

CALGARY BIRD BANDING SOCIETY
2013 ANNUAL TECHNICAL REPORT



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Custodire aves

Keep watch on birds

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Calgary Bird Banding Society Code of Ethics

1. Members are jointly responsible for the safety and welfare of the birds they capture and study. Stress, injuries and mortalities must be minimized. The following guidelines must be adhered to:

- handle each bird carefully, gently, quietly, and with respect
- capture only as many birds as you can safely process
- close traps or nets when predators in the area result in unacceptable risk to bird safety
- do not open nets in inclement weather
- assess the condition of nets frequently and repair or replace them quickly
- members must be properly trained and supervised
- check nets at least every 30 minutes
- close and properly furl all nets at the end of each banding day
- do not double bag birds
- use the correct band size and banding pliers for each bird
- treat all bird injuries in the most humane way

2. Members must continually assess their own work to ensure that the highest standards possible are maintained. The following guidelines must be adhered to:

- reassess methods and your approach whenever an injury or mortality occurs
- accept constructive and positive criticism from peers

3. Members must offer honest and constructive assessment of other member's work to help develop and maintain the highest standards possible. The following guidelines must be adhered to:

- provide criticism to other members in a constructive and positive manner
- inform members and others of innovations and improvements in capture, handling and banding techniques
- report any mistreatment of birds or improper conduct by a member to the BIC and/or a member of the CBBS executive



**Misty Morning at Inglewood Bird Sanctuary
(Photo by Mike Potter)**

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Aftermath of June 2013 Catastrophic Flooding

EXECUTIVE SUMMARY

The Calgary Bird Banding Society (CBBS) was incorporated in March 1995. The primary objective of CBBS is to conduct migration monitoring and other banding-based studies at Inglewood Bird Sanctuary (IBS), a federal Migratory Bird Sanctuary. IBS has long been known as an important migration site for Neotropical migrants. Located within 80-km of the Rocky Mountains in southwestern Alberta, the site is a unique component of the Canadian Migration Monitoring Network.

During 2013, in addition to membership dues and member donations CBBS received support from the Alberta Gaming and Liquor Commission, the Suncor Volunteer Grant Fund, the Alberta Conservation Association, Golder Associates and the Baillie Birdathon.

Spring migration monitoring was undertaken at IBS for the 12th consecutive year since 2002. The 2013 fall program would have marked the 19th year of migration monitoring but was cancelled due to catastrophic flooding of IBS in June. Mist-nets were operated on 31 of the 37 days between 1 May and 6 June (2059 net-hours). Total new bandings of 236 (2nd lowest ever) was achieved for the spring program.

The IBS Monitoring Avian Productivity and Survival (MAPS) site was cancelled in 2013 after the first period due to catastrophic flooding of the project area in June. An analysis of IBS MAPS results through 2008 was undertaken in 2009 (Smith et al. 2009 – see 2009 and 2010 ATRs and website).

2013 marked the 10th year of full Northern Saw-whet Owl migration monitoring at our site in the foothills southwest of Calgary. A total of 73 Northern Saw-whet Owls were captured and banded between 15 September and 31 October in 43 nights (830 net-hours). Of these 40% were HY and 57% were female. Monitoring did not occur in 2009. The lowest apparent recruitment to date occurred in 2013.

Pilot migration monitoring (Elkwater site), MAPS (3 sites) and Northern Saw-whet Owl monitoring (mostly at the Spring Creek site) were continued in 2013 at Cypress Hills Interprovincial Park. Mist-nets were operated on 20 of the 27 days between 15 May and 10 June (1221 net-hrs) and 57 of the 70 days between 2 August and 10 October (3351 net-hours). Total new bandings of 405 and 1122 were achieved for the spring and fall programs, respectively. The three MAPS stations established in 2010 were continued. A total of 56 Northern Saw-whet Owls were captured and banded at the Elkwater site respectively between 28 September and 28 October.

CBBS participated in a call playback study of capture rates at Minatitlan, Mexico during 2013 which resulted in a manuscript being published in *North American Bird Bander*. A total of 2375 birds were banded at the CBBS control site. The use of an audio lure had a significant effect on the overall capture rate of spring migrant passerines. Use of audio lures may be particularly valuable where higher capture rates can increase the power of trend estimation.

Captures during spring 2013 were relatively low compared to previous years. As a result, for species with more than 100 captures (common species) spring trends up to 2013 tend to be more negative than the ones up to 2012. One notable result of this is that the overall trend estimate for Cedar Waxwing is no longer significantly positive. An exception to the general downwards adjustment is Tree Swallow for which spring 2013 was a good year and resulted in a more positive trend estimate.

Considering only the most recent 10 years, American Robin and White-crowned Sparrow are now significantly decreasing (White-crowned Sparrow was already close for 2003-2012). Trends that were close to being significantly positive for 2003-2012 (Traill's Flycatcher, Chipping Sparrow and Clay-coloured Sparrow) were not confirmed by 2013 captures and now have a more neutral trend estimate.

During 2013 membership in CBBS totaled 105. Banders-in-Charge and volunteers contributed 193 person-days or approximately 1544 hours to CBBS projects.

Both the number of mortalities during CBBS banding projects and the injury rate remained low at 0.00% and 1.39% respectively.



Aftermath of June 2013 Catastrophic Flooding

INTRODUCTION

The Calgary Bird Banding Society (CBBS) was incorporated on 22 March 1995 with the following objectives:

- Quantify long-term population trends of Neotropical migratory birds using constant effort mist-netting;
- Promote involvement and expertise in bird banding; and
- Promote conservation of Neotropical migratory birds by fostering public awareness and understanding of Neotropical migratory birds.

Although the primary project of the CBBS is monitoring of migratory birds at Inglewood Bird Sanctuary (IBS) in Calgary, other complementary projects have also been undertaken:

- a Monitoring Avian Productivity and Survivorship (MAPS) station was established at IBS in 1992 and continued in 1993 and 1995-2004 and 2006-2012;
- spring banding was initiated in 1997 at Dunbow Road approximately 22-km SSE of the City of Calgary and continued in 1998 and 1999;
- spring and fall banding/migration monitoring was initiated at the Cominco Natural Area in 2000 with spring banding continued in 2001;
- colour-banding and relocation of Red-tailed and Swainson's Hawks at Calgary International Airport was initiated in cooperation with the Calgary Airport Authority in 2000 and continued through 2004;
- pilot spring migration monitoring was initiated at Las Caletas on the Osa Peninsula, Costa Rica in 2002, continued in 2003 and full migration monitoring initiated in 2004 and continued in 2005, 2007 and 2008;
- pilot spring migration monitoring was initiated in 2011 at La Selva Biological Station, Costa Rica and continued in 2012;
- spring migration monitoring, MAPS (3 sites), fall migration monitoring and Northern Saw-whet Owl migration monitoring (2 sites) were all initiated in 2010 and continued in 2011, 2012 and 2013 at Cypress Hills InterProvincial Park (CHIP);
- pilot Monitoreo de Sobrevivencia Invernal (MoSI) was undertaken in Costa Rica both at Las Caletas and another site on Isla Violin in 2006 and continued at Las Caletas 2007-2008;
- a pilot Northern Saw-whet Owl migration monitoring pilot program was carried out at Inglewood Bird Sanctuary in 2000;
- pilot Northern Saw-whet Owl migration monitoring was carried out in 2003 and full migration monitoring was initiated in 2004 and has continued through 2013 except for 2009 at the De Wit ranch in the foothills southwest of Calgary;
- pilot MAPS was undertaken at Dinosaur Provincial Park (DPP) in 2006; and
- pilot spring migration monitoring was undertaken at DPP in 2007.

As of 1998 the Calgary Bird Banding Society's Inglewood Bird Sanctuary site is a fully designated member of the Canadian Migration Monitoring Network (CMMN) a cooperative initiative of the member stations, Canadian Wildlife Service and Bird Studies Canada. This formal association of migrant monitoring sites across Canada significantly enhances the value of the work conducted at each site. The Calgary Bird Banding Society and Inglewood Bird Sanctuary hosted the 2003 CMMN national meeting and the initial face-to-face meeting of the CMMN Steering Committee in November 2006 as well as sending delegates to all other biennial national meetings..

Canadian Migration Monitoring Network (CMMN)



- | | |
|---|---|
| 1 Rocky Point Bird Observatory | 14 Pelee Island Bird Observatory |
| 2 Tatlayoko Lake Bird Observatory | 15 Long Point Bird Observatory |
| 3 Vaseux Lake Bird Observatory | 16 Haldimand Bird Observatory (Ruthven) |
| 4 Mackenzie Nature Observatory | 17 Tommy Thompson Park Bird Research Station |
| 5 Yukon Bird Observatories (Albert Creek and Teslin Lake) | 18 Prince Edward Point Bird Observatory |
| 6 Lesser Slave Lake Bird Observatory | 19 Innis Point Bird Observatory |
| 7 Beaverhill Bird Observatory | 20 McGill Bird Observatory |
| 8 Inglewood Bird Observatory | 21 Observatoire d'oiseaux de Tadoussac |
| 9 Last Mountain Bird Observatory | 22 Point Lepreau Bird Observatory |
| 10 Delta Marsh Bird Observatory | 22 Greenlaw Mountain Hawk Watch |
| 11 Thunder Cape Bird Observatory | 23 St. Andrew's Bird Banding Station |
| 12 Whitefish Point Bird Observatory | 24 Atlantic Bird Observatory |
| 13 Bruce Peninsula Bird Observatory | 25 Brier Island Bird Migration Research Station |

FUNDING AND ACKNOWLEDGEMENTS

Funding sources other than membership dues and member donations during 2013:

- funds raised by the CBBS through participation in the Baillie Birdathon;
- proceeds from Alberta Gaming and Liquor Commission arising from CBBS sponsored casinos;
- grants from the Alberta Conservation Association (operations) and Golder and Associates (banding lab) in support of CHIP; and
- a grant from the Suncor Volunteer Grant Program.

Funds were used to provide a per diem to Banders-in-Charge (BICs), purchase mist-nets, produce the Annual Technical Report, fund migration monitoring at CHIP, fund a migration monitoring call-playback study at Minatitlan, Mexico and cover migration monitoring equipment and other miscellaneous costs.

Thanks to West Canadian Digital Imaging Inc. for generous sharing of conference room facilities for CBBS Board meetings and *Introduction to Banding* seminars.

Sincere appreciation goes out to all CBBS members who have helped make 2013 successful for CBBS. In addition, many non-members have helped immensely by volunteering at our casinos, participating in the Baillie Birdathon and providing expertise such as carpentry and electrical.



Eastern Phoebe
(Photo by Shirley Otway)

PROGRAMS AT INGLEWOOD BIRD SANCTUARY

Migration Monitoring

Background

Neotropical migrants are birds that breed in the Nearctic biogeographic realm and winter in the Neotropics. The Neotropical migratory bird system involves some 5-10 billion birds of over 150 species (Greenberg 1992). Trends in data from the Breeding Bird Survey indicate that populations of many Neotropical migrants in North America may be decreasing. Although destruction of tropical forests on the wintering grounds has been implicated in declines, increasing concern is being raised about the potential effect of accelerated land-use changes on breeding grounds.

Inglewood Bird Sanctuary (IBS) is a federal Migratory Bird Sanctuary and is an important site for migrating passerines. IBS is strategically located within 80-km of the Rocky Mountains (Figure 1) and is a unique and valuable member of the Canadian Migration Monitoring Network. IBS is located within Calgary which greatly facilitates member involvement. Pilot monitoring, covering only a portion of the fall migration, was undertaken in 1992 and 1994. Full spring and fall migration monitoring have occurred since 2002 and 1995. Monitoring songbird population change based on mist-netting has been shown to be an effective technique (Dunn *et al.* 1997).

Methods and Study Site

Only spring migration of Neotropical migrants was monitored in 2013 at Inglewood Bird Sanctuary (IBS). Fall migration monitoring was cancelled due to catastrophic flooding that occurred during June. IBS's 35 hectares includes mature riverine balsam poplar forest known for its number and diversity of songbirds during spring and fall migration (Sherrington 1975; Elphinstone 1990). Constant-effort mist-netting (i.e. constant number of nets in permanent locations for constant period each day) and collection of associated morphometric and other data (e.g. age, sex, wing chord, weight, fat reserves, capture net, time of capture) from each bird captured was carried out each day, weather permitting. Twelve 12-m long x 2.6-m high x 30-mm mesh mist-nets were operated in permanent net lanes for approximately 6 hours each day beginning at sunrise.

The migration monitoring protocol used at IBS was developed from procedures outlined in McCracken *et al.* (1993) (*A Manual for Monitoring Bird Migration*), Hagan *et al.* (1994) (*Recommended Methods for Monitoring Bird Migration*) and Hussell and Ralph (1996) (*Recommended Methods for Monitoring Bird Populations by Counting and Capture of Migrants*). Net locations are shown on Figure 2.

Schedule and Coverage

Spring

Spring migration monitoring at IBS was conducted from 1 May to 6 June 2013. This was the 12th year of full spring migration monitoring at IBS. Mist-netting occurred on 31 of the 37 target days (84% coverage) for a total of 2059 net-hours (Table 1a, Figure 3a). Inclement weather and no volunteer precluded banding on 5 and 1 days respectively. Seven other days had a reduced number of net-hours from the daily target of 72 due to weather and/or high water.

Fall

Fall migration monitoring at IBS was cancelled due to catastrophic flooding of IBS in June. The City of Calgary did not allow access to the banding area post-flooding due to safety concerns.

New Bandings

Spring

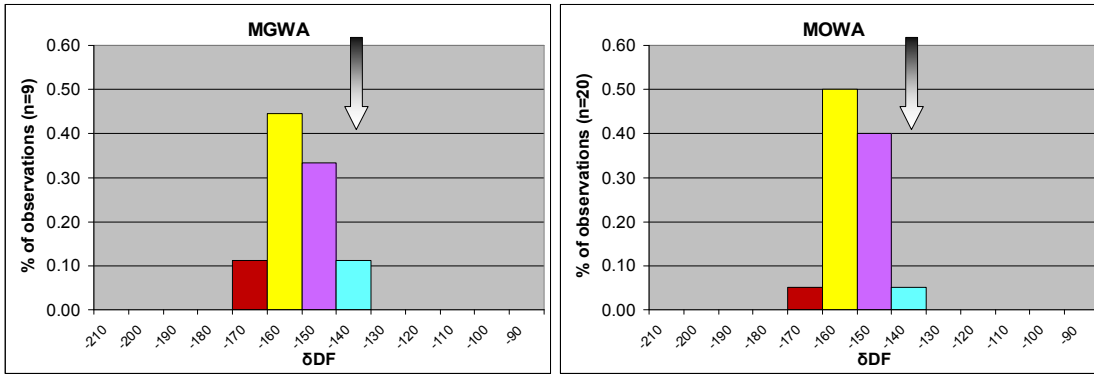
A total of 236 (2nd lowest in 12 years) new bands were placed on birds of 39 (3rd lowest in 12 years) species (Table 2a, Appendix 1a). Greater than 20 new bandings occurred on 2 days and at least 30 new bandings occurred on only 1 day (Figure 3a). New banding totals by species at IBS are presented in Table 2a.

The 20 most frequently banded species in spring over all years, and during 2013, are identified in Appendix 2. The top five in 2013 in descending order were Yellow-rumped Warbler, Tree Swallow, Clay-colored Sparrow, Swainson's Thrush and House Wren. The top five since 2002 are Yellow-rumped Warbler, Swainson's Thrush, Lincoln's Sparrow, American Robin and Clay-colored Sparrow.

Insight from Mist-netting

Mist-netting can substantially add to understanding the avifauna at a site particularly in detection of rare or elusive species. The first spring banding at IBS of a Townsend's Warbler took place during 2013.

A number of warbler species are difficult to detect and identify in the field particularly in fall. Although the expectation might be that Mourning Warblers banded at IBS would be from areas farther north than MacGillivray's Warblers, stable isotope analysis of rectrices collected at IBS in 2003, 2004 and 2008 suggests similar geographic origins. IBS is in an area of hybridization of these species (Hall 1979) and the similarity of their apparent origin may be an artifact of the difficulty in speciating hybrids.



Origin of MacGillivray's (MGWA) and Mourning (MOWA) Warbler feather samples obtained at IBS in 2003, 2004 and 2008. More negative δDF values indicate a more northerly origin. The arrow points to the expected value of feather material obtained at IBS.

Other areas of research have involved, or have the potential to involve, data from IBS. Banding data were provided to Erica Dunn of CWS as part of a cooperative study on mass gain among migrating songbirds at Canadian stopover sites. Her analysis (Dunn 2002) provided insight that IBS appears to be an important refueling stop for Neotropical migrants. A copy of her paper appeared in Appendix 4 of the 2003 ATR and is available on the CBBS website.

Stable Isotope Ecology

Stable isotope ecology, through identifying the geographic origin of birds captured, offers the possibility of confirming the hypothesis that CMMN sites, including IBS, monitor birds from a wide area north of their respective locations. Preliminary results involving 1999 samples from Delta Marsh Bird Observatory and Atlantic Bird Observatory indeed indicated that CMMN stations are capturing birds from a broad area, not simply from a small region close to the station. To investigate the origin of birds captured at IBS during the fall migration, feather samples were collected from 54 resident and migrant birds of six species during 2003. A total of 919 feather samples were collected from 28 species at IBS during 2004 while an additional 1028 were collected from 33 species in 2008. These samples have been analyzed and interpretation is underway to characterize the breeding and natal geographic areas of origin for species monitored at IBS.

Recaptures

Recaptures at IBS during spring migration monitoring totaled 69 of at least 49 different birds of 17 species (see table on following page). Recapture numbers were highest in six resident species (Downy Woodpecker, Tree Swallow, Black-capped Chickadee, House Wren, American Robin and Yellow Warbler) and one migrant, (Lincoln's Sparrow). Migrants with high recapture rates may be using IBS for moulting or extended "re-fuelling".

Twenty-one (21) birds banded at IBS in previous years were recaptured in 2013. Year-to-year recaptures from 1992-current are available on the CBBS website. Most year-to-year recaptures occur in the year following banding. However, in a few cases birds are recaptured in several

subsequent years and occasionally only re-appear several years after banding. For example, a Yellow Warbler banded in 2010 was recaptured again in 2013 after having been recaptured in every intervening year. A Lincoln's Sparrow banded in 2006 was recaptured in 2013 for the first time.

Individuals Recaptured at Inglewood Bird Sanctuary during Spring and Fall MM 2013					
Species	Recap	Banded	Species	Recap	Banded
Downy Woodpecker	7		Cedar Waxwing	1	
Hairy Woodpecker	1		Yellow Warbler	8	
Northern Flicker	1		Yellow-rumped Warbler	1	
Tree Swallow	7		Clay-colored Sparrow	1	
Black-capped Chickadee	8		Song Sparrow	1	
White-breasted Nuthatch	2		Lincoln's Sparrow	7	
House Wren	8		Brown-headed Cowbird	1	
American Robin	8		Baltimore Oriole	1	
Gray Catbird	4				

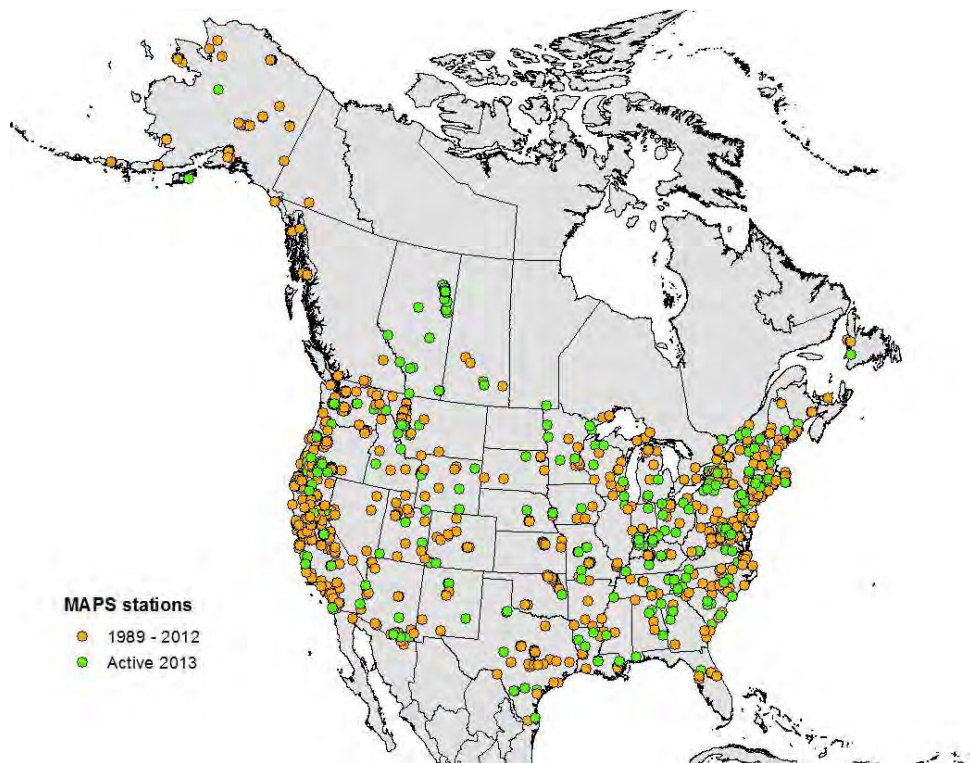


Aftermath of June 2013 Catastrophic Flooding

Monitoring Avian Productivity and Survivorship (MAPS)

Background

The Monitoring Avian Productivity and Survivorship (MAPS) Program is a cooperative effort among public agencies, private organizations, and bird banders of North America. It provides long-term data on population and demographic parameters for target landbird species throughout the continent. The 2013 field season was MAPS 25th year of North American operation.



The MAPS program utilizes standardized, constant-effort mist-netting during the breeding season at a continent-wide network of stations. Annual regional indices of adult population size and post-fledging productivity are estimated from capture data during the breeding season. Annual regional estimates are made of adult survivorship, adult population size and recruitment into the adult population from capture-recapture data.

North America is divided into eight major regions based on biogeographical and meteorological considerations, and each region has, within it, target species. IBS falls into the Northwest Region whose target species are:

Dusky Flycatcher	Yellow Warbler
Western Flycatcher complex	MacGillivray's Warbler
Swainson's Thrush	Wilson's Warbler
American Robin	Song Sparrow
Warbling Vireo	Lincoln's Sparrow
Orange-crowned Warbler	"Oregon" Dark-eyed Junco

All these species have been captured at IBS although only American Robin, Warbling Vireo, Yellow Warbler, Song Sparrow, and Lincoln's Sparrow are local breeders. IBS MAPS data is provided to the Institute for Bird Populations in Point Reyes, CA where it is integrated with data from more than 500 other North American stations.

Objectives

The overall objective of the MAPS Program is to contribute to an integrated avian population monitoring system for selected North American land-birds. The indices and estimates obtained:

- determine annual changes and, ultimately, longer-term trends in population and demographic parameters of target species in each region;
- relate these trends to readily-measured environmental co-variates such as climatic factors, habitat type, and management practice; and
- refine current population models and develop new ones.

Methods

The MAPS Program consists of standardized constant-effort mist-netting during the breeding season. The breeding season is considered to extend from May through mid-August and is divided into 10 ten-day periods. Mist-netting commences the first ten-day period during which most breeding adults of the target species have established territories and migrant individuals of these species are no longer passing through the area. Ten 12-m long x 2.6-m high x 30-mm mesh mist-nets were operated for 6 hours from sunrise on one day in each of the ten-day periods. The operation of the mist-nets must continue for a minimum of three periods in the adult "super-period" and two periods in the young "super-period". At IBS, MAPS initiates during period 4 (31 May - 9 June) and coverage entails the last 7 of the 10 ten-day periods. In recent years period 10 has been operated during fall migration monitoring. During 2003 period 9 was also operated during fall migration monitoring.

An additional requirement is to record the type and distribution of vegetation present at the MAPS station. Because changes in the vegetation at a station can cause changes in breeding populations and demographic parameters, the habitat is assessed every 5 years. CBBS conducted an initial habitat assessment in 2001 and replicates in 2007 and 2012.

Schedule and Coverage

The MAPS program at IBS was cancelled after period 1 due to catastrophic flooding of IBS in June. The City of Calgary did not allow access to the banding area post-flooding due to safety concerns.

Results

New bandings at IBS through 2013 are presented in Figure 4 and Table 3.

Discussion

Lack of regeneration of balsam poplar is an ongoing issue at IBS. The heavy flooding that occurred during 2005 stimulated some poplar seedling recruitment and may have helped to alleviate this problem. The habitat assessment in 2012 identified no reduction in *Populus balsamifera* regeneration since 2007 and perhaps an increase in the percent cover of this species in Habitat B which is the regeneration east of the regional pathway.

An analysis of IBS MAPS results through 2008 was undertaken in 2009 (Smith et al. 2009 – see 2009 and 2010 ATRs and website). The objective of the analysis was to detect and compare trends in populations, productivity and survival of target species.



**Northern Saw-whet Owl
(Photo by Shonna Mcleod)**

NORTHERN SAW-WHET OWL MONITORING NEAR BRAGG CREEK

Background

During 2003 a site in the foothills southwest of Calgary near Bragg Creek was identified as having potential for monitoring migrating Northern Saw-whet Owls (Figure 1). After disappointing results at Inglewood Bird Sanctuary in 2000, the CBBS was pleased to have another opportunity to initiate a Northern Saw-whet Owl migration monitoring program. Pilot monitoring was undertaken in 2003 from 7 October to 18 November with encouraging results. A full monitoring program was implemented in 2004 and has continued in each year since excluding 2009.

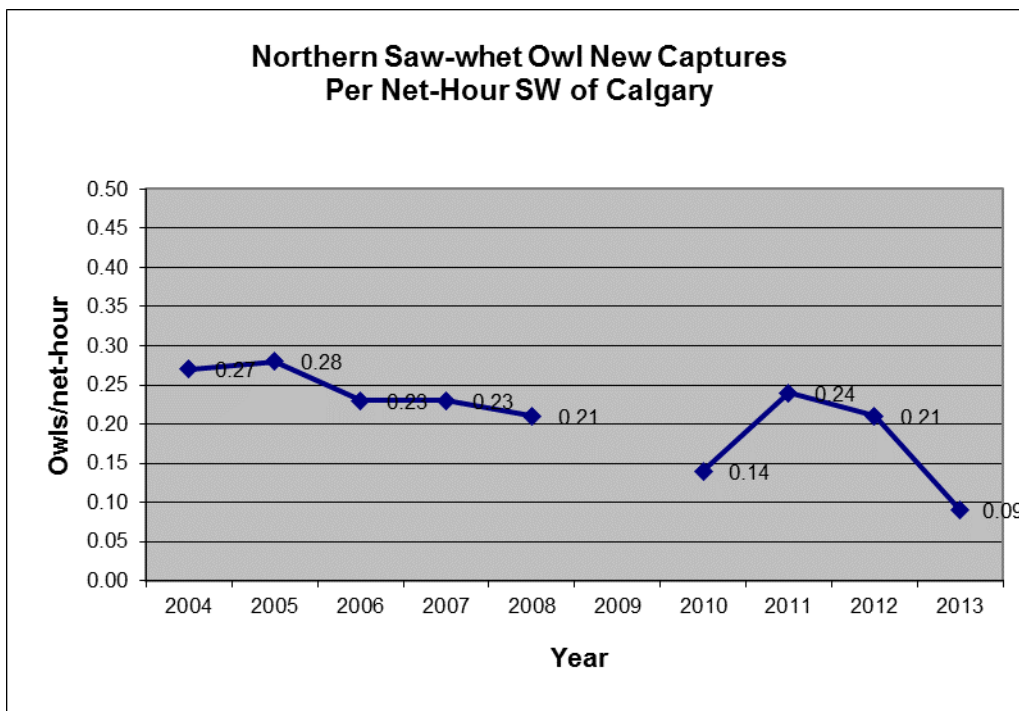
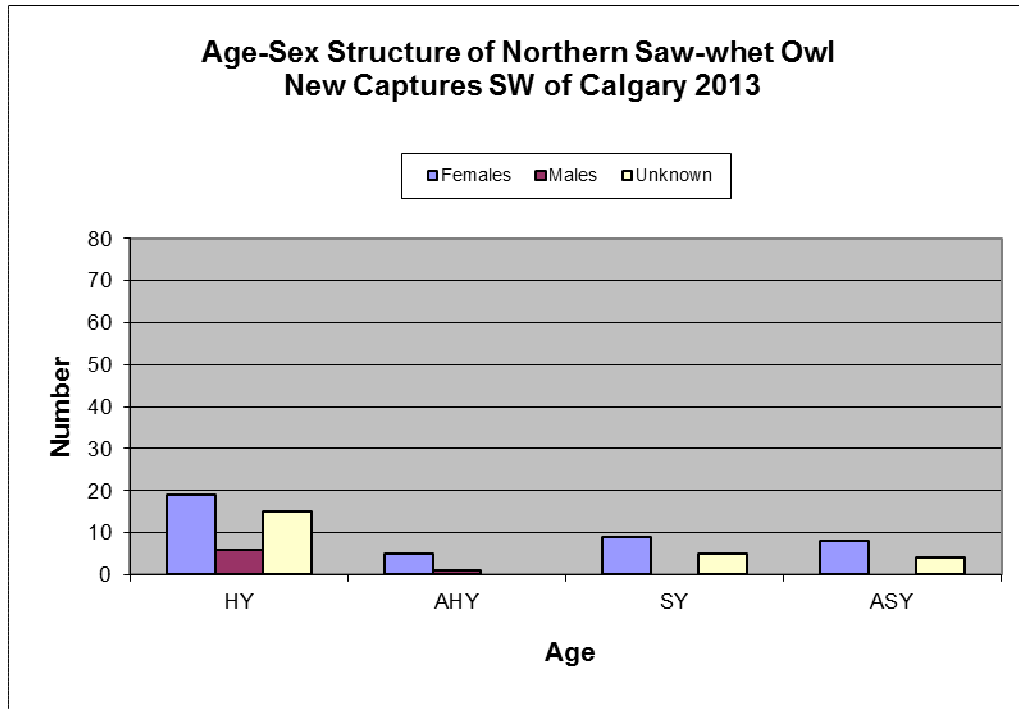
Methods

Monitoring began 15 September and continued through 31 October when most Northern Saw-whet Owl movement occurs at our site. A continuous recording of Northern Saw-whet Owl calls was played at 80% volume in a portable CD “boom box” from the center of an array (double H) of five 12-m long x 2.6-m high x 60-mm mesh mist-nets. The array was placed beneath a thick canopy of mature spruce trees. The area has been subject to cattle grazing and the understory and tree branches as high as a cow can rub are absent. Call playback commenced approximately 0.5-hrs after sunset and continued for 4-hrs, weather and other factors permitting. Nets were checked at least every 0.75-hrs by a Bander-in-Charge (BIC) and one or more volunteers. Sex, age and morphometric data were collected on all owls captured. Basic weather data (wind direction and speed, sky conditions and temperature) were noted at start and finish each evening.

Results

A total of 73 Northern Saw-whet Owls were captured and banded during 830 luring hours on 43 of 47 possible evenings between 15 September and 31 October (Figure 5). Of the 4 evenings when monitoring did not occur all were due to weather. Strongest movement of owls occurred from 8-21 October. No owls were captured after 25 October.

Of the 72 new Northern Saw-whet Owl bandings, HY, AHY, SY and ASY age birds comprised 56%, 8%, 19% and 17%, respectively (see histogram below). Females comprised 57% and males 10%, while 33% could not be sexed with confidence. The number of Northern Saw-whet Owls per net-hour since inception is **0.27, 0.28, 0.23, 0.23, 0.21, n.d., 0.14, 0.24, 0.21 and 0.09** in 2004, 2005, 2006, 2007, 2008, 2010, 2011, 2012 and 2013 respectively (see histogram below). Monitoring did not occur in 2009. The low per net-hour in 2013 reflects a poor breeding season as evidenced by the low numbers of HY birds encountered. 2010 was a poor breeding season as well – the number of HY birds encountered per net-hr in that year was the second lowest after 2013.



Discussion

This site has proven to be a good location for monitoring migration of Northern Saw-whet Owls. Monitoring sites for this species are well established in eastern North America but sparse in western North America (Figure 6). CBBS intends to continue a full monitoring program at this location and strive for full coverage during the monitoring period.

PROGRAMS AT CYPRESS HILLS INTERPROVINCIAL PARK

Cypress Hills Interprovincial Park is strategically located to complement the array of migration monitoring member stations across Canada. During 2010 – 2012 and again in 2013 CBBS supported several bird monitoring programs within CHIP.

Migration Monitoring

Spring

Spring Migration at CHIP occurred from 15 May to 10 June at the Elkwater Lake location (Figure 8a) for 20 mornings of coverage (74%) with 5 mornings lost due to inclement weather and 2 mornings lost due to lack of a BIC (Table 4a, Figure 8a). Net-hours were significantly reduced (≤ 66) on another 11 days. Up to 12 nets open each day contributed a total of 1221 net hours and 405 new birds banded of 48 species and forms (Tables 4a, 5a, Appendix 3a). Two days experienced at least 40 new bandings, 6 days experienced at least 30 new bandings and 10 days experienced at least 20 new bandings. The top 5 most frequently banded species were Yellow Warbler (43), Myrtle Warbler (37), Red-winged Blackbird (36), Blackpoll Warbler (31) and Least Flycatcher (28).

Fall

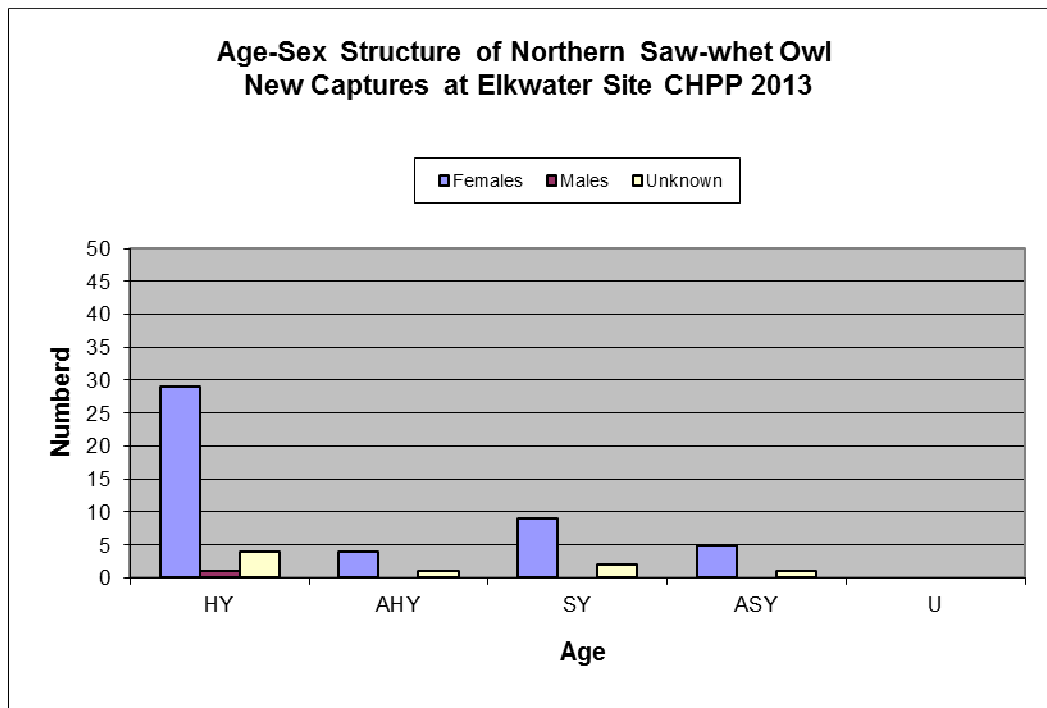
Fall migration monitoring began on 2 August and continued through 10 October at the Elkwater Lake site (Figure 8b) for 57 (81%) days of coverage with 1 day lost due to lack of a qualified bander and 12 days lost due to inclement weather (Table 4b, Figure 8b). Wind is an issue at this site and contributed to 26 of the 57 days with significantly reduced (≤ 66) net-hours. Up to 12 nets open each day resulted in 1122 birds of 67 species/forms being banded in 3351 net-hrs (Figure 8b Tables 4b, 5b Appendix 3b). Brown Creeper was a new species and 6 were banded. Approximately 55%, 38% and 7% of new bandings occurred in August, September and October respectively. The top 5 most frequently banded species were Yellow Warbler (171), Least Flycatcher (137), Myrtle Warbler (86), Traill's Flycatcher (62), and White-crowned Sparrow (59).

Monitoring Avian Productivity and Survivorship (MAPS)

Three locations along the north slope of the Cypress Hills were selected in 2010 for MAPS with 7 nets being used at each site (Figure 7). The Rodeo Grounds and Old Baldy location are situated at approximately 1200-m. The Spruce Coulee site is at 1300-m with a similar habitat to Old Baldy but is more mesic. A total of 409 new bands were placed on birds of 38 species. Old Baldy was the most productive site with 154 birds banded of 28 species, followed closely by Spruce Coulee with 151 birds banded of 27 species while Rodeo Grounds produced 104 birds banded of 28 species.

Northern Saw-whet Owl Migration Monitoring

Northern Saw-whet Owl Monitoring was undertaken from 25 September through 28 October at the Elkwater site using call-playback. A total of 56 Northern Saw-whet Owls was captured in four 60-mm and twelve 30-mm nets in a total of 1496 net-hours (Figure 9). Percentage of HYs, AHYs, SYs and ASYs totaled 61, 9, 20, and 11 respectively. Percentage of Fs, Ms, and Us totaled 84, 14, and 2 respectively.



CALL PLAYBACK STUDY AT MINATITLAN, MEXICO

Tierra de Aves A.C., an organization in Mexico dedicated to avian research, had been undertaking migration monitoring at a site in Veracruz State since 2010. The directors of Tierra de Aves A.C. seemed eager to collaborate with other bird banders to improve the extent and effectiveness of bird monitoring in southern Mexico. In November 2012, two members of the CBBS Executive visited Mexico to meet with the Tierra de Aves A.C. researchers to discuss the potential for specific collaborative efforts, and to perform reconnaissance for a possible program for 2013. The reconnaissance was successful and at a General Meeting held December 11, 2012 the CBBS membership approved, subject to AGLC approval, initiation of a migration monitoring pilot program in southern Mexico for 2013.

Although the primary objective of CBBS programs in Central America is to monitor Neotropical migrants and link them to their breeding areas, including Alberta, it was decided that we would support Tierra de Aves A.C in evaluating the effectiveness of their call playback protocol during spring migration. After completion of the 2013 program it became clear that working independently but with support Tierra de Aves A.C. in the Veracruz area of Mexico was not feasible. No further research by CBBS in Mexico was pursued post 2013. However, our work during 2013 did result in a contribution to *North American Bird Bander*, a peer-reviewed ornithological journal (see References below and CBBS website).

Methods

The established Tierra de Aves A.C. banding site (MIGRA2) where call playback was being employed to increase captures was located near Minatitlan, Vera Cruz, Mexico. We established a control site (CONTA3) 2.5-km south of MIGRA2. Tierra de Aves A.C. operated MIGRA2 and CBBS operated CONTA3. Call playback was used daily at MIGRA2 while CONTA3 employed call playback on alternate days. Standard 30-mm mist-nets were opened for 4 hours each morning beginning ½ hour before sunrise resulting in 52 net-hrs per day at MIGRA2 and 40 and ~25 net-hrs on non-call playback and call playback days respectively at CONTA3. Capture rates were standardized per 100 net-hrs.

Results

Between 10 Apr and 10 May 2013, 2,735 birds representing 71 species were banded at CONTA3 and 7,328 birds representing 89 species were banded at MIGRA2 (figure 10, Appendices 4a, 4b). Swainson's Thrush accounted for approximately 50% of all birds banded. At CONTA3, 78% of all birds were banded on the 14 days (45%) with the audio lure playing. On average, the capture rate at CONTA3 was seven times higher on days when the audio lure was playing than on silent days, whereas at MIGRA2 where the audio lure was broadcast every day, the difference between the two sets of dates was negligible (<4%). Overall, the 13 most frequently banded species at CONTA3 (each with at least 25 individuals) comprised 88% of the total; the same species accounted for 85% of birds banded at MIGRA2.

Discussion

We found that the use of an audio lure had a significant effect on the overall capture rate of spring migrant passerines, which, although variable among species, on average was seven-fold higher on audio lure days than on days with only passive mist netting. Species not included on the audio lure also responded to it. Use of audio lures may be particularly valuable where higher capture rates can increase the power of trend estimation.



Aftermath of June 2013 Catastrophic Flooding

SIGNIFICANT RE-ENCOUNTERS

All year-to-year recaptures of birds at CBBS study sites and Neotropical Migrants in Costa Rica are presented on the CBBS website. No recaptures of migrants suggesting stopover site fidelity were recorded. The choice of which recaptures to include below is somewhat arbitrary, although species for which there are many recaptures over the years (e.g. Yellow Warbler, House Wren) are not included unless inferred age is > 5 years. Other species that are recaptured infrequently and for which longevity data are lacking may be included even if inferred age is five years or less

Hairy Woodpecker 0922-89596 Banded as ASY-M at Inglewood Bird Sanctuary in 2009 and recaptured there in 2013. At least 6-years old

Yellow-rumped Warbler 2630-65999 Banded as HY-F at Elkwater Station in Cypress Hills Interprovincial Park on 28 September 2012. Killed by cat 1-km W of Egan, Acadia Parish, Louisiana on 12 April 2013. ~2630-km SSE (151°).



Aftermath of June 2013 Catastrophic Flooding

TREND ANALYSES

Trend analysis for spring 2013 is discussed below. Fall migration monitoring at Inglewood Bird Sanctuary was cancelled due to catastrophic flooding. Please refer to the 2012 ATR for trend analyses through 2012.

Table 7 and Appendix 5 provide the results of trend analysis on species monitored at Inglewood Bird Sanctuary through 2013. In Appendix 5 the y-axis shows the annual abundance index estimate in captures per day. This only pertains to the 95%-migration window, so it should only be used to compare abundances between species within their respective migration windows. To compare overall abundances between species one should refer to the season totals.

For species with more than 100 captures (common species) spring trends up to 2013 tend to be more negative than the ones up to 2012. Spring 2013 had a relatively low number of captures for almost all analysed species. One result of this is that the overall trend estimate for Cedar Waxwing is no longer significantly positive. An exception to the general downwards adjustment is Tree Swallow for which spring 2013 was a good year, which results in a more positive trend estimate.

Considering only the most recent 10 years, American Robin and White-crowned Sparrow are now significantly decreasing (White-crowned Sparrow was already close for 2003-2012). Trends that were close to being significantly positive for 2003-2012 (Traill's Flycatcher, Chipping Sparrow and Clay-coloured Sparrow) were not confirmed by 2013 captures and now have a more neutral trend estimate.

Although the trends with $P < 0.05$ and even < 0.10 are likely real, the cause behind them is open to interpretation. Comparison to other CMMN stations and interpretation in the context of other data sets will indicate whether significant trends are due to changes in regional populations or to other confounding variables such as weather or local habitat change.

Trend analysis is based on total captures from 1995-2012 for fall migration and 2002-2012 for spring migration and was performed by contract biostatistician Mathias Fenton. In addition to trend analyses since inception Mathias has calculated trends over the last 10 years a time period frequently used by conservation regulators and managers.

95%-migration windows were determined for each season (spring/fall) based on all new capture records for the respective species. A 95%-migration window describes the period in a specific season within which 95% of all individuals of a species were caught historically. Trend analyses were restricted to these windows. This technique reduces the amount of days with zero captures and avoids disproportional impact of unusually early or late captures on the analyses.

Daily captures were first standardized with respect to daily net hours to account for variation in net opening times. Net hour totals only included focal nets, which were defined as nets with at least one historic capture. After standardization the captures were normalized to represent the expected number of captures for each day under the condition that all focal nets were open for

exactly six hours. For days where all focal nets remained closed, no capture data was provided to the subsequent model to reduce false negatives.

Normalized captures from all years were used in a single hierarchical model that modelled the daily captures as a function of year, day, and day². The model was implemented in R using the library for Integrated Nested Laplace Approximation (INLA). The observation error distribution was specified as ‘negative binomial’ and auto-regressive process error terms were included for day and year. To obtain mean estimates for the trend associated with year as well as for the average daily abundance within a season (annual abundance index), the posterior probability distributions produced by the model were sampled 10,000 times. Confidence limits and significance levels for each estimate were calculated based on the distribution of samples. Because the model provides linear trend estimates for the logarithm of captures, percent population changes per year were obtained through back-transformation.



Aftermath of June 2013 Catastrophic Flooding

PERSONNEL

Volunteers

Volunteer participation in CBBS projects continues to be the key to the success of research efforts. Banding at IBS is done in an area of the sanctuary designated "reserve" and off-limits to the public. A condition of operation is that a limited number of people are in the reserve at one time, to minimize impact. Thus, on any given day, a Bander-in-Charge and from 1-3 volunteers carry out the banding. CBBS projects not based in IBS are not subject to this restriction. All participants in CBBS projects at IBS are required to complete the IBS (City) orientation each year as well as the CBBS orientation each year before participating in any CBBS project including those at IBS.

Without donated time by members the success of CBBS projects would not have been possible. Sincere appreciation is extended to the volunteers listed in Table 8 who contributed approximately 8 hours in the field on each day indicated (113 person-days or 904 hours).

Banders-in-Charge (BIC)

CBBS has no salaried staff. However, a per diem is available to all Banders-in-Charge during most CBBS projects (a contract bander and assistant were hired to carry out pilot migration monitoring at CHIP). This arrangement provides an incentive for qualified individuals to assume the BIC duties and imposes accountability on the BIC to complete field data sheets and input data to computer files. No per diems are paid until all duties of the BIC, including data entry, have been fully completed. Banders-in-Charge and assistants contributed approximately 8 hours in the field on each day indicated (80 person-days or 640 hours).



Barred Owl
(Photo by Shonna McLeod)

MORTALITIES AND INJURIES

The goal of the CBBS is to achieve as low a rate of casualties as possible during all banding projects. Casualties refer to all injuries, minor and serious, including fatalities. Our goal, of course, is to come as close to zero as possible.

Table 8 presents all casualties during 2013 for all programs, including IBS and Northern Saw-whet Owl but without CHIP and Minatitlan. Note that the number captured, by species, is only given where that species experienced injury or mortality. The number of mortalities during CBBS banding projects was 0.00% and the injury rate was 1.39% (Figure 11).

Increases through 1997 were in part due to an increased awareness of banding personnel to record even slight abrasions. In other words, the data pre-1998 likely underestimates the rate of injury. CBBS BICs and volunteers take each mortality and injury very seriously and continuously endeavor to identify the potential for reduction or avoidance of similar occurrences in the future.



Aftermath of June 2013 Catastrophic Flooding

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See website

www.calgarybirdbandingsociety.org

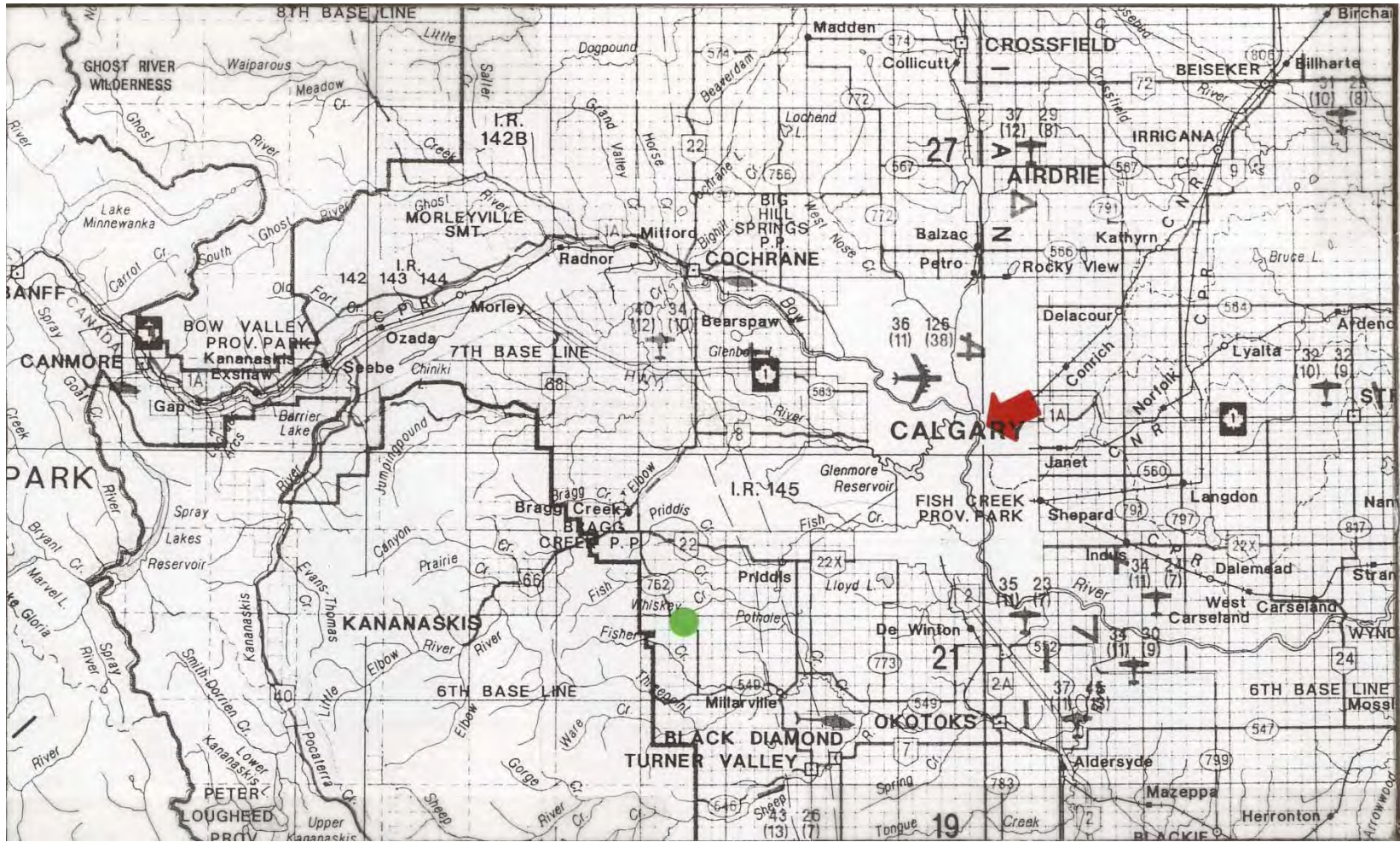


Figure 1: 1:250,000 NTS topographic map segment showing regional context of Inglewood Bird Sanctuary (red arrow) and the CBS Northern Saw-whet Owl migration monitoring site (green dot)

Figure 10
New Bandings at Minatitlan, Mexico 2013

MIGRA2 CONTA3 CONTA3 norm norm - normalized to 52 net-hrs

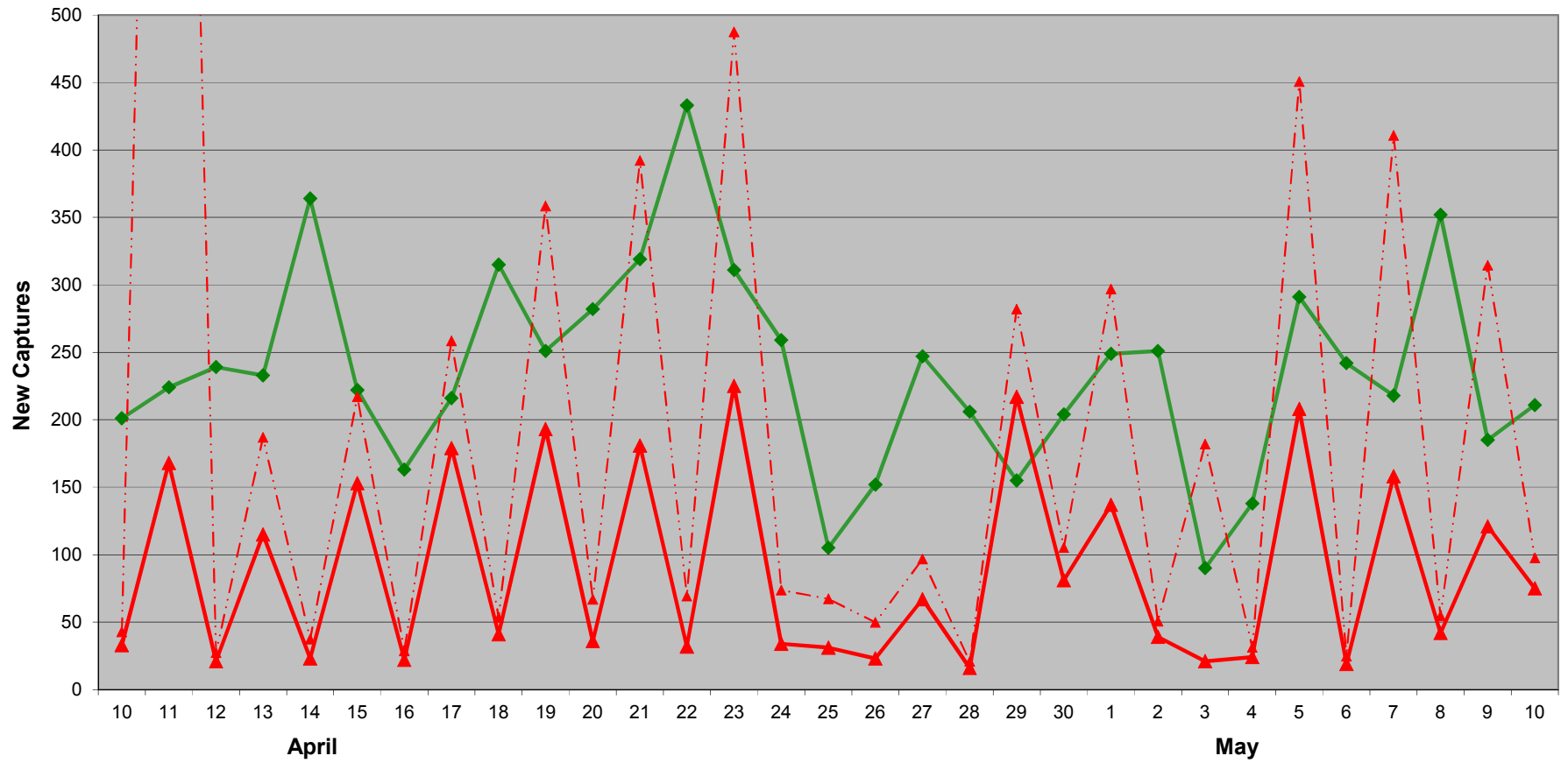


Figure 11. Casualty Rates for all CBBS Projects Excluding CHIP and Minatitlan

—■— Injuries —▲— Mortalities

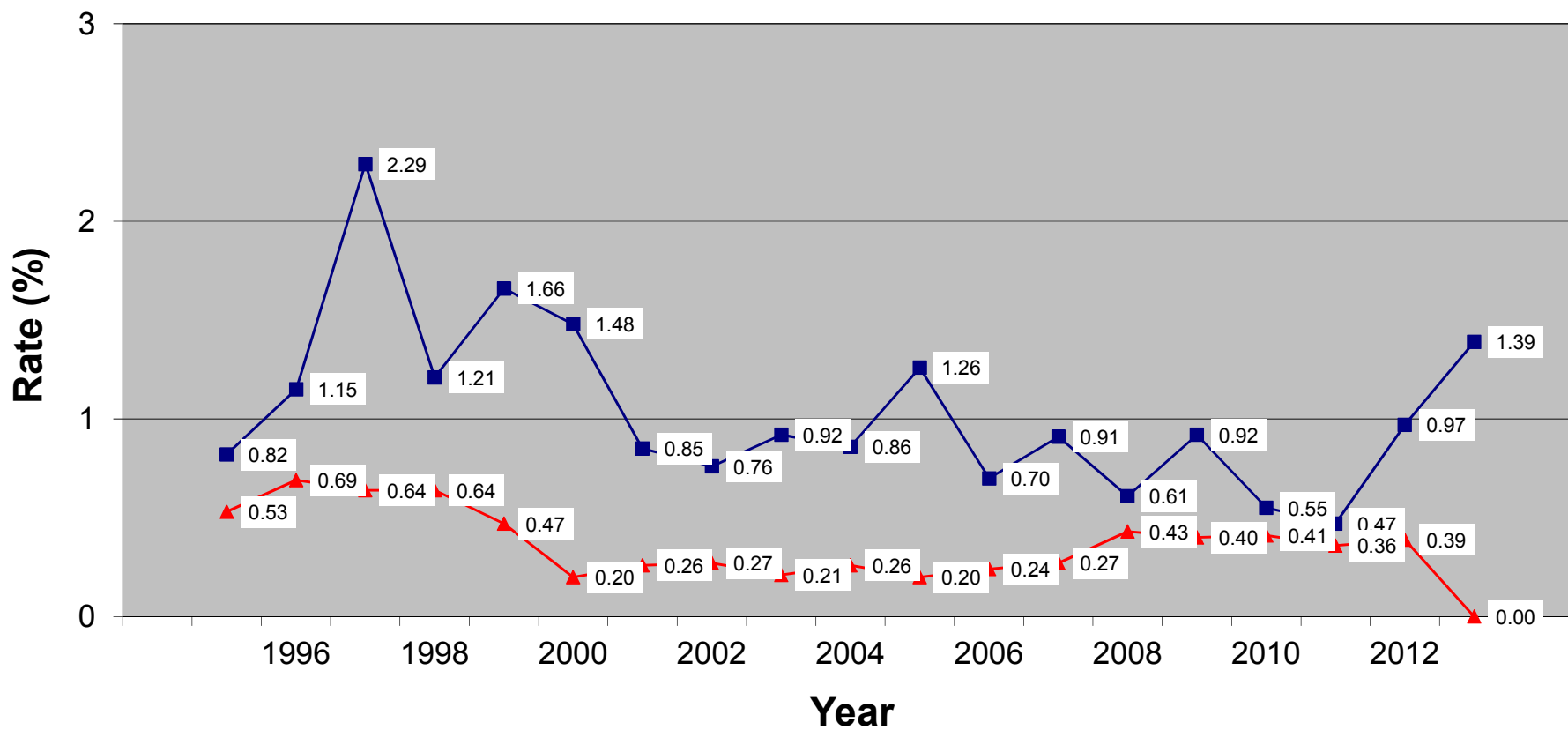




Figure 2. Location of net locations (see legend) and banding area (X) in the southern reserve area of Inglewood Bird Sanctuary.

Figure 3. New bandings at Inglewood Bird Sanctuary - Spring 2013

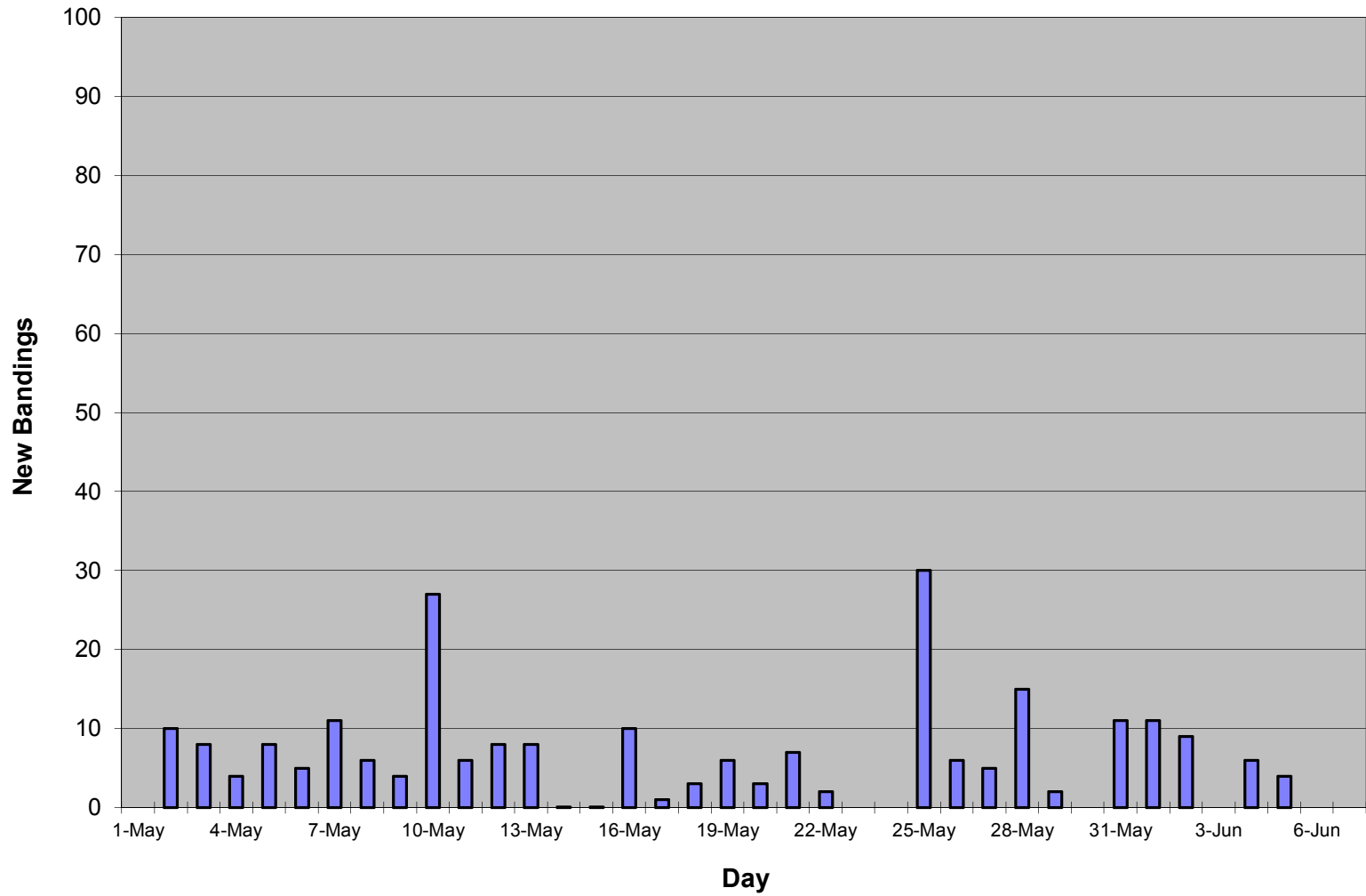


Figure 4. MAPS at Inglewood Bird Sanctuary

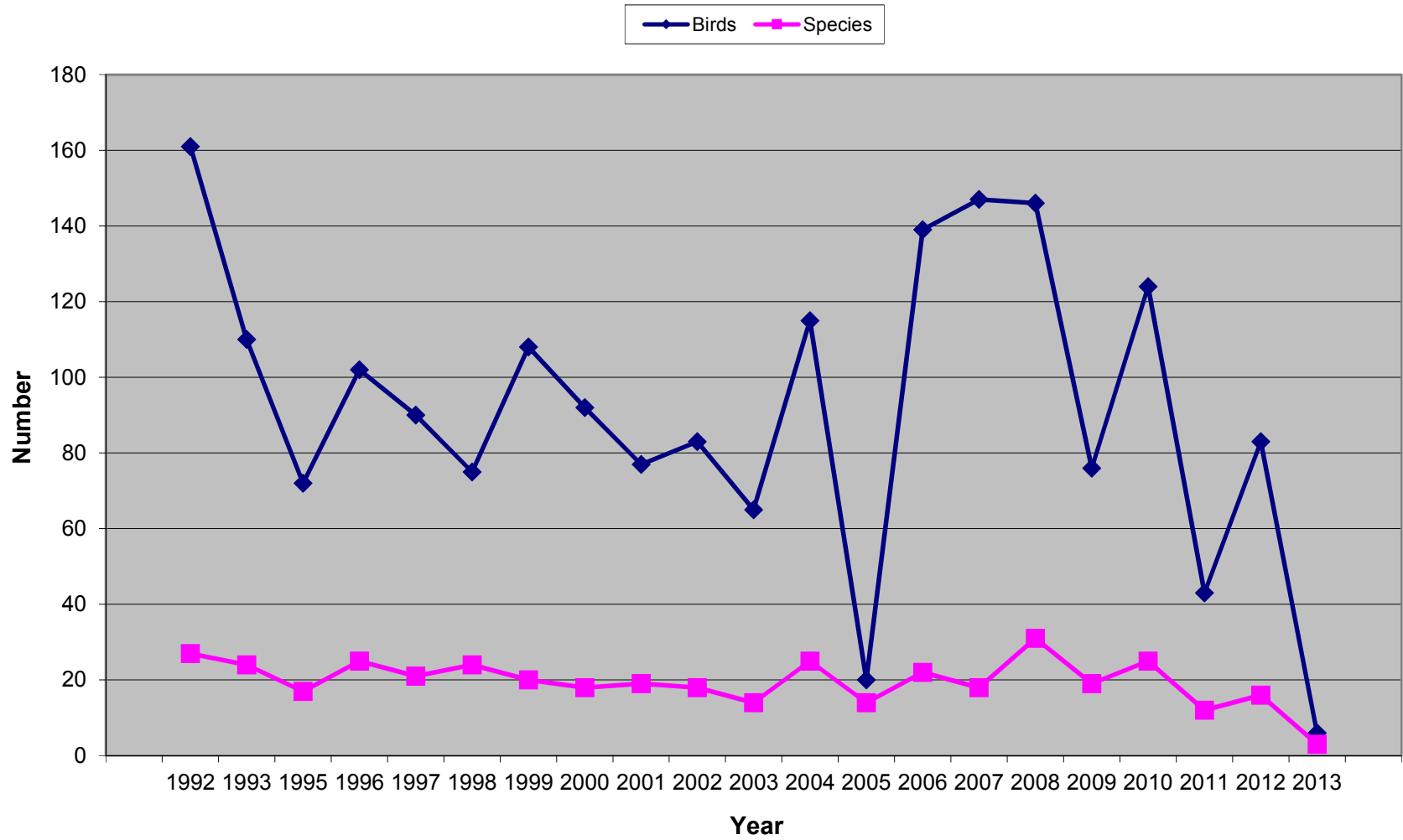
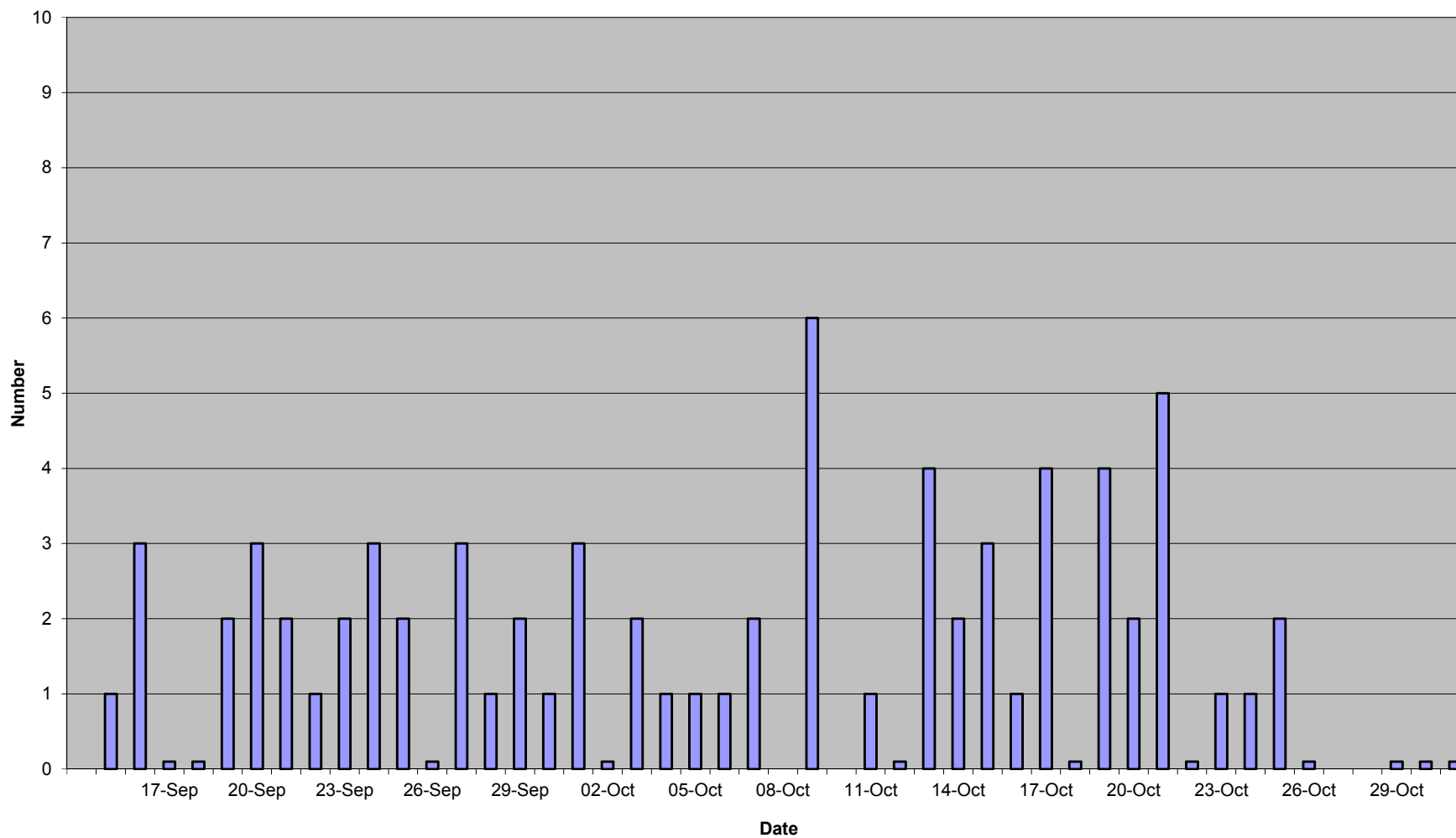


Figure 5. Northern Saw-whet Owl New Captures 2013
(new bands=72, year-to-year recaptures=0, foreign recapture=0)
Number = 0.1 indicates nets up but no owls captured



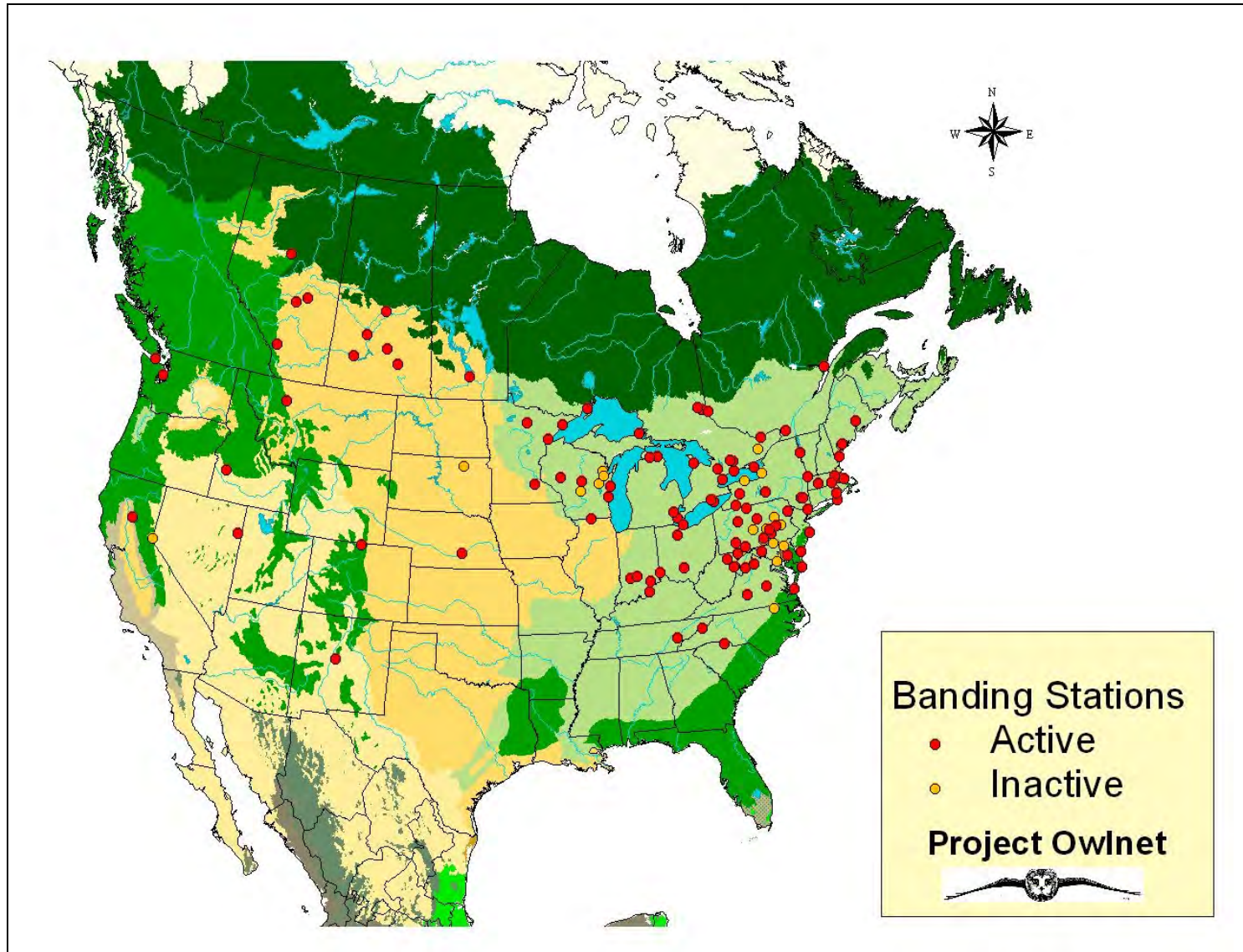


Figure 6. Northern Saw-whet Owl Migration Monitoring Stations Across North America

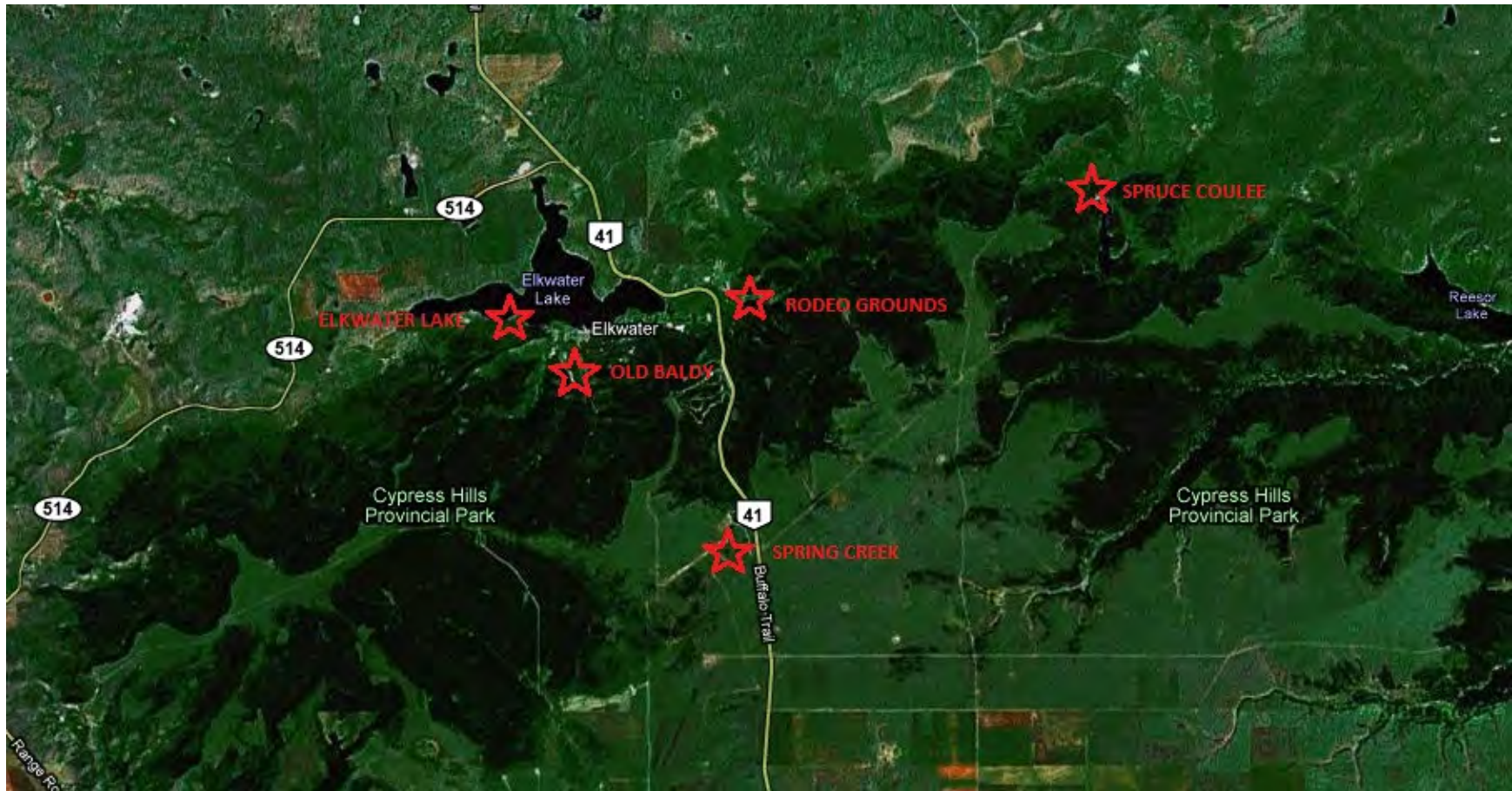


Figure 7. Cypress Hills Interprovincial Park Monitoring Locations

Figure 8a. New bandings at Cypress Hills InterProvincial Park - Spring 2013

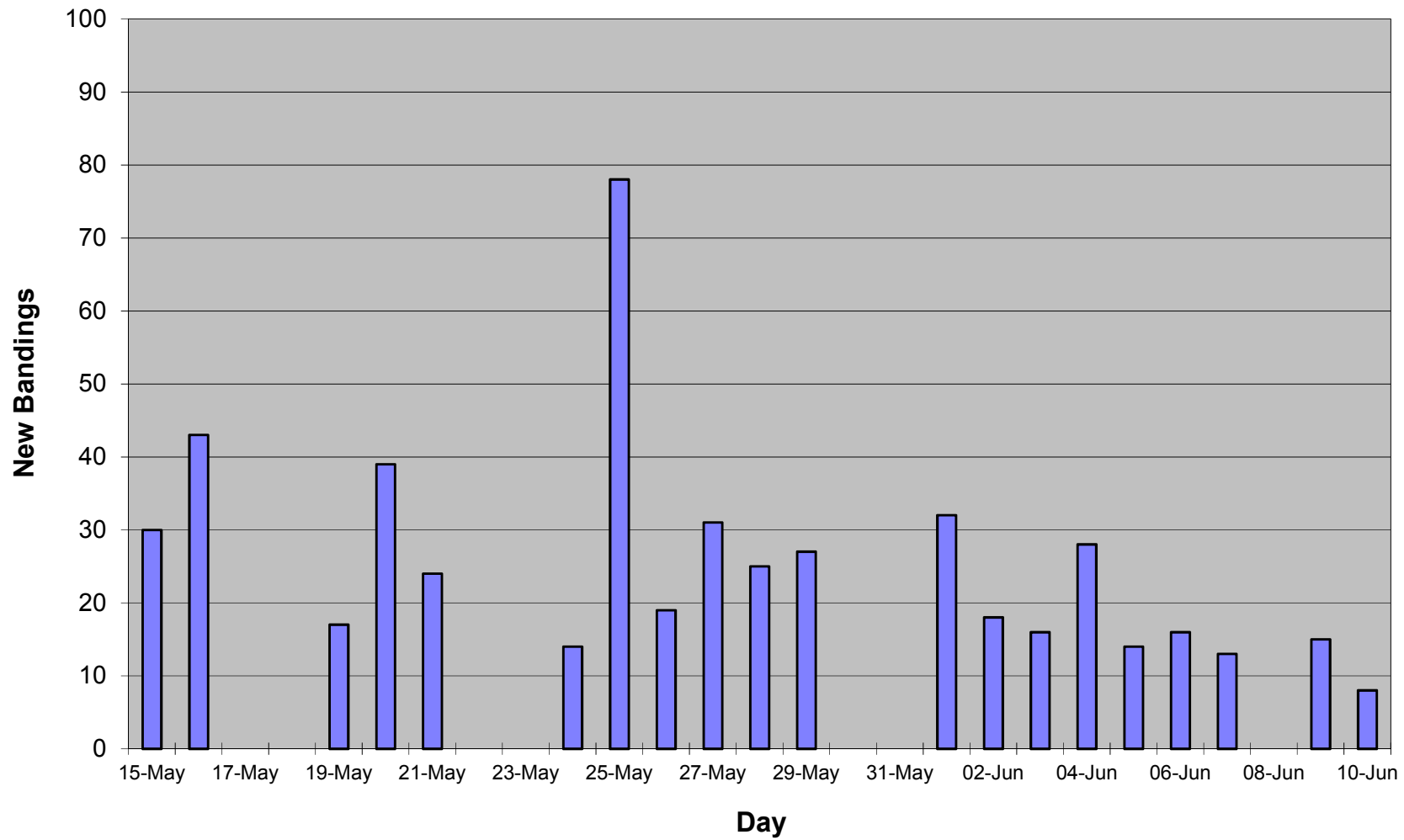
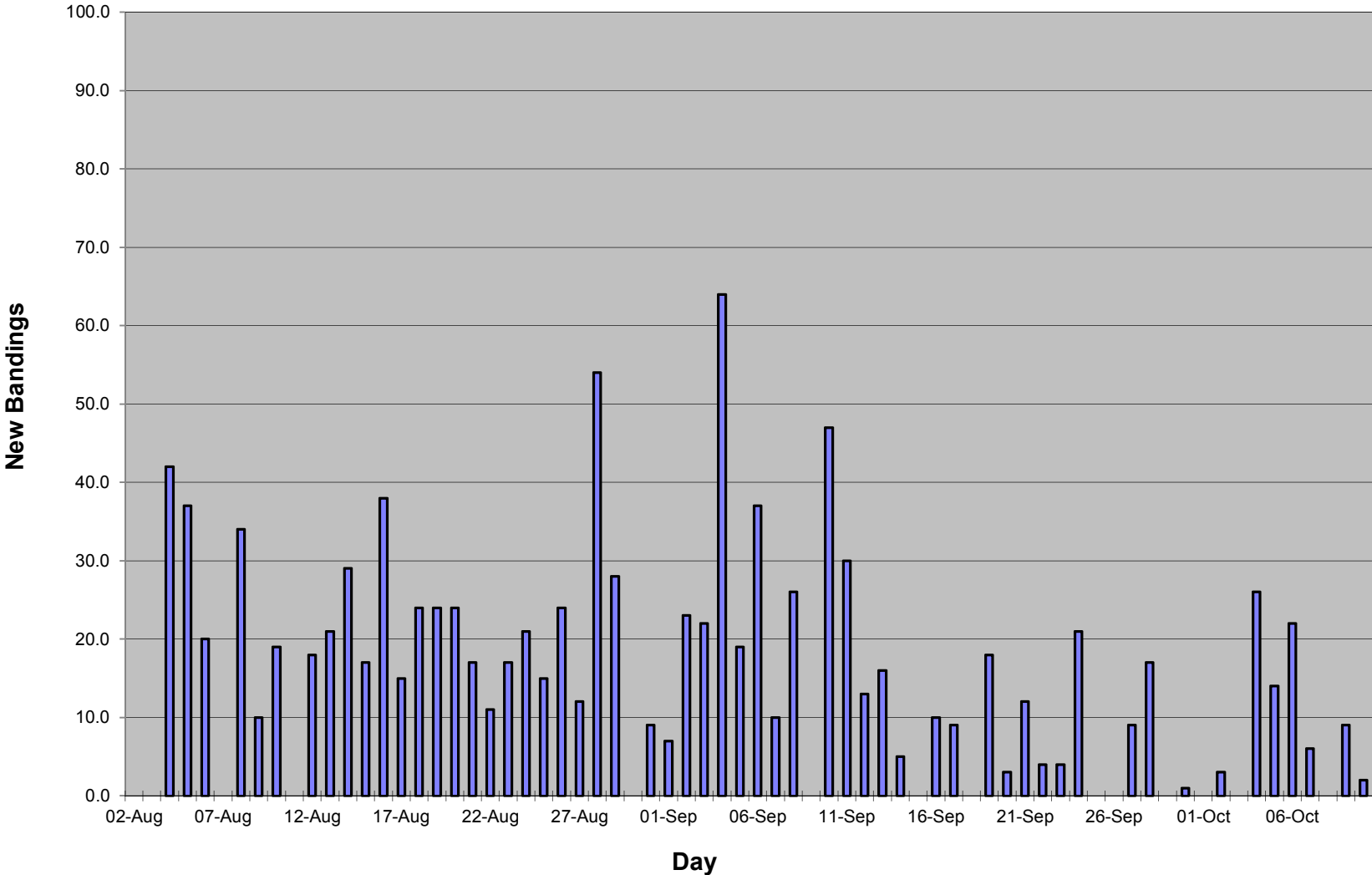


Figure 8b. New Bandings at Cypress Hills Interprovincial Park- Fall 2013



**Figure 9. Northern Saw-whet Owl New Captures at Elkwater Site
Cypress Hills InterProvincial Park 2013
(new bands=56 same year recaptures=4)
Number = 0.1 indicates nets up but no owls captured**

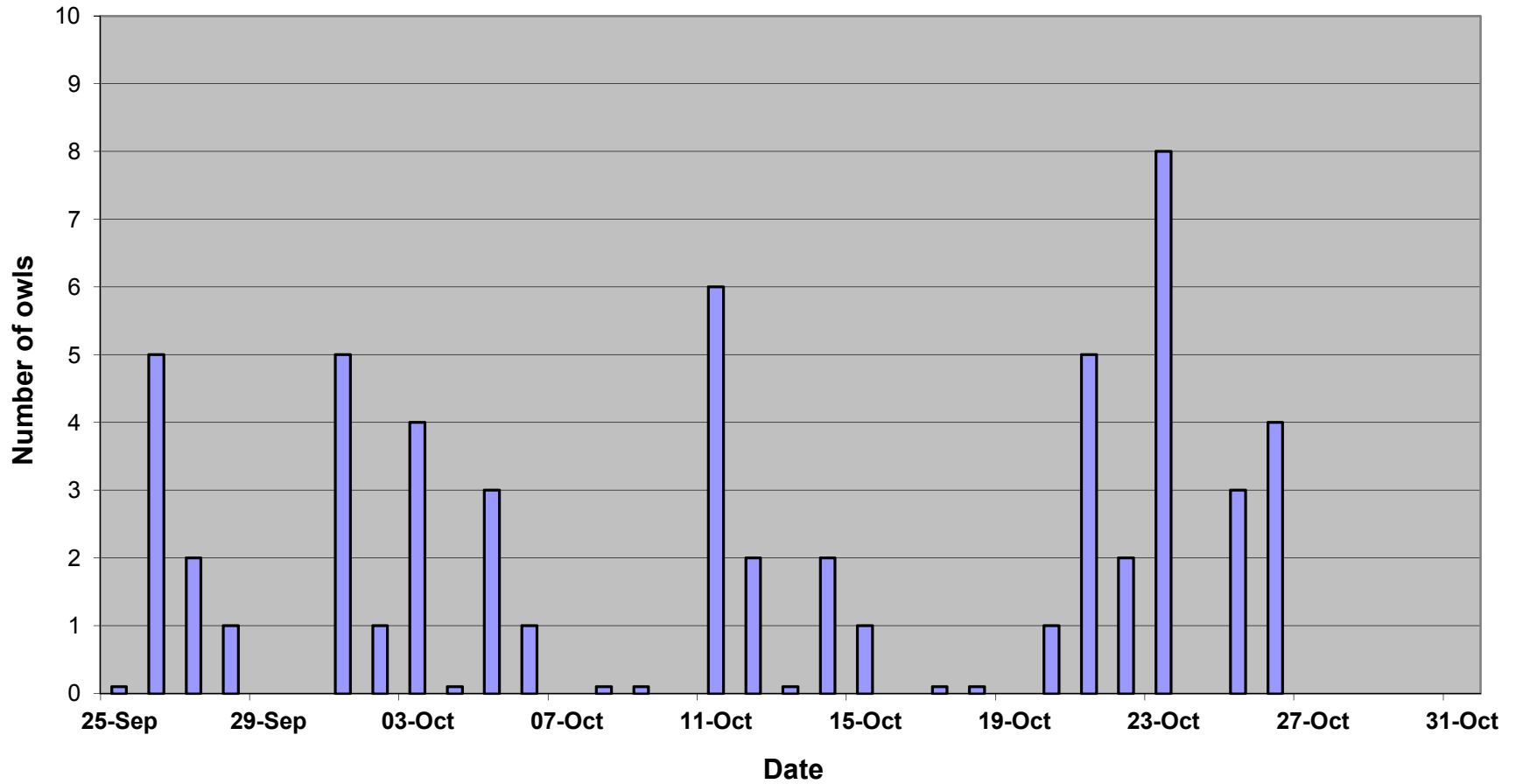


Table 1. Coverage and Capture Rates During 2013 Spring MM at IBS

Date	Net-hours	Captures				Total	Captures/100 Net-hours
		New Bandings	Recaptures	Escapes/unbanded	Mortalities		
01-May		cold					
02-May	72.4	10	1	2		13	18.0
03-May	72.1	8		4		12	16.6
04-May	72.1	4	3			7	9.7
05-May	73.4	8	3			11	15.0
06-May	72.0	5	3	3		11	15.3
07-May	68.6	11	3	3		17	24.8
08-May	72.8	6	1	4		11	15.1
09-May	72.1	4	3	3		10	13.9
10-May	75.1	27	3	2		32	42.6
11-May	72.4	6				6	8.3
12-May	72.5	8	2			10	13.8
13-May	72.7	8	1	2		11	15.1
14-May	68.4	0				0	0.0
15-May	72.8	0				0	0.0
16-May	72.3	10	2			12	16.6
17-May	72.3	1				1	1.4
18-May	72.8	3	2			5	6.9
19-May	72.3	6	1			7	9.7
20-May	73.0	3	2	1		6	8.2
21-May	69.9	7	1			8	11.4
22-May	37.2	2	1			3	8.1
23-May		rain				0	
24-May		rain				0	
25-May	35.0	30	3			33	94.3
26-May	60.0	6	3			9	15.0
27-May	60.7	5	2	1		8	13.2
28-May	69.4	15	2	2		19	27.4
29-May	28.4	2	1			3	10.6
30-May		rain				0	
31-May	60.6	11	8			19	31.4
01-Jun	72.9	11	7	1		19	26.1
02-Jun	60.0	9	3			12	20.0
03-Jun		rain				0	
04-Jun	72.8	6	5			11	15.1
05-Jun	59.5	4	3			7	11.8
06-Jun		no volunteer				0	
Total	2059	236	69	28	0	333	16.2

< 72 net-hrs

**TABLE 10. CALGARY BIRD BANDING SOCIETY
2013 MEMBERSHIP LIST**

Achuff, Peter	Holmes, Greg
Alderman, Lynda	Hornbeck, Garry
Attia, Yousif	Hornsby, Debra
Bartok, Nick	Hunter, Mary Jane
Bazin, Yvonne	Jensen, Krista
Bennett, Christine	Kaiser, Mathias
Brennan, Liz	Kissinger, Bev
Bugajski, Aleksandra	Klassen, Henry
Chen, Daniel	Knox, Carol
Chu, Byron	Konopnicki, Sue
Collister, Doug	Koszler, Bianca
Cooper, Bob	Lai, Priscilla
Cousins, David	Lane, Stephen*
Dann, Erin	Lapka, Stephanie
Darling, Amy	Laverty, Jolene
Darling, Julie	Maidment, Susanne
Davis, Jim	Mancuso, Kristen
Davis, Nancy	McDonald, Christine
Donohue, Katie	McLeod, Shonna*
Donohue, Charlene	Meyer, Greg*
Donohue, Jim	Mitchell, Pat*
Donohue, Marie	Moores, Amy
Drut, Marty	Mulligan, Mike
Dubrovna, Alexandra	Musto, David
Duncan, Paula	O'Connell, Kristin
Ealey, Dave	Oberle, Kathleen
Ebel, Rainer	Patey Ledrew, Susan
Edgar, Marta	Peterson, El
Fai, Mackenzie	Potter, Jane
Flynn, Lenora	Potter, Michael
Flynn, Richard	Prins, Colton
Foster, Ken	Raffan, Jennifer
Gahbauer, Marcel	Reimer, Jennifer
Godwin-Sheppard, Christine	Rowlands, Jane
Gratz, Lynn	Russum, Dave
Gregg, Jim	Senger, Laura
Hachey, Carole	Shakibaei, Simon
Halladay, Diana	Shepherd, Brenda
Hawes, David	Sipkens, Jennifer
Herrero, Steve	Smiley, Gwen

Smith, Cyndi
Spitzer, Milt
Stauffer, Dick
Stiles, Don
Storms, Bob
Stroh, Jennifer
Sveen, Michael
Szabo, Tamas
Taylor, Bill*
Teruel-Diez, Andrea
Tietz, Gwen
Thorsteinsson, Tommy
Trakalo, Barry
Tumber, Tariman
Waight, Celina (Praymak)
Walker, Joan
Walker, Wayne
Weerstra, Anne
White, Krystle
Wieckowski, Donna
Wieckowski, Arthur
Wiggins, Linda
Wilson, Bruce
Wilson, Scott
Young, Colin

Board

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David Hawes
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Nick Bartok

* non-voting member

Table 2a. New Bandings at Inglewood Bird Sanctuary - Spring

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Start	01-May	01-May	01-May	01-May	01-May	01-May	01-May	01-May	01-May	01-May	01-May	02-May	
Finish	07-Jun	07-Jun	07-Jun	07-Jun	07-Jun	05-Jun	06-Jun	05-Jun	06-Jun	06-Jun	06-Jun	05-Jun	
# Days	27	31	31	31	33	32	30	33	32	32	36	31	
Total	597	230	440	370	311	528	589	700	573	500	394	236	5468
Species	46	36	41	41	41	44	46	45	41	47	38	39	80
Net-hours	1884	2138	2177	2248	2273	2113	1744	2374	2655	1988	2406	2059	26059
Bandings/100 Net-hours	31.7	10.8	20.2	16.5	13.7	25.0	33.8	29.5	21.6	25.2	16.4	11.5	21.0
Wilson's Snipe									1				1
Sharp-shinned Hawk			1	1	1						2	1	6
Cooper's Hawk				1			1						2
American Kestrel	1												1
Killdeer						1							1
Solitary Sandpiper	1						1	4					6
Spotted Sandpiper	2		2		1			2	2	1		2	12
Belted Kingfisher	1			1	3	1	3			1	2		12
Red-naped Sapsucker				1									1
Downy Woodpecker	5	1	1	4	1	4	1	3	4	2	4	5	35
Hairy Woodpecker							1	1				1	3
Northern Flicker	1		1	1			2	2		1	1	5	14
Olive-sided Flycatcher			1										1
Western Wood-Pewee	5	1	5		4	4	1	13	1	1			35
Alder Flycatcher	6	4	6	5	1	8	5	11	32	13	7	2	100
Willow Flycatcher				1		1		1	3	1			7
Least Flycatcher	16	6	6	7	5	16	20	25	13	11	7	3	135
Eastern Phoebe	1												1

Table 2a. New Bandings at Inglewood Bird Sanctuary - Spring

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Eastern Kingbird		3	1	2	3	2			1	1		1	14
Blue-headed Vireo	2	1											3
Warbling Vireo	4	2			1	3	3	4	5	1	1	1	25
Red-eyed Vireo		1									1		2
Black-billed Magpie			2	1		2	1		1		1	2	10
Tree Swallow	18	6	11	18	14	12	25	36	19	11	9	20	199
N Rough-winged Swallow	5		4	5	4	3	5	9	6	4		2	47
Bank Swallow		1	1	1			2						5
Barn Swallow	1												1
Black-capped Chickadee	3		2	2	1	2	2					2	14
Red-breasted Nuthatch	1		4	1		1		1					8
White-breasted Nuthatch	2				2	1			1	2	1	2	11
House Wren	13	15	8	13	10	18	28	18	21	10	5	15	174
Ruby-crowned Kinglet		2			3	1	3	1		4		1	15
Golden-crowned Kinglet					1								1
Gray-cheeked Thrush					1	2	1						4
Swainson's Thrush	54	38	5	25	46	44	44	54	80	60	43	18	511
Hermit Thrush	2	2	1	2		2		2	2	1	1		15
Veery		1					1						2
American Robin	28	35	32	4	37	38	26	40	27	34	35	14	350
Varied Thrush							1			1			2
Gray Catbird	13	13	11	1	15	9	19	13	6	8	14	12	134
Brown Thrasher					1			1	1				3
European Starling											1		1
Cedar Waxwing	3		12	8	8	1	4	3	59	1	25	3	127
Ovenbird			1	1	1		1			1	2		7

Table 2a. New Bandings at Inglewood Bird Sanctuary - Spring

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Northern Waterthrush	8	3	7	2	3	4	1	5	3	3	4	5	48
Black-and-white Warbler								1					1
Tennessee Warbler									3	1	2		6
Orange-crowned Warbler	19	6	12	18	1	18	24	11	10	21	6	4	150
Connecticut Warbler									1				1
MacGillivray's Warbler			1		1	1							3
Mourning Warbler										1			1
Common Yellowthroat	21	6	12	4	6	2	7	4	17	2	3	1	85
American Redstart	2	1			2	2	7	2	3	1	1		21
Magnolia Warbler						1							1
Yellow Warbler	33	2	13	2	21	23	10	23	44	12	14	7	204
Blackpoll Warbler	3	2	1	1			4	7	6	4	3		31
Palm Warbler										1	1	1	3
Yellow-rumped Warbler	249	1	136	43	45	61	231	210	32	203	81	47	1339
Townsend's Warbler													1
Wilson's Warbler	4	1	3		3	3	2	3	3		1	2	25
Spotted Towhee										1			1
Chipping Sparrow	3	6	1		6	108	14	30	26	4	52	3	253
Clay-colored Sparrow	15	9	1	1	6	63	16	45	57	15	17	19	264
Brewer's Sparrow								1					1
Savannah Sparrow	3		2	2	2		5	15	3	5	1	4	42
Fox Sparrow		1											1
Song Sparrow	3	1	8	7		2	1	3	6	2			39
Lincoln's Sparrow	19	31	37	42	16	20	32	62	49	36	26	15	385
White-throated Sparrow	5	2	7	7	2	2	13	7	6	1	4	1	57
White-crowned Sparrow	6	7	7	42	16	17	12	10	9	4	5	2	137

Table 2a. New Bandings at Inglewood Bird Sanctuary - Spring

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Dark-eyed Junco	1						1	2		1		2	7
Western Tanager	1		6	1		4	3	1	1	1			18
Rose-breasted Grosbeak	1					1	1	1	2	1			7
Lazuli Bunting				1				1					2
Red-winged Blackbird	3	5	1	8	5	4	1	1	1	3	6		38
Brewer's Blackbird									1				1
Common Grackle				1	2	3		1			2		9
Brown-headed Cowbird	5	3	7	8	4	8	2	4	5	4	1	2	53
Baltimore Oriole	4	7	6		6	3	1	6		1	2	1	37
American Goldfinch	1	4		2		2				2			11

New species in 2013

Table 2b. New Bandings at Inglewood Bird Sanctuary - Fall

Year	1992	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Start	03-Aug	18-Aug	01-Aug	31-Jul	31-Jul	25-Jul	26-Jul	01-Aug	25-Jul	27-Jul	28-Jul	28-Jul	29-Jul	28-Jul	28-Jul	28-Jul	28-Jul	28-Jul	28-Jul	28-Jul	28-Jul	all
Finish	22-Sep	09-Sep	30-Sep	12-Oct	15-Oct	02-Oct	08-Oct	30-Sep	06-Oct	06-Oct	06-Oct	06-Oct	06-Oct	04-Oct	07-Oct	07-Oct	07-Oct	07-Oct	07-Oct	07-Oct	07-Oct	years
# Days	26	20	54	70	65	61	68	55	73	68	69	71	62	62	66	67	66	68	66	64		1221
Total	841	466	1549	1121	1455	1898	1276	1262	1402	1466	1452	1872	1335	1625	1670	1679	1066	1949	860	871		27115
Species	52	48	61	59	64	64	66	68	64	66	60	73	67	64	68	69	58	60	62	56		107
Net-hours	934	1078	3456	4547	4608	4371	4426	3842	5152	4838	4928	4944	4387	4509	4665	4789	4662	4682	4711	4442		83972
Bandings/100 Net-hours	90.0	43.2	44.8	24.7	31.6	43.4	28.8	32.8	27.2	30.3	29.5	37.9	30.4	36.0	35.8	35.1	22.9	41.6	18.3	19.6		32.3
Wood Duck			1																			1
Mallard							1															1
Green Heron												1										1
Sharp-shinned Hawk	2	2		1	5	4	3	1	1	3		1	2	3	1	3	6	2	1	3		44
Cooper's Hawk				1	1			1		1												4
Northern Goshawk				1																		1
Broad-winged Hawk						1									1							2
Swainson's Hawk																			1			1
Spotted Sandpiper		1	2		3	3	2			5	1	4	4	3	6	1	7		6	2		50
Solitary Sandpiper	3	2	3	14	13	14	2	8	4	12	5	8	11	7	7	8	8	3	4	1		137
Common Snipe								1		1								1				3
Mourning Dove												1										1
Belted Kingfisher	2	2	8	8	6	8	10	7	2	5	6	7	4	15	7	11	7	7	8	2		132
Yellow-bellied Sapsucker			1							1						1						3
Downy Woodpecker		1	2	3	5	7	3	9	9	13	12	16	9	7	13	18	11	15	6	9		168
Hairy Woodpecker								1		1		2		1		1		1	1			8
Northern Flicker	2	1	4	8	7	3	11	2		4	7	6	3	3	1	2	1	2	5	5		77
Olive-sided Flycatcher	3		3		5	2		2		2		2	3	1	3	1	1	1		3		32
Western Wood-Pewee	6	4	11	2	33	8	10	7	14	14	11	16	17	11	18	19	9	11	2	3		226
Yellow-bellied Flycatcher			1				1					2			2			1				7
Traill's Flycatcher*	24	16	29	25	50	36	24	40	46	45	32	197	173	71	99	26	15	35	18	25		1026
Least Flycatcher	16	5	16	9	30	14	11	21	20	21	9	40	45	43	51	20	16	44	12	21		464
Hammond's Flycatcher																1		1				2

Catastrophic Flooding

Table 2b. New Bandings at Inglewood Bird Sanctuary - Fall

Year	1992	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Dusky Flycatcher			2	1									2				1					6
Pacific-slope Flycatcher			1		1							1										3
Eastern Phoebe		1						1			1		1				1					5
Great Crested Flycatcher									1													1
Eastern Kingbird	1	2	7	18	17	19	2	7	17	7	15	17	11	17	15	7	4	4	4	4		195
Yellow-throated Vireo											1											1
Blue-headed Vireo	1		1	1	2			1		2		2		1	1	1			2			15
Warbling Vireo	8	15	13	18	27	18	8	7	12	9	17	12	1	17	25	24	10	18	6	20		285
Philadelphia Vireo	1							1	1		1	1			2		2					9
Red-eyed Vireo	3	1	2	4	3	12	2	4	2	2	4		3	4	5	2			2	1	2	58
Blue Jay				1				1														2
Black-billed Magpie			2	1	8	2	2	1	3	1	3	3	3		2	3	3	1	4	4		46
Tree Swallow										1			7		5	7						20
N Rough-winged Swallow					2							1	2		2	3					1	11
Bank Swallow													1		1	1						3
Black-capped Chickadee	9	12	7	17	5	19	10	19	14	13	19	20	28	27	20	13	19	10	8	15		304
Red-breasted Nuthatch		3		2		4	2	20	7	1	2	4	2	3	3	15	1	3	1	2		75
White-breasted Nuthatch	1	1	6		4	4	4	5	5	5	7	5	2	2	5	6	5	3	2	4		76
Brown Creeper	1						1	1				1	1	6								11
House Wren	3	3	50	45	52	49	33	57	59	72	58	138	96	59	99	100	107	67	60	35		1242
Winter Wren								1				2		1								4
Golden-crowned Kinglet	2		2	1	1	1	2	1		2		1	2	5								20
Ruby-crowned Kinglet	3	1	10	18	20	14	5	11	15	14	24	18	11	29	20	13	3	11	7	7		254
Townsend's Solitaire				1					1		1			1				1	1	1		7
Veery	2					1						1										4
Gray-cheeked Thrush	1					1		1														3
Swainson's Thrush	34	13	17	52	10	28	19	13	30	13	19	31	27	17	34	29	15	37	9	11		458
Hermit Thrush	4		3	14	6	9	9	4	11	11	5	8	4	3	4	9	3	7	7	32		153
American Robin	5	11	114	81	81	31	60	32	105	37	89	28	43	29	46	56	57	26	20	29		980
Varied Thrush									1			5										6
Gray Catbird		1		5	7	6	5	4	14	8	19	14	14	13	12	14	15	15	4	8		178

Catastrophic Flooding

Table 2b. New Bandings at Inglewood Bird Sanctuary - Fall

Year	1992	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Brown Thrasher					3						1		1									5
European Starling			2						4						1							7
Bohemian Waxwing							1															1
Cedar Waxwing	12	1	42	14	67	11	25	26	49	27	21	43	22	24	71	153	71	124	63	92		958
Ovenbird	22	6	10	30	11	38	11	11	24	7	18	37	16	26	28	16	8	18	15	5		357
Northern Waterthrush	22	8	23	56	46	26	41	34	44	33	29	78	67	43	53	39	50	44	37	38		811
Black-and-white Warbler	4	1	1	2		3			2	3	3	1	2	1	2	3	2	1				31
Tennessee Warbler	43	5	33	30	52	74	106	167	46	76	147	98	58	43	87	96	56	56	23	24		1320
Orange-crowned Warbler	24	36	177	116	86	207	91	84	58	71	115	45	45	154	163	123	32	407	76	47		2157
Nashville Warbler				1	2	1	1	2	1	1			1	3		1				1		15
Connecticut Warbler	2	2	4	4	1	3	3	3	4	1		6	1	5	4	2	1	1	2	2		51
MacGillivray's Warbler	2		3	8	10	6	2	5	4	4	5	6	4	4	2	1	3	5	2			76
Mourning Warbler	4	2	5	10	3	9	1	4	5	7	10	7	5	5	6	3	3	3	4			96
Common Yellowthroat		1	6	1	8	10	8	4	12	8	9	7	2	9	7	5	6	13	3	4		123
American Redstart	19	4	3	6	4	20	5	3	16	27	18	19	7	16	14	7	8	19	3	9		227
Cape May Warbler											2											2
Magnolia Warbler	9	4	2	2	4	4	2	2	1	9	6	4	5	6	5	3		3	2	5		78
Bay-breasted Warbler			1				1	1			1											4
Yellow Warbler	56	19	44	62	137	91	138	89	101	119	82	165	126	75	154	113	60	154	48	53		1886
Chestnut-sided Warbler	1						1				1	1			1		1					6
Blackpoll Warbler	17	5	17	8	6	30	5	8	11	7	7	1	11	7	12	14	2	16	6	3		193
Palm Warbler		3	7	4	3	8	7	1	6	4	1	2	1	4				3	3	6		63
Yellow-rumped Warbler	293	171	496	92	191	638	195	200	246	248	223	148	73	412	207	256	100	200	169	53		4611
Townsend's Warbler	1				1	2	3	1	2	2		1	2	2	1	1	1	3				23
Black-throated Green Warbler					1	1	1															3
Canada Warbler	1			2	1	3	1	1	1	2		8		1	4	2		2	1			30
Wilson's Warbler	121	68	102	175	119	113	100	167	152	145	224	251	12	168	136	159	114	339	53	117		2835
American Tree Sparrow			10	3	3	7	2	1	1	2	4	4	3	5	2	3	1	2	2	4		59
Chipping Sparrow	4	1	29	14	151	27	83	50	47	92	23	155	34	1	34	43	80	60	9	17		954
Clay-colored Sparrow		1	1	6	21	37	26	9	30	26	6	12	14	15	10	11	23	12	5	10		275
Brewer's Sparrow							1															1

Catastrophic Flooding

Table 2b. New Bandings at Inglewood Bird Sanctuary - Fall

Year	1992	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Savannah Sparrow		1			2			1	1					1			3		1			10
Fox Sparrow	1	1	1			2	1		2	1	1	2			1	4			2	1		20
Song Sparrow		1	9	9	15	18	21	9	3	13	5	15	21	14	13	10	11	16	5	3		211
Lincoln's Sparrow	9	7	53	28	13	59	48	30	39	88	43	30	44	58	45	65	25	29	34	40		787
Swamp Sparrow				2		7	3		1	2	1	2		2	1	3			8	6		38
White-throated Sparrow	13	11	73	28	39	77	54	18	35	51	25	40	34	67	24	27	14	27	34	34		725
Harris's Sparrow			1						1			1	1									4
White-crowned Sparrow	5	4	20	24	22	21	22	23	27	30	18	31	36	17	11	14	20	23	15	6		389
Dark-eyed Junco	5	3	15	15	3	10	8	6	1	6	3	11	4	14		5	2	6	1	3		121
Western Tanager	1	1	12	1	3	2	4	1	5	6	3	5	3		4	8	1	9	4	2		75
Rose-breasted Grosbeak	6				1	3	2	3	1	3	7	5	3	2	1	5		5	1			48
Red-winged Blackbird			4				2			3		1			1					2		13
Rusty Blackbird															1	1						2
Common Grackle			3								1		2	4		5	5		14	16		50
Brown-headed Cowbird			1	2	2	1		2	4	5	1	4	3			4	2	4	1			36
Baltimore Oriole	4		21	12	12	8	5	1	8	9	20	7	11	2	11	7	12	3	3	5		161
Purple Finch		1			2	1	1	2	6				2	1	1	2				1		20
House Finch													9	2	35	45	12	11		7		121
Red Crossbill																					2	2
Pine Siskin					2							1			2	2	6		8	7		28
American Goldfinch	3			2	4	2	2	1	4	2		2	1	2	5		4		2			36
House Sparrow									3							4						7

Catastrophic Flooding

New species

*Note: Traill's Flycatcher includes both Willow and Alder

Table 3. Inglewood Bird Sanctuary MAPS Summary

Species	New Bandings																				Total	
	1992	1993	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012		2013*
American Kestrel			1																			1
Downy Woodpecker	1	3	1	5	4	1			1		1	3		5		6	5	6				42
Hairy Woodpecker	1	1	1			1																4
Northern Flicker	1	1	3	2			2							2	3	1						15
Western Wood-Pewee	6	1	1	1	1	2		1	3			3		2		1	1					23
Traill's Flycatcher				3	3		1	1	4	1	1	2	3	2		2	2	1		3		29
Least Flycatcher	14	8	3	2	3	4	2	1	2	1			1	5	9	3		3	1			62
Eastern Kingbird	2	1			3	1	3		2	1		3	1	1		1		1		1		21
Warbling Vireo	7	7	1	4	2		2	2	1	4	3		1	2	1	2	3	1	3			46
Philadelphia Vireo																		1				1
Red-eyed Vireo	1																				1	2
Black-billed Magpie				1	2							2									1	6
Tree Swallow	3						2					4		8		2		3				22
Northern Rough-winged Swallow																1		1				2
Bank Swallow	1																				1	2
Black-capped Chickadee	5	7	5	9	2	3	5	4	4	2	4	10	2	8	5	11	1			7		94
White-breasted Nuthatch	3	4		2						1		2		2	1		1					16
House Wren	5	11	9	9	13	8	9	18	11	2	11	9	1	15	30	26	9	23	8	20		247
Veery	2					1																3
Swainson's Thrush	10	8	6	4	3	1	4		3	1	1	4	1	4		7	4	1	1	1		64
Hermit Thrush								1														1
American Robin	21	6	26	25	23	10	8	14	20	19	19	21	1	45	18	21	7	7	6	4		321
Gray Catbird	3			1	1	4	8	1	6	16	9	12	1	4	8	6	5	7	4	3		99
European Starling			1																			1
Cedar Waxwing	27	8		6	1	9	5	7	5	13	3	17	3	8	20	9	19	35	9	22	2	228
Tennessee Warbler	1	6		7	1	3	4	22	1	1	1	5		5	11	13	2	2				85
Orange-crowned Warbler						1						1										2
Yellow Warbler	20	14	7	2	6	9	24	13	4	7	9	4	2	10	26	6	8	13	5	8	3	200
Yellow-rumped Warbler	10					2		2	1		1	1			3	3		1				24
American Redstart		1									1			2		1	1					6

Table 3. Inglewood Bird Sanctuary MAPS Summary

Species	New Bandings																				Total	
	1992	1993	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012		2013*
Ovenbird	3			1		1										1	1					7
Northern Waterthrush						1	1		1							1		1				5
Mourning Warbler	1																					1
Common Yellowthroat												1	1			1		2				5
Wilson's Warbler				2		1	1					1						1				6
Chipping Sparrow		7			1							1		1	2			1		1	1	15
Clay-colored Sparrow		1				6	17	1	2						1	2	1	4	2	1		38
Song Sparrow		1		1		1	4				1		1		1	1		1	2			14
Lincoln's Sparrow		3	1	2	5	2		1				2				4	2					22
White-throated Sparrow				2						1		2				2						7
White-crowned Sparrow																1						1
Western Tanager		1	3	1	2		4					1								1		13
Rose-breasted Grosbeak				1																		1
Red-winged Blackbird															1							1
Common Grackle			1		2					1												4
Brown-headed Cowbird	6				3			1	1	2		2	1	2		3		1				22
Baltimore Oriole	3	7	2	8	9	1	2	1	5	9		2			3	1	3	1	1			58
Purple Finch		1						1														2
House Finch														5	4	6	1	6		8		30
American Goldfinch	2	2		1						1				1		1				1		9
House Sparrow	2					2																4
Total	161	110	72	102	90	75	108	92	77	83	65	115	20	139	147	146	76	124	43	83	6	1934
Species	27	24	17	25	21	24	20	18	19	18	14	25	14	22	18	31	19	25	12	16	3	47

Note: * limited to only the first session in 2013 due to catastrophic flooding

Table 4a. Coverage and Capture Rates During 2013 Spring MM at CHIP

Date	Net-hours	Captures				Total	Captures/100 Net-hours
		New Bandings	Recaptures	Escapes/unbanded	Mortalities		
15-May	62.9	26	3	1		30	48
16-May	66.0	37	4	2		43	65
17-May		no BIC					
18-May		no BIC					
19-May	21.6	13	4			17	79
20-May	72.0	31	3	5		39	54
21-May	61.0	17	6	1		24	39
22-May		wind					
23-May		wind					
24-May	18.0	13	1			14	78
25-May	72.0	68	7	3		78	108
26-May	72.0	12	7			19	26
27-May	72.0	23	7	1		31	43
28-May	66.0	19	6			25	38
29-May	72.0	19	8			27	38
30-May		rain					
31-May		wind					
01-Jun	72.0	27	5			32	44
02-Jun	66.0	12	6			18	27
03-Jun	39.7	12	4			16	40
04-Jun	60.0	23	5			28	47
05-Jun	57.5	12	2			14	24
06-Jun	72.0	14	2			16	22
07-Jun	54.0	10	3			13	24
08-Jun		wind					
09-Jun	72.0	11	4			15	21
10-Jun	72.0	6	2			8	11
Total	1221	405	89	13	0	507	42

<< 72 net-hrs

Table 4b. Coverage and Capture Rates During 2013 Fall MM at CHIP

Date	Net-hours	Captures				Total	Captures/100 Net-hours
		New Bandings	Recaptures	Escapes	Mortalities		
02-Aug	rain					0	
03-Aug	72.0	0	3			36	50
04-Aug	72.0	42	6			48	67
05-Aug	60.0	37	2			39	65
06-Aug	60.0	20	3		1	24	40
07-Aug	rain					0	
08-Aug	72.0	34	2			36	50
09-Aug	58.0	10	3	1		14	24
10-Aug	66.0	19	2			21	32
11-Aug	no BIC					0	
12-Aug	72.0	18	2			20	28
13-Aug	72.0	21	1			22	31
14-Aug	72.0	29	5			34	47
15-Aug	72.0	17	5			22	31
16-Aug	72.0	38	6			44	61
17-Aug	72.0	15	7			22	31
18-Aug	72.0	24	4			28	39
19-Aug	69.5	24	1			25	36
20-Aug	72.0	24	6			30	42
21-Aug	67.0	17	2			19	28
22-Aug	62.0	11	2			13	21
23-Aug	72.0	17	8			25	35
24-Aug	51.5	21	3			24	47
25-Aug	72.0	15	8			23	32
26-Aug	60.0	24	3			27	45
27-Aug	72.0	12	4			16	22
28-Aug	69.5	54	11			65	94
29-Aug	72.0	28	3			31	43
30-Aug	wind					0	
31-Aug	36.0	9	2			11	31
01-Sep	72.0	7				7	10
02-Sep	72.0	23	6	1		30	42
03-Sep	51.0	22	4			26	51
04-Sep	72.0	64	4			68	94
05-Sep	72.0	19	8	1	1	29	40
06-Sep	72.0	37	4			41	57
07-Sep	12.0	10	1			11	92
08-Sep	72.0	26	9			35	49
09-Sep	rain					0	
10-Sep	51.0	47	8			55	108

Table 4b. Coverage and Capture Rates During 2013 Fall MM at CHIP

Date	Net-hours	Captures				Total	Captures/100 Net-hours
		New Bandings	Recaptures	Escapes	Mortalities		
11-Sep	72.0	30	7			37	51
12-Sep	72.0	13	5			18	25
13-Sep	72.0	16	12			28	39
14-Sep	11.5	5				5	43
15-Sep	wind					0	
16-Sep	39.5	10	2			12	30
17-Sep	72.0	9	3			12	17
18-Sep	rain					0	
19-Sep	72.0	18	1			19	26
20-Sep	18.0	3				3	17
21-Sep	72.0	12	4			16	22
22-Sep	54.0	4	2			6	11
23-Sep	41.5	4	1			5	12
24-Sep	72.0	21	3			24	33
25-Sep	rain					0	
26-Sep	wind					0	
27-Sep	42.0	9				9	21
28-Sep	58.0	17	3	1		21	36
29-Sep	wind					0	
30-Sep	8.0	1				1	13
01-Oct	wind					0	
02-Oct	36.0	3	1			4	11
03-Oct	snow					0	
04-Oct	30.0	26	2			28	93
05-Oct	50.4	14	3			17	34
06-Oct	72.0	22	1			23	32
07-Oct	49.0	6	1			7	14
08-Oct	wind					0	
09-Oct	24.0	9	2			11	46
10-Oct	28.0	2				2	7
Total	3351	1122	201	4	2	1329	40

<<72 net-hrs

Table 5a. New Bandings at Cypress Hills InterProvincial Park - Spring

Year	2010	2011	2012	2013	Total
Start	01-May	01-May	18-May	15-May	
Finish	10-Jun	12-Jun	09-Jun	10-Jun	
# Days	30	36	21	19	
Total	839	948	372	405	2564
Species & Forms	60	56	43	48	81
Net-hours	1671	2052	1277	1221	6221
Bandings/100 Net-hours	50.2	46.2	29.1	33.2	41.2
Mallard		1			1
Spotted Sandpiper		2		1	3
Belted Kingfisher		2			2
Red-naped Sapsucker	17	5	6	2	30
Downy Woodpecker	1		2	1	4
Hairy Woodpecker	2	1			3
"Red-shafted" Flicker	1				1
"Yellow-shafted" Flicker			1		1
Intergrade Flicker			1		1
Olive-sided Flycatcher	1	2			3
Western Wood-Pewee	9		4	2	15
Yellow-bellied Flycatcher	1			1	2
"Traill's" Flycatcher	44	33	19	23	119
Least Flycatcher	125	76	28	28	257
Dusky Flycatcher	13	1	1	1	16
Western Kingbird	1	1			2
Eastern Kingbird	3				3
Warbling Vireo	1	5	1	1	8
Red-eyed Vireo	8	11	1		20
Black-billed Magpie		2			2
American Crow		1		1	2
Tree Swallow	1	3	4	4	12
Northern Rough-winged Swallow				1	1
Bank Swallow		1	43	27	71
Black-capped Chickadee	5	1		2	8
House Wren	8	12	5	1	26
Ruby-crowned Kinglet	7	2			9

Table 5a. New Bandings at Cypress Hills InterProvincial Park - Spring

	Year	2010	2011	2012	2013	
Mountain Bluebird		1				1
Veery		3	7	3	3	16
Gray-cheeked Thrush			1			1
Swainson's Thrush		25	18	18	6	67
Hermit Thrush		1				1
American Robin		26	29	14	10	79
Gray Catbird		22	12	14	7	55
Brown Thrasher			2			2
Cedar Waxwing		44	271	46	6	367
Ovenbird		3	1	1		5
Northern Waterthrush		1	4	1	1	7
Black-and-white Warbler			2		1	3
Tennessee Warbler		6	18	1	2	27
Orange-crowned Warbler		30	23	2	3	58
MacGillivray's Warbler		17	4	3	2	26
Mourning Warbler		4				4
Common Yellowthroat		25	12	11	13	61
American Redstart		30	3	3	2	38
Cape May Warbler		1				1
Magnolia Warbler		1				1
Bay-breasted Warbler		1				1
Yellow Warbler		84	87	19	43	233
Blackpoll Warbler		16	25	9	31	81
Palm Warbler			1	1		2
"Myrtle" Warbler		15	23	3	37	78
"Audubon's" Warbler		45	11	3	4	63
"Unidentified" Yellow-rumped Warbler		2	3			5
Townsend's Warbler		1				1
Wilson's Warbler		1			3	4
Yellow-breasted Chat		1				1
Spotted Towhee		5			1	6
Chipping Sparrow		44	106	7	22	179
Clay-colored Sparrow		16	15	5	13	49
Brewer's Sparrow			1			1
Savannah Sparrow		7	1			8
Song Sparrow		4	2	4	9	19
Lincoln's Sparrow		12	1		4	17
White-throated Sparrow		8				8

Table 5a. New Bandings at Cypress Hills InterProvincial Park - Spring

Year	2010	2011	2012	2013	
"Eastern" White-crowned Sparrow	30	15	2	11	58
"Gambel's" White-crowned Sparrow	2	3		1	6
"Pink-sided" Junco	5	1			6
"Unidentified" Dark-eyed Junco	1				1
Western Tanager	7	3	3		13
Rose-breasted Grosbeak	3	6		3	12
Black-headed Grosbeak	2	1	2		5
Lazuli Bunting		1	1	1	3
Red-winged Blackbird	11	14	22	36	83
Yellow-headed Blackbird			1		1
Common Grackle		5		1	6
Brown-headed Cowbird	15	28	24	15	82
Baltimore Oriole		14	3	7	24
White-winged Crossbill				1	1
Pine Siskin	4	5	26	9	44
American Goldfinch	9	7	4	1	21

New Species

Table 5b. New Bandings at Cypress Hills InterProvincial Park - Fall

Species/Form	Year	2010	2011	2012	2013	Total	
	Start	29-Jul	04-Aug	02-Aug	02-Aug		
	Finish	16-Oct	13-Oct	10-Oct	10-Oct		
	# Days	68	62	65	65		
Total		1390	1550	1887	1122	5949	
Species and forms		64	71	70	67	92	
Net-hours		3377	3743	3752	3351	14223	
Bandings/100 Net-hours		41.2	41.4	50.3	33.5	41.8	
Northern Harrier				1		1	
Sharp-shinned Hawk		3	2	4	1	10	
Cooper's Hawk			1			1	
Spotted Sandpiper		1		2		3	
Wilson's Snipe				1		1	
Belted Kingfisher		2	6	2	5	15	
Yellow-bellied Sapsucker		1			1	2	
Red-naped Sapsucker		11	25	18	18	72	
Downy Woodpecker		5		10	14	29	
Hairy Woodpecker			3	1	4	8	
"Yellow-shafted" Flicker		1	2			3	
"Red-shafted" Flicker		1			1	2	
<i>Flicker Intergrade</i>		1		2	1	4	
Western Wood-Pewee		14	18	11	8	51	
<i>Contopus pewee</i> spp.					1	1	
Alder Flycatcher					2	2	
"Traill's" Flycatcher		151	52	125	62	390	
Least Flycatcher		155	188	140	137	620	
Dusky Flycatcher		8		1	3	12	
Unidentified Flycatcher				1		1	
Western Kingbird					1	1	
Eastern Kingbird			2	3	5	10	
Northern Shrike		1				1	
Blue-headed Vireo					1	1	
Warbling Vireo		6	15	9	17	47	
Philadelphia Vireo			3		1	4	
Red-eyed Vireo		6	8	15	22	51	
Black-billed Magpie			1			1	

Table 5b. New Bandings at Cypress Hills InterProvincial Park - Fall

Species/Form	Year	2010	2011	2012	2013	
Black-capped Chickadee		85	13	28	62	188
Red-breasted Nuthatch		4	2	13		19
Brown Creeper					6	6
House Wren		32	39	34	21	126
Marsh Wren			1	1		2
Blue-gray Gnatcatcher			1			1
Ruby-crowned Kinglet		6	21	15	11	53
Veery		3	10	4	9	26
Gray-cheeked Thrush			1			1
Swainson's Thrush		21	8	12	11	52
Hermit Thrush			1	4		5
American Robin		41	11	15	17	84
Gray Catbird		31	19	40	43	133
Brown Thrasher		1	1			2
Cedar Waxwing		29	25	25	11	90
Ovenbird		4	4	6	3	17
Northern Waterthrush		9	7	5	13	34
Black-and-white Warbler		3	5	3	6	17
Tennessee Warbler		6	18	2	1	27
Orange-crowned Warbler		203	134	66	46	449
Nashville Warbler			2	1		3
MacGillivray's Warbler		4	11	7	10	32
Mourning Warbler		4	2	1	4	11
Common Yellowthroat		21	48	43	45	157
American Redstart		5	15	11	8	39
Magnolia Warbler		1	3	1	2	7
Yellow Warbler		124	259	158	171	712
Chestnut-sided Warbler			1			1
Blackpoll Warbler		6	7	5		18
"Western" Palm Warbler		1	1	4	3	9
"Myrtle" Warbler		108	220	395	86	809
"Audubon's" Warbler		3	9	5	5	22
"Unidentified" Yellow-rumped Warbler		2	5	23	1	31
Canada Warbler		1	3	1		5
Wilson's Warbler		51	46	24	22	143
Yellow-breasted Chat			1			1
Spotted Towhee			1		1	2
American Tree Sparrow		6	16	5	5	32

Table 5b. New Bandings at Cypress Hills InterProvincial Park - Fall

Species/Form	Year	2010	2011	2012	2013	
Chipping Sparrow		19	14	11	4	48
Clay-colored Sparrow		21	54	22	25	122
Field Sparrow				1		1
Savannah Sparrow		2	3		2	7
Song Sparrow		20	39	38	41	138
Lincoln's Sparrow		13	14	18	15	60
Swamp Sparrow			1	6	3	10
White-throated Sparrow		10	9	16	12	47
Harris's Sparrow					1	1
"Eastern" White-crowned Sparrow		9	9	46	4	68
"Gambel's" White-crowned Sparrow		2	3	3	1	9
White-crowned Sparrow		53	35	6	59	153
"Slate-colored" Junco		7	16	5	7	35
"Pink-sided" Junco		3	3		1	7
"Unidentified" Dark-eyed Junco		16	7	3		26
Western Tanager			1	1	1	3
Rose-breasted Grosbeak		1			1	2
Black-headed Grosbeak				3		3
Red-winged Blackbird		4		8	2	14
Brown-headed Cowbird			3	3	1	7
Baltimore Oriole		1	1	2	1	5
Purple Finch		1		2		3
Red Crossbill			2	171		173
White-winged Crossbill		4	11	40		55
Pine Siskin		14	23	169	6	212
American Goldfinch		8	5	10	7	30

New species/form

**Table 6. New Bandings During MAPS at
Cypress Hills Interprovincial Park 2013**

Species/Forms	Locations			Total
	Rodeo Grounds	Old Baldy	Spruce Coulee	
Wilson's Snipe	1			1
Red-naped Sapsucker	11	4	3	18
Downy Woodpecker	2	4		6
Hairy Woodpecker	1			1
Western Wood-Pewee	1	2		3
"Traill's" Flycatcher	1		2	3
Least Flycatcher	14	19	18	51
Dusky Flycatcher	1		5	6
"Western" Flycatcher		1	1	2
Warbling Vireo	5		2	7
Red-eyed Vireo		1		1
Black-capped Chickadee	4	5	19	28
Red-breasted Nuthatch			1	1
Brown Creeper	1	1	1	3
House Wren	2	7	24	33
Golden-crowned Kinglet			1	1
Ruby-crowned Kinglet		1		1
Veery	2	3	6	11
Swainson's Thrush	8	2	1	11
American Robin	2	7	7	16
Gray Catbird	3	3	4	10
Cedar Waxwing	2	11	10	23
Ovenbird	1		6	7
Tennessee Warbler	2	5	6	13
Orange-crowned Warbler		2		2
MacGillivray's Warbler	2	4	1	7
Common Yellowthroat		2		2
American Redstart	16	5	8	29
Yellow Warbler	4	19	8	31
"Audubon's" Warbler		1	1	2
Chipping Sparrow			2	2
Clay-colored Sparrow		22	9	31
Song Sparrow	6			6
"Eastern" White-crowned	3	10		13
White-crowned Sparrow	3	8	2	13
Brown-headed Cowbird	2	2		4
Pine Siskin	3	1	1	5
American Goldfinch	1	2	2	5
Totals	104	154	151	409

Table 7. All time (12-year) and 10-year trend analysis results for species monitored at Inglewood Bird Sanctuary in Spring

Spring migration trends Species	2002-2013			2004-2013		
	Trend (%/year)	p	# captures	Trend (%/year)	p	# captures
Belted Kingfisher	2.01	0.88	18	0.45	0.99	17
Western Wood-Pewee	-28.55	0.17	37	-27.11	0.39	30
Traill's Flycatcher	4.81	0.69	106	8.76	0.57	95
Least Flycatcher	-4.22	0.73	146	-3.57	0.81	123
Eastern Kingbird	-11.66	0.42	24	-	-	17
Warbling Vireo	-8.54	0.67	31	20.15	0.54	23
Northern Rough-winged Swallow	-3.75	0.79	51	-9.00	0.54	46
Tree Swallow	2.33	0.46	236	0.69	0.87	212
House Wren	2.28	0.42	250	-0.18	0.96	210
Ruby-crowned Kinglet	1.18	0.99	16	13.09	0.77	14
Swainson's Thrush	1.32	0.76	568	-2.64	0.71	476
Hermit Thrush	-10.25	0.45	15	-8.49	0.68	11
American Robin	-4.17	0.11	457	-6.57	0.01	387
Gray Catbird	2.87	0.40	159	4.34	0.35	129
Cedar Waxwing	13.11	0.13	137	8.71	0.33	134
Northern Waterthrush	-0.87	0.91	50	2.82	0.78	39
Orange-crowned Warbler	-2.50	0.70	150	-2.29	0.80	126
Common Yellowthroat	-17.24	0.22	88	-15.68	0.43	60
American Redstart	0.14	0.95	21	9.70	0.72	18
Yellow Warbler	-2.99	0.59	305	1.22	0.81	242
Blackpoll Warbler	-23.04	0.29	59	5.95	0.79	26
Yellow-rumped Warbler	-10.64	0.19	1457	3.44	0.75	1104
Wilson's Warbler	-3.04	0.80	25	-4.30	0.77	20
Chipping Sparrow	10.70	0.40	268	-0.44	0.97	258
Clay-colored Sparrow	6.74	0.29	298	7.14	0.45	272
Savannah Sparrow	3.51	0.85	44	1.98	0.93	41
Song Sparrow	-2.34	0.80	46	-8.01	0.58	42
Lincoln's Sparrow	1.23	0.63	421	-1.59	0.75	368
White-throated Sparrow	-6.26	0.66	58	-12.00	0.47	51
White-crowned Sparrow	-11.05	0.26	141	-19.98	0.04	128
Western Tanager	-14.24	0.51	18	-29.25	0.16	17
Brown-headed Cowbird	-3.9	0.62	70	-9.23	0.32	61
Red-winged Blackbird	-7.69	0.56	39	-6.46	0.73	30
Baltimore Oriole	-8.19	0.34	52	-11.94	0.29	40

Table 8. Bander-in-Charge and Volunteer Effort 2013

Member/Guest	Bander-in-Charge (days)				Volunteer (days)			
	Inglewood		NSWO	CHIP	Inglewood		NSWO	CHIP
	Spring MM	MAPS			Spring MM	MAPS		
Lynda Alderman							4	
Yousif Attia								3
Erin Bartok*							1	
Nick Bartok					1		1	
Christine Bennett					2			
Vivian Brissette*							3	
Aleksandra Bugajski							2	1
Doug Collister	2							
Erin Dann							2	
Amy Darling					3			
Julie Darling					2			
Jim Davis							1	
Nancy Davis							2	
Jim Donahue							1	
Katie Donohue							1	
Alexandra Dubrovna							1	
Paula Duncan					5		3	
Mackenzie Fai								1
Diane Fenton*							1	
Devin Fischer***				45				
Dick Flynn							1	
Lenora Flynn							1	
Ken Foster							1	
Marcel Gahbauer							1	1
Carole Hachey					2			
Diana Halladay					1			
Dave Hawes							2	
Krista Jensen*							1	
Mathias Kaiser					5		1	
Hank Klassen							6	
Judy Klassen*							1	
Susan Konopnicki					3			
Priscilla Lai							1	
Stephen Lane	10	1					6	5
Lea Lapka*							1	
Stephanie Lapka							3	
Kristen Mancuso								2
Alan McLeod*							1	
Shonna McLeod	4		29					
Greg Meyer	14				1			
Pat Mitchell	1	1	16					
Amy Moores							2	1
Mike Mulligan					2			
Kathleen Oberle					3		1	

Table 8. Bander-in-Charge and Volunteer Effort 2013

Member/Guest	Bander-in-Charge (days)				Volunteer (days)			
	Inglewood		NSWO	CHIP	Inglewood		NSWO	CHIP
	Spring MM	MAPS			Spring MM	MAPS		
Jane Potter					1			
Mike Potter					4			3
Colton Prins**				117	5			
Jane Rowlands					2		3	
Dave Russum					1			
Jen Sipkens					3			
Gwen Smiley					2			
Don Stiles					1			
Michael Sveen								1
Bill Taylor	2							
Celina Waight					3			
Joan Walker					1			
Morganne Wall***				64				
Anne Weerstra					2		2	
Total	33	2	45	226	55	0	58	18

* guest volunteer
 ** contract BIC
 *** contract assistant

Table 9. Injuries and Mortalities During 2013 CBBS Projects Excluding CHIP or Minatitlan

Species	Captures	Injuries		Mortalities	
		Number	Type	Number	Cause
Northern Saw-whet Owl	73	1	wing abrasion		
Downy Woodpecker	12	1	tongue extension		
Northern Flicker	6	1	tongue extension		
American Robin	22	1	tongue extension		
Song Sparrow	9	1	broken leg		
White-crowned Sparrow	2	1	wing strain		
Total	431	6	1.39%	0	0.00%

Appendix 2. Top 20 New Bandings at Inglewood Bird Sanctuary

Spring				
Species	2002-2013		2013	2013
	Rank	Number	Rank	Number
Yellow-rumped Warbler	1	1339	1	47
Swainson's Thrush	2	511	4	18
Lincoln's Sparrow	3	385	5-6	15
American Robin	4	350	7	14
Clay-colored Sparrow	5	264	3	19
Chipping Sparrow	6	253	16-18	3
Yellow Warbler	7	204	9	7
Tree Swallow	8	199	2	20
House Wren	9	174	5-6	15
Orange-crowned Warbler	10	150	14-15	4
White-crowned Sparrow	11	137	19-28	2
Least Flycatcher	12	135	16-18	3
Gray Catbird	13	134	8	12
Cedar Waxwing	14	127	16-18	3
Trail's Flycatcher*	15	100	19-28	2
Common Yellowthroat	16	85		
White-throated Sparrow	17	57		
Brown-headed Cowbird	18	53	19-28	2
Northern Waterthrush	19	48	11-13	5
N Rough-winged Swallow	20	47	19-28	2
Savannah Sparrow		42	14-15	4
Song Sparrow		39	10	6
Downy Woodpecker		35	11-13	5
Wilson's Warbler		25	19-28	2
Northern Flicker		14	11-13	5
Black-capped Chickadee		14	19-28	2
Spotted Sandpiper		12	19-28	2
White-breasted Nuthatch		11	19-28	2
Black-billed Magpie		10	19-28	2
Dark-eyed Junco		7	19-28	2

Fall				
Species	2002-2012**		2012	2012
	Rank	Number	Rank	Number
Yellow-rumped Warbler	1	4611	3-4	53
Wilson's Warbler	2	2835	1	117
Orange-crowned Warbler	3	2157	5	47
Yellow Warbler	4	1886	3-4	53
Tennessee Warbler	5	1320	13	24
House Wren	6	1242	8	35
Trail's Flycatcher	7	1026	12	25
American Robin	8	980	11	29
Cedar Waxwing	9	958	2	92
Chipping Sparrow	10	954	16	17
Northern Waterthrush	11	811	7	38
Lincoln's Sparrow	12	787	6	40
White-throated Sparrow	13	725	9	34
Least Flycatcher	14	464	14	21
Swainson's Thrush	15	458	19	11
White-crowned Sparrow	16	389		6
Ovenbird	17	357		5
Black-capped Chickadee	18	304	18	15
Warbling Vireo	19	285	15	20
Clay-colored Sparrow	20	275	20	10
Hermit Thrush			10	32
Common Grackle			17	16

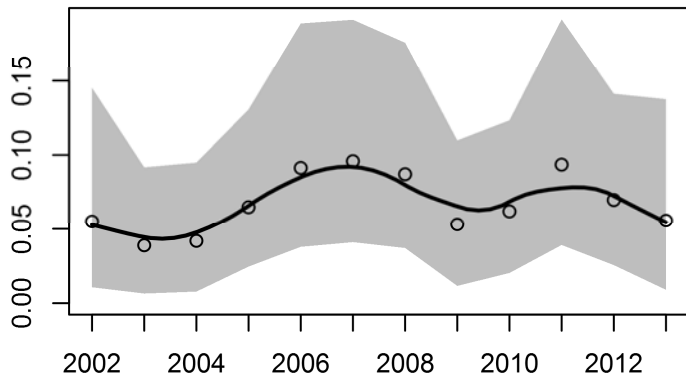
Appendix 4a. New Bandings at MIGRA2 Site, Minatitlan, Mexico 2013

Species	April																														May										Total
	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10										
Magnolia Warbler (<i>Setophaga magnolia</i>)			1											1		2	2		3			3	1	2	1	4			2	3	2	27									
Blackburnian Warbler (<i>Setophaga fusca</i>)			1																													1									
Yellow Warbler (<i>Setophaga petechia</i>)	1		1		2	1	5	2	4	5	20	11	10	8	19	9	22	11	19	16	43	54	32	10	11	79	40	18	30	47	53	583									
Chestnut-sided Warbler (<i>Setophaga pensylvanica</i>)			1					2	3	3		2			13	1	2	5	13	6	6	12	9	1	1	4	1	9	7	9	4	114									
Black-throated Green Warbler (<i>Setophaga virens</i>)			1										1																			2									
Canada Warbler (<i>Cardellina canadensis</i>)							1	1		2				1				1		2		4				1	1	3	1	3	21										
Wilson's Warbler (<i>Cardellina pusilla</i>)	1				1	1	1	1	1		1		4	3	4	1		5	24	5	14	13	9	1	2	3	3	1	5	4	3	111									
Yellow-breasted Chat (<i>Icteria virens</i>)	42	52	28	16	64	48	37	36	39	16	4	14	113	47	19	4	3	11	11	5	16	6	9		2	2	1		5	1	651										
Blue-black Grassquit (<i>Volatinia jacarina</i>)						1		1							1		1						1								2	8									
White-collared Seedeater (<i>Sporophila torqueola</i>)				1			1						2	1	1				1		2	1	1			1	1		1	1	1	16									
Buff-throated Saltator (<i>Saltator maximus</i>)								1															1									2									
Grasshopper Sparrow (<i>Ammodramus savannarum</i>)				1																												1									
Lincoln's Sparrow (<i>Melospiza lincolni</i>)	1	1		3	1		3	1	2	1	2	6	8	3	4	2	5	4	5	1	1	2	4	1	1	5	2	3	14	1	87										
Summer Tanager (<i>Piranga rubra</i>)					1					2	5						1		1					2						1	13										
Scarlet Tanager (<i>Piranga olivacea</i>)																			1						1							2									
Western Tanager (<i>Piranga ludoviciana</i>)							1	1																								2									
Rose-breasted Grosbeak (<i>Pheucticus ludovicianus</i>)	1		2		2	1	3	4	3	1	5	1	1	1	6				1		1		1		2	1					37										
Blue Grosbeak (<i>Passerina caerulea</i>)											1												1									2									
Indigo Bunting (<i>Passerina cyanea</i>)	1						3	1	1	3	45	5	6	2	2	3	2		2	1	1	1		2		1	1				83										
Painted Bunting (<i>Passerina ciris</i>)	11	6	4	4	9	10	14	16	13	16	15	3	8	9	8	8		6	7		8	5	7	1	2	3	5		4		202										
Dickcissel (<i>Spiza americana</i>)											1				2																	3									
Red-winged Blackbird (<i>Agelaius phoeniceus</i>)																							1									1									
Orchard Oriole (<i>Icterus spurius</i>)			3	10	1	2	5	5	7	3		9	5	6	5	2	5		4	16	10	12	23		7	1	14	9	4	2	4	15	189								
Altamira Oriole (<i>Icterus gularis</i>)					1																										1	2									
Baltimore Oriole (<i>Icterus galbula</i>)				1	4			3	12	3		3	4	3		2		1	5	10	3	2	8	2	1		3	1	1	1	1	75									
Yellow-billed Cacique (<i>Amblycercus holosericeus</i>)	1						1																									2									
Lesser Goldfinch (<i>Spinus psaltria</i>)																										2						2									
																																	0								
Total	201	224	239	233	364	222	163	216	315	251	282	319	433	311	259	105	152	247	206	155	204	249	251	90	138	291	242	218	352	185	211	7328									
Net-hrs audio-lured	52	40	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	1600									

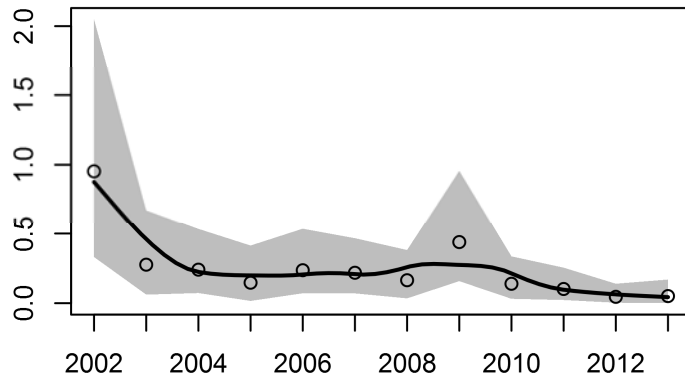
Appendix 5. Trend Analysis Charts – Spring 2013

**Open circles represent annual abundance index estimates,
Line represents smooth Loess-curve,
Gray area indicates 95% confidence interval**

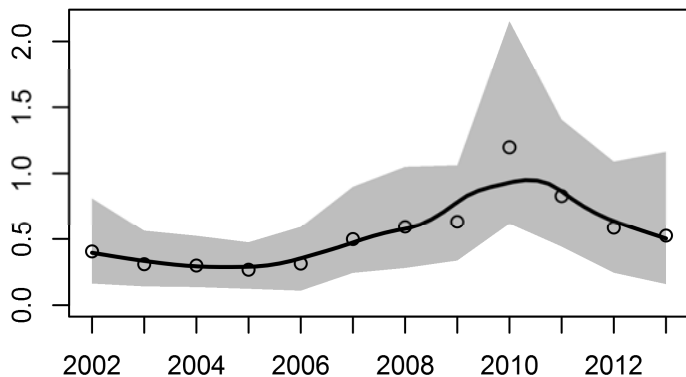
Belted Kingfisher
2.01%/year, $p=0.88$



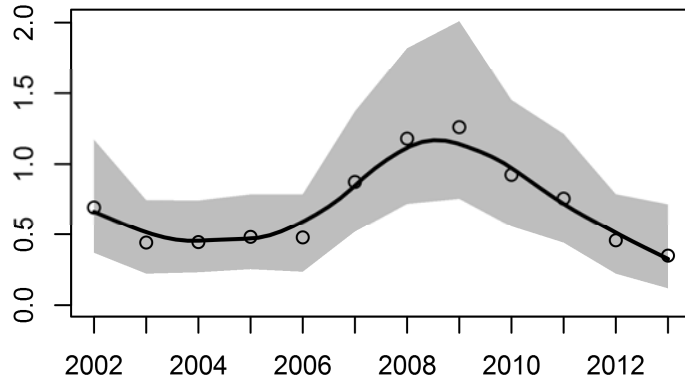
Western Wood-Pewee
-28.55%/year, $p=0.17$



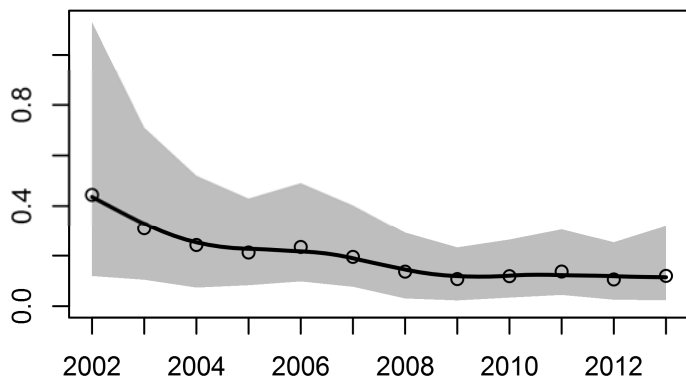
Trail's Flycatcher
4.81%/year, $p=0.69$



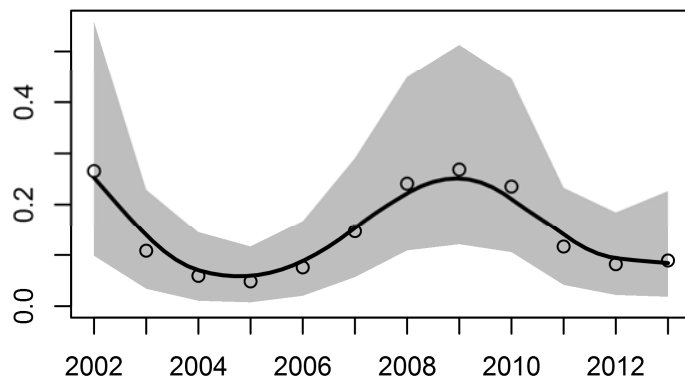
Least Flycatcher
-4.22%/year, $p=0.73$



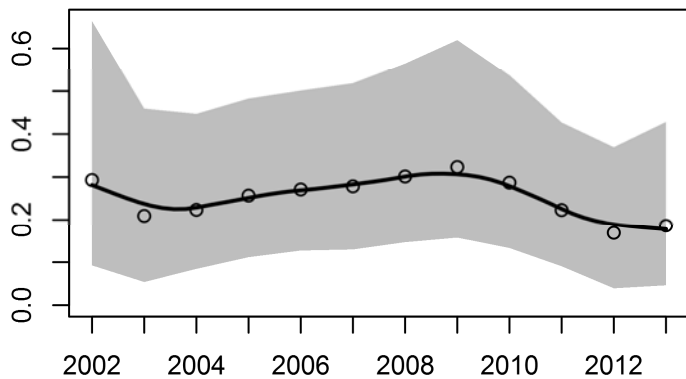
Eastern Kingbird
-11.66%/year, $p=0.42$



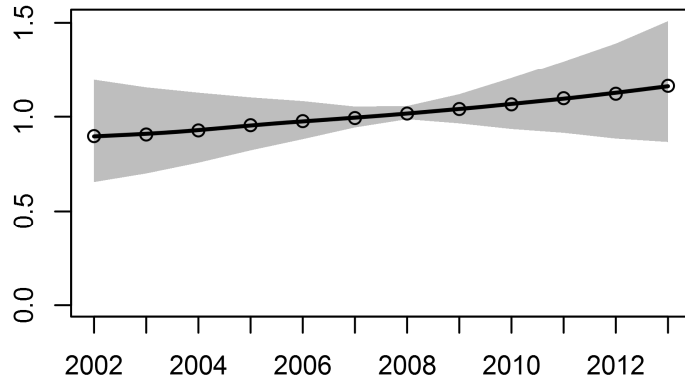
Warbling Vireo
-8.54%/year, $p=0.67$



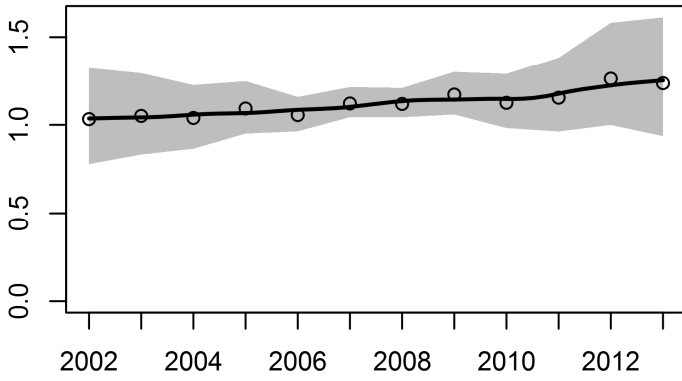
Northern Rough-winged Swallow
-3.75%/year, $p=0.79$



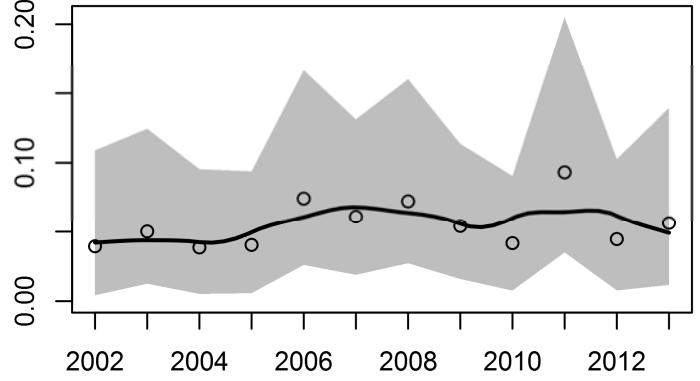
Tree Swallow
2.33%/year, $p=0.46$



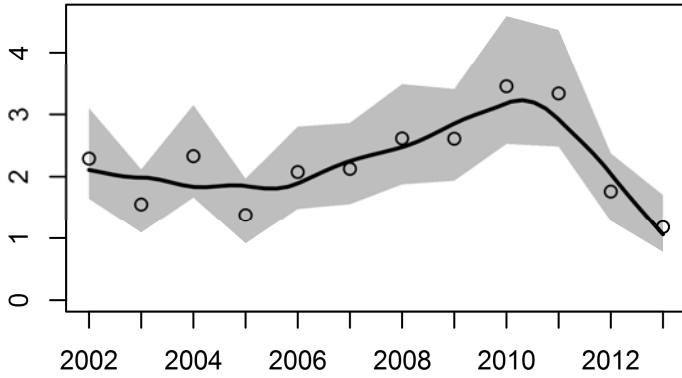
House Wren
2.28%/year, $p=0.42$



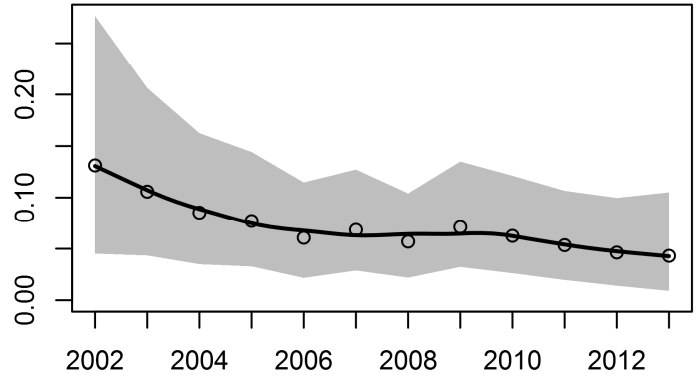
Ruby-crowned Kinglet
1.18%/year, $p=0.99$



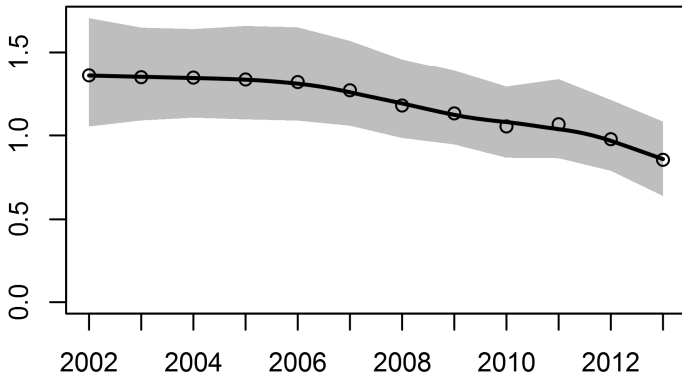
Swainson's Thrush
1.32%/year, $p=0.76$



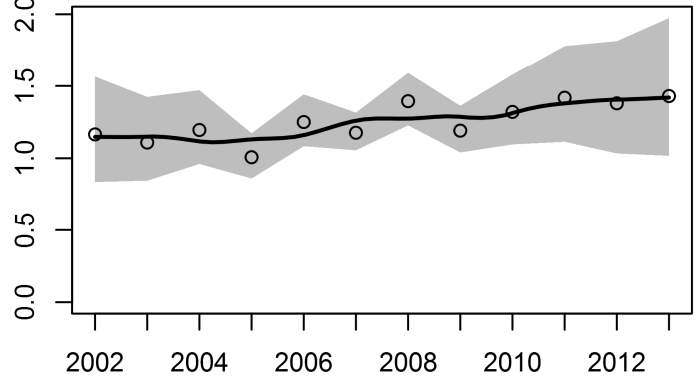
Hermit Thrush
-10.25%/year, $p=0.45$



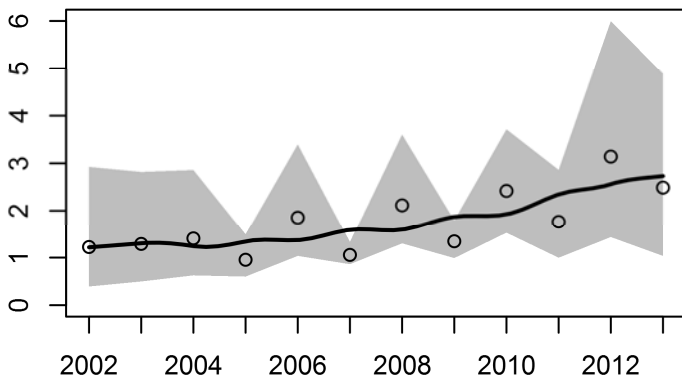
American Robin
-4.17%/year, $p=0.11$



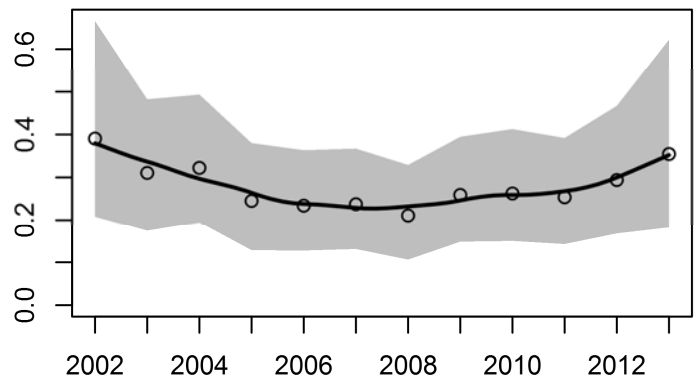
Gray Catbird
2.87%/year, $p=0.40$



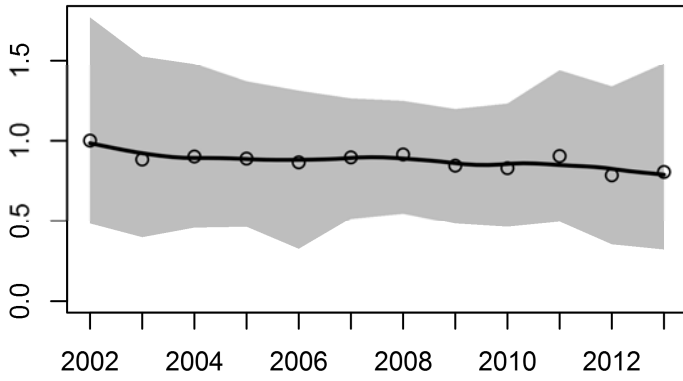
Cedar Waxwing
13.11%/year, $p=0.13$



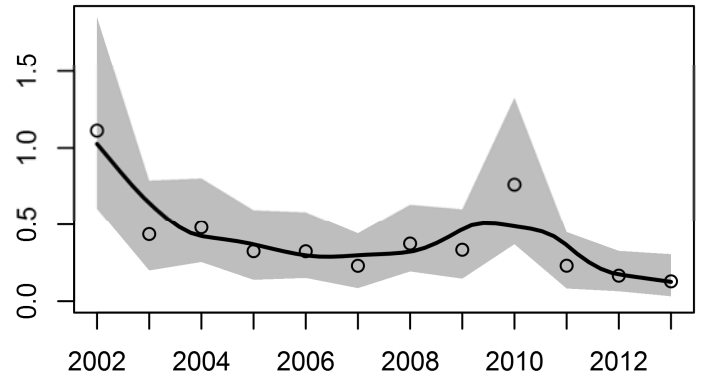
Northern Waterthrush
-0.87%/year, $p=0.91$



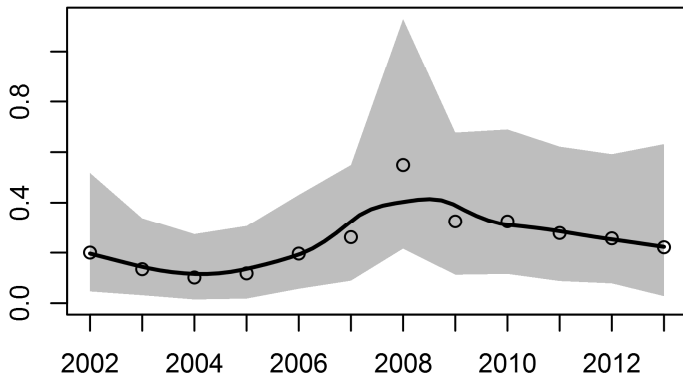
Orange-crowned Warbler
-2.50%/year, $p=0.70$



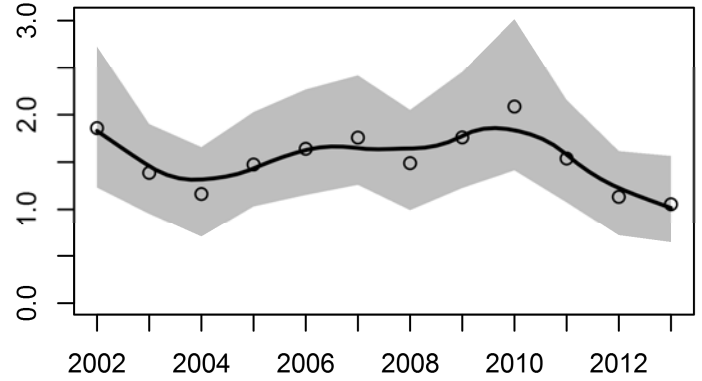
Common Yellowthroat
-17.24%/year, $p=0.22$



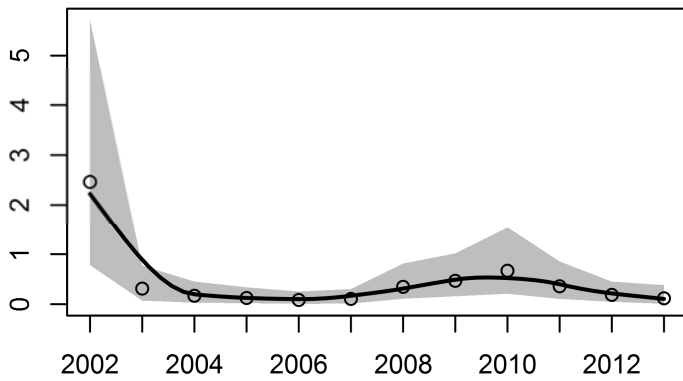
American Redstart
0.14%/year, $p=0.95$



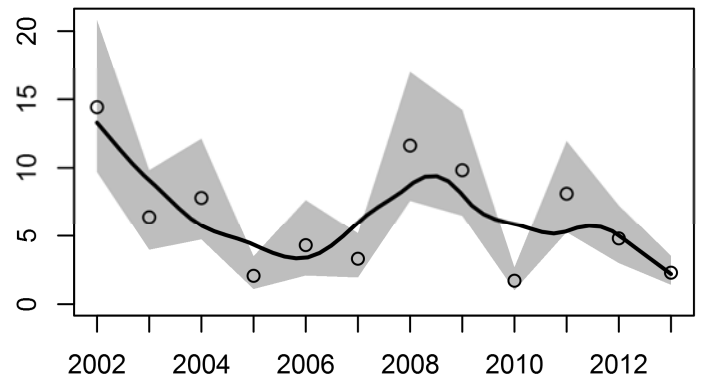
Yellow Warbler
-2.99%/year, $p=0.59$



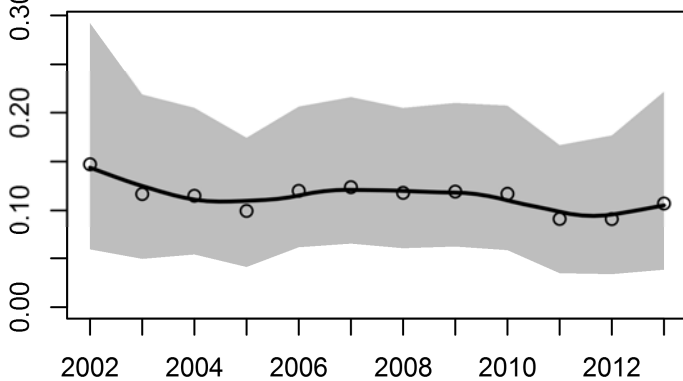
Blackpoll Warbler
-23.04%/year, $p=0.29$



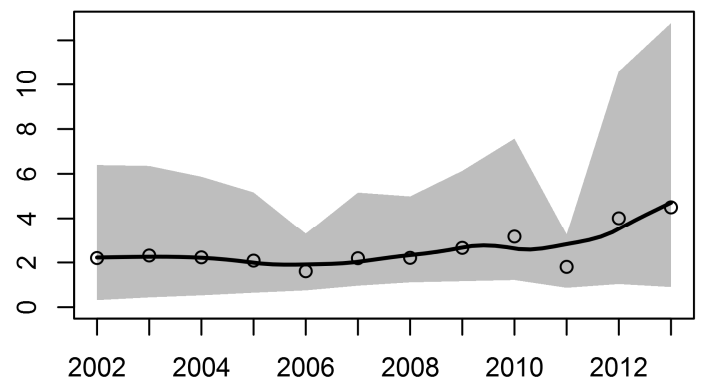
Yellow-rumped Warbler
-10.64%/year, $p=0.19$



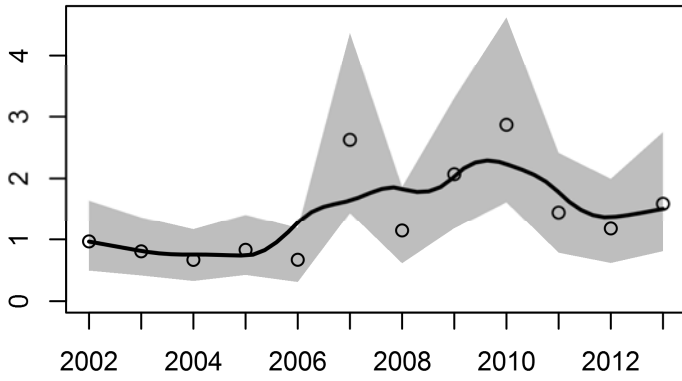
Wilson's Warbler
-3.04%/year, $p=0.80$



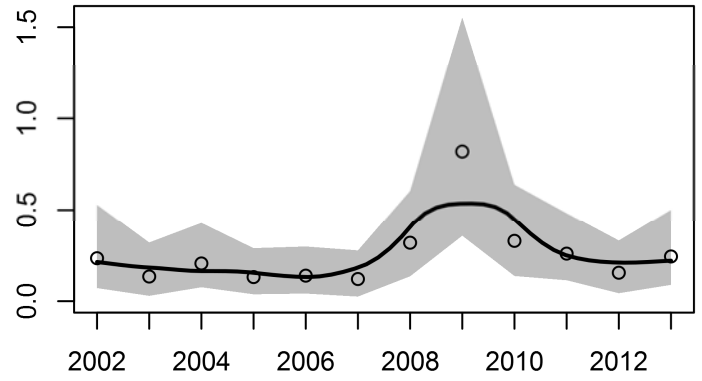
Chipping Sparrow
10.70%/year, $p=0.40$



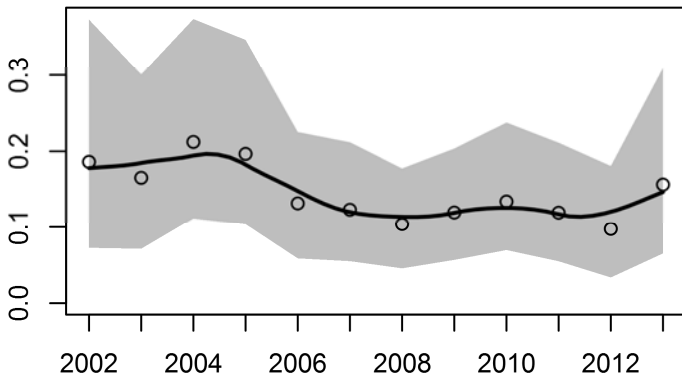
Clay-colored Sparrow
6.74%/year, $p=0.29$



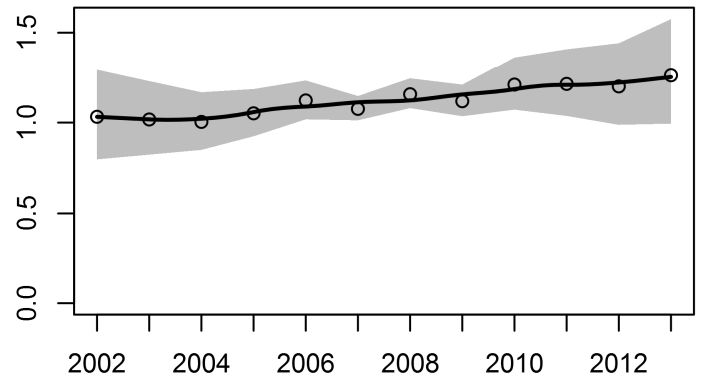
Savannah Sparrow
3.51%/year, $p=0.85$



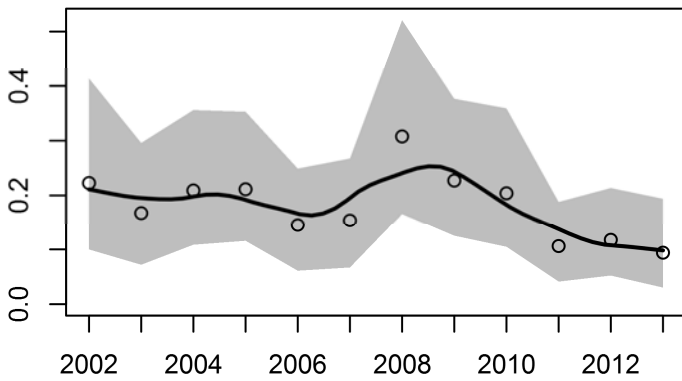
Song Sparrow
-2.34%/year, $p=0.80$



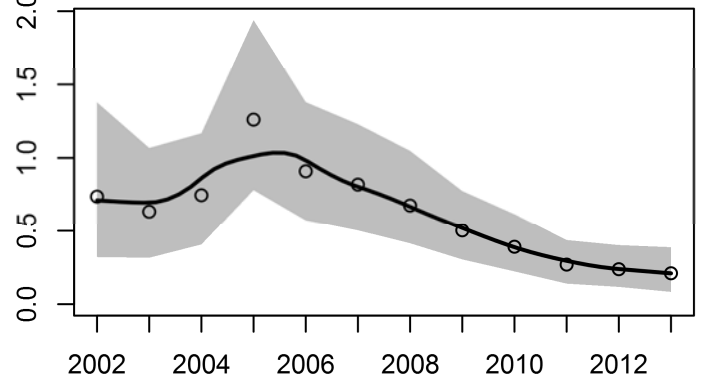
Lincoln's Sparrow
1.23%/year, $p=0.63$



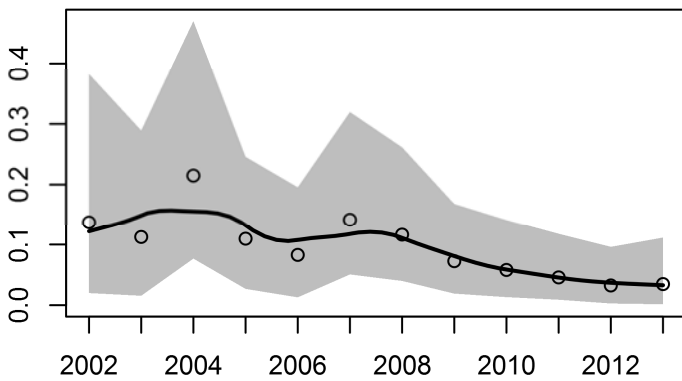
White-throated Sparrow
-6.26%/year, $p=0.66$



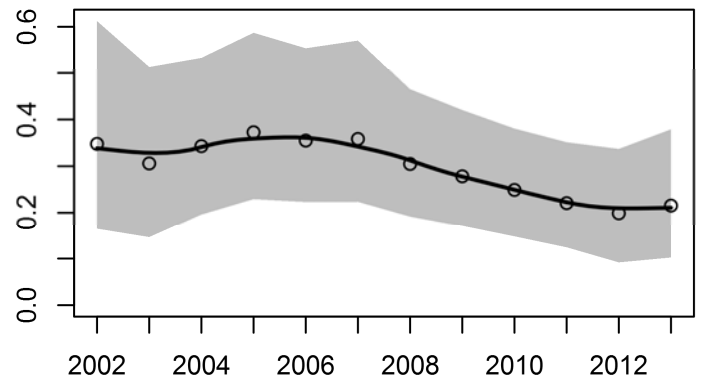
White-crowned Sparrow
-11.05%/year, $p=0.26$



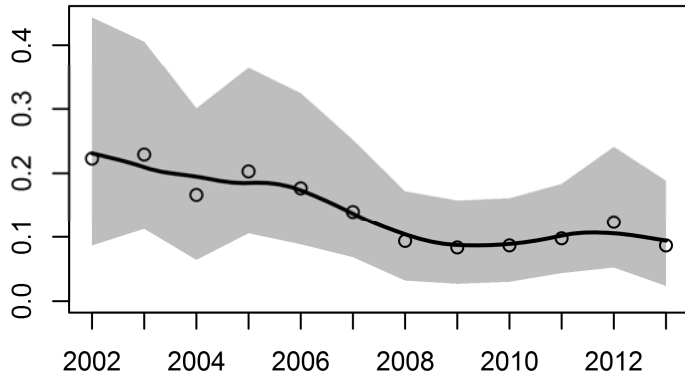
Western Tanager
-14.24%/year, $p=0.51$



Brown-headed Cowbird
-3.90%/year, $p=0.62$



Red-winged Blackbird
-7.69%/year, p=0.56



Baltimore Oriole
-8.19%/year, p=0.34

