

Albert Creek Bird Observatory Final Report 2008



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Albert Creek Bird Observatory
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The 2008 operation of the Albert Creek Bird Observatory was made possible due to financial contributions from the following organizations.



Environment
Canada

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Cover Photos:

Upper Row (L to R): American Redstart (fall male), Blackpoll Warbler (spring male)

Middle Row (L to R): Cape May Warbler (spring male), Lincoln's Sparrow (fall juvenile)

Bottom Row (L to R): Alder Flycatcher (fall adult), Rusty Blackbird (fall adult female)

ABSTRACT

The Albert Creek Bird Observatory operated during both the spring and fall migration seasons during 2008. This year was the station's eighth consecutive year of operation. During the spring, the station operated for 47 days from April 23rd to June 8th. Over this time period, 2,056 birds of 50 species were banded and 122 species were observed. During the fall season, the station was operated for 59 days from July 23rd to September 23rd. Over this time period, 1,664 birds of 41 species were banded and 89 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 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, Swamp Sparrow and White-throated Sparrow were banded during the 2008 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 314.5 volunteer hours by individuals assisting in the operation of the station. In addition, 260.5 visitor hours were recorded by individuals not assisting with the stations operation, but touring the area and learning about bird banding and bird migration in general.

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1.0 Introduction

The Albert Creek Bird Observatory operated during both the spring and fall migration seasons in 2008. The station completed its eighth 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, Ducks Unlimited Canada, Lotteries Yukon and TD Friends of the Environment Fund.

The goals of the Albert Creek Bird Observatory are 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 observatory serves as a place where research can be carried out 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 observatory 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 angustifolium*), 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 2008 season at the Albert Creek Bird Observatory was divided into the spring and fall seasons. The spring season began on April 23rd, 2008 and finished on June 8th, 2008. The fall season began on July 23rd, 2008 and finished on September 23rd, 2008. 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 and were baited with mixed seed (including corn). A total of 26 mist nets were used this year as this number has been set as the standard number to be used in future years of operation. The number of nets used on any given day depends on a number of factors including weather, bird activity and the number of qualified banders/extractors onsite.

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 (7 point scale)
- banding date
- banding time
- location banded
- bander's initials
- trap used
- net captured in
- molt information
- additional comments

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 using 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 was done using the following formula; Estimated Total (ET) = # banded + # recaptured + # observed/heard.

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

3.0 Results

A total of 3,750 birds of 56 species were banded during 2008 as summarized in Tables 1 – 4 and Figures 2 – 3. The all time total number of birds banded at Albert Creek is now 26,740 birds of 84 species. Note that supplemental data analysis to this section is presented in appendices 1 to 6.

Table 1. Summary statistics of the 2008 spring and fall seasons at Albert Creek.

Season	Start Date	End Date	# of Days Operated	Species Banded	Individuals Banded	Net Hrs.	Birds Banded / 100 Net Hrs	Species Observed
Spring	23 Apr	8 Jun	47	50	2,086	4,644	44.92	122
Fall	23 Jul	23 Sep	59	41	1,664	6,385	26.23	89
TOTAL	24 Apr	23 Sep	106	56	3,750	11,029	34.10	131

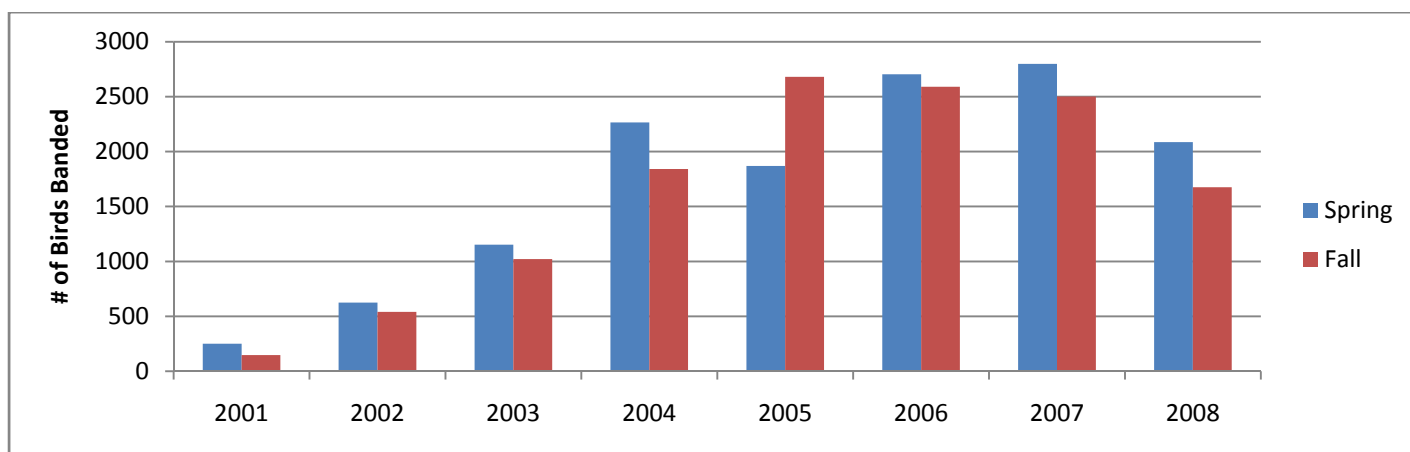


Figure 1. Banding totals at Albert Creek from 2001 through 2008.

Table 2. Top 10 species banded during the spring of 2008 in comparison to past years (numbers in parenthesis indicate the respective rank during each respective year).

SPECIES	TOTAL INDIVIDUALS BANDED (SEASONAL RANKING)					
	2008	2007	2006	2005	2004	2003
Yellow-rumped Warbler	434	113 (9)	364 (2)	91 (6)	268 (3)	143 (2)
Orange-crowned Warbler	339	251 (5)	214 (5)	105 (5)	286 (2)	137 (3)
Yellow Warbler	208	261 (4)	313 (3)	33 (12)	61 (9)	65 (4)
Wilson’s Warbler	182	369 (1)	398 (1)	552 (1)	502 (1)	384 (1)
White-crowned Sparrow	138	217 (6)	14 (26)	269 (2)	184 (5)	6 (25)
Blackpoll Warbler	88	57 (14)	62 (12)	17 (19)	22 (16)	22 (10)
Ruby-crowned Kinglet	88	75 (11)	246 (4)	18 (18)	51 (10)	24 (9)
American Tree-Sparrow	74	345 (2)	196 (6)	175 (3)	172 (6)	24 (9)
Common Redpoll	54	12 (24)	46 (15)	2 (33)	68 (8)	-
Savannah Sparrow	53	70 (12)	42 (16)	31 (13)	38 (130)	27 (8)
TOTAL NET HOURS	4,644	4,683	4,376	4,963	3,864	3,089

Table 3. Top 10 species banded during the fall of 2008 in comparison to past years (numbers in parenthesis indicate the respective rank during each respective year).

SPECIES	TOTAL INDIVIDUALS BANDED (SEASONAL RANKING)					
	2008	2007	2006	2005	2004	2003
Alder Flycatcher	202	253 (2)	183 (5)	174 (5)	217 (1)	80 (4)
Northern Waterthrush	195	248 (3)	97 (11)	157 (6)	95 (8)	33 (12)
Common Yellowthroat	191	217 (4)	228 (2)	119 (3)	107 (6)	72 (5)
Wilson's Warbler	146	167 (7)	218 (4)	106 (12)	203 (2)	83 (3)
Yellow-rumped Warbler	106	262 (1)	105 (10)	185 (4)	138 (5)	86 (2)
Yellow Warbler	93	214 (5)	125 (8)	149 (8)	159 (4)	50 (8)
American Redstart	90	50 (13)	48 (14)	54 (13)	35 (14)	27 (15)
Orange-crowned Warbler	87	152 (8)	151 (7)	122 (10)	199 (3)	52 (7)
Swainson's Thrush	70	137 (9)	93 (12)	133 (9)	104 (7)	65 (6)
American Tree-Sparrow	61	116 (10)	223 (3)	150 (7)	66 (10)	26 (16)
TOTAL NET HOURS	6,385	6,762	6,002	6,290	5,058	2,972

Table 4. Top 10 banded species by age ratio during the spring of 2008.

Species	# Banded	% SY (Second Year) Banded	% ASY (After Second Year) Banded	% AHY (After Hatch Year) Banded
Yellow-rumped Warbler	433	50	40	10
Orange-crowned Warbler	339	57	35	8
Yellow Warbler	208	61	36	3
Wilson's Warbler	182	58	28	14
White-crowned Sparrow	138	18	28	54
Blackpoll Warbler	88	42	56	2
Ruby-crowned Kinglet	88	9	76	15
American Tree Sparrow	74	19	16	65
Common Redpoll	52	14	12	74
Savannah Sparrow	53	19	13	68

Table 5. Top 10 banded species by age ratio during the fall of 2008.

Species	# Banded	% HY (Hatch Year) Banded	% AHY (After Hatch Year) Banded
Alder Flycatcher	207	68	32
Northern Waterthrush	194	78	22
Common Yellowthroat	191	81	19
Wilson's Warbler	146	71	29
Yellow-rumped Warbler	117	65	35
Yellow Warbler	93	67	33
Orange-crowned Warbler	87	61	39
American Redstart	85	86	14
Swainson's Thrush	70	83	17
American Tree Sparrow	61	75	25

Table 6. Birds banded at Albert Creek during the spring and fall of 2008.

Common Name	Latin Name	AOU Code	Spring Total	Fall Total	Common Name	Latin Name	AOU Code	Spring Total	Fall Total
Solitary Sandpiper	<i>Tringa solitaria</i>	SOSA	1		Magnolia Warbler	<i>Dendroica magnolia</i>	MAWA	4	38
Sharp-shinned Hawk	<i>Accipiter striatus</i>	SSHA		1	Cape May Warbler	<i>Dendroica tigrina</i>	CMWA	3	2
Boreal Owl	<i>Aegolius funerus</i>	BOOW	1		Yellow-rumped Warbler	<i>Dendroica coronata</i>	YRWA	434	107
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	YBSA	9	10	Townsend’s Warbler	<i>Dendroica townsendi</i>	TOWA	4	
Northern Flicker	<i>Colaptes auratus</i>	NOFL	3	1	Blackpoll Warbler	<i>Dendroica striata</i>	BLPW	88	19
Olive-sided Flycatcher	<i>Contopus cooperi</i>	OSFL	2		American Redstart	<i>Setophaga ruticilla</i>	AMRE	6	90
Western Wood-pewee	<i>Contopus sordidulus</i>	WEWP	2		Northern Waterthrush	<i>Seiurus noveboracensis</i>	NOWA	31	195
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	YBFL		2	Common Yellowthroat	<i>Geothlypis trichas</i>	COYE	46	191
Alder Flycatcher	<i>Empidonax alnorum</i>	ALFL	21	202	Wilson’s Warbler	<i>Wilsonia pusilla</i>	WIWA	182	146
Least Flycatcher	<i>Empidonax minimus</i>	LEFL	2	11	Western Tanager	<i>Piranga ludoviciana</i>	WETA		2
Hammond’s Flycatcher	<i>Empidonax hammondi</i>	HAFL	2	7	American Tree Sparrow	<i>Spizella arborea</i>	ATSP	74	61
Dusky Flycatcher	<i>Empidonax oberholseri</i>	DUFL	1		Chipping Sparrow	<i>Spizella passerine</i>	CHSP	6	1
Northern Shrike	<i>Lanius excubitor</i>	NSHR	1	1	Savannah Sparrow	<i>Passerculus sandwichensis</i>	SAVS	53	7
Warbling Vireo	<i>Vireo gilvus</i>	WAVI	3	17	Fox Sparrow	<i>Passerella iliaca</i>	FOSP	51	22
Tree Swallow	<i>Tachycineta bicolor</i>	TRES	13		Lincoln’s Sparrow	<i>Melospiza lincolni</i>	LISP	27	57
Violet-green Swallow	<i>Tachycineta thalassina</i>	VGSW	2		Swamp Sparrow	<i>Melospiza georgiana</i>	SWSP	5	29
Black-capped Chickadee	<i>Poecile atricapillus</i>	BCCH		16	White-throated Sparrow	<i>Zonotrichia albicollis</i>	WTSP	14	10
Boreal Chickadee	<i>Poecile hudsonica</i>	BOCH	3	6	White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	GWCS	138	5
Ruby-crowned Kinglet	<i>Regulus calendula</i>	RCKI	88	53	Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>	GCSP	3	
Gray-cheeked Thrush	<i>Catharus minimus</i>	GCTH	2	5	Dark-eyed Junco	<i>Junco hyemalis</i>	DEJU	48	39
Swainson’s Thrush	<i>Catharus ustulatus</i>	SWTH	15	70	Lapland Longspur	<i>Calcarius lapponicus</i>	LALO	2	
Hermit Thrush	<i>Catharus guttatus</i>	HETH	5	1	Red-winged Blackbird	<i>Aegialius phoeniceus</i>	RWBL	2	
American Robin	<i>Turdus migratorius</i>	AMRO	5	1	Rusty Blackbird	<i>Euphagus carolinus</i>	RUBL	47	9
Varied Thrush	<i>Ixoreus naevius</i>	VATH		5	Brown-headed Cowbird	<i>Molothrus ater</i>	BHCO	1	
Bohemian Waxwing	<i>Bombycilla garrulus</i>	BOWA	2		Purple Finch	<i>Carpodacus purpureus</i>	PUFI	9	
Cedar Waxwing	<i>Bombycilla cedrorum</i>	CEDW		3	Common Redpoll	<i>Carduelis flammea</i>	CORE	54	14
Tennessee Warbler	<i>Vermivora peregrina</i>	TEWA	22	28	Pine Siskin	<i>Carduelis pinus</i>	PISI	2	
Orange-crowned Warbler	<i>Vermivora celata</i>	OCWA	339	87	TOTAL			2086	1664
Yellow Warbler	<i>Dendroica petechia</i>	YWAR	208	93					

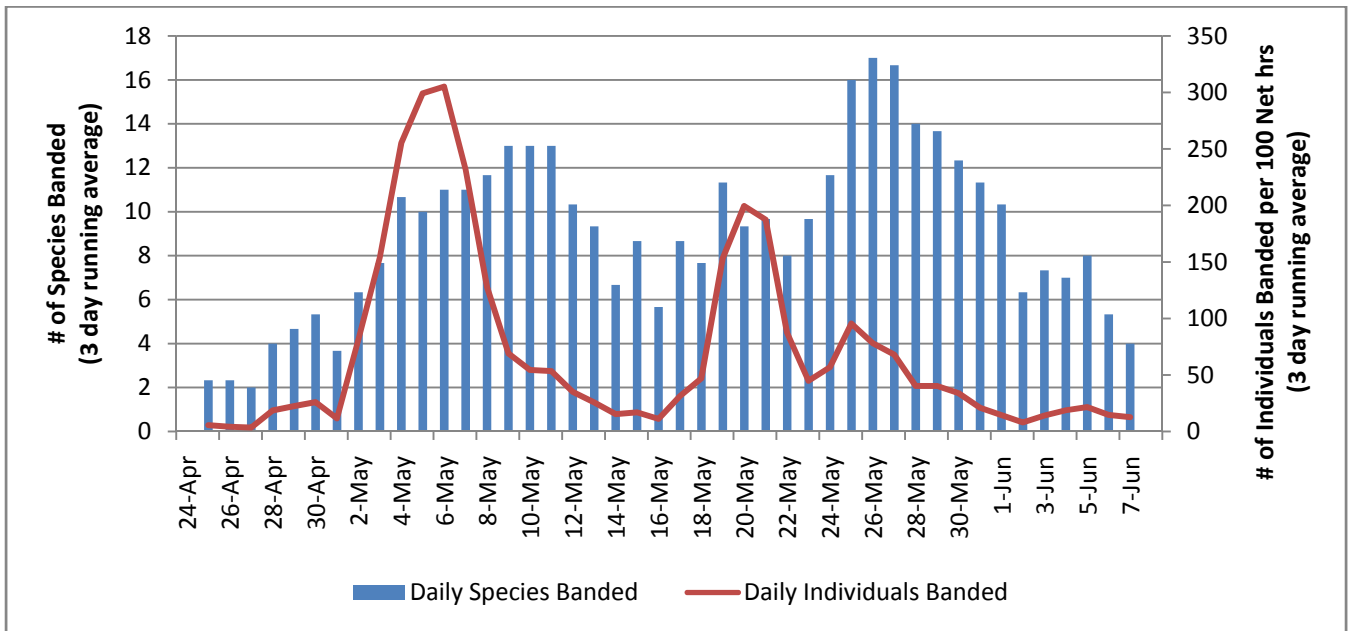


Figure 2. Summary of species banded and birds / 100 net hours during the spring of 2008.

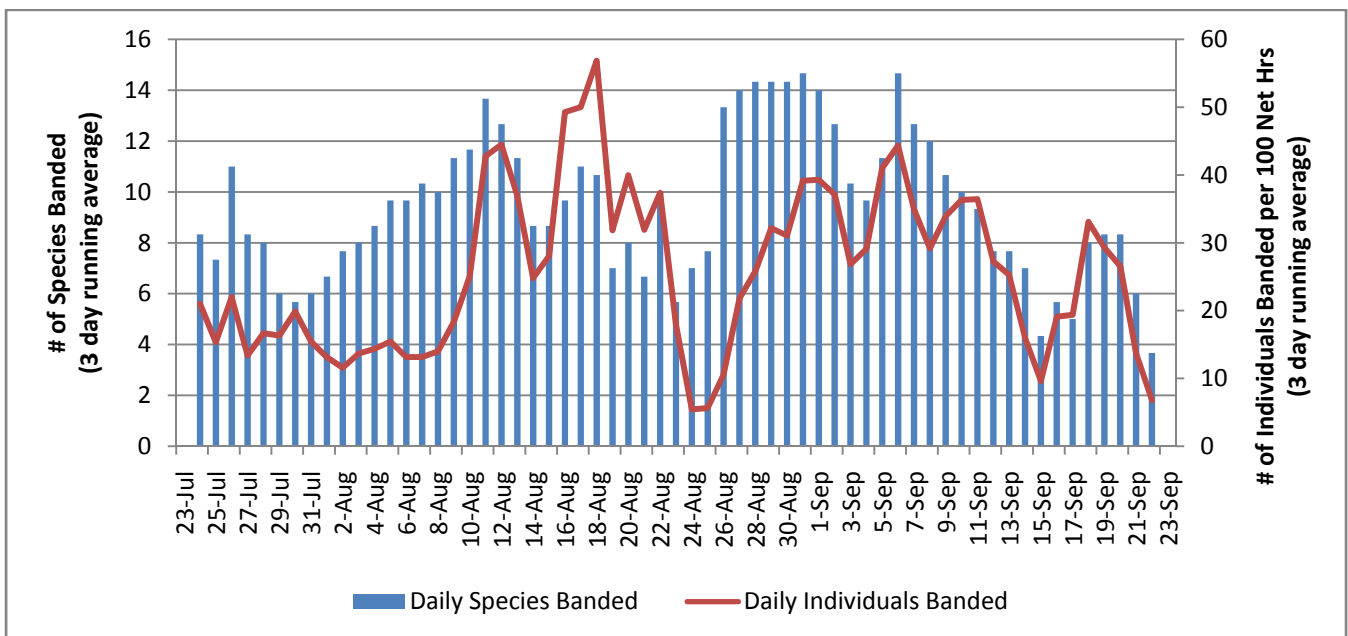


Figure 3. Summary of species banded and birds / 100 net hours during the fall of 2008.

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 7. Banded birds recovered during the spring and fall of 2008.

Species	Original Banded Year					TOTAL
	2003	2004	2005	2006	2007	
Yellow-bellied Sapsucker			1		2	3
Alder Flycatcher					1	1
Warbling Vireo				2	2	4
Gray Jay					1	1
Black-capped Chickadee			1			1
Boreal Chickadee					1	1
Swainson's Thrush	1			1		2
American Robin		1		2	1	4
Tennessee Warbler			1	1		2
Yellow-rumped Warbler			1			1
American Redstart					2	2
Northern Waterthrush		1	1	4	2	8
Common Yellowthroat			1	1	6	8
Lincoln's Sparrow	1		1	3	1	6
Swamp Sparrow				2		2
White-throated Sparrow			1		1	2
Purple Finch			1			1
TOTAL INDIVIDUALS	2	2	9	16	20	49

3.2 Notable Captures

As is the case in all years, the vast majority of birds banded at Albert Creek in 2008 were species which are common and widespread north and west of the southeast Yukon. For example, of the 26,740 birds banded at Albert Creek since 2001, 72% of all birds banded are of the top 10 species (Wilson's Warbler, Yellow-rumped Warbler, Orange-crowned Warbler, Yellow Warbler, Dark-eyed Junco, American Tree-Sparrow, Ruby-crowned Kinglet, Common Yellowthroat, Alder Flycatcher and Northern Waterthrush). These 10 species are primarily common species; however, the wetland habitat at the study site results in a relatively high proportion of wetland associated species 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 2008.

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.

Gadwall

The Gadwall is not a common duck species in the Yukon and this species appears to be expanding its range and increasing in numbers in the Yukon. This species was observed for the first time at the site, when a lone individual was seen on May 22nd.

Whimbrel

Not one of the more common Yukon shorebird species, a single individual observed on May 29th was the first record of this species at the site.

Pileated Woodpecker

Not a familiar woodpecker species in much of the Yukon, this species is regularly observed at Albert Creek and it is likely that breeding is occurring within, or near the site. A summary of observations for this species is shown in the table below.

Table 8. Summary of Pileated Woodpecker observations.

Season	# Banded	# of Days Observed	First Date Observed	Last Date Observed	High Count
Spring	0	27	27 Apr	8 Jun	2 on many days
Fall	0	35	23 Jul	23 Sep	2 on many days

Dusky Flycatcher

One of the least common flycatchers seen at Albert Creek, a single Dusky Flycatcher was banded on May 31st. This constituted the third individual banded at the site to date.

Philadelphia Vireo

Along with the closely related Red-eyed Vireo, this species is very rare in the Yukon. In the Yukon, this species is typically restricted to the La Biche River valley in the extreme southeast Yukon. In 2008, a single individual was observed, but not banded, at the site on August 3rd. This was the second record of this species at Albert Creek, as a single individual was banded during the fall of 2004.

American Crow

Similar to other areas in the southern Yukon, this species appears to be increasing in numbers at Albert Creek. In 2008, this species was observed on 20 days during the spring from April 26th to June 8th with a high count of 4 individuals on June 6th.

Violet-green Swallow

Although a fairly common species in the Yukon, this species was banded at the site for the first time during the spring season. Two individuals (one male, one female) were banded on May 20th alongside a number of Tree Swallows.



Photo 1. Dusky Flycatcher.



Photo 2. Violet-green Swallow (male).

Northern Rough-winged Swallow

Similar to the more common and closely related Bank Swallow, a single rough-wing was observed over the marsh on May 19th.

Cedar Waxwing

Contrary to the familiar Bohemian Waxwing, Cedar Waxwings are observed sporadically at Albert Creek. In some years they are present in modest numbers and in other years they are completely absent. A summary of observations for this species is shown in the table below.

Table 9. Summary of Cedar Waxing observations.

Season	# Banded	# of Days Observed	First Date Observed	Last Date Observed	High Count
Spring	0	1	23 May	-	-
Fall	3	20	23 Jul	15 Sep	7 on 15 Sep

Magnolia Warbler

Although not common by Yukon standards, this species is present in modest numbers at Albert Creek, particularly during the fall season. A number of juvenile birds were once again banded early during the fall season, indicating that local breeding is likely occurring at the site. A summary of observations for this species is shown in the table below.

Table 10. Summary of Magnolia Warbler observations.

Season	# Banded	# of Days Observed	First Date Observed	Last Date Observed	High Count
Spring	4	4	29 May	8 Jun	2 on 4 Jun
Fall	38	22	25 Jul	30 Aug	7 on 13 Aug



Photo 3. Magnolia Warbler (spring male).

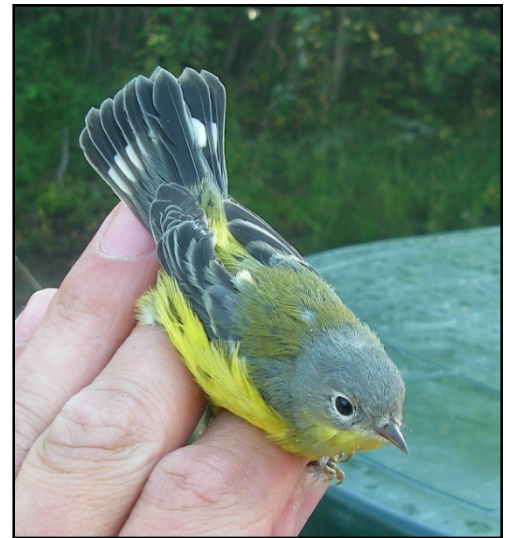


Photo 4. Magnolia Warbler (juvenile).

Cape May Warbler

This species is typically restricted to the southeast Yukon only; however, this species has been showing up erratically in other parts of the territory in recent years. The data collected at Albert Creek suggests that this species is becoming more common at the study. The presence of territorially singing males in the spring and the capture of newly fledged juvenile during the fall suggests that this species may be breeding at the site. A summary of observations for this species is shown in the table below.

Table 11. Summary of Cape May Warbler observations.

Season	# Banded	# of Days Observed	First Date Observed	Last Date Observed	High Count
Spring	3	10	26 May	8 Jun	2 on 2,3,4 Jun
Fall	2	2	25 Jul	8 Aug	1 on both days



Photo 5. Cape May Warblers (from left to right – spring male, fall adult, fall juvenile)

Bay-breasted Warbler

One of the least common warbler species observed at Albert Creek, this species was encountered on two days during the spring season. On May 27th and 28th, a lone singing male was present at the site. Although no individuals were banded during 2008, three individuals have been banded to date.

Western Tanager

Similar to some of the other southeast Yukon species, the Western Tanager appears to be on the increase at Albert Creek. A summary of observations for this species is shown in the table below. Note that as of 2008, 13 individuals (2 spring, 11 fall) have been banded at Albert Creek. This species is likely a local breeder at the site.

Table 12. Summary of Western Tanager observations.

Season	# Banded	# of Days Observed	First Date Observed	Last Date Observed	High Count
Spring	0	12	19 May	8 Jun	2 on 26,27,29 May
Fall	2	7	23 Jul	19 Aug	3 on 23 Jul



Photo 6. Western Tanager (adult male in fall).

Swamp Sparrow

Although quite common at Albert Creek, this species is seldom seen further west in the Yukon. The expanse of suitable breeding habitat for this species at the site likely results in the modest numbers of individuals (mostly juveniles) banded during the fall season. A summary of observations for this species is shown in the table below.

Table 13. Summary of Swamp Sparrow observations.

Season	# Banded	# of Days Observed	First Date Observed	Last Date Observed	High Count
Spring	5	18	9 May	2 Jun	3 on 14 May
Fall	29	32	23 Jul	20 Sep	6 on 23 Jul



Photo 7. Swamp Sparrows (from left to right – spring adult, fall adult, fall juvenile).

White-throated Sparrow

Like the Swamp Sparrow, the White-throated Sparrow is rare across much of the Yukon but is a common breeding bird at Albert Creek. A summary of observations for this species is shown in the table below. It is also of note that lower than typical numbers of this species were encountered during the fall season.

Table 14. Summary of White-throated Sparrow observations.

Season	# Banded	# of Days Observed	First Date Observed	Last Date Observed	High Count
Spring	14	29	10 May	8 Jun	6 on 31 May
Fall	10	19	23 Jul	21 Sep	5 on 27 Aug

Vesper Sparrow

The most notable observation of 2008 was a Vesper Sparrow seen at the site briefly on May 16th. This individual constituted only the second well documented record of this species in the territory.



Photo 8. Vesper Sparrow.

3.3 Additional Studies

In an attempt to maximize the data collection component of the birds captured, the station partakes in add on studies when possible. 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 Observatory, all Rusty Blackbirds captured were fitted with color bands (light green) 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 re-sightings of banded individuals which will provide banding location information without the bird being captured.

The following table summarizes the Rusty Blackbirds captured and subsequently color banded at Albert Creek during 2008.

Table 15. Rusty Blackbird banded during the spring and fall of 2008.

Season	After Hatch Year (AHY)		Second Year (SY)	Hatch Year	
	Female	Male	Male	Female	Male
Spring	18	28	1		
Fall	2	2		2	3



Photo 9. AHY-F and HY-M Rusty Blackbirds banded during the fall of 2008.

3.3.2 Owl Banding

In an attempt to continue testing the feasibility of owl banding at the site, a total of 17.5 net hours (3nights) were achieved using both Boreal Owl and Northern Sawhet 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 Sawhet Owl lure was set adjacent to mist net lane 18 (see Map 1); however, no owls were captured during 2008 nocturnal attempts.

3.3.3 Tick Collection

In collaboration with John Scott (private researcher from Ontario), all birds captured where checked for the presence of bird ticks with the intention of collecting them to identify the distribution of these parasites. Two ticks were collected from a single Wilson’s Warbler during the 2008 season. The species of tick was identified by Mr. Scott and it was noted that this was the furthest north that this particular tick species had ever been recorded.

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 5 to 11 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.

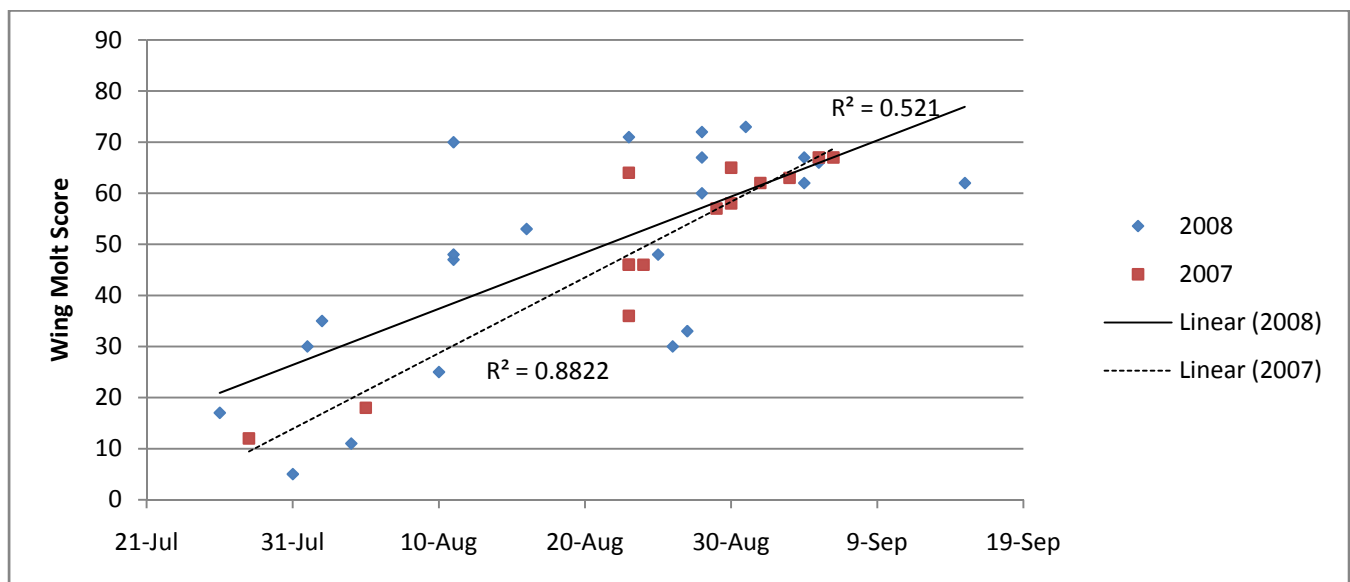


Figure 4. Molt scores over time during 2007 and 2008 for American Redstart.

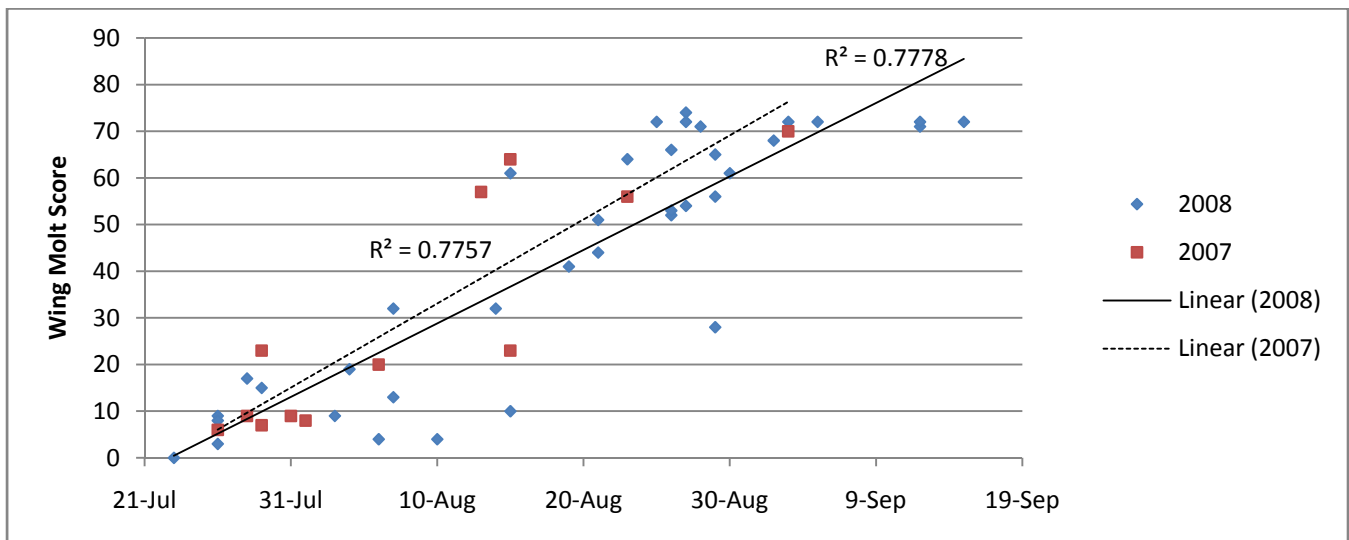


Figure 5. Molt scores over time during 2007 and 2008 for Common Yellowthroat.

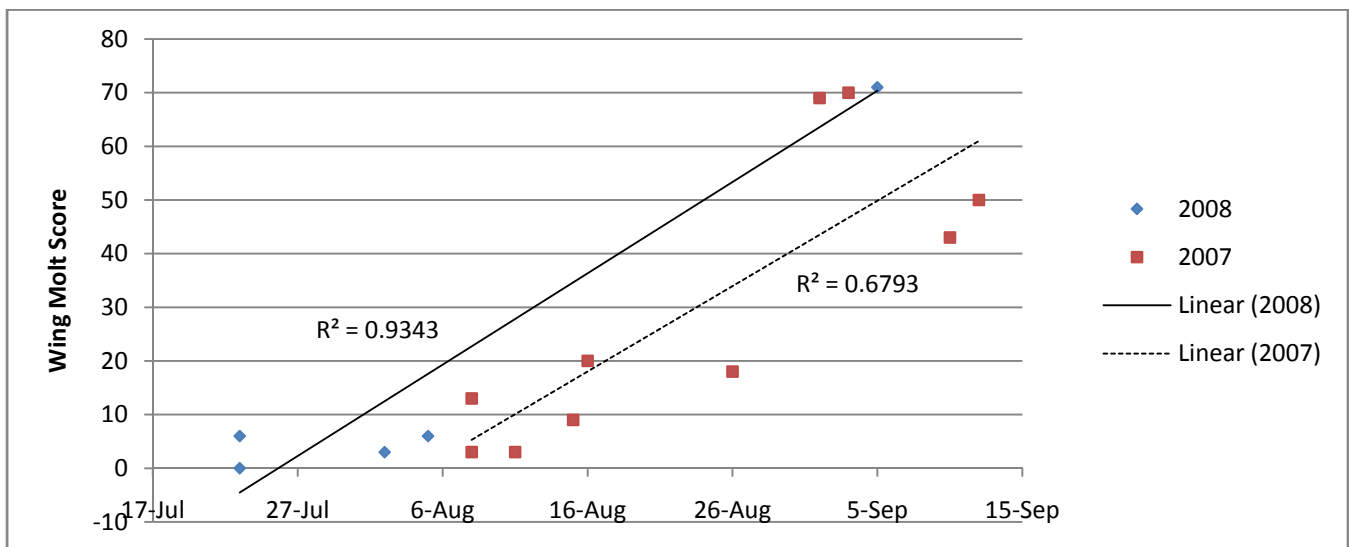


Figure 6. Molt scores over time during 2007 and 2008 for Lincoln's Sparrow.

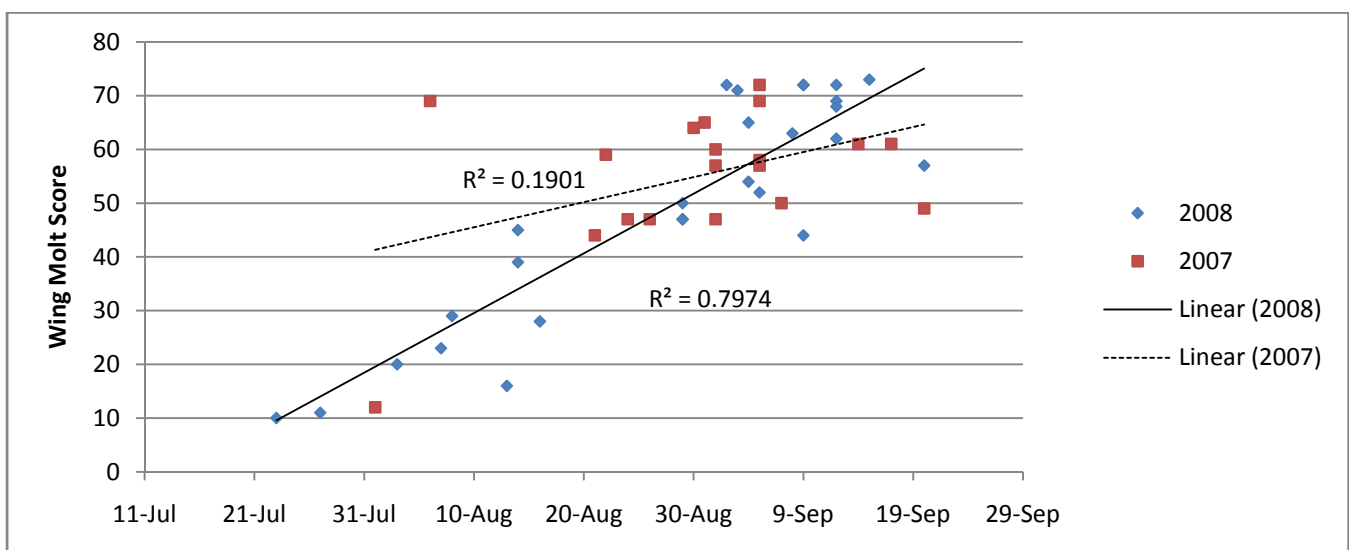


Figure 7. Molt scores over time during 2007 and 2008 for Yellow-rumped Warbler.

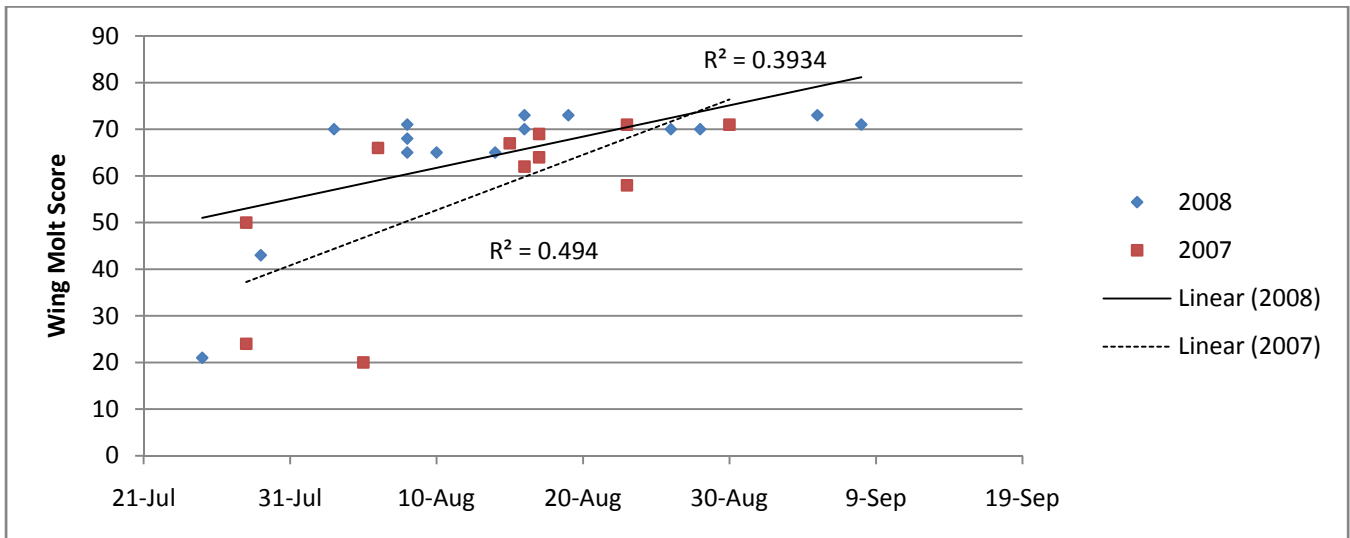


Figure 8. Molt scores over time during 2007 and 2008 for Northern Waterthrush.

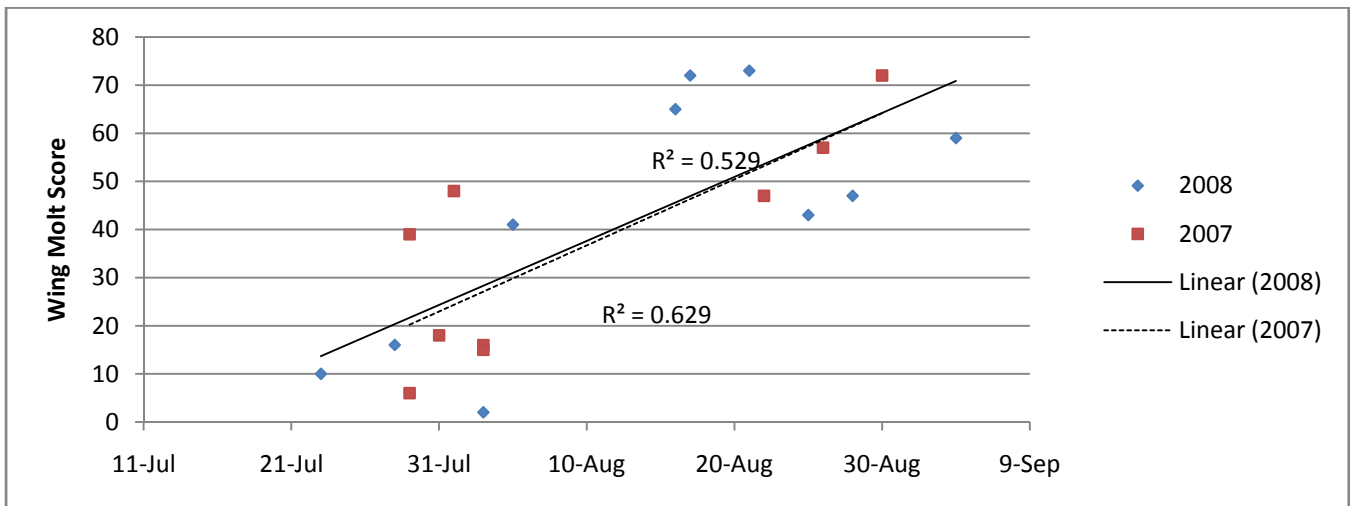


Figure 9. Molt scores over time during 2007 and 2008 for Yellow Warbler.

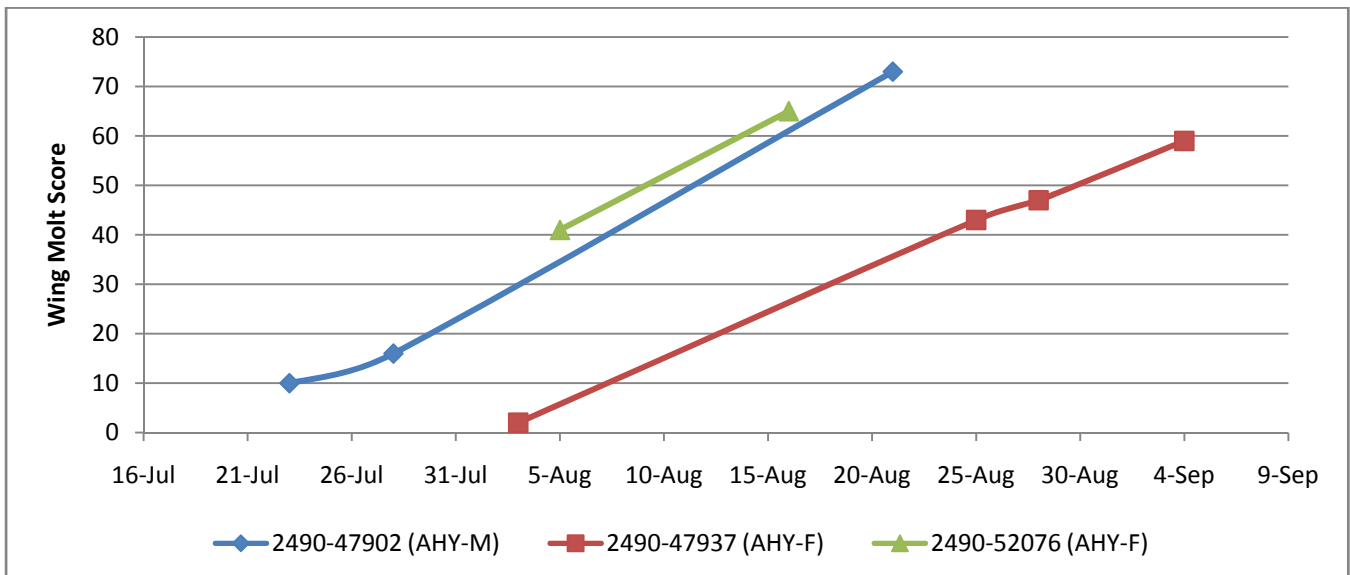


Figure 10. Molt scores over time during 2008 for select Yellow Warblers.

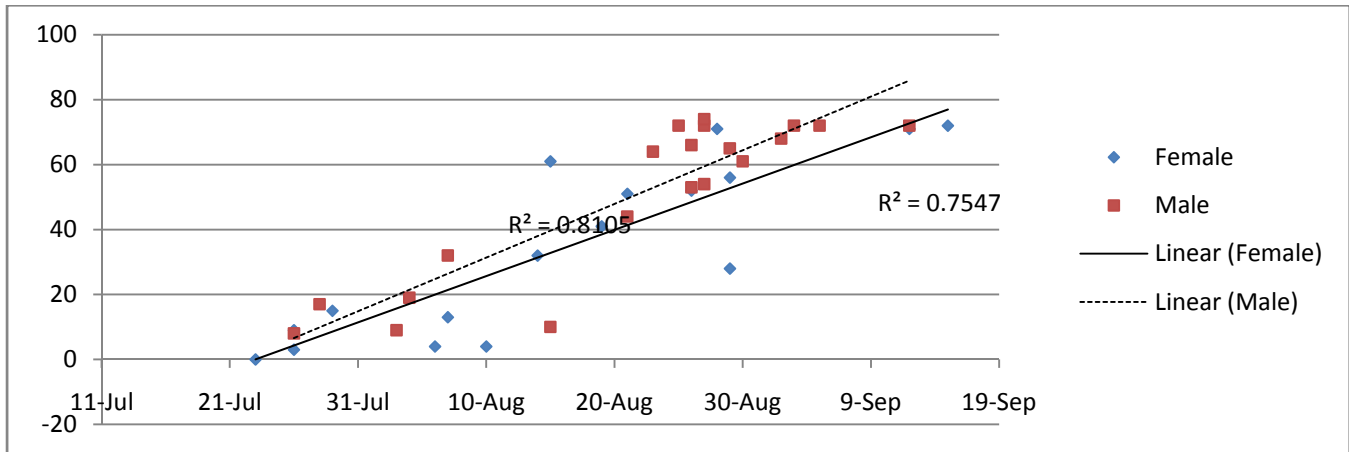


Figure 11. Molt scores over time during 2008 for female and male Common Yellowthroats.

3.4 Visitors and Volunteers

Table 16 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 Bander In Charge (Jillian Johnston, Ted Murphy-Kelly and Jukka Jantunen), Y2C2 students and a CWS intern.

Table 16. Hours spent at the banding station visitors, volunteers and paid workers¹.

	Visitor Hours	Volunteer Hours	Paid Hours
Spring	184.0	144.5	579.8
Fall	76.5	169.8	677.5
TOTAL	260.5	314.3	1,257.3



Photo 10. 2008 Banders In Charge (left – Jillian Johnston with a Northern Harrier, right – Jukka Jantunen discussing ageing with CWS- Whitehorse intern Julia Montgomery).

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.

4.0 Photos

The following photos illustrate the top 18 species banded during the 2008 season (in order).



Yellow-rumped Warbler



Orange-crowned Warbler



Wilson's Warbler



Yellow Warbler



Common Yellowthroat



Northern Waterthrush



Alder Flycatcher



White-crowned Sparrow



Ruby-crowned Kinglet



American Tree-Sparrow



Blackpoll Warbler



American Redstart



Dark-eyed Junco



Swainson's Thrush



Lincoln's Sparrow



Fox Sparrow



Common Redpoll



Rusty Blackbird

5.0 Discussion

The results from this season's operation have continued to add to the 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 2008 season is indicative of the high number of local breeding birds at the study site. This is not the best case scenario for migration monitoring due to the potential bias of results due to local productivity (especially early during the fall season). Some species which likely have a strong bias of local breeders include Northern Waterthrush, Common Yellowthroat, White-throated Sparrow, Swamp Sparrow and Lincoln's Sparrow

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. During 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, American Redstart and Swamp Sparrow which are relatively common at the study site; however, they have a very restricted range in the Yukon.

The capture of 3 Cedar Waxwings during the fall season continues to be of some interest as this species has only been recorded during two other seasons, the fall of 2004, and 2007 when 8 individuals for each year were also banded. This species is at the northern extent of its range. During all three 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, 2007 and 2008.

This relatively high number of specific species during certain years often asks many questions. For example, the record high numbers of American Redstarts captured during the 2008 fall season leads to speculation of whether the 2008 breeding season was exceptionally productive for this species. It is also possible that this species is increasing in numbers or the site is becoming more suitable to stopover migrants of this species.

5.3 Additional Studies

The 2008 season continued to trial two new add on studies at Albert Creek which increases the data collected at the station and test the possibility of monitoring bird species other than songbirds.

The three nights conducting owl banding conducted during the fall season was unsuccessful at capturing any owls but there were owls that responded to the lure calls. The owl banding effort was low however, it was proven that owls can be captured at Albert Creek using the tested methodology in 2007. The project will continue in future years. A single Boreal Owl was banded on the morning of April 24th during regular mist netting. The results of the owl banding testing show that with a substantial amount of effort 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 was the case in 2007. No ducks were captured. However, duck banding will be attempted again in 2009 with hopes of having better success. The 2007 and 2008 seasons 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 where there is 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.

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 encouraging numbers of volunteers participating at the station, which is essential for increasing the future productivity of the station.

6.0 Conclusion and Recommendations

The spring and fall banding seasons of 2008 marked another successful year for the Albert Creek bird observatory. Geographically, the southeast Yukon is a very bird rich region and Albert Creek illustrates this extremely well. 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 to continue capturing birds.

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 six 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 2009 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.

The placement of boardwalks along many of the net lanes this year has also made the site easier to get around. More work on board walks will be conducted in 2009.

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 and enjoyable 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, and Scott Heron, for your general assistance in making the station a success. To Jillian Johnston and Jukka Jantunen, thank you for your assistance at the station, particularly in the training of new banders. A special thanks goes out to long time volunteers Julie Bauer, Gwen Baluss and Sarah Davidson who continue to take time off every year to come and help out. The photographs included in this report were provided by Ben Schonewille, Ted Murphy-Kelly, Julie Bauer, Jillian Johnston and Jukka Jantunen. In closing, the authors would like to thank CBC Radio, and 96.1 “The Rush” for advertising the station to the public. The Yukon Conservation Society (Karen Baltgailis) and the Southeast Yukon Proper Land Use Society also provided logistical support for the observatory.

**APPENDIX 1 –ALBERT CREEK ALL TIME BANDING TOTALS & LIST OF SPECIES
OBSERVED**

SPECIES	SPRING								FALL								ALL TIME
	2001	2002	2003	2004	2005	2006	2007	2008	2001	2002	2003	2004	2005	2006	2007	2008	
Orange-crowned Warbler	57		137	286	105	214	251	339	12	30	52	199	122	151	152	87	2182
Ovenbird			1											1			2
Philadelphia Vireo											1						1
Pileated Woodpecker					1								2				3
Pine Grosbeak													2				2
Pine Siskin		6	2	2				2		4	31	5					52
Purple Finch	5	9	11	10	8	8	5	9				3	11		1		80
Red-breasted Nuthatch			1						3			1			1		3
Red-eyed Vireo				1													1
Red-winged Blackbird					7	8	4	2									21
Ruby-crowned Kinglet	17	20	24	51	18	246	75	88		29	125	47	200	412	184	53	1589
Rusty Blackbird	2		5	5	37	81	14	47	2	1	10	12	15	35	31	9	304
Savannah Sparrow	4	7	27	38	31	42	70	53		3	6	19	7	13	18	7	345
Say's Phoebe						1											1
Sharp Shinned hawk			3		1	2	1			1	1	3	2	6	4	1	25
Solitary Sandpiper			1		3	12	9	1							2		28
Song Sparrow													1				1
Spotted Sandpiper							1								1		2
Swainson's Thrush	2	25	21	53	19	46	55	15	1	7	65	104	133	93	137	70	845
Swamp Sparrow			4	2	1	4	5	5	4	6	9	7	33	40	21	29	166
Tennessee Warbler	1	12	17	48	51	60	21	22	4	9	14	12	30	15	22	28	362
Three-toed Woodpecker							1				2	1					4
Townsend's Warbler				1				4	1		3		3	1	1		13
Tree Swallow							1	13									14
Varied Thrush			1		2	3				2	3	3	2	7	3	5	31
Violet-green Swallow								2									2
Warbling Vireo	2	8	6	11	10	7	7	3	3	19	17	28	34	22	26	17	217
Western Tanager		1		2	1	1	1				1	2	3	1	2	2	17
Western Wood-pewee			1			4		2									7
White-crowned Sparrow	6	7	6	184	269	14	217	138	1	3	9	11	13	22	10	5	914
White-throated Sparrow	2	19	20	9	14	18	14	14	4	6	33	30	27	22	9	10	247
White-winged Crossbill						16							7		12		35
Wilson's Snipe			1		2	3	1							1	1		9
Wilson's Warbler	16	189	384	502	552	398	369	182	10	28	83	203	106	218	167	146	3543
Yellow Warbler	6	84	65	61	33	313	261	208	7	22	50	159	149	125	214	93	1843
Yellow-bellied Flycatcher		1		2	1		1			4		1	2		2	2	16
Yellow-bellied Sapsucker	1	2	7	15	9	17	16	9	1	1	8	21	14	18	16	10	164
Yellow-rumped Myrtle Warbler	73	9	143	268	91	364	113	434	35	80	86	138	185	105	262	117	2468
Yellow-rumped Warbler						3										1	4
Yellow-shafted Norther Flicker		1		2	1		1	3				1	2	1	1	1	14
TOTAL SPECIES BANDED	27	36	45	47	49	51	54	51	28	36	41	50	49	47	53	43	84
TOTAL BIRDS BANDED	251	625	1152	2265	1869	2704	2799	2086	147	540	1021	1842	2681	2591	2502	1676	26751

Description of Bird Species List

Common - Recorded annually, in at least modest numbers on most days of operation.

Uncommon - Recorded annually but not in modest numbers or not on a high number of days.

Rare - Recorded annually, but in low numbers.

Casual - Not recorded annually, but recorded during at least 2 years.

Accidental - One record only.

Note that species highlighted in yellow have been banded during the respective season.

	Spring	Fall
Loons & Grebes		
Red-throated Loon	Rare	Casual
Common Loon	Uncommon	Uncommon
Horned Grebe	Rare	Accidental
Red-necked Grebe	Accidental	Accidental
Geese, Swans & Ducks		
Greater White-fronted Goose	Uncommon	Common
Snow Goose	Casual	Accidental
Canada Goose	Common	Common
Trumpeter Swan	Uncommon	Uncommon
Tundra Swan	Uncommon	Uncommon
Gadwall	Casual	
American Wigeon	Uncommon	Uncommon
Mallard	Common	Common
Blue-winged Teal	Rare	Rare
Northern Shoveler	Uncommon	Casual
American Green-winged Teal	Common	Common
Northern Pintail	Common	Casual
Canvasback	Accidental	
Ring-necked Duck	Uncommon	Rare
Greater Scaup	Accidental	
Lesser Scaup	Uncommon	
Long-tailed Duck	Casual	
Bufflehead	Uncommon	Casual
Common Goldeneye	Uncommon	Casual
Barrow's Goldeneye	Uncommon	Casual
Common Merganser	Uncommon	Accidental
Red-breasted Merganser	Casual	
Birds of Prey		
Osprey	Rare	Rare
Bald Eagle	Uncommon	Uncommon
Northern Harrier	Common	Uncommon
Sharp-shinned Hawk	Uncommon	Uncommon
Northern Goshawk	Rare	Rare
Swainson's Hawk		Accidental
Red-tailed Hawk	Uncommon	Uncommon
Rough-legged Hawk	Casual	Casual
American Kestrel	Uncommon	Uncommon
Merlin	Casual	Uncommon

Grouse & Ptarmigan		
Ruffed Grouse	Common	Common
Spruce Grouse	Common	Common
Rails, Coots & Allies		
American Coot	Casual	
Sora	Rare	Rare
Sandhill Crane	Uncommon	Uncommon
Plovers		
American Golden Plover	Accidental	Accidental
Semi-palmated Plover	Rare	
Killdeer	Uncommon	Accidental
Sandpipers & Allies		
Greater Yellowlegs	Uncommon	Casual
Lesser Yellowlegs	Common	Uncommon
Solitary Sandpiper	Common	Uncommon
Wandering Tattler	Accidental	
Spotted Sandpiper	Rare	Rare
Whimbrel	Casual	
Semi-palmated Sandpiper	Accidental	Accidental
Least Sandpiper	Rare	Rare
Pectoral Sandpiper	Rare	Casual
Short-billed Dowitcher	Casual	
Long-billed Dowitcher	Rare	Accidental
Wilson's Phalarope	Accidental	
Wilson's Snipe	Uncommon	Uncommon
Gulls & Terns		
Bonaparte's Gull	Uncommon	
Mew Gull		Casual
Herring Gull	Uncommon	Uncommon
Owls		
Great Horned Owl	Casual	
Northern Hawk Owl	Accidental	Casual
Short-eared Owl	Accidental	
Boreal Owl	Rare	Rare
Northern Saw-whet Owl		Accidental
Goatsuckers		
Common Nighthawk	Casual	Casual
Hummingbirds		
Rufous Hummingbird	Accidental	
Kingfishers		
Belted Kingfisher	Common	Common
Woodpeckers		
Yellow-bellied Sapsucker	Common	Uncommon
Downy Woodpecker	Accidental	Accidental
Hairy Woodpecker	Uncommon	Uncommon
American Three-toed Woodpecker	Uncommon	Uncommon
Black-backed Woodpecker	Casual	Rare
Northern Flicker	Common	Common
Pileated Woodpecker	Uncommon	Uncommon

Flycatchers		
Olive-sided Flycatcher	Uncommon	Rare
Western Wood-pewee	Rare	Accidental
Yellow-bellied Flycatcher	Rare	Rare
Alder Flycatcher	Uncommon	Common
Least Flycatcher	Uncommon	Uncommon
Hammond's Flycatcher	Uncommon	Uncommon
Dusky Flycatcher	Casual	Accidental
Say's Phoebe	Rare	
Shrikes & Vireos		
Northern Shrike	Casual	Casual
Blue-headed Vireo	Casual	Rare
Warbling Vireo	Uncommon	Common
Philadelphia Vireo		Casual
Red-eyed Vireo	Casual	
Jays & Crows		
Gray Jay	Common	Common
American Crow	Uncommon	Rare
Common Raven	Common	Common
Larks		
Horned Lark	Casual	Accidental
Swallows		
Tree Swallow	Common	Common
Violet-green Swallow	Uncommon	Casual
Northern Rough-winged Swallow	Accidental	
Bank Swallow	Rare	Rare
Cliff Swallow	Uncommon	Uncommon
Barn Swallow		
Chickadees & Nuthatches		
Black-capped Chickadee	Common	Common
Boreal Chickadee	Common	Common
Red-breasted Nuthatch	Uncommon	Uncommon
Winter Wren	Accidental	
Kinglets		
Golden-crowned Kinglet		Rare
Ruby-crowned Kinglet	Common	Common
Thrush		
Townsend's Solitaire	Accidental	
Gray-cheeked Thrush	Uncommon	Uncommon
Swainson's Thrush	Common	Common
Hermit Thrush	Uncommon	Uncommon
American Robin	Common	Uncommon
Varied Thrush	Uncommon	Uncommon
Pipits & Wagtails		
American Pipit	Uncommon	Uncommon
Waxwings		
Bohemian Waxwing	Common	Uncommon
Cedar Waxwing	Accidental	Casual
Wood Warblers		

Tennessee Warbler	Uncommon	Uncommon
Orange-crowned Warbler	Common	Common
Yellow Warbler	Common	Common
Magnolia Warbler	Uncommon	Uncommon
Cape May Warbler	Uncommon	Rare
Yellow-rumped (Myrtle) Warbler	Common	Common
Yellow-rumped (Integrade) Warbler	Accidental	
Townsend's Warbler	Uncommon	Uncommon
Bay-breasted Warbler	Rare	Casual
Blackpoll Warber	Common	Common
Black-and-white Warbler	Casual	Accidental
American Redstart	Uncommon	Common
Ovenbird	Accidental	Accidental
Northern Waterthrush	Common	Common
MacGillvary's Warbler	Accidental	
Common Yellowthroat	Common	Common
Wilson's Warbler	Common	Common
Tanagers		
Western Tanager	Rare	Rare
Sparrows		
American Tree Sparrow	Common	Common
Chipping Sparrow	Uncommon	Rare
Vesper Sparrow	Accidental	
Savannah Sparrow	Uncommon	Uncommon
Fox Sparrow	Uncommon	Uncommon
Song Sparrow		Accidental
Lincoln's Sparrow	Common	Common
Swamp Sparrow	Uncommon	Uncommon
White-throated Sparrow	Uncommon	Uncommon
White-crowned Sparrow	Common	Uncommon
Golden-crowned Sparrow	Uncommon	Accidental
Dark-eyed (Slate-colored) Junco	Common	Common
Dark-eyed (Integrade) Junco	Uncommon	Uncommon
Dark-eyed (Oregon) Junco	Accidental	
Lapland Longspur	Common	Uncommon
Snow Bunting	Accidental	
Cardinals & Allies		
Rose-breasted Grosbeak	Casual	Accidental
Blackbirds		
Red-winged Blackbird	Uncommon	Uncommon
Rusty Blackbird	Common	Common
Brown-headed Cowbird	Uncommon	Casual
Finches		
Pine Grosbeak	Accidental	Casual
Purple Finch	Uncommon	Uncommon
Red Crossbill	Casual	Casual
White-winged Crossbill	Uncommon	Uncommon
Common Redpoll	Common	Casual
Pine Siskin	Uncommon	Uncommon

APPENDIX 2 – SPRING ESTIMATED TOTAL SUMMARY

SPECIES	# Days Recorded	First Date	Last Date	High Count		Sum of Ets
Red-throated Loon	2	16-May	25-May	1		2
Common Loon	14	12-May	7-Jun	1		14
Greater White-fronted Goose	6	24-Apr	20-May	320	29-Apr	410
Canada Goose	37	28-Apr	8-Jun	10	3-May	116
Trumpeter Swan	18	4-May	8-Jun	9	4-May	42
Tundra Swan	10	3-May	14-May	1000	3-May	2906
Gadwall	1		22-May	1		1
American Wigeon	11	30-Apr	27-May	95	18-May	222
Mallard	32	29-Apr	6-Jun	20	4-May	135
Blue-winged Teal	25	10-May	8-Jun	4		53
Northern Shoveler	6	13-May	2-Jun	71	18-May	86
Northern Pintail	14	2-May	31-May	75	6-May	266
Green-winged Teal	18	6-May	4-Jun	6	16-May	38
Canvasback	3	12-May	18-May	30	18-May	73
Ring-necked Duck	24	9-May	8-Jun	13	17-May	84
Greater Scaup	2	17-May	18-May	72	17-May	117
Lesser Scaup	2	17-May	18-May	288	17-May	335
Bufflehead	23	5-May	8-Jun	5	23-May	50
Unidentified Goldeneye	34	29-Apr	8-Jun	14	13-May	123
Common Merganser	1		12-May	2	12-May	2
Red-breasted Merganser	2	14-May	17-May	2	17-May	3
Bald Eagle	7	24-Apr	29-May	1		7
Northern Harrier	14	24-Apr	31-May	2	13-May	15
Sharp-shinned Hawk	4	30-Apr	19-May	1		4
Red-tailed Hawk	9	27-Apr	6-Jun	1		9
Rough-legged Hawk	2	25-Apr	28-Apr	1		2
Golden Eagle	5	3-May	13-May	1		5
American Kestrel	11	30-Apr	26-May	1		11
Merlin	1		30-May	1		1
Ruffed Grouse	38	26-Apr	7-Jun	3	27-Apr	50
Spruce Grouse	2	16-May	24-May	2	16-May	3
Sora	14	13-May	8-Jun	3	29-May	20
Sandhill Crane	1		9-May	200	9-May	200
American Golden Plover	2	17-May	18-May	38	18-May	39
Semipalmated Plover	1		12-May	1		1
Killdeer	3	13-May	4-Jun	1		3
Greater Yellowlegs	16	12-May	4-Jun	2		19
Lesser Yellowlegs	12	12 mat	29-May	35		62
Unidentified Yellowlegs	5	3-May	1-Jun	2		6
Unidentified Yellowlegs	22	3-May	4-Jun	36	12-May	87
Solitary Sandpiper	18	12-May	5-Jun	10	18-May	35
Least Sandpiper	1	12-May	12-May	1		1
Pectoral Sandpiper	4	12-May	19-May	90	17-May	115
Short-billed Dowitcher	1		18-May	1		1
Long-billed Dowitcher	1		22-May	40	22-May	40
Whimbrel	1		29-May	1		1

SPECIES	# Days Recorded	First Date	Last Date	High Count		Sum of Ets
Common Snipe	33	3-May	8-Jun	16	3-May	66
Bonaparte's Gull	3	13-May	23-May	1		3
Herring Gull	6	12-May	28-May	2	12-May	9
Mew Gull	8	12-May	21-May	3	14-May	11
Boreal Owl	5	24-Apr	2-May	1		5
Belted Kingfisher	30	3-May	6-Jun	3	24/28/30 May	45
Yellow-bellied Sapsucker	31	9-May	8-Jun	6	26-May	85
Hairy Woodpecker	2	13-May	15-May	1		2
Three-toed Woodpecker	2	4-May	12-May	1		2
Black-backed Woodpecker	1		1-Jun	1		1
Northern Flicker	36	3-May	8-Jun	3	18-May	49
Pileated Woodpecker	27	27-Apr	8-Jun	2	19/22/27 may	30
Olive-sided Flycatcher	8	18-May	6-Jun	3	18-May	11
Western Wood-pewee	4	19-May	23-May	2	23-May	5
Say's Phoebe	1		14-May	1		1
Alder Flycatcher	14	26-May	8-Jun	9	8-Jun	45
Hammond's Flycatcher	14	12-May	28-May	5	19-May	29
Least Flycatcher	4	26-May	2-Jun	2	26/28 may	6
Dusky Flycatcher	1		31-May	1		1
Northern Shrike	1	29-Apr	29-Apr	1		1
Warbling Vireo	18	20-May	8-Jun	3	28/31May - 5,6,7	36
Gray Jay	23	27-Apr	8-Jun	5	10-May	37
Common Raven	46	23-Apr	8-Jun	6	12-May	103
American Crow	20	26-Apr	8-Jun	4	6-Jun	26
Horned Lark	1		15-May	1		1
Tree Swallow	28	12-May	8-Jun	80	18-May	397
Violet-green Swallow	14	12-May	30-May	50	18-May	123
N. Rough-winged Swallow	1		19-May	1		1
Bank Swallow	11	15-May	5-Jun	50	29-May	111
Barn Swallow	5	22-May	6-Jun	3	29-May	8
Cliff Swallow	14	15-May	2-Jun	50	22-May	133
Black-capped Chickadee	19	24-Apr	27-May	3	24-Apr	27
Boreal Chickadee	30	24 ap	5-Jun	3	24 / 26 apr	41
Red-breasted Nuthatch	15	5-May	8-Jun	2	2-Jun	16
Ruby-crowned Kinglet	39	25-Apr	8-Jun	33	29-Apr	181
Swainson's Thrush	14	11-May	7-Jun	5	29-May	26
Gray-cheeked Thrush	2	16-May	19-May	1		2
Hermit Thrush	20	4-May	8-Jun	2	4 / 11 may	28
Varied Thrush	19	29-Apr	8-Jun	2	29-Apr	21
American Robin	38	2-May	8-Jun	13	12-May	125
American Pipit	13	27-Apr	18-May	9	18-May	32
Bohemian Waxwing	37	23-Apr	5-Jun	25	18-May	186
Cedar Waxwing	1		23-May	1		1
Tennessee Warbler	10	25-May	6-Jun	9	27-May	40
Orange-crowned Warbler	29	3-May	5-Jun	63	26-May	568
Yellow Warbler	22	18-May	8-Jun	100	26-May	302

SPECIES	# Days Recorded	First Date	Last Date	High Count		Sum of Ets
Magnolia Warbler	4	29-May	8-Jun	2	4-Jun	5
Cape May Warbler	10	26-May	8-Jun	2	2,3,4, Jun	15
Bay-breasted Warbler	2	27-May	28-May	1		2
Myrtle Warbler	37	30-Apr	8-Jun	120	21-May	965
Unid. Yellow-rumped Warbler	1		19-May	1		1
Townsend's Warbler	7	18-May	27-May	2	20,25 May	9
Blackpoll Warbler	21	9-May	8-Jun	52	26-May	124
American Redstart	11	27-May	8-Jun	4	30-May	23
Northern Waterthrush	29	10-May	8-Jun	21	26-May	133
Common Yellowthroat	26	10-May	8-Jun	10	26-May	130
Wilson's Warbler	35	3-May	8-Jun	35	19-May	289
Western Tanager	12	19-May	8-Jun	2	26,27,29 May	15
American Tree Sparrow	24	23-Apr	4-Jun	35	4-May	164
Chipping Sparrow	10	18-May	1-Jun	3	27,29 May	17
Savannah Sparrow	28	29-Apr	2-Jun	14	8-May	112
Fox Sparrow	29	29-Apr	5-Jun	45	4-May	148
Lincoln's Sparrow	31	3-May	8-Jun	8	28-May	100
Swamp Sparrow	18	9-May	2-Jun	3	14-May	27
White-throated Sparrow	29	10-May	8-Jun	6	31-May	76
White-crowned Sparrow	23	28-Apr	30-May	60	5-May	291
Golden-crowned Sparrow	10	5-May	23-May	2	5/6 May	12
Vesper Sparrow	1		16-May	1		1
Slate-colored Junco	39	23-Apr	8-Jun	26	29-Apr	154
Lapland Longspur	13	29-Apr	26-May	35	12-May	52
Red-winged Blackbird	28	3-May	8-Jun	4	26-May	53
Rusty Blackbird	36	2-May	8-Jun	30	7-May	193
Brown-headed Cowbird	20	15-May	7-Jun	2	8 from 19-30 may	28
Purple Finch	19	10-May	2-Jun	5	27-May	47
Red Crossbill	5	12-May	23-May	3	12-May	7
White-winged Crossbill	4	13-May	28-May	40	28-May	45
Common Redpoll	40	23-Apr	8-Jun	216	30-Apr	980
Pine Siskin	1		5-Jun	2		2

APPENDIX 3 – FALL ESTIMATED TOTAL SUMMARY

SPECIES	# Days Recorded	First Date	Last Date	High Count		Sum of Ets
Common Loon	33	23-Jul	21-Sep	2	5,6 Sep	35
Greater White-fronted Goose	4	19-Aug	6-Sep	55	29-Aug	64
Canada Goose	7	15-Aug	13-Sep	21	23-Aug	49
Trumpeter Swan	5	15-Aug	21-Sep	5	21-Sep	10
American Wigeon	7	6-Aug	27-Aug	8	27-Aug	18
Mallard	39	25-Jul	18-Sep	10	17-Aug	135
Blue-winged Teal	10	1-Aug	6-Sep	5	25-Aug	17
Green-winged Teal	7	6-Aug	6-Sep	3	11-Aug	12
Bufflehead	10	6-Aug	23-Aug	3	11-Aug	13
Bald Eagle	3	5-Aug	10-Sep	1		3
Northern Harrier	13	25-Jul	21-Sep	1		13
Sharp-shinned Hawk	6	4-Aug	19-Sep	1		6
Red-tailed Hawk	1		19-Sep	1		1
American Kestrel	19	26-Jul	6-Sep	2	23-Aug	22
Merlin	3	21-Aug	26-Aug	1		3
Ruffed Grouse	15	1-Aug	21-Sep	5	31-Aug	40
Spruce Grouse	12	23-Jul	1-Sep	7	11-Aug	34
Sora	1		26-Aug	1		1
Solitary Sandpiper	4	5-Aug	16-Aug	2	8-Aug	5
Spotted Sandpiper	2	2-Aug	21-Aug	1		2
Least Sandpiper	1			1		1
Wilson's Snipe	10	4-Aug	21-Sep	4	31-Aug	19
Herring Gull	2	25-Aug	27-Aug	1		2
Mew Gull	1			1		1
Boreal Owl	1		20-Sep	1		1
Belted Kingfisher	47	23-Jul	21-Sep	2	many	56
Yellow-bellied Sapsucker	12	23-Jul	1-Sep	9	23-Jul	32
Hairy Woodpecker	6	5-Aug	26-Aug	1		6
Three-toed Woodpecker	16	6-Aug	23-Sep	1		16
Black-backed Woodpecker	2	25-Aug	27-Aug	1		2
Northern Flicker	25	23-Jul	12-Sep	3	5-Aug	30
Pileated Woodpecker	35	23-Jul	23-Sep	2	19-Sep	36
Olive-sided Flycatcher	1		18-Aug	1		1
Western Wood-pewee	3	23-Jul	23-Aug	1		3
Alder Flycatcher	48	23-Jul	18-Sep	46	21-Aug	307
Hammond's Flycatcher	9	23-Jul	27-Aug	1		9
Yellow-bellied Flycatcher	2	26-Aug	27-Aug	1		2
Least Flycatcher	9	29-Jul	22-Aug	3	12-Aug	13
Horned Lark	1		23-Aug	1		1
Northern Shrike	4	2-Sep	19-Sep	1		4
Philadelphia Vireo	1			1		1
Warbling Vireo	32	23-Jul	2-Sep	8	4-Aug	87
Gray Jay	50	23-Jul	22-Sep	4	4-Aug	73
Black-billed Magpie	2	20-Sep	21-Sep	1		2
Common Raven	51	27-Jul	23-Sep	6	21-Sep	80
Barn Swallow	1		23-Aug	1		1

SPECIES	# Days Recorded	First Date	Last Date	High Count		Sum of Ets
Cliff Swallow	2	23-Jul	26-Jul	2	23-Jul	3
Black-capped Chickadee	44	23-Jul	23-Sep	17	15-Sep	124
Boreal Chickadee	27	23-Jul	23-Sep	13	6-Sep	67
Red-breasted Nuthatch	13	23-Jul	21-Sep	2	21-Sep	15
Golden-crowned Kinglet	1		18-Aug	2	18-Aug	2
Ruby-crowned Kinglet	30	10-Aug	23-Sep	12	19-Sep	121
Swainson's Thrush	38	23-Jul	12-Sep	11	25-Aug	122
Gray-cheeked Thrush	7	21-Aug	7-Sep	1		7
Hermit Thrush	3	21-Aug	21-Sep	1		3
Varied Thrush	20	6-Aug	21-Sep	3	18-Aug	23
American Robin	38	23-Jul	21-Sep	4	4,7 Sep	59
American Pipit	21	25-Aug	19-Sep	14	26-Aug	69
Cedar Waxwing	20	23-Jul	15-Sep	7	15-Sep	30
Tennessee Warbler	20	23-Jul	9-Sep	7	25-Jul	37
Orange-crowned Warbler	24	17-Aug	20-Sep	13	30-Aug	106
Yellow Warbler	42	23-Jul	19-Sep	18	28-Aug	146
Magnolia Warbler	22	25-Jul	30-Aug	7	13-Aug	49
Cape May Warbler	2	25-Jul	8-Aug	1		2
Myrtle Warbler	42	23-Jul	23-Sep	80	1-Sep	301
Blackpoll Warbler	15	27-Jul	7-Sep	8	28-Aug	26
American Redstart	39	23-Jul	15-Sep	13	10-Aug	175
Northern Waterthrush	49	23-Jul	18-Sep	23	11-Aug	405
Common Yellowthroat	57	23-Jul	21-Sep	28	31-Aug	613
Wilson's Warbler	43	4-Aug	23-Sep	14	12-Sep	190
Western Tanager	7	23-Jul	19-Aug	3	23-Jul	10
American Tree Sparrow	24	30-Aug	23-Sep	20	20-Sep	151
Chipping Sparrow	1		29-Jul	1		1
Savannah Sparrow	7	25-Aug	7-Sep	3	30-Aug	9
Fox Sparrow	22	13-Aug	21-Sep	5	31 aug, 1.6 Sep	41
Lincoln's Sparrow	44	23-Jul	22-Sep	9	29-Aug	118
Swamp Sparrow	32	23-Jul	20-Sep	6	23-Jul	53
White-throated Sparrow	19	23-Jul	21-Sep	5	27-Aug	39
White-crowned Sparrow	8	15-Aug	21-Sep	7	12-Sep	16
Slate-colored Junco	35	23-Jul	23-Sep	28	12-Sep	189
Lapland Longspur	2	23-Aug	20-Sep	4	20-Sep	5
Red-winged Blackbird	5	23-Jul	6-Aug	2	6-Aug	6
Rusty Blackbird	41	25-Jul	22-Sep	100	13-Sep	355
Pine Grosbeak	1		8-Aug	2	8-Aug	2
Red Crossbill	1		21-Aug	6	21-Aug	6
White-winged Crossbill	24	23-Jul	19-Sep	34	9-Aug	174
Common Redpoll	11	25-Aug	23-Sep	20	20-Sep	33
Pine Siskin	9	25-Jul	30-Aug	3	25-Jul	15

APPENDIX 4 – SPRING MIGRATION TIMING FIGURES

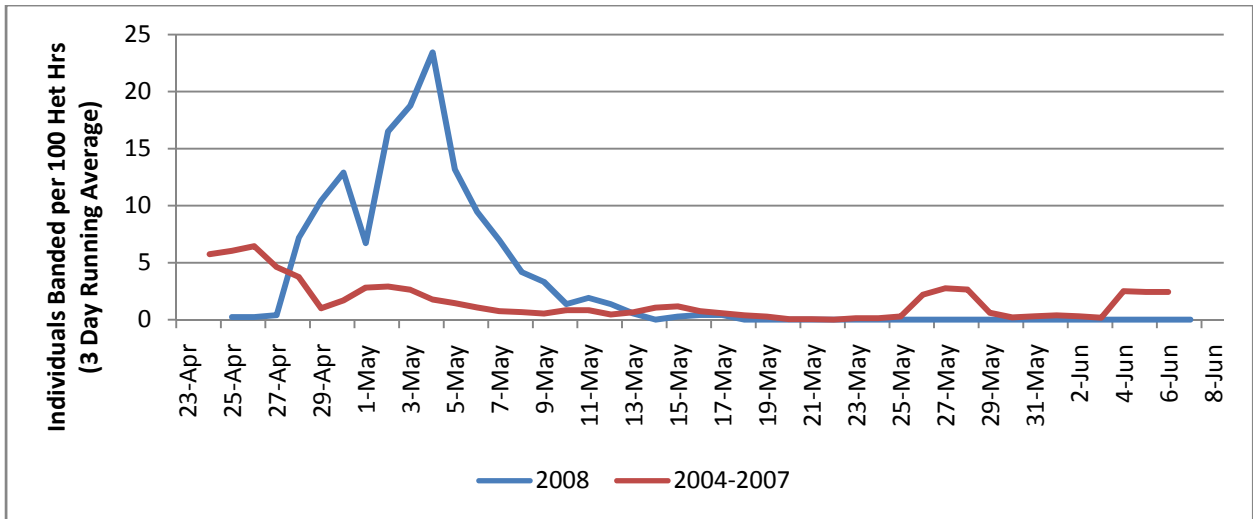


Figure A3-1. Ruby-crowned Kinglet spring migration timing.

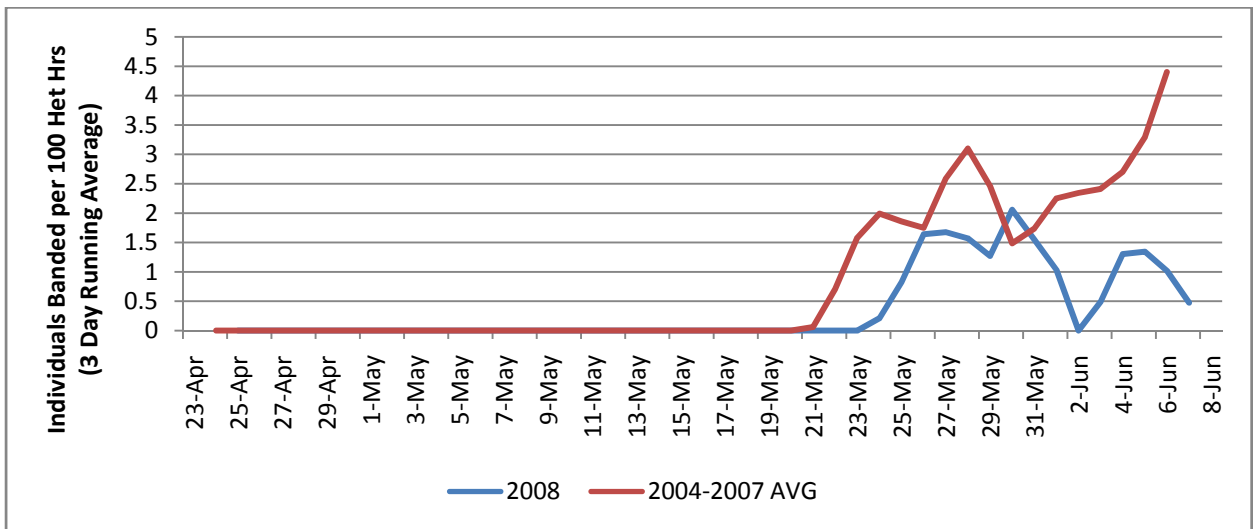


Figure A3-2. Tennessee Warbler spring migration timing.

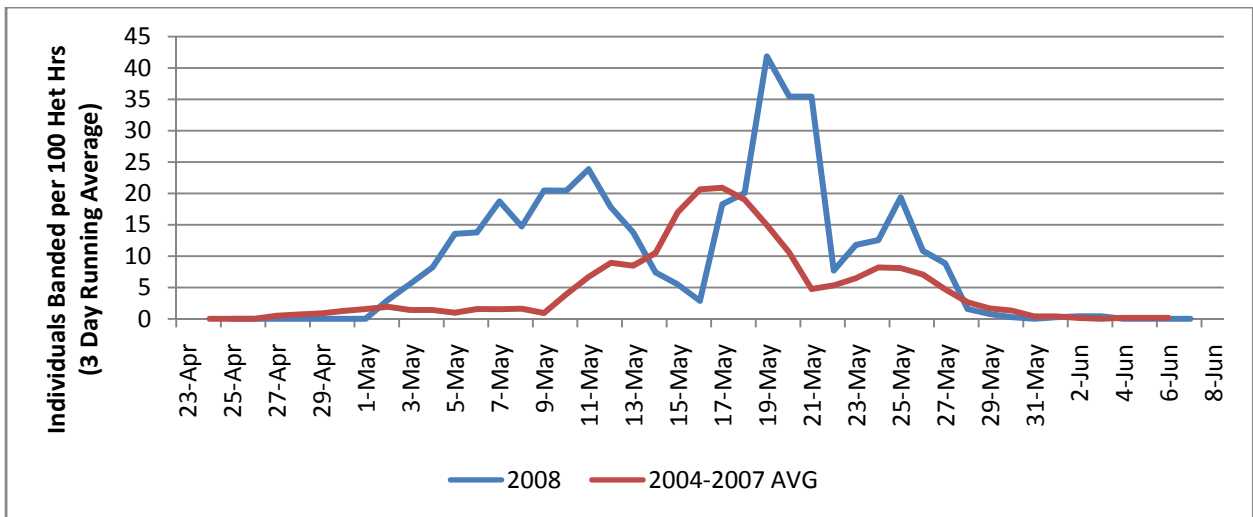


Figure A3-3. Orange-crowned Warbler spring migration timing.

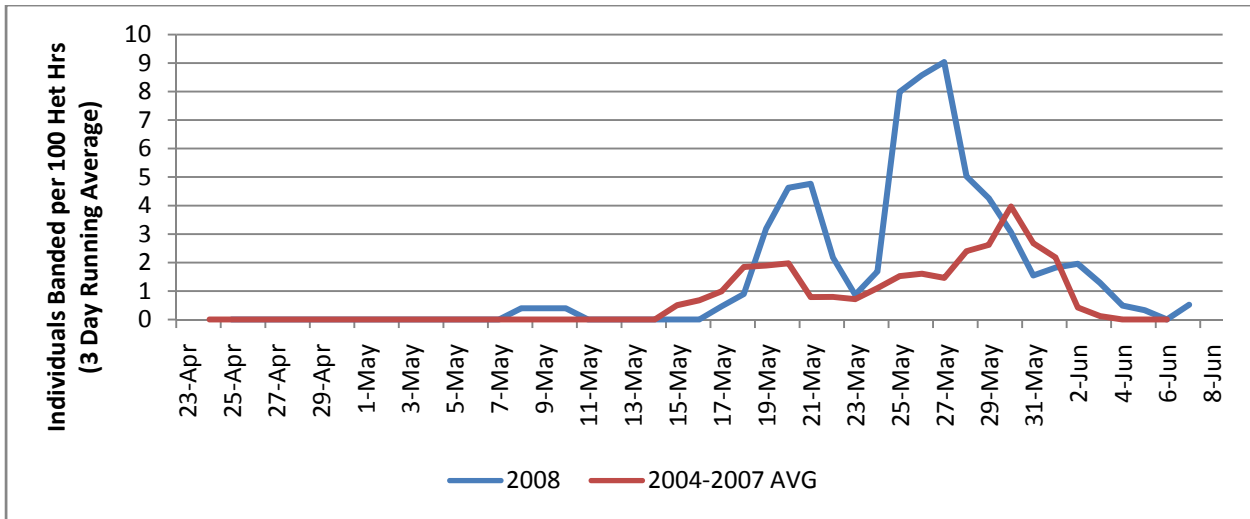


Figure A3-4. Blackpoll Warbler spring migration timing.

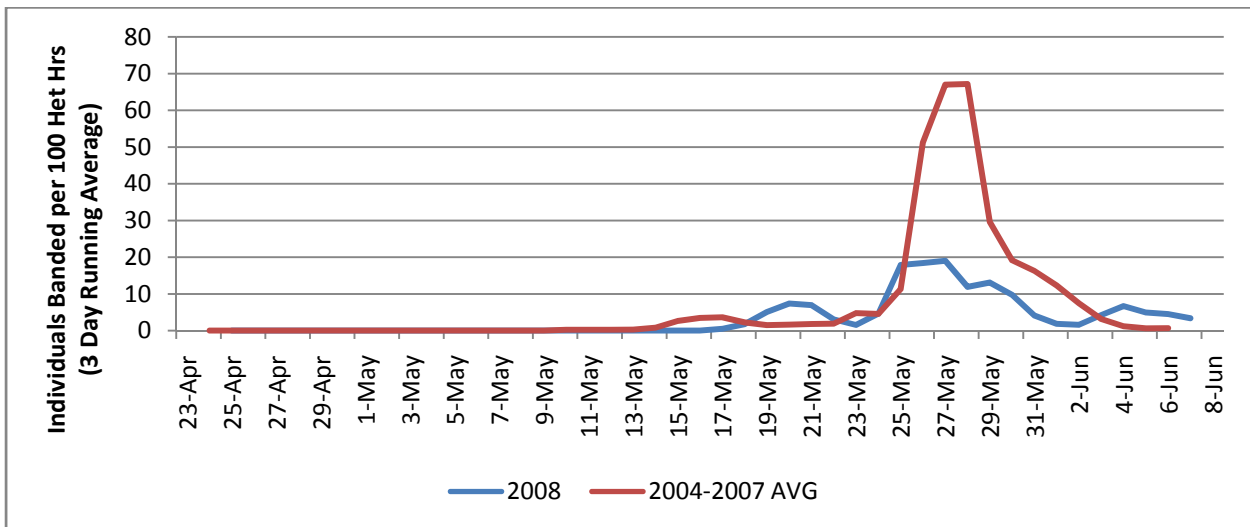


Figure A3-5. Yellow Warbler spring migration timing.

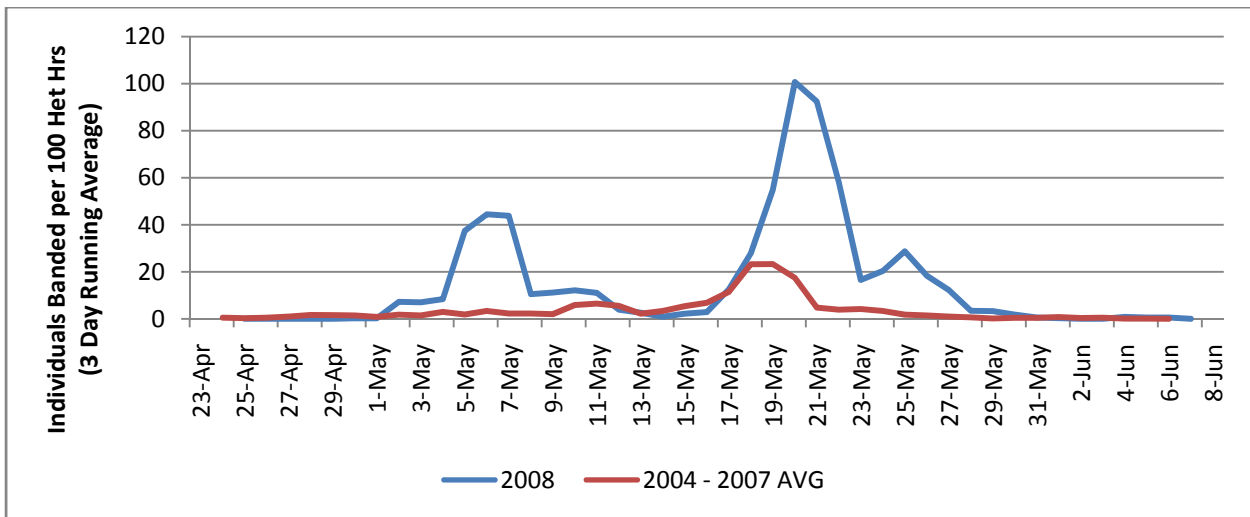


Figure A3-6. Yellow-rumped Warbler spring migration timing.

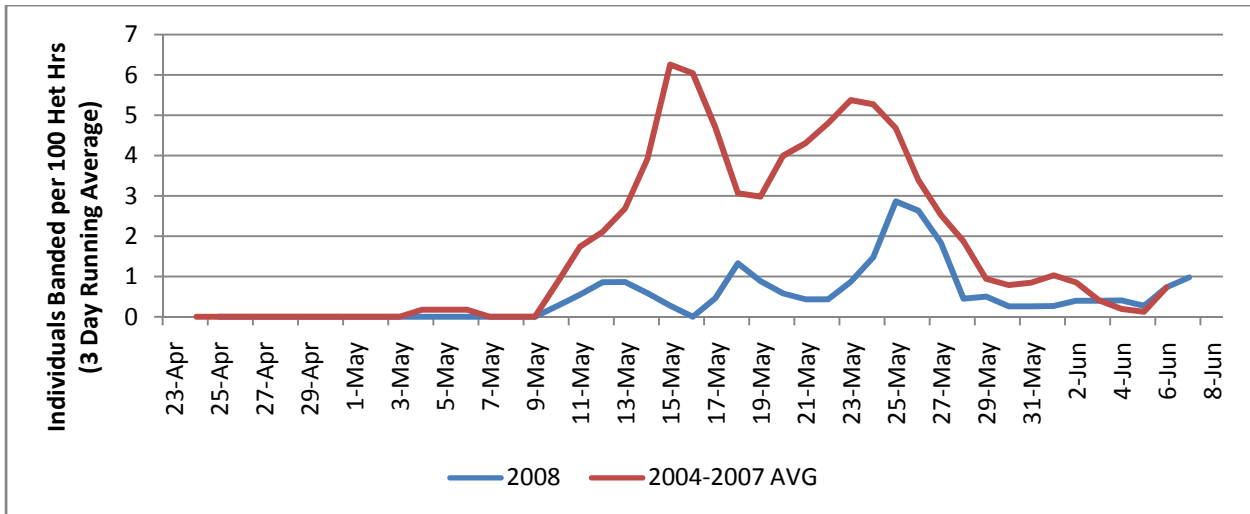


Figure A3-7. Northern Waterthrush spring migration timing.

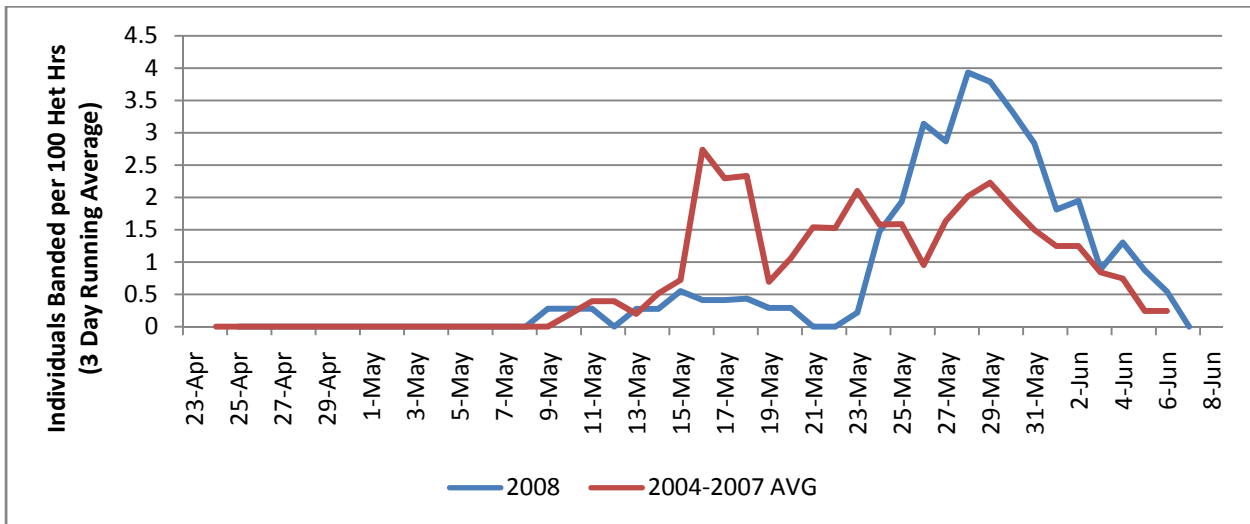


Figure A3-8. Common Yellowthroat spring migration timing.

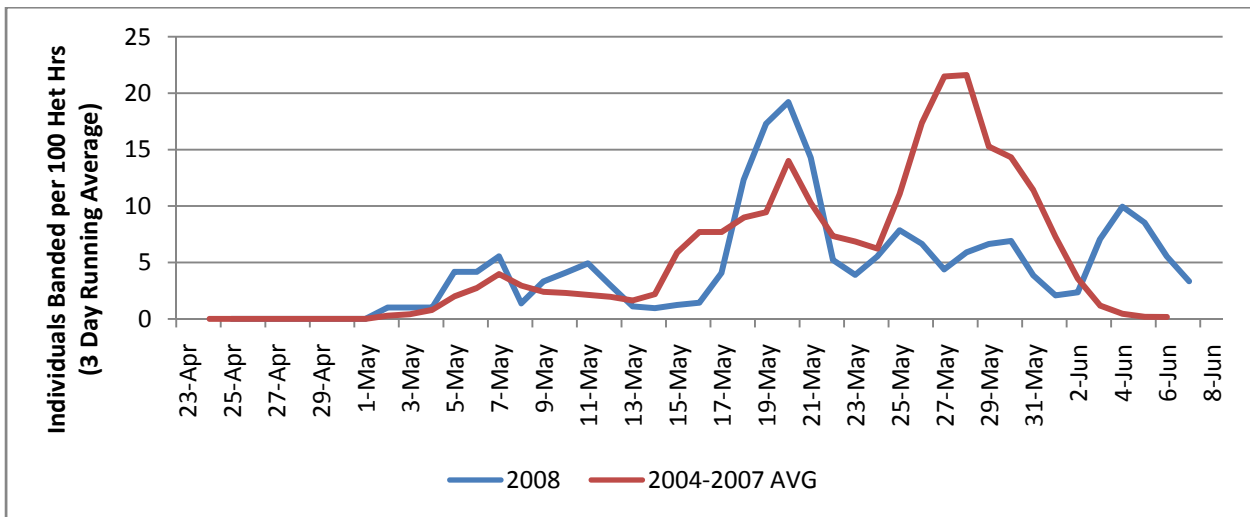


Figure A3-9. Wilson's Warbler spring migration timing.

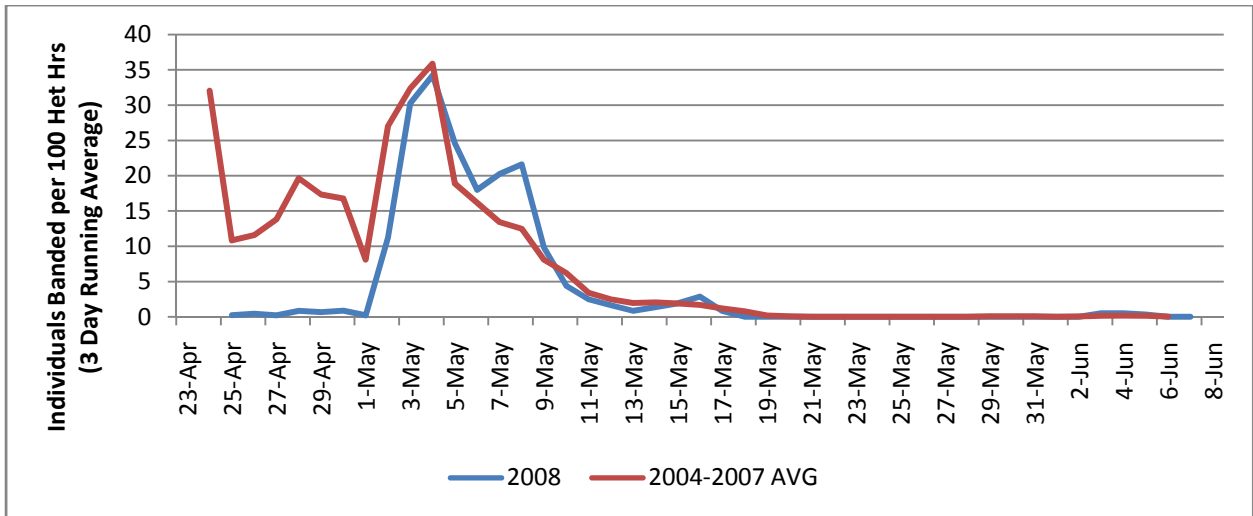


Figure A3-10. American Tree Sparrow spring migration timing.

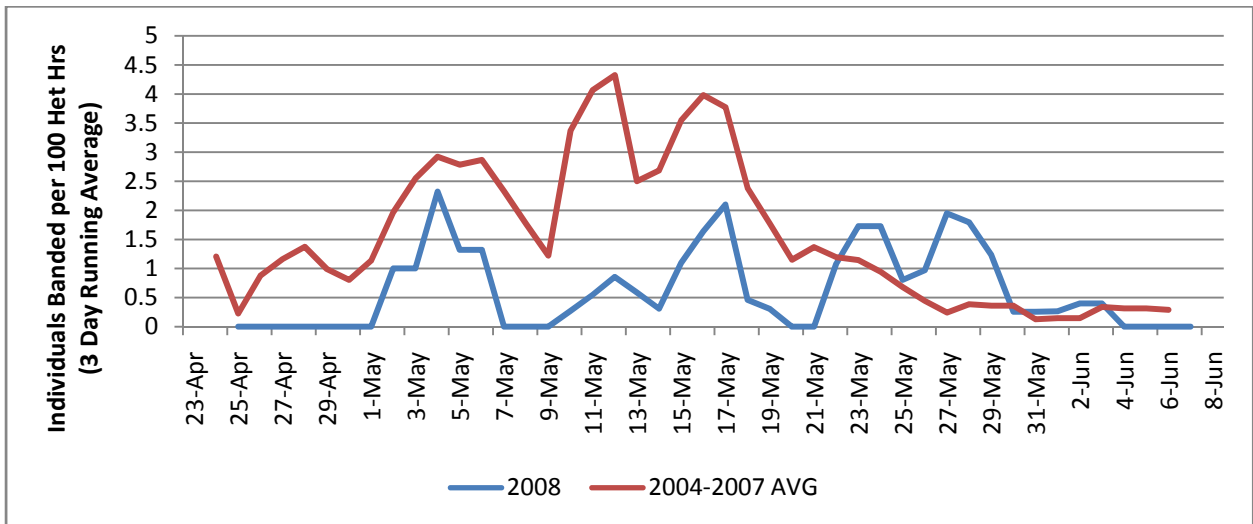


Figure A3-11. Lincoln's Sparrow spring migration timing.

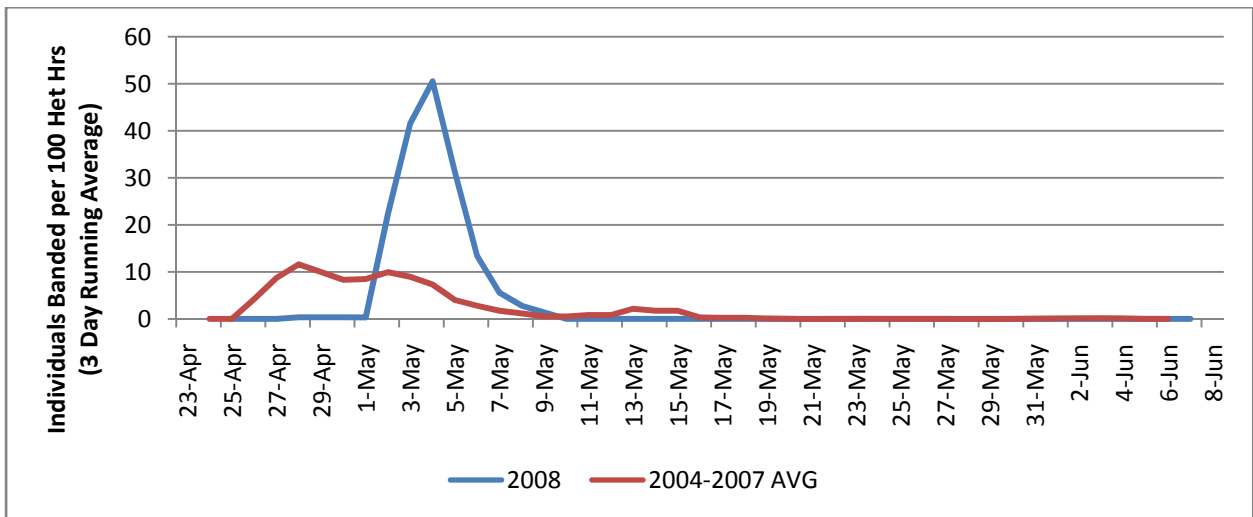


Figure A3-12. Fox Sparrow spring migration timing.

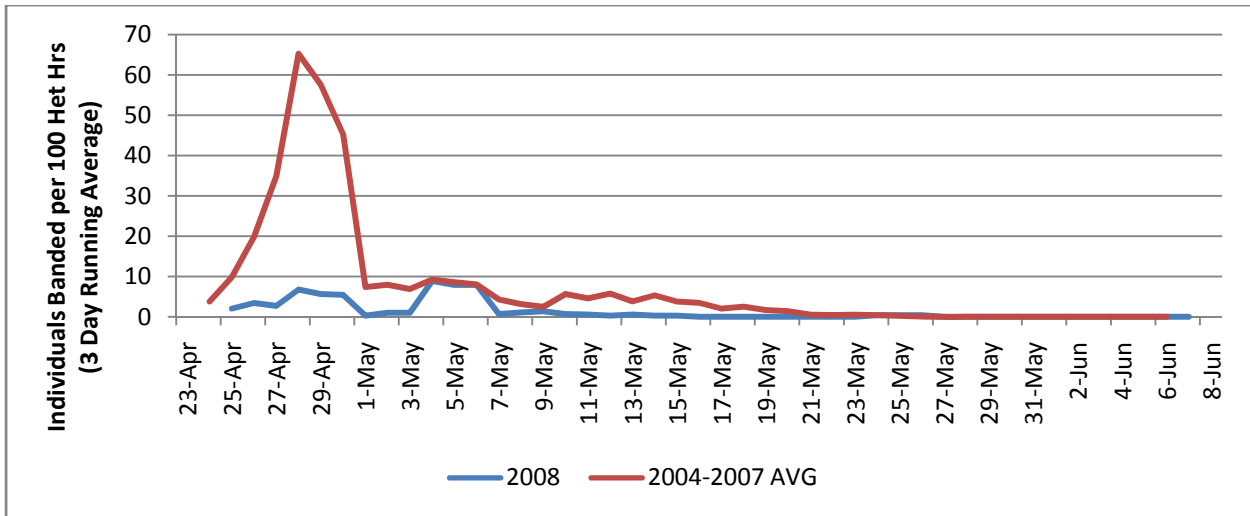


Figure A3-13. Dark-eyed Junco spring migration timing.

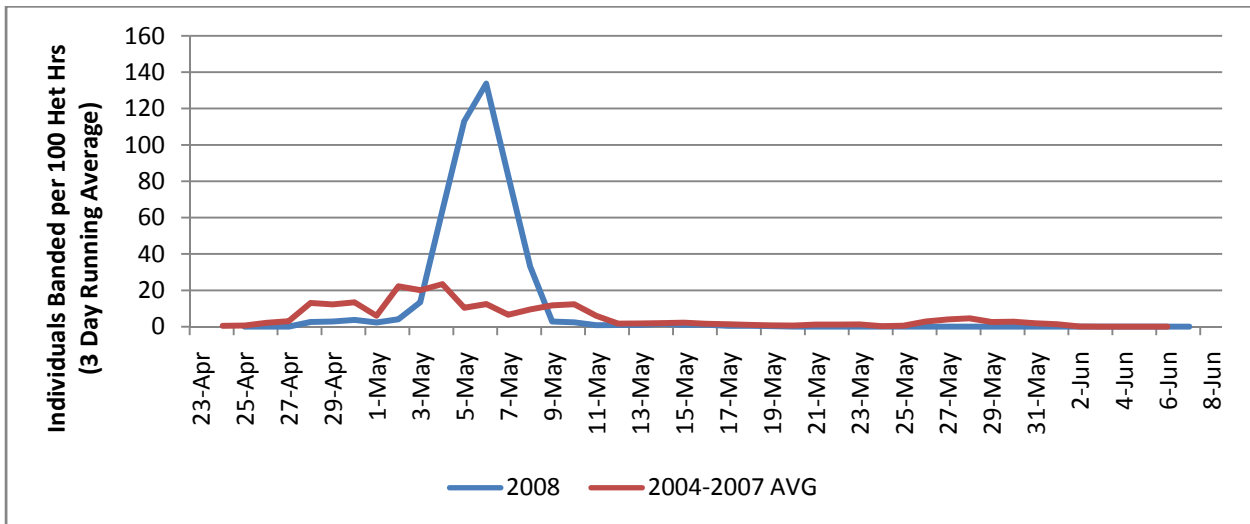


Figure A3-14. White-crowned Sparrow spring migration timing.

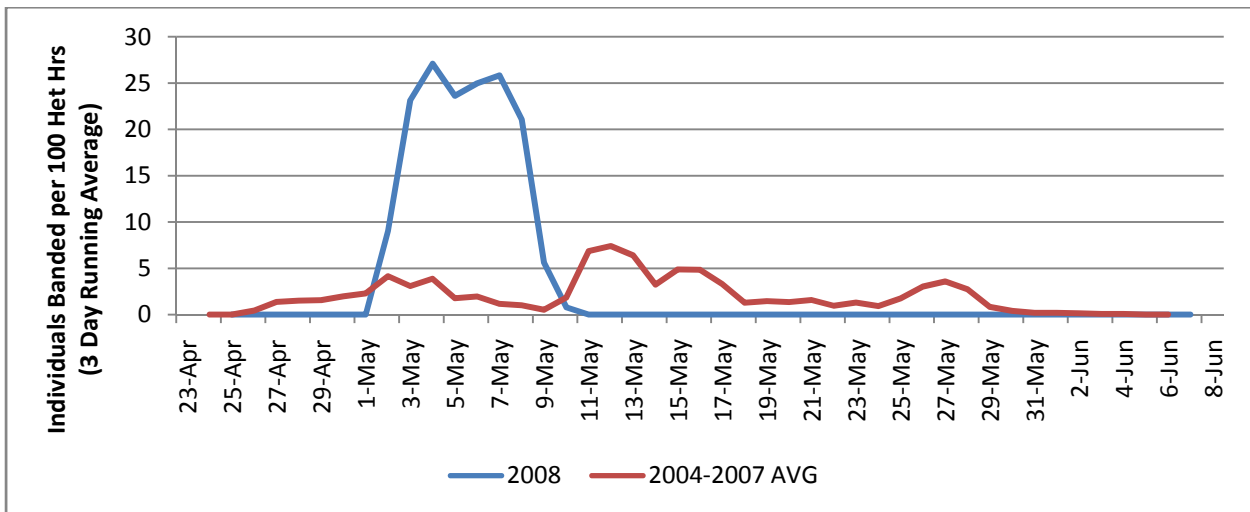


Figure A3-15. Rusty Blackbird spring migration timing.

APPENDIX 5 – FALL MIGRATION TIMING FIGURES

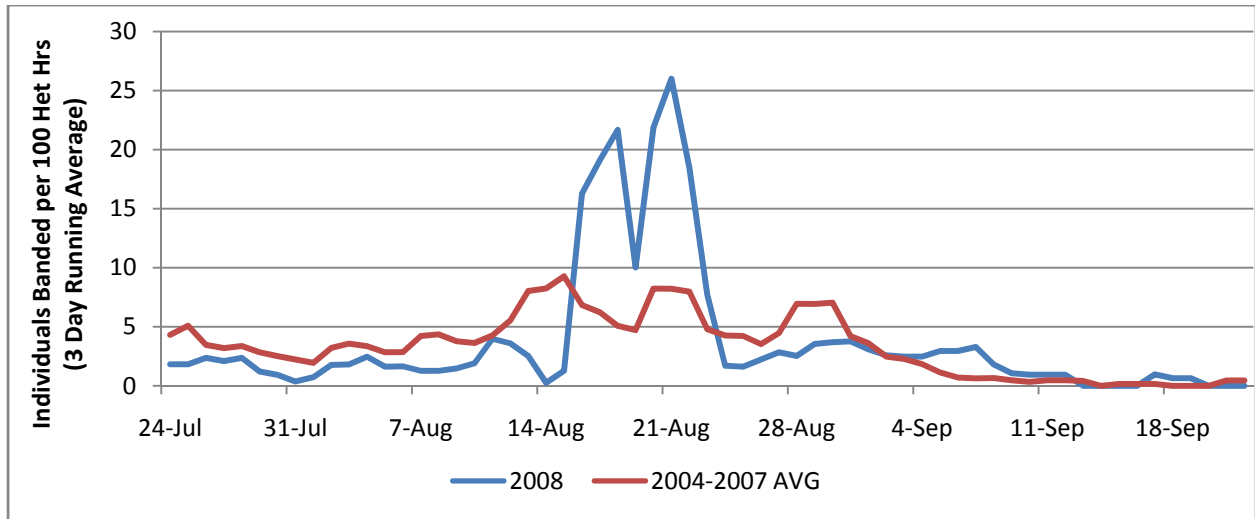


Figure A4-1. Alder Flycatcher fall migration timing.

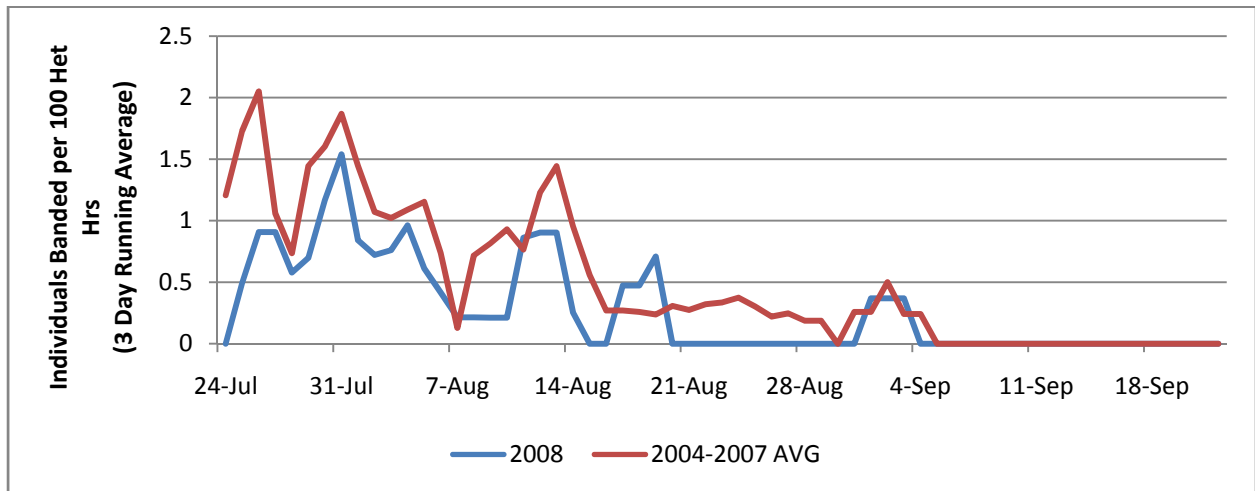


Figure A4-2. Warbling Vireo fall migration timing.

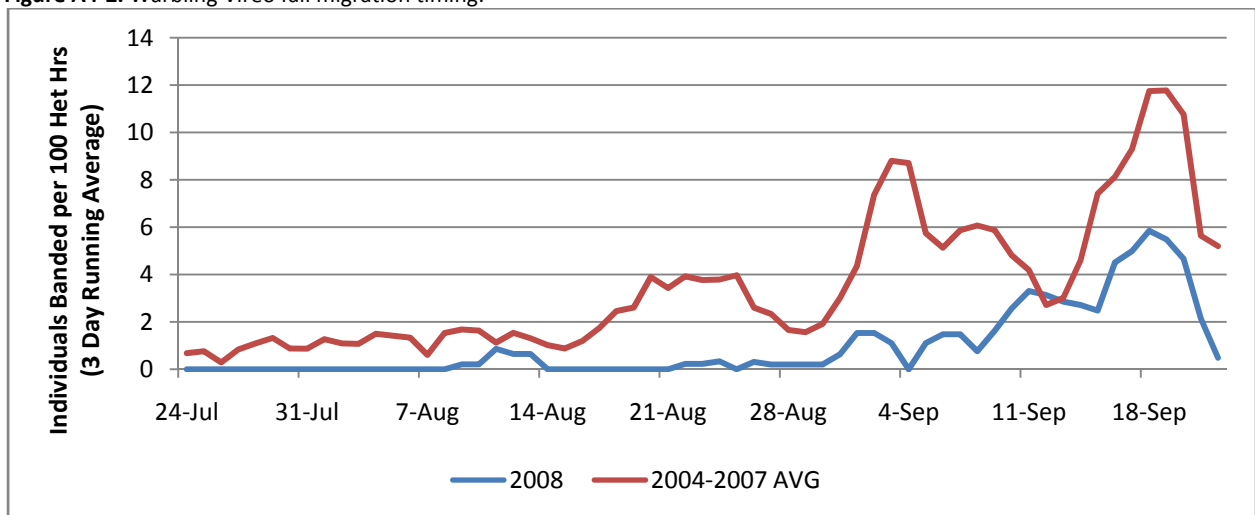


Figure A4-3. Ruby-crowned Kinglet fall migration timing.

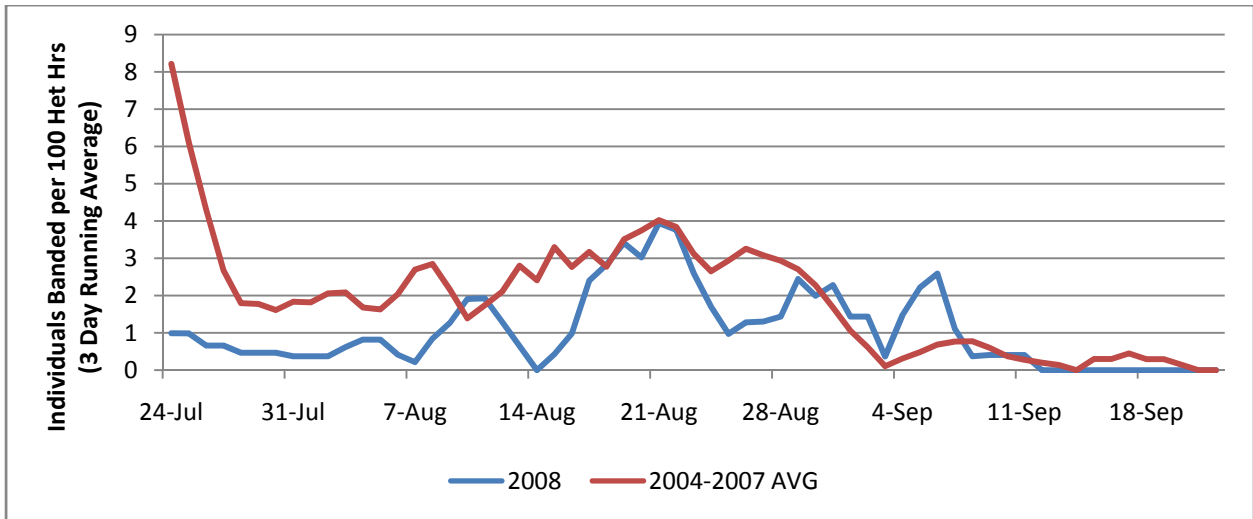


Figure A4-4. Swainson's Thrush fall migration timing.

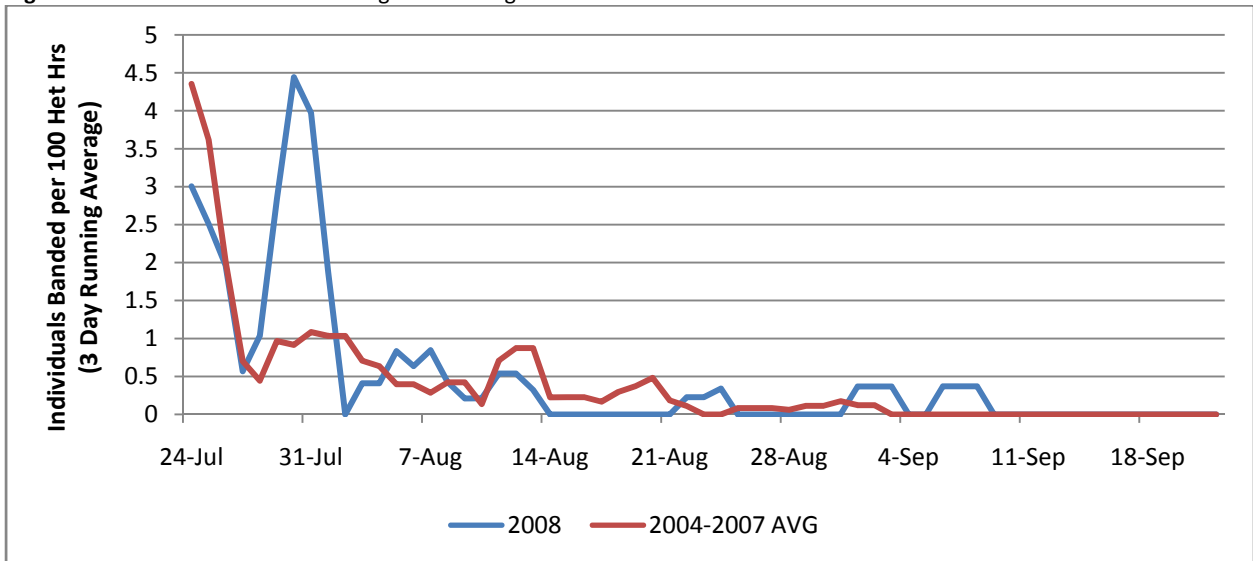


Figure A4-5. Tennessee Warbler fall migration timing.

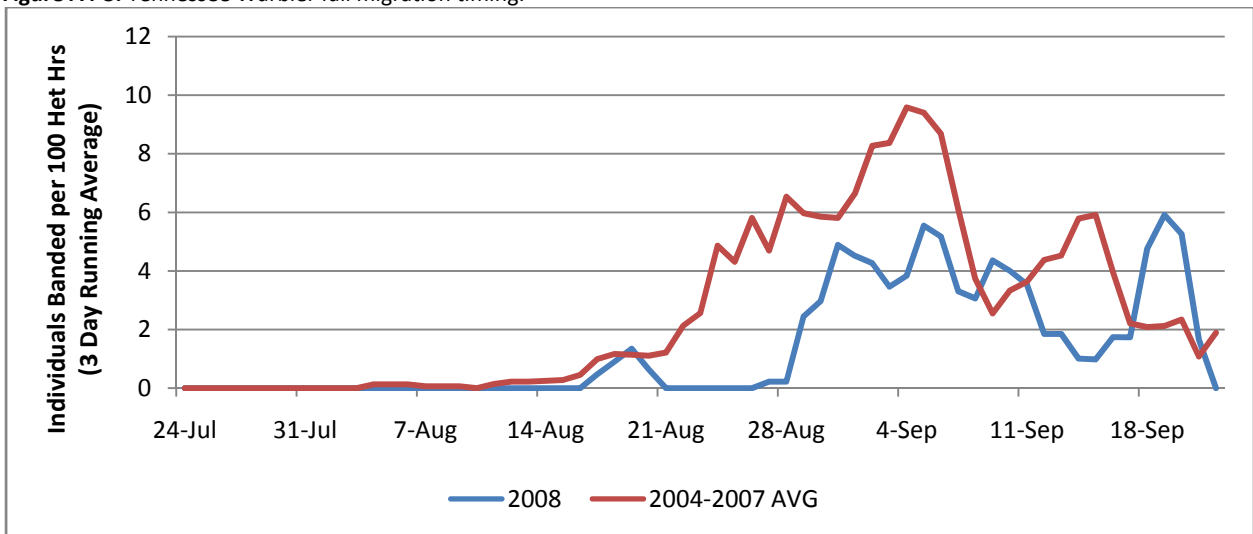


Figure A4-6. Orange-crowned Warbler fall migration timing.

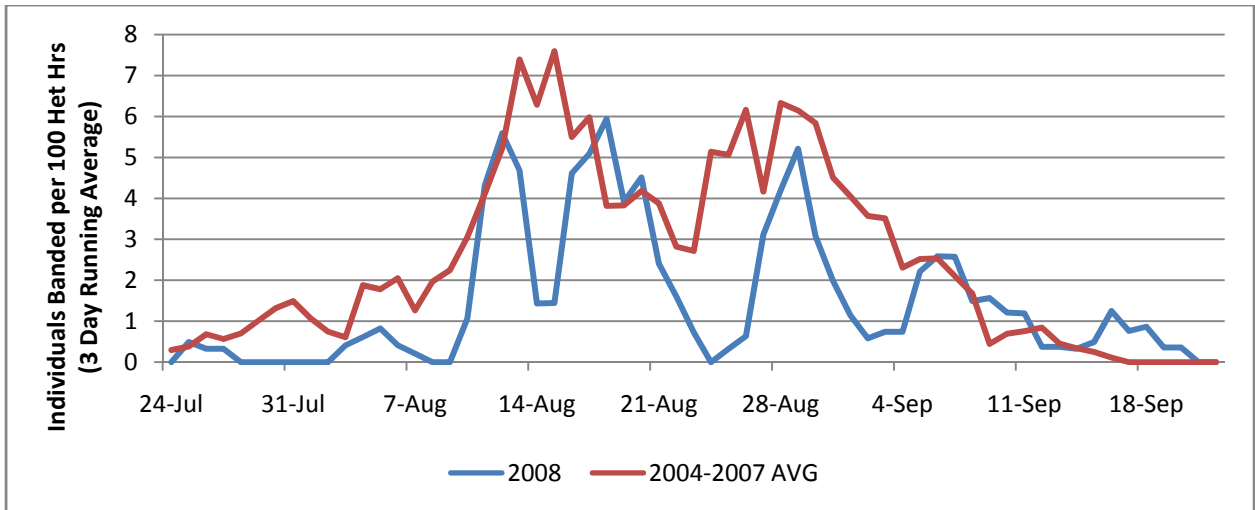


Figure A4-7. Yellow Warbler fall migration timing.

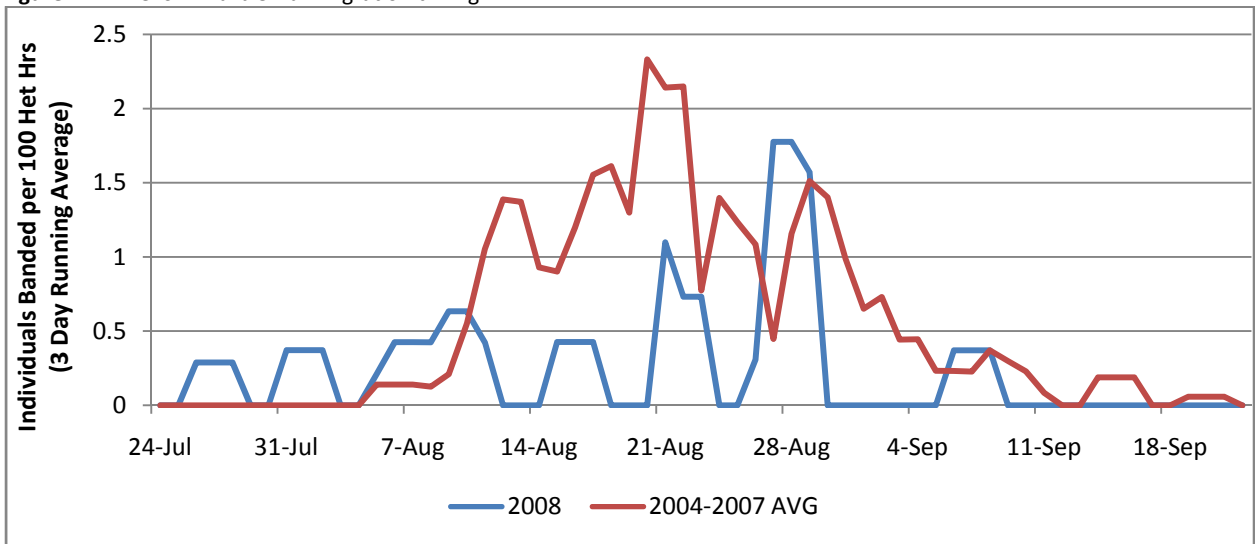


Figure A4-8. Blackpoll Warbler fall migration timing.

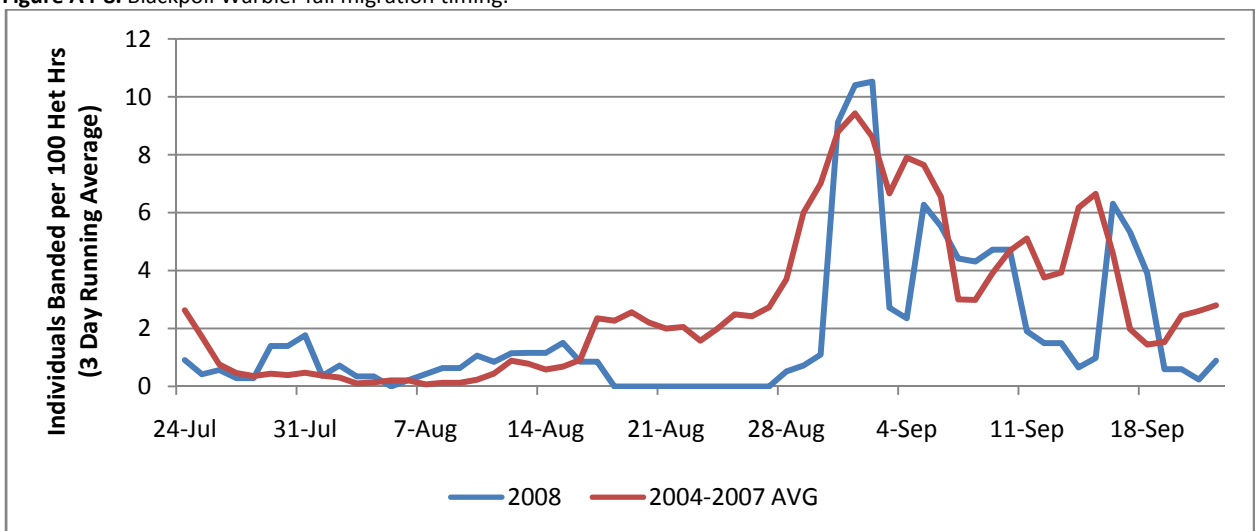


Figure A4-9. Yellow-rumped Warbler fall migration timing.

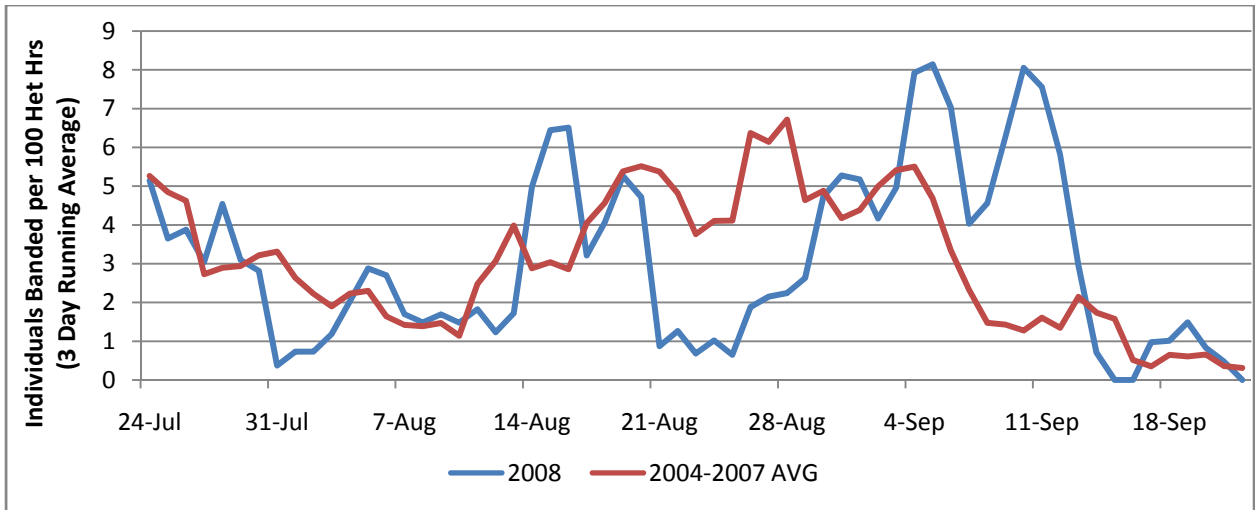


Figure A4-10. Common Yellowthroat fall migration timing.

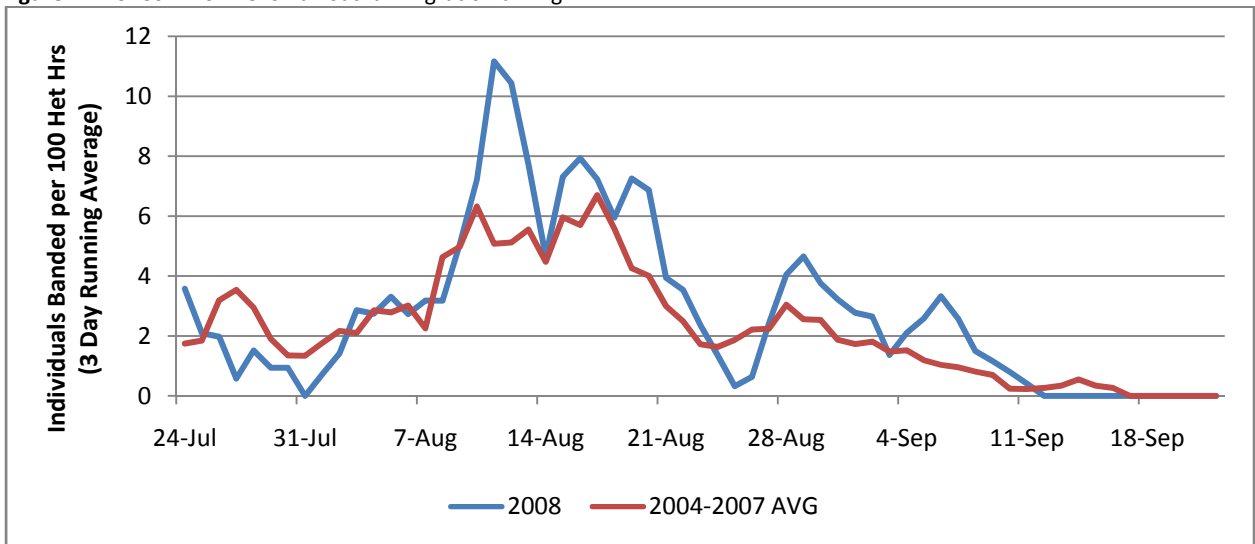


Figure A4-11. Northern Waterthrush fall migration timing.

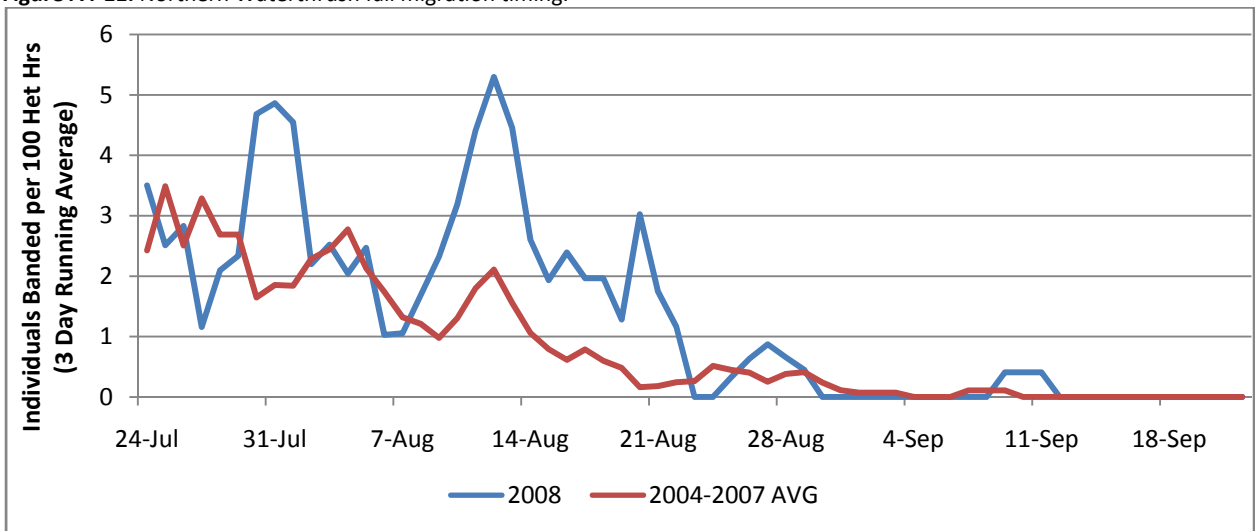


Figure A4-12. American Redstart fall migration timing.

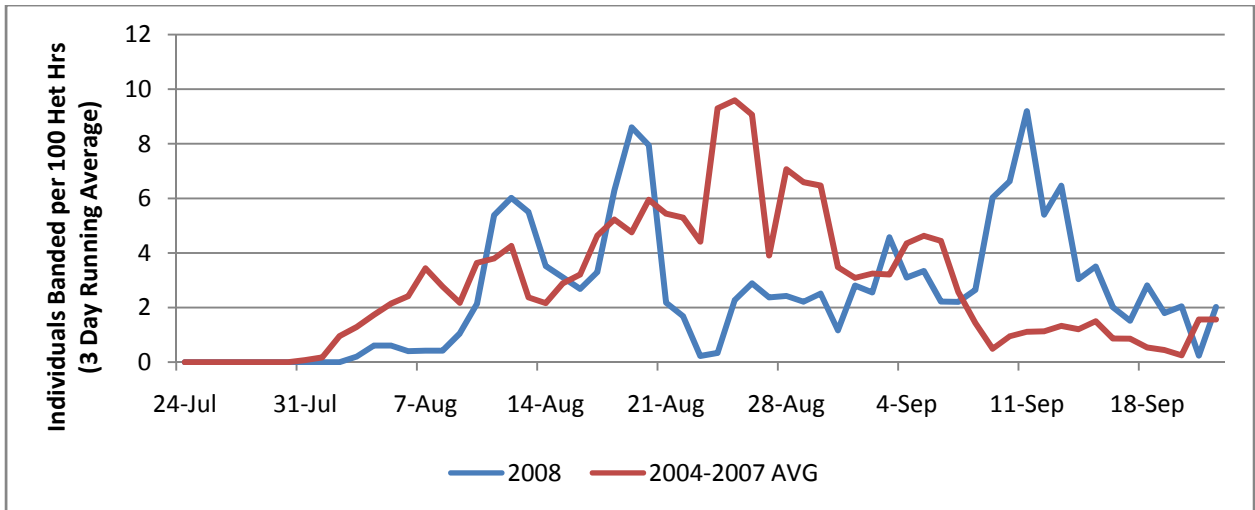


Figure A4-13. Wilson's Warbler fall migration timing.

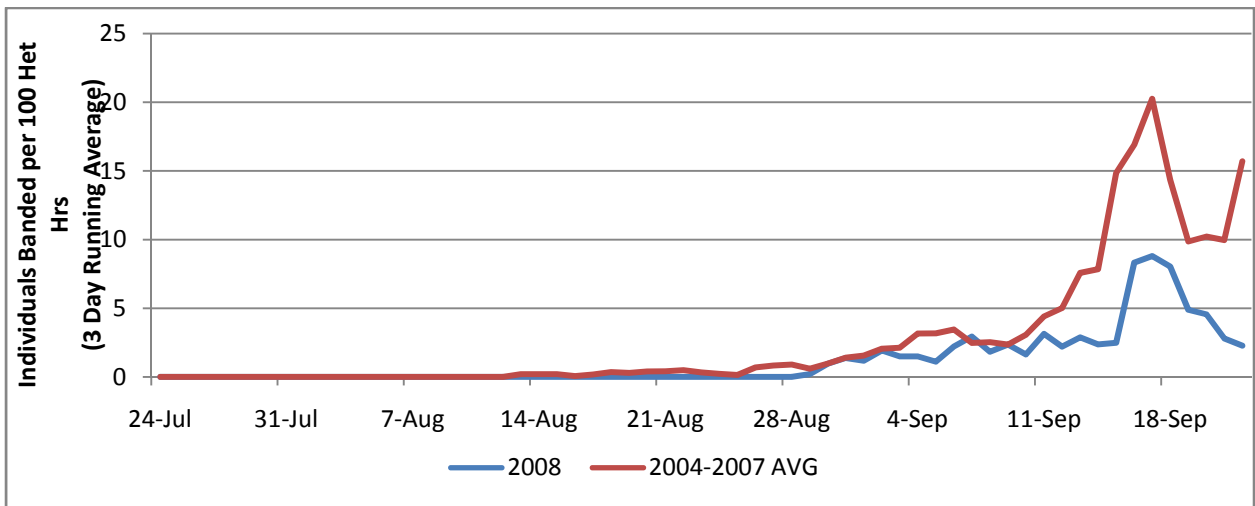


Figure A4-14. American Tree Sparrow fall migration timing.

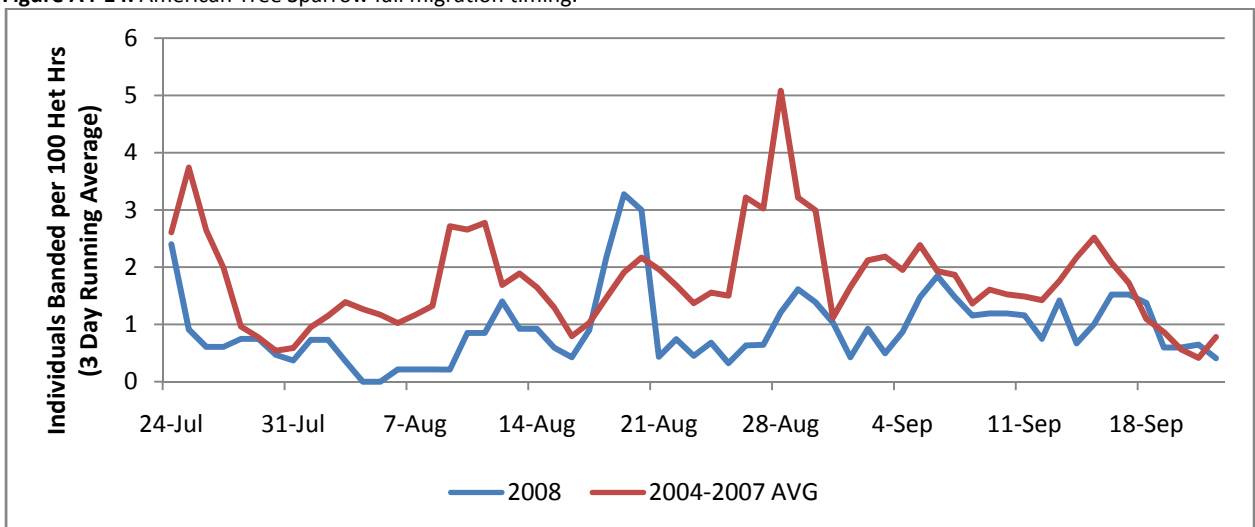


Figure A4-15. Lincoln's Sparrow fall migration timing.

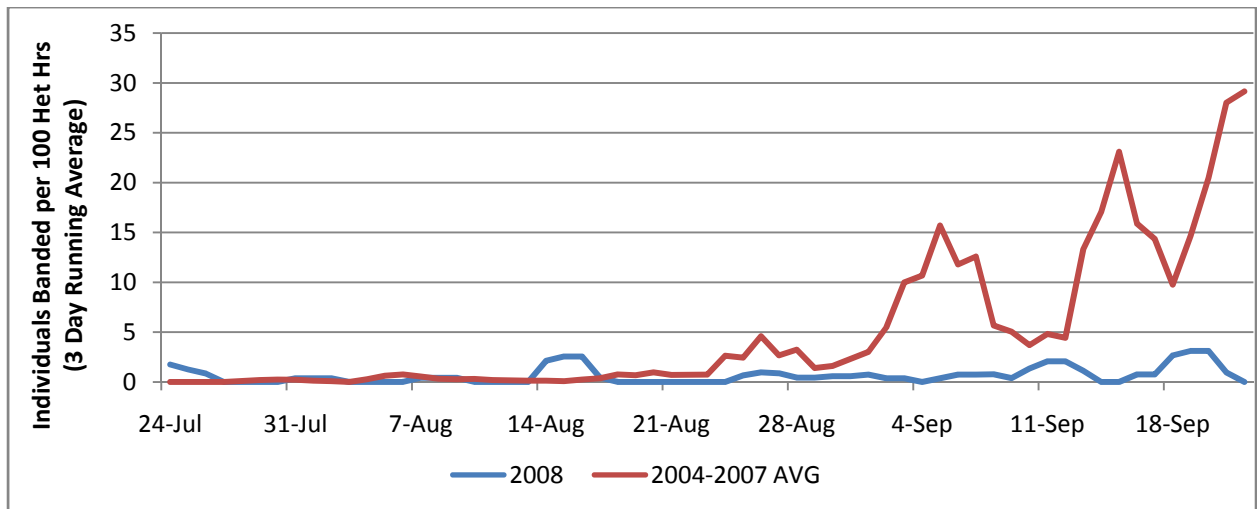


Figure A4-16. Dark-eyed Junco fall migration timing.

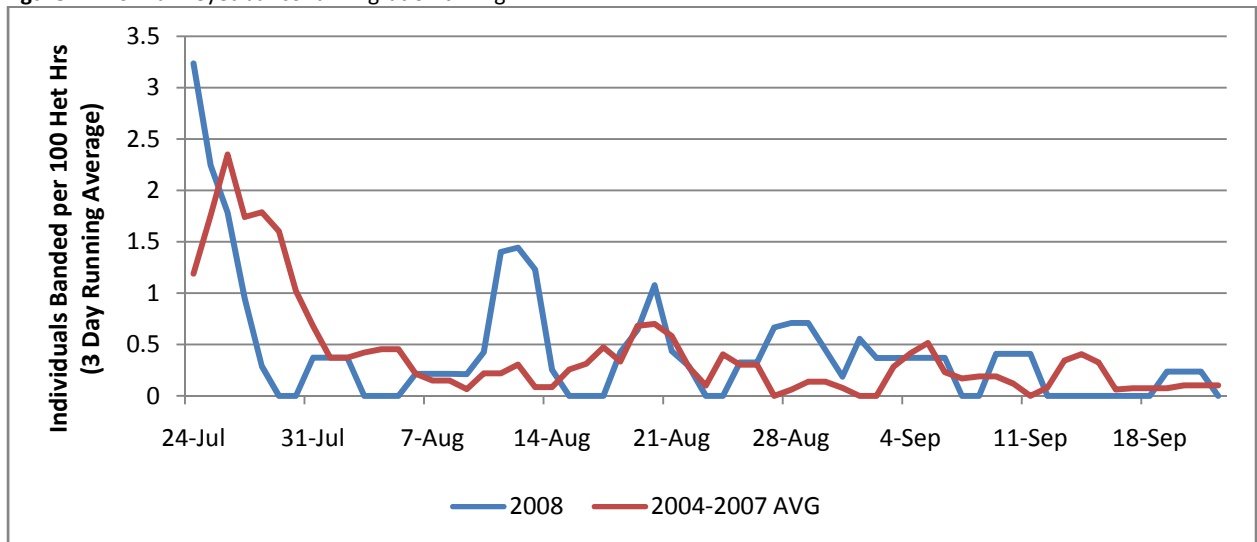


Figure A4-17. Swamp Sparrow fall migration timing.

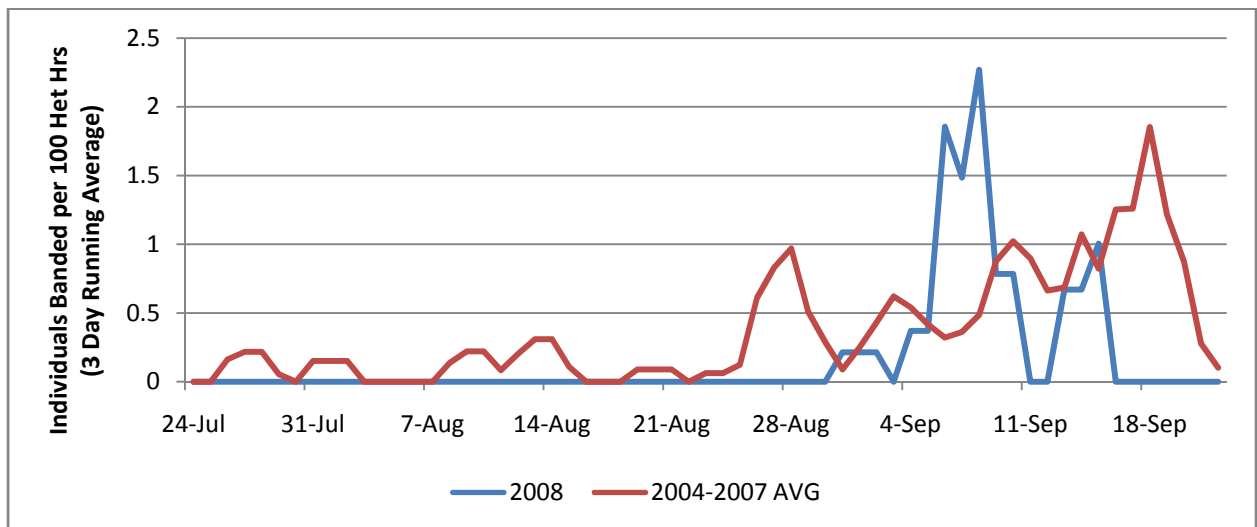


Figure A4-18. Rusty Blackbird fall migration timing.

APPENDIX 6 – AGE BREAKDOWN & CATCH RATE FIGURES

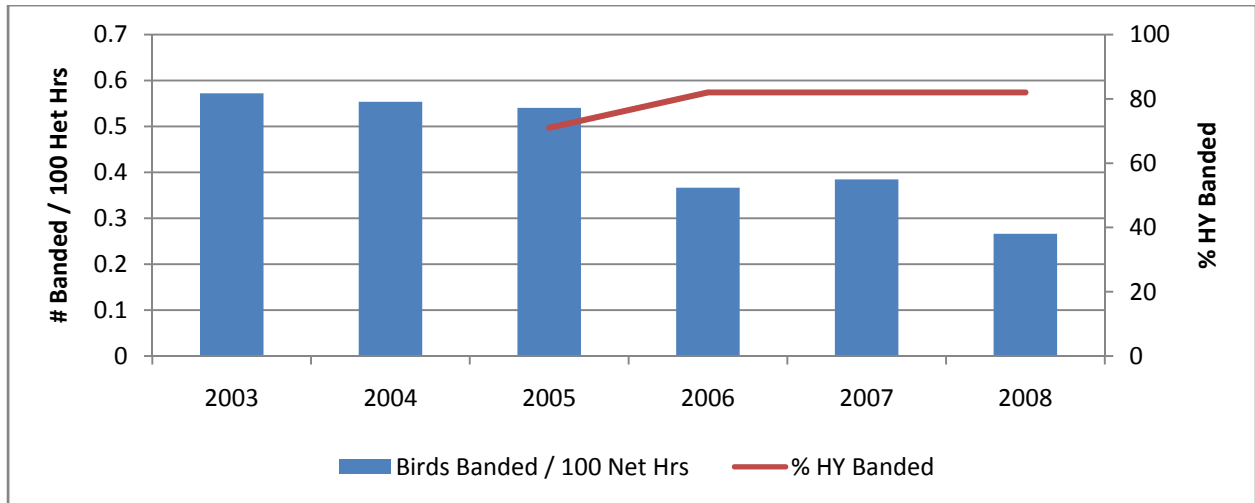


Figure A5-1. Age breakdown and relative capture rate (fall) for Warbling Vireo.

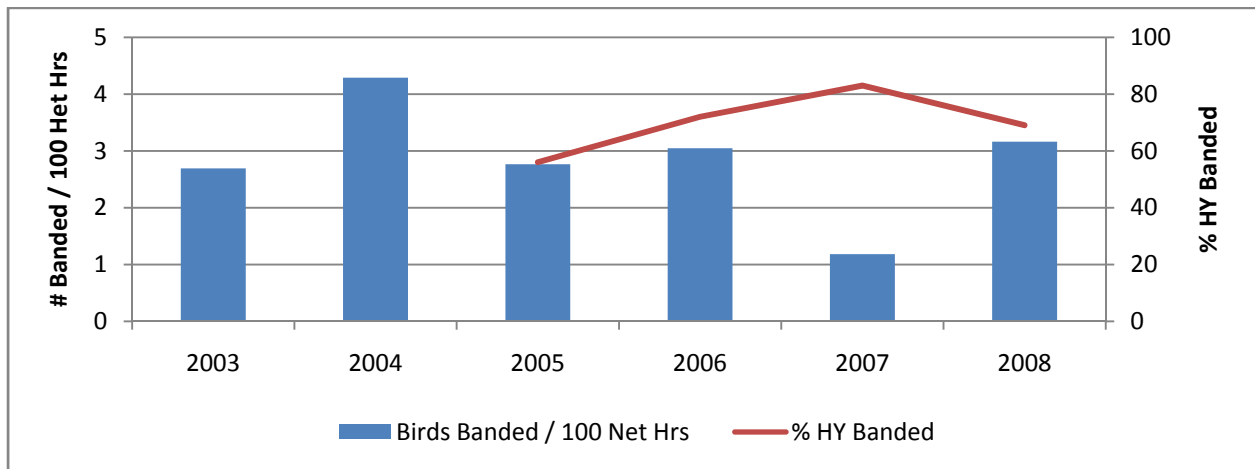


Figure A5-2. Age breakdown and relative capture rate (fall) for Alder Flycatcher.

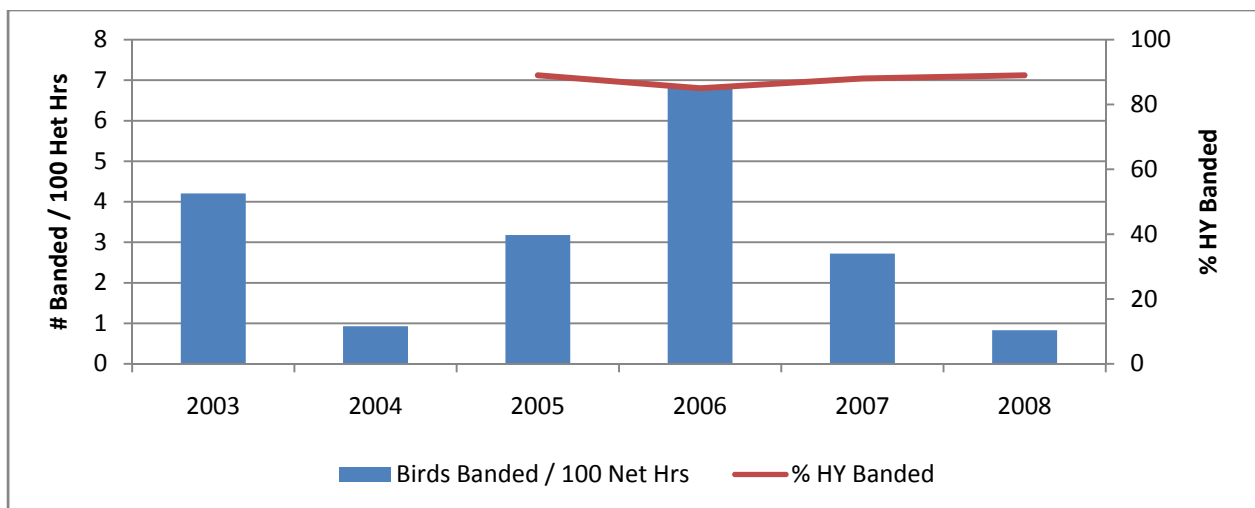


Figure A5-3. Age breakdown and relative capture rate (fall) for Ruby-crowned Kinglet.

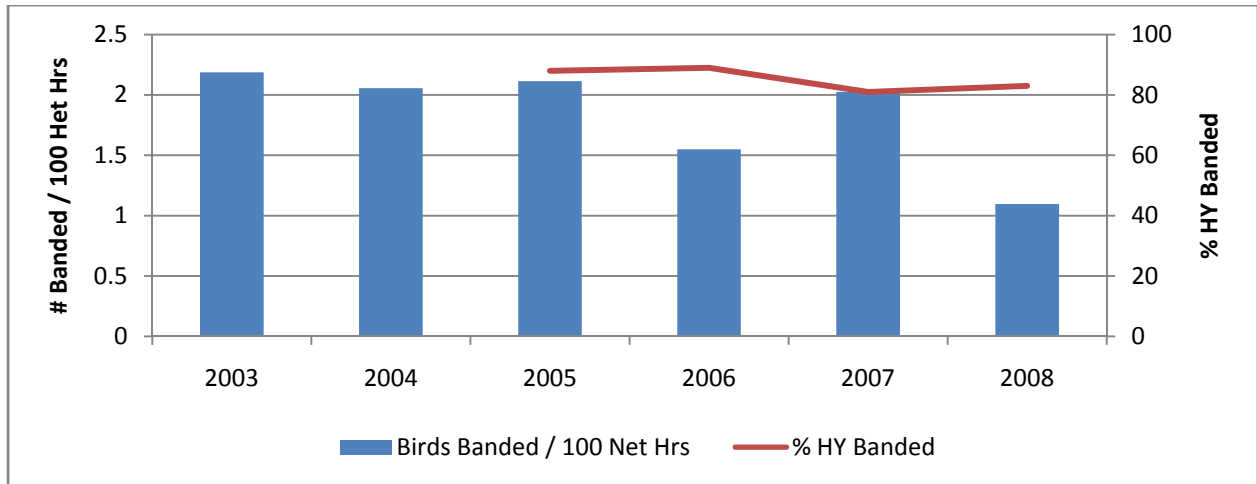


Figure A5-4. Age breakdown and relative capture rate (fall) for Swainson's Thrush.

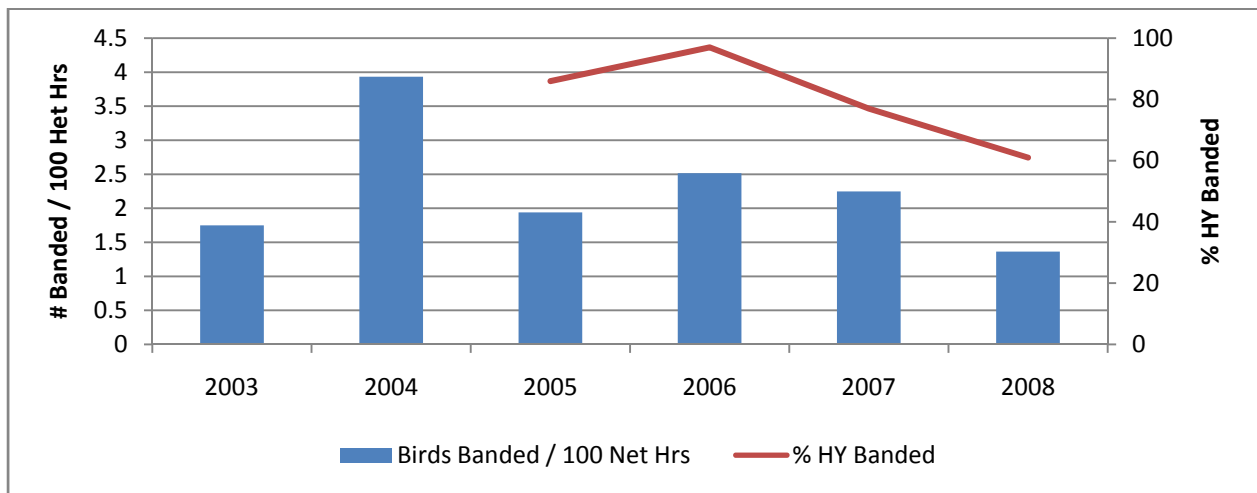


Figure A5-5. Age breakdown and relative capture rate (fall) for Orange-crowned Warbler.

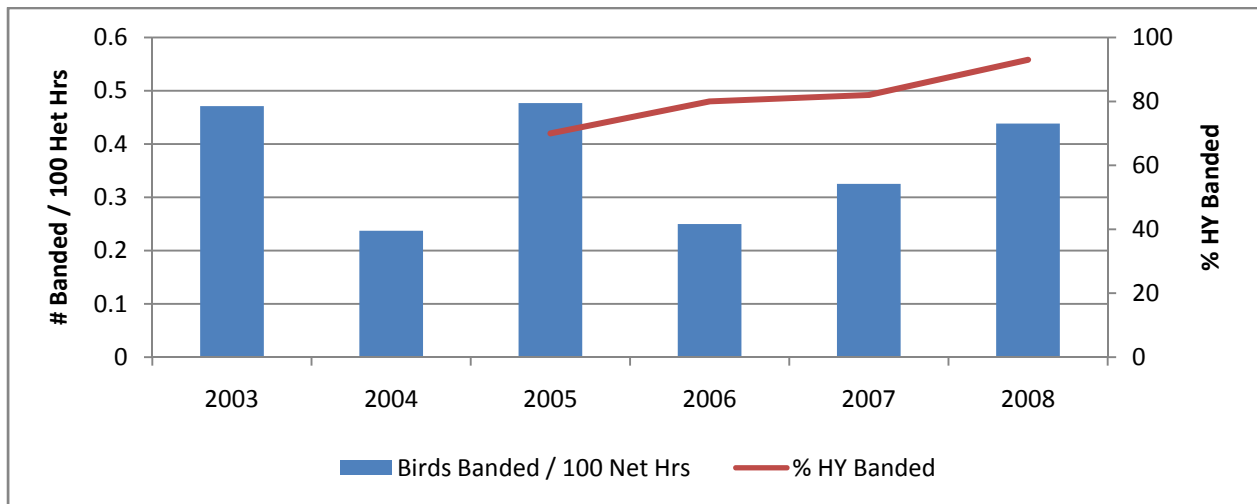


Figure A5-6. Age breakdown and relative capture rate (fall) for Tennessee Warbler.

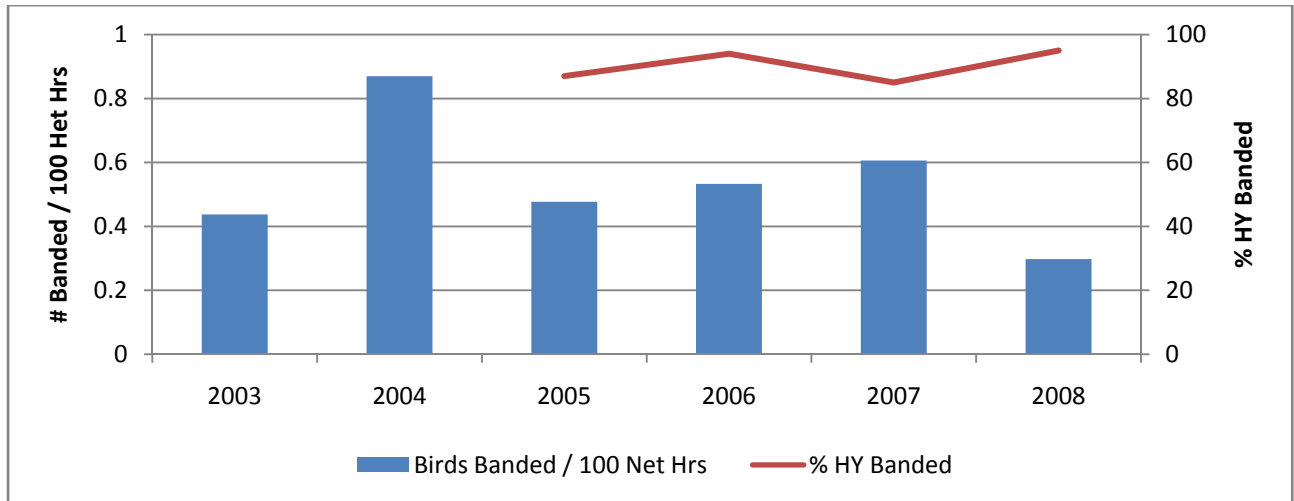


Figure A5-7. Age breakdown and relative capture rate (fall) for Blackpoll Warbler.

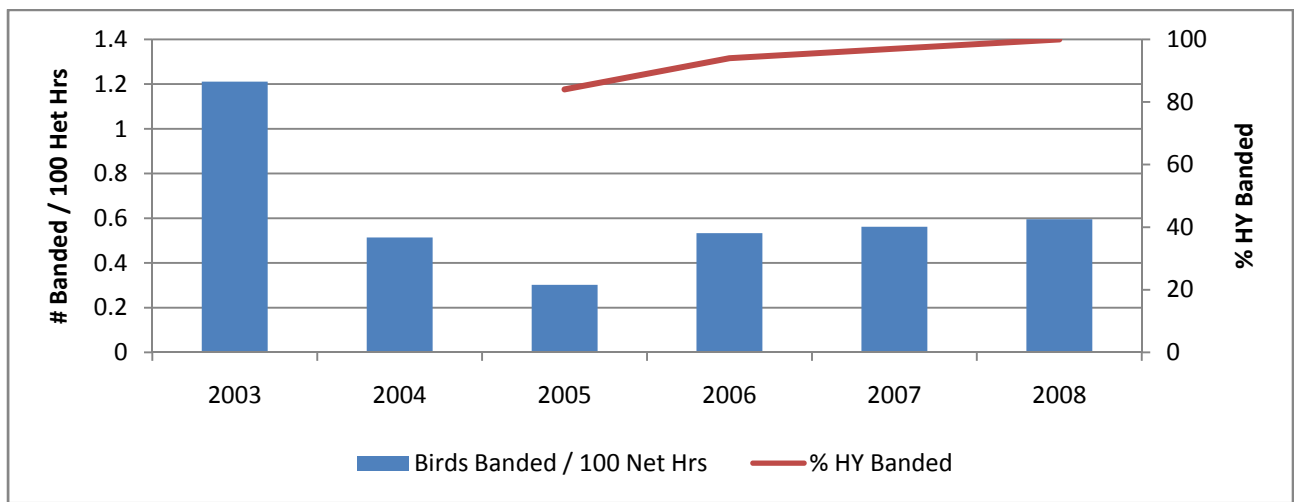


Figure A5-8. Age breakdown and relative capture rate (fall) for Magnolia Warbler.

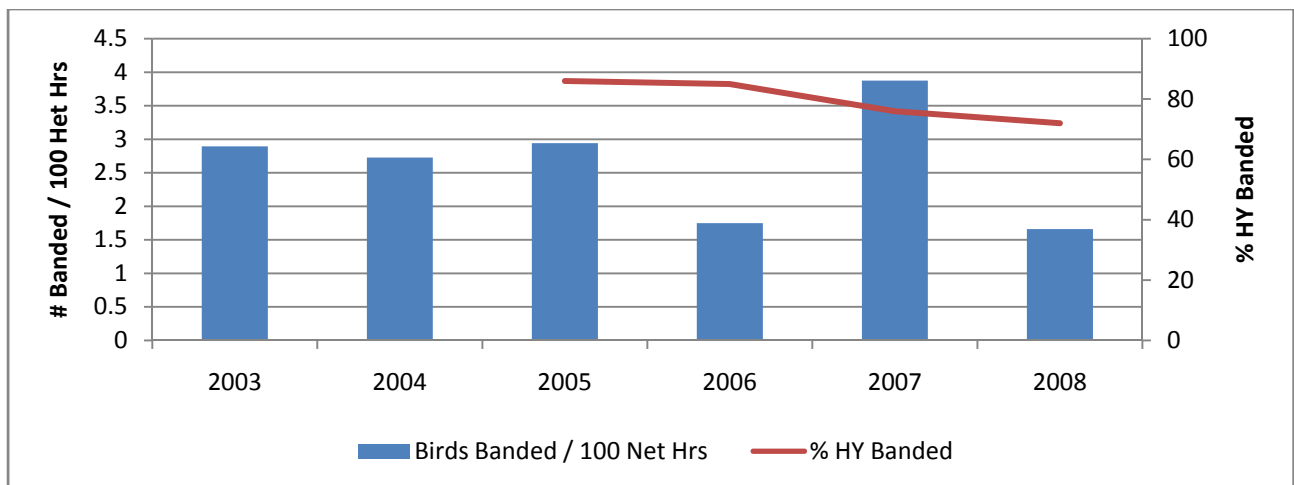


Figure A5-9. Age breakdown and relative capture rate (fall) for Yellow-rumped Warbler.

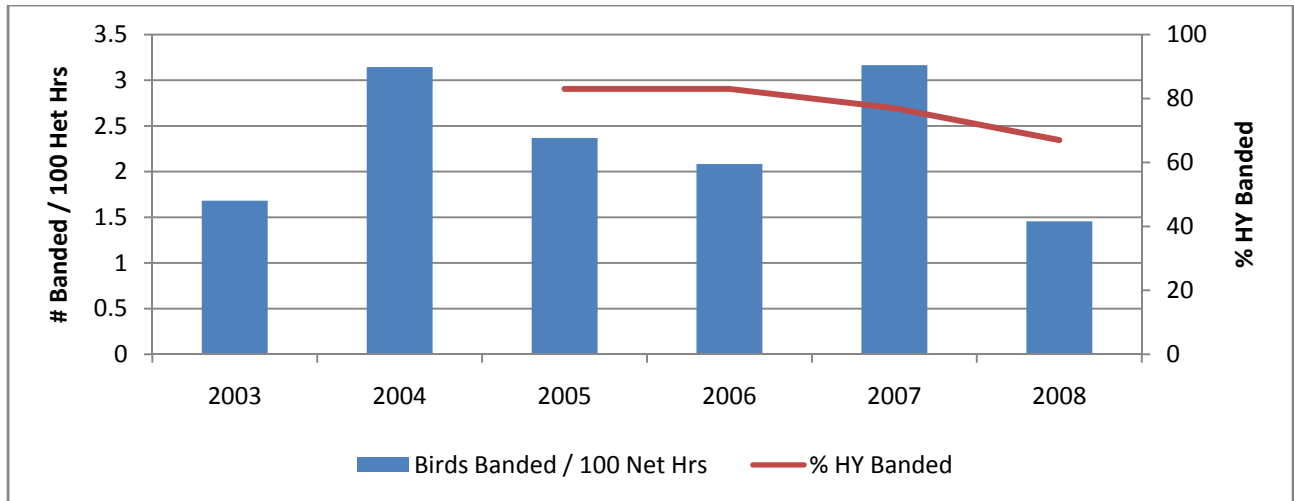


Figure A5-10. Age breakdown and relative capture rate (fall) for Yellow Warbler.

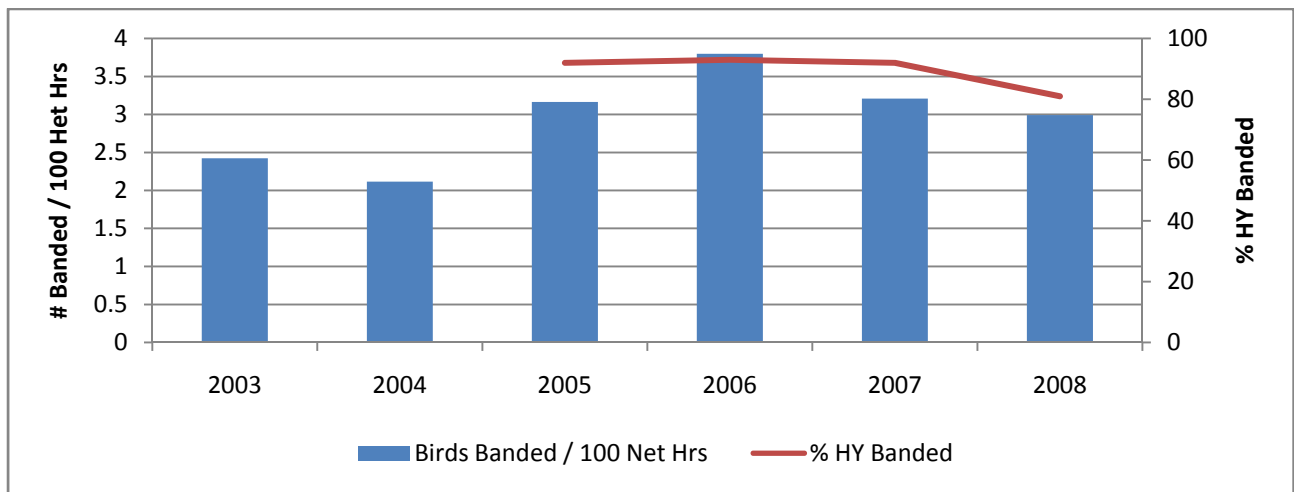


Figure A5-11. Age breakdown and relative capture rate (fall) for Common Yellowthroat.

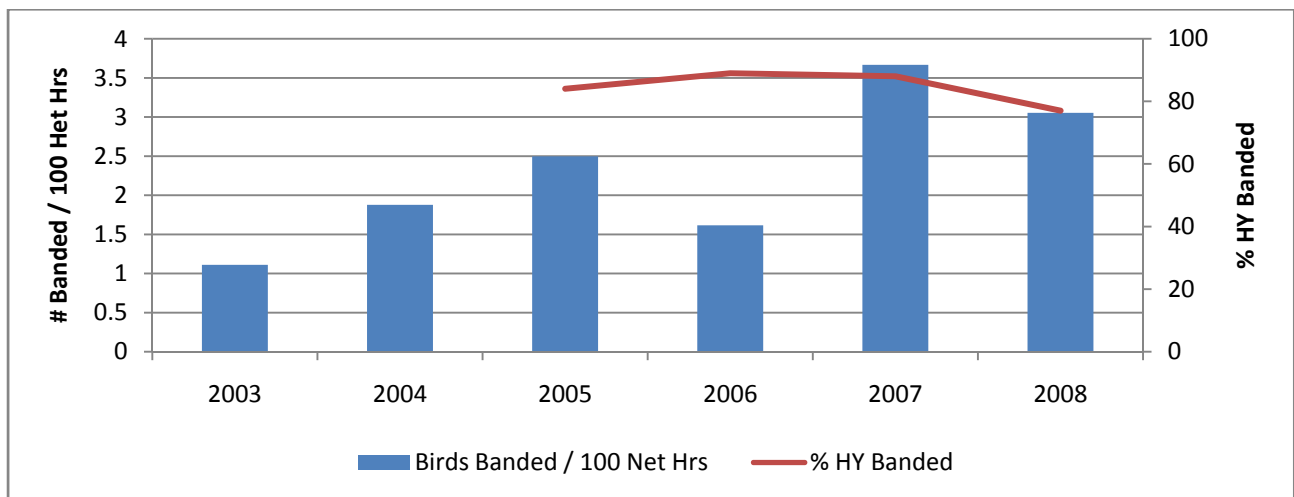


Figure A5-12. Age breakdown and relative capture rate (fall) for Northern Waterthrush.

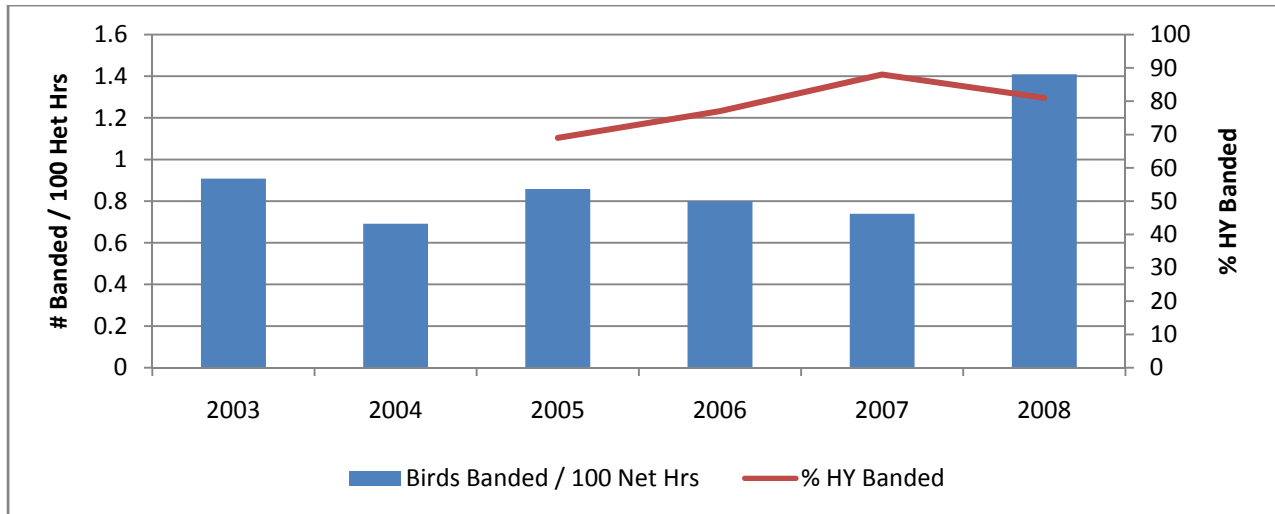


Figure A5-13. Age breakdown and relative capture rate (fall) for American Redstart.

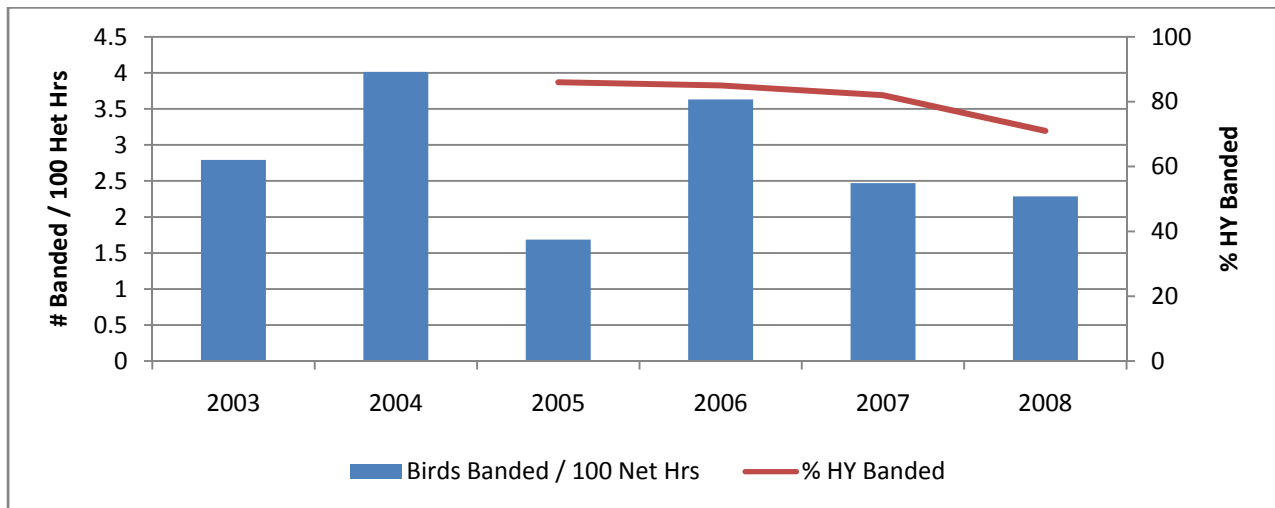


Figure A5-14. Age breakdown and relative capture rate (fall) for Wilson's Warbler.

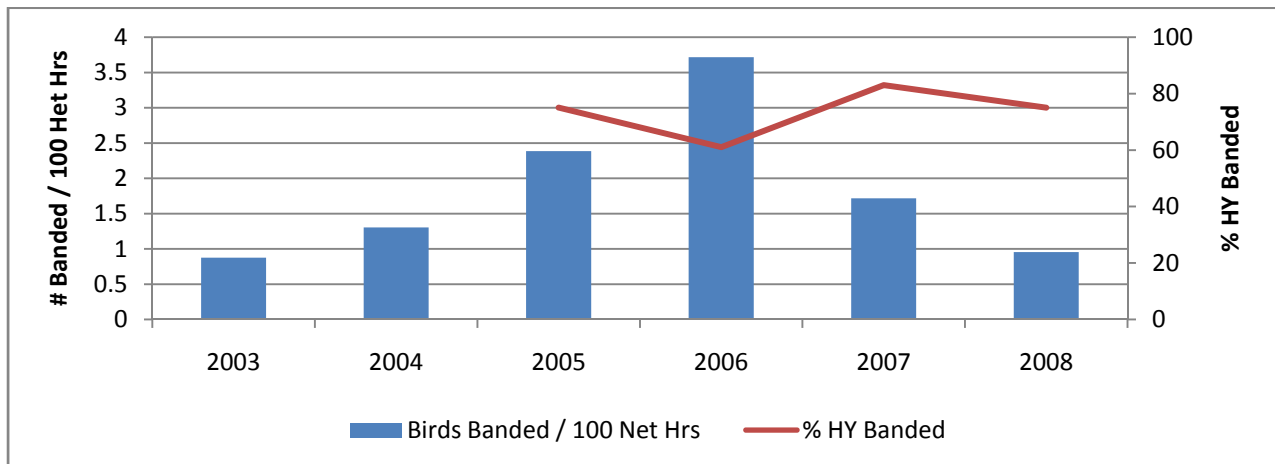


Figure A5-15. Age breakdown and relative capture rate (fall) for American Tree Sparrow.

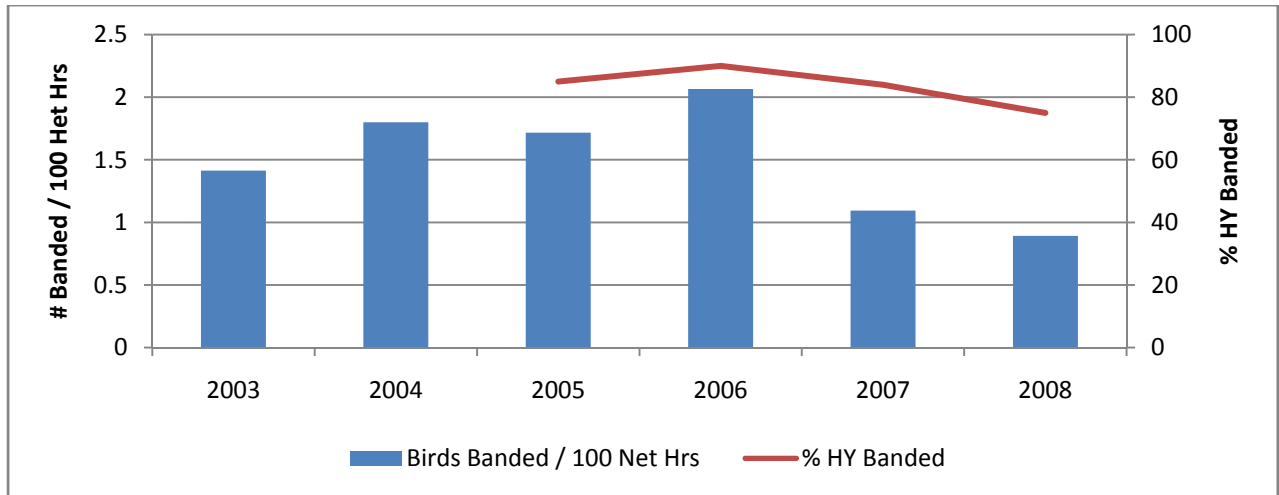


Figure A5-16. Age breakdown and relative capture rate (fall) for Lincoln's Sparrow.

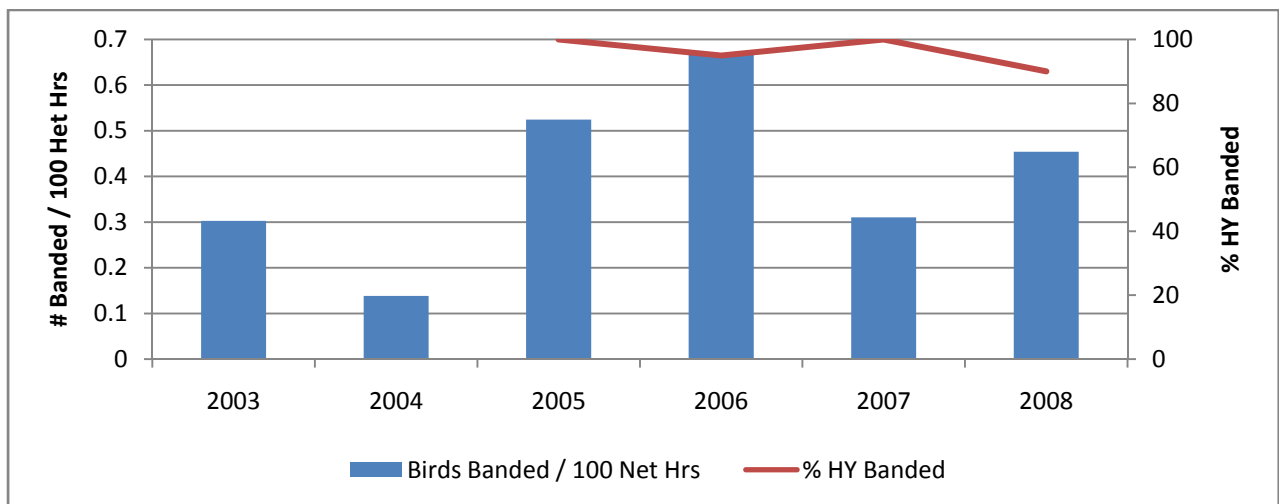


Figure A5-17. Age breakdown and relative capture rate (fall) for Swamp Sparrow.

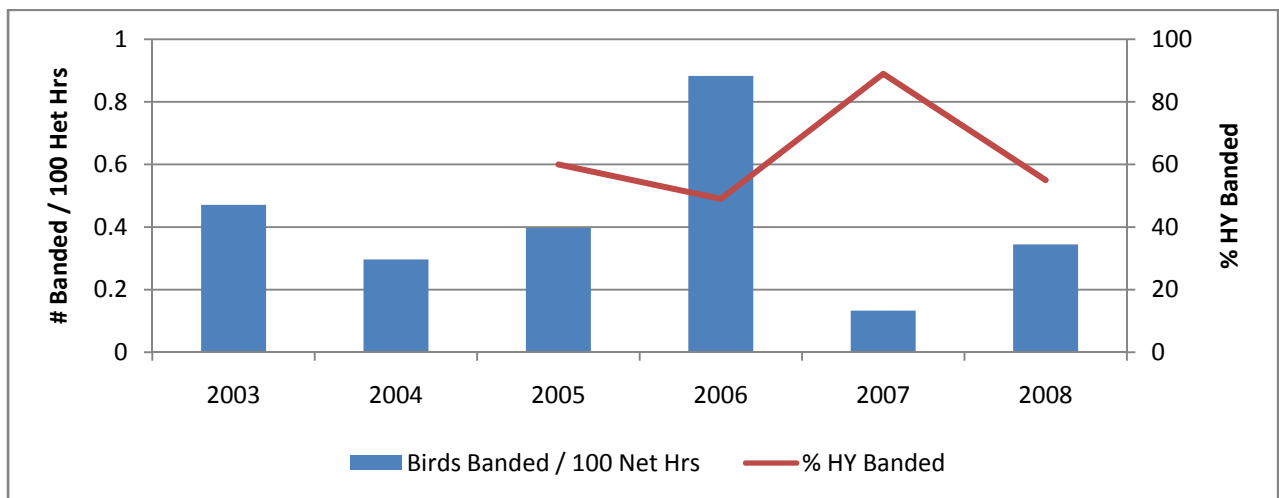


Figure A5-18. Age breakdown and relative capture rate (fall) for Fox Sparrow.

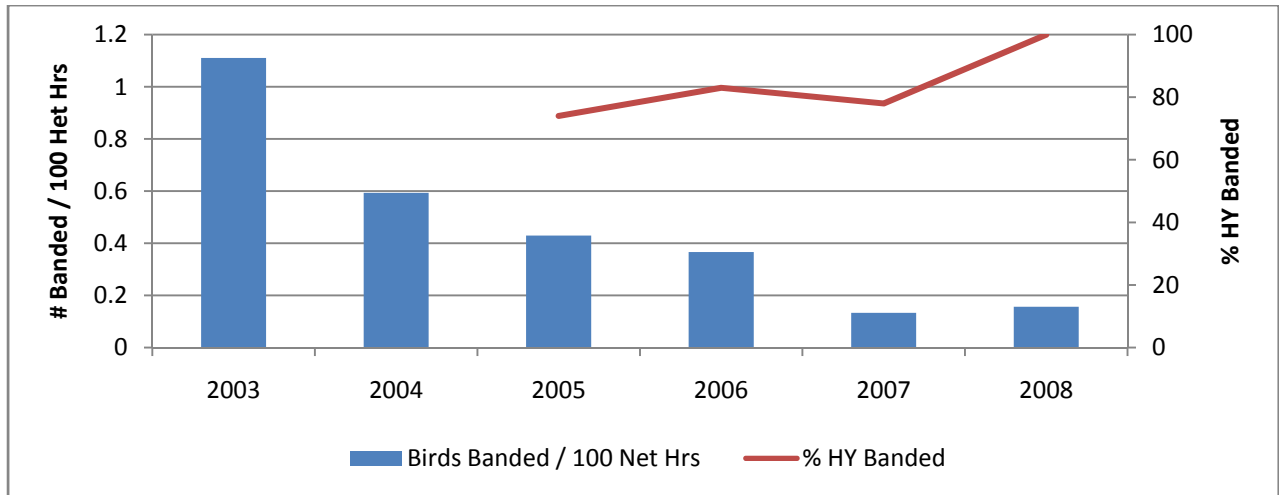


Figure A5-19. Age breakdown and relative capture rate (fall) for White-throated Sparrow.

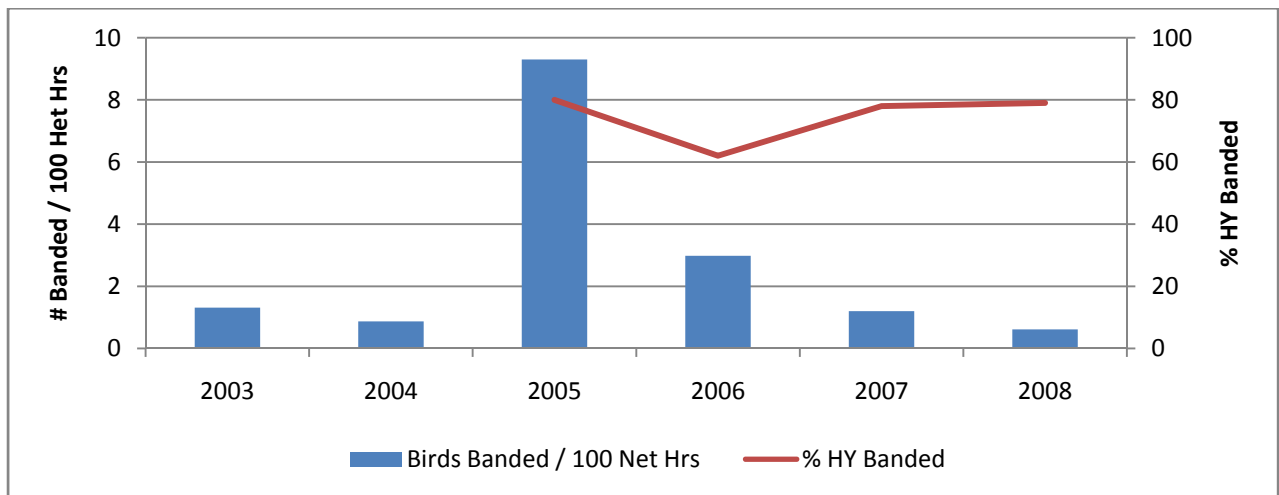


Figure A5-20. Age breakdown and relative capture rate (fall) for Dark-eyed Junco.

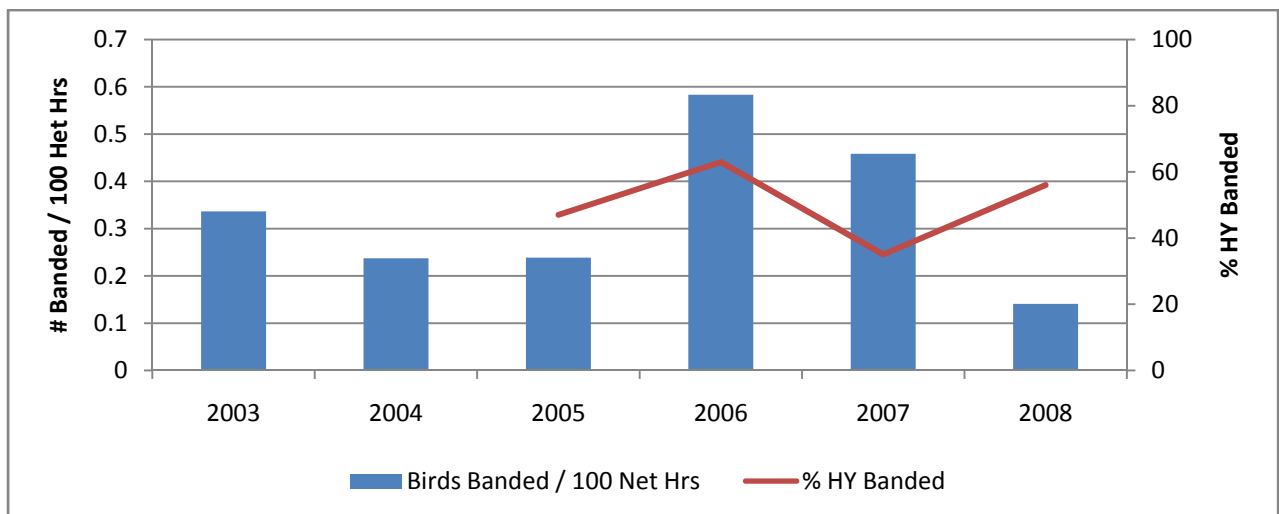


Figure A5-21. Age breakdown and relative capture rate (fall) for Rusty Blackbird.