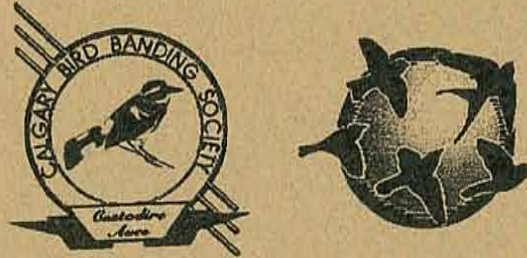


CALGARY BIRD BANDING SOCIETY
2004 ANNUAL TECHNICAL REPORT



Prepared

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**HY-U Green Heron banded at Inglewood Bird Sanctuary 5 October 2004
A rare species in Alberta (<20 records)**

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EXECUTIVE SUMMARY

The Calgary Bird Banding Society (CBBS) was incorporated in March 1995. The main objective of CBBS remains conducting 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, the site is an integral component of the Canadian Migration Monitoring Network.

During 2004 CBBS received support from the Alberta Gaming and Liquor Commission, Petro-Canada Volunteer Grant Fund, Baillie Birdathon and the Canadian Wildlife Service.

Spring migration monitoring was undertaken at IBS for the third consecutive year. The 2004 fall migration monitoring program follows pilot programs in 1992 and 1994 and full fall programs in 1995 through 2003. Twelve mist-nets were operated on 31 of the 38 days between 1 May and 7 June (2177 net-hrs) and 71 of the 71 days between 28 July and 6 October (4944 net-hrs). Total new bandings of 440 and 1872 were achieved for the spring and fall programs respectively. A Green Heron, a vagrant in Alberta, was banded on 5 October. Stable isotope analysis of 54 samples collected in 2003 indicates IBS is indeed sampling bird populations across a broad range of latitudes north and west. An additional 919 feather samples were collected from 28 species in 2004.

The IBS MAPS site was operated again in 2004, adding to previous data gathered since 1992. New bandings were the second highest number of birds and species since 1992. Least Flycatchers and Warbling Vireo were notable by their absence.

2004 marked the first year of full migration monitoring at Las Caletas, Costa Rica on the Osa Peninsula along the Pacific coast. Migration monitoring methods used were similar to those at IBS. Spring migration monitoring was conducted from 28 March - 29 April. Mist-netting occurred on all 33 days for a total of 2468 net-hours. In total, 1283 new birds of 79 species were captured of which 983 were new bandings. Fifty-six percent (574) of the new bandings were migrants of which 95% (546) were Swainson's Thrushes and 2% were Alder/Willow Flycatchers. Forty-four percent (454) of the new bandings were resident birds of which 37% (167) were hummingbirds. 110 stable isotope samples were collected from Swainson's Thrushes (every 5th bird).

After pilot monitoring in 2003 a full Northern Saw-whet Owl migration monitoring program was initiated at a site in the foothills southwest of Calgary. A total of 189 Northern Saw-whet Owls and 1 Boreal Owl were captured on 44 days between 16 September and 19 November. 61% were HY and 71% were F. An owl banded in a nest box in 2002 at Miquelon Lake was recaptured.

Trend analysis was undertaken on 28 species occurring as migrants at IBS and captured in sufficient quantity to allow analysis. Seven species evidenced significant or nearly significant change over the evaluation period:

Solitary Sandpiper	- 1.5%/year (p=0.06)
Trail's Flycatcher	4.2%/year (p=0.09)
Warbling Vireo	- 1.3%/year (p=0.11)
Orange-crowned Warbler	- 4.9%/year (p=0.10)
Yellow Warbler	- 3.2%/year (p=0.08)
American Redstart	2.5%/year (p=0.03)
Wilson's Warbler	3.6%/year (p=0.06)

Trends over the period 1995-2004 were compared to those for the same period for Last Mountain Bird Observatory. Orange-crowned Warbler showed a similar trend at both stations, both nearly significant.

Banders-in-Charge and volunteers contributed 465 man-days or approximately 3,720 hours to CBBS projects during 2004. Bird injuries and mortalities during CBBS projects remained low at 0.86% and 0.26% respectively.



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 complimentary 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;
- 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 (CNA) in 2000 with spring banding continued in 2001 (Cominco is still utilized for training);
- 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;
- a Northern Saw-whet Owl migration monitoring pilot program was carried out at Inglewood Bird Sanctuary in 2000 and subsequently discontinued; and
- pilot Northern Saw-whet Owl migration monitoring was carried out in 2003 and full migration monitoring initiated in 2004 at a location in the foothills southwest of Calgary.

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) coordinated and administered by Bird Studies Canada. Establishment of 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. The 2004 season was the tenth anniversary of CBBS migration monitoring.

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Canadian Migration Monitoring Network – Inglewood Bird Sanctuary is Site 6

FUNDING AND ACKNOWLEDGEMENTS

Funding proceeds other than membership dues and member donations during 2004 were:

- funds raised by the CBBS through participation in the Baillie Birdathon (\$4,160 net – \$5,760 gross);
- a grant from Canadian Wildlife Service through Ms. Brenda Dale (\$4,600);
- a grant from the Petro-Canada Volunteer Grant Program (\$500); and
- proceeds from running a 2-day casino under authority of the Alberta Gaming and Liquor Commission (\$71,370)

Funds were used to provide a per diem to Banders-in-Charge (BICs), cover in-country costs for the Costa Rica migration monitoring project, purchase mist-nets, produce the annual technical report, conduct stable isotope analyses of feather samples and cover migration monitoring miscellaneous costs (field data sheets, propane, batteries, film and processing etc.).

Sincere appreciation goes out to all members who have helped make 2004 another successful year for CBBS. Many non-members have helped immensely by volunteering at our casino, participating in the Baillie Birdathon and providing expertise such as carpentry, electrical etc. Thanks to you all.



MIGRATION MONITORING AT INGLEWOOD BIRD SANCTUARY

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 (1978-1988) indicated that a majority of Neotropical migrants in eastern North America decreased in their population index (Sauer and Droege 1992). Although destruction of tropical forests on the wintering grounds has been implicated in this decline, 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 known as 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 coordinated and administered by Bird Studies Canada. 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 has occurred since 2002 and 1995 respectively. 2004 is CBBS' 10th anniversary. Monitoring songbird population change based on fall mist-netting has been shown to be an effective technique (Dunn *et al.* 1997).

Methods and Study Site

Both spring and fall migration of Neotropical migrants were monitored in 2004 at Inglewood Bird Sanctuary (IBS). IBS' 35 hectares includes mature riverine balsam poplar forest known for its number and diversity of songbirds during spring and fall migration. Constant-effort mist-netting (i.e. constant number of nets in permanent locations for constant time 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, during fall migration. Twelve 12-m long x 30-mm mesh mist-nets were operated in permanent net lanes for approximately 6-hours each day beginning at sunrise. A daily census was obtained when possible. A census was not attempted when the number of migrants or volunteer shortage would result in unacceptable risk to captured birds (e.g. excessive holding time).

A migration monitoring protocol has been developed for IBS 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 and the daily census route are shown on Figure 2.

Monitoring Schedule and Coverage

Spring

Spring migration monitoring at IBS was conducted from 1 May to 7 June. This was the third year of full spring migration monitoring at IBS. In addition to standardized constant-effort mist-netting, a census route was surveyed 2-3 hours from the start of the netting. Coverage of 82% was achieved. That is, mist-netting occurred on 31 of the 38 target days for a total of 2177 net-hours (Table 1a, Figure 3a). Inclement weather (6 days) and a sick BIC (1 day) resulted in 7 days of the monitoring period without banding.

Fall

Fall migration monitoring at IBS was conducted from 28 July to 6 October. In addition to standardized constant-effort mist-netting, a census route was surveyed 2-3 hours from the start of the netting. Coverage of 100% was achieved. That is, mist-netting occurred on all 71 target days for a total of 4944 net-hours (Table 1b, Figure 3b). However inclement weather resulted in 5 days with a significantly reduced number of net-hours.

New Bandings

Spring

A total of 440 new bands were placed on birds of 41 species (Table 2a, Appendix 1a), an increase over 2003 but still a significant decrease from 2002. Days on which 25 or more new bandings occurred were 7, 13, 14, 15, 20, 22 May (Figure 3a). New banding totals by species at IBS are presented in Table 2a. The top 20 banded species are identified in Appendix 2. Species monitored at IBS based on criteria developed by Bird Studies Canada appear in Appendix 3 along with those criteria.

Fall

A total of 1872 new bands were placed on birds of 73 species (Table 2b, Appendix 1b). Days on which 50 or more new bandings occurred were 31 July and 4,8,13,18,19,21,25,26 August. Approximately 74% of new bandings occurred in August and 25% in September (Figure 3b). Although it has not been unusual for >50% of new bandings to occur in August, 74% is unusually high and may reflect good conditions during the breeding season. New bandings at IBS from 1992-2004 are presented in Table 2b. The top 20 banded species over all years, and during 2004, are identified in Appendix 2. Several species showed dramatic differences in 2004 in their rank compared to combined historical results. Orange-crowned Warbler was 9th in 2004 compared to 3rd from 1995-2004, Yellow-rumped Warbler was 5th versus 1st, Lincoln's Sparrow was 16th versus 11th, American Robin was 17th versus 7th, Traill's Flycatcher was 2nd versus 9th, Least Flycatcher was 11th versus 17th and Northern Waterthrush was 8th versus 12th.

Species monitored at IBS based on criteria developed by Bird Studies Canada appear in Appendix 3 along with those criteria.

General

Mist-netting can add another dimension to understanding the avifauna at a site particularly in detection of rare or elusive species. As in past years several species were banded at Inglewood that are infrequently reported by bird watchers: a Green Heron on 5 October was a rare record for Alberta; a Chestnut-sided Warbler on 5 September; a Mourning Dove on 28 July was a first banding for IBS; 2 Yellow-bellied Flycatchers on 22 and 24 August; a Pacific-slope Flycatcher on 18 August; and a Philadelphia Vireo on 16 September. Five Varied Thrushes banded during fall migration was unprecedented with only 1 having been banded previously. Eight Canada Warblers banded during fall migration was also unprecedented, 3 being the previous high.

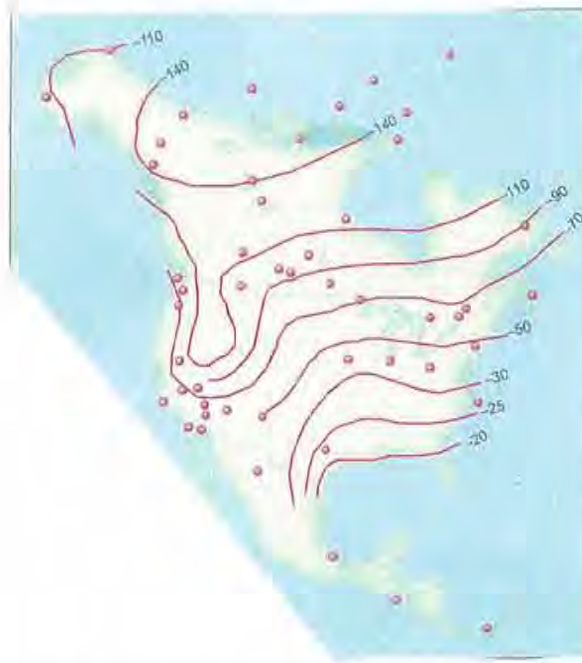
The *Oporornis* warblers are often difficult to detect and identify with binoculars. During 2004 migration monitoring at IBS 7 Mourning Warblers and 6 MacGillivray's Warblers were banded. A study of differences between Mourning and MacGillivray's Warblers captured at IBS has been underway since 1996. All birds are photographed when initially captured and additional morphometric detail and plumage characteristics documented. Stable isotope analysis of rectrices collected at IBS may help shed light on the geographic origin of Mourning and MacGillivray's Warblers banded 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. Ms. Dunn's analysis provided insight into the quality of IBS as a refueling stop for Neotropical migrants. A copy of her paper appeared in Appendix 4 of the 2003 ATR. Based on that work IBS appears to be an important refueling stop for migrating Neotropical migrants.

Stable Isotope Ecology

Techniques are being developed to identify the geographic origin of birds captured at CMMN sites using stable isotopes. This project offers the possibility of confirming the hypothesis that CMMN sites monitor birds from a wide area north-west 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 material was collected from 54 resident and migrant birds during 2003.

Table 3 presents the results from the analyses of samples collected in 2003. In general, feathers that are relatively depleted of deuterium (more negative values) were grown at higher latitudes or altitudes. See figure below from Hobson (2002). Our results indicate that IBS migrants originate from a wide range of latitudes/altitudes. According to J. Duxbury (pers. comm.) a



range of -105 to -110‰ is characteristic of the Alberta/Montana border based on Peregrine Falcon and Burrowing Owl nestling feathers. An approximate hydrogen isotope ratio value of -145‰ is characteristic of Edmonton area Peregrine Falcons, and -170‰ to -180‰ is characteristic of Yukon. While nestling feathers were not collected in montane regions, altitude can cause hydrogen isotope ratios to become depleted in a similar manner as latitude. Therefore, some knowledge of the breeding habitat of study species is helpful in interpreting isotope ratio data.

Most of the IBS samples appear to have originated north of IBS although two species, Swainson's Thrush and MacGillivray's Warbler, have samples that are suggestive of southern and/or western origin. Two Yellow Warblers, originally banded at IBS in 2001 and 2002, exhibit values significantly lower than would be expected if these birds were in the IBS area during the 2002 breeding season. A possibility, although unlikely, is that these two birds are examples of migratory stopover site fidelity and in fact bred during 2003 a significant distance north of IBS. The House Wren sample with a value of -60.8‰ , also a return from 2002, appears to be an example of loss of a feather on the wintering ground. This value is characteristic of the southern US or northern Mexico.

Across the continent of North America, there is a slight gradient of more positive carbon ratio values in the south with values becoming more negative with latitude. Carbon isotope ratio values ($\Delta C13$) in the -23 range are indicative of a boreal forest origin and most of the IBS samples are in line with that interpretation.

A total of 919 feather samples were collected from 28 species at IBS during 2004. Analysis is anticipated to begin in the near future likely on a species by species basis.

Recaptures

Recaptures at IBS during migration monitoring totaled 860 of 581 different birds of 50 species. Recapture rates were highest ($\geq 100\%$) in resident species (e.g. House Wren, Black-capped Chickadee, Downy Woodpecker). However some resident species evidenced a relatively low recapture rate suggesting that migrants swell the ranks (e.g. Yellow Warbler, Western Wood-Pewee, American Robin). A few migrant species appear to use IBS for moulting or extended pre-migratory foraging as evidenced by high recapture rates (e.g. Wilson's Warbler, Tennessee Warbler, Northern Waterthrush).

Species Recaptured at Inglewood Bird Sanctuary during MM 2004					
Species	Recap	Banded	Species	Recap	Banded
Solitary Sandpiper	5	8	Yellow Warbler	63	178
Belted Kingfisher	4	7	Yellow-rumped Warbler	32	284
Downy Woodpecker	17	17	American Redstart	6	19
Northern Flicker	5	7	Ovenbird	23	38
Western Wood-Pewee	2	21	Northern Waterthrush	71	85
Trail's Flycatcher	64	203	Connecticut Warbler	2	6
Least Flycatcher	5	46	Mourning Warbler	2	7
Eastern Kingbird	4	18	MacGillivray's Warbler	6	7
Warbling Vireo	2	12	Common Yellowthroat	10	19
Tree Swallow	9	11	Wilson's Warbler	84	254
Black-capped Chickadee	42	22	Canada Warbler	9	8
Red-breasted Nuthatch	3	8	Western Tanager	1	11
White-breasted Nuthatch	3	5	American Tree Sparrow	2	4
House Wren	162	146	Chipping Sparrow	15	156
Golden-crowned Kinglet	1	1	Fox Sparrow	1	12
Ruby-crowned Kinglet	1	18	Song Sparrow	12	23
Swainson's Thrush	13	81	Lincoln's Sparrow	27	67
Hermit Thrush	1	9	White-throated Sparrow	31	47
American Robin	24	60	Harris' Sparrow	1	1
Gray Catbird	9	25	White-crowned Sparrow	4	38
Cedar Waxwing	12	55	Rose-breasted Grosbeak	1	5
Tennessee Warbler	47	110	Brown-headed Cowbird	5	11
Orange-crowned Warbler	7	57	Baltimore Oriole	6	13
			American Goldfinch	2	2

Fifty-three birds banded in previous years were recaptured in 2004. All year-to-year recaptures from 1992-2004 are presented in Appendix 4. 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 re-appear a number of years after banding. Of note are:

- Black-capped Chickadee banded in 1999 and recaptured every year since;
- House Wren banded in 2000 and recaptured every year since; and
- An American Robin banded in 1998 and recaptured for the 1st time in 2004.

Daily Estimated Totals (DETs)

The daily estimated totals (DETs) represent the total number of birds, by species, detected at the IBS migration monitoring site each day. Each DET incorporates capture data as well as a standardized census and any casual observations made during banding operations. The DETs, after removal of probable and known stopovers (PKS), give an overall description of bird migration. DET is secondary, and inferior to, mist-netting as a monitoring measure at IBS. If high capture rates and/or personnel shortage create a risk to the welfare of the birds, a census (and therefore a DET) is not done.



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 2004 field season was MAPS 16th year of North American operation.

MAPS 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 of these species have been captured at IBS although only American Robin, Warbling Vireo, Yellow Warbler, Song Sparrow, and Lincoln's Sparrow are breeders. MAPS data is provided to the Institute for Bird Populations in Point Reyes, CA where it is integrated with data from the over 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 landbirds. 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. Ten 30-mm mist-nets are operated for 6 hours from sunrise on one day in each of the ten-day periods. Mist-netting commences the first ten-day period during which the majority of breeding adults of the target species have established territories and migrant individuals of these species are no longer passing through the area. 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 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.

MAPS Schedule and Coverage

2004 marked the 12th year of the MAPS project at IBS since 1992. Unavailability of qualified personnel precluded gathering data in 1994. In 2004 a total of 421 net-hours were achieved over 7 periods. Although period 4 is no longer required at stations at the latitude of IBS we have continued with it in most years out of tradition.

Results

The number of each species banded, by date, during 2004 are summarized in Table 4. The number of each species that were banded is summarized in Table 5 and Figure 5 for 2004 as well as the 11 previous years.

Discussion

The number of new bandings has fluctuated from year to year but has generally trended downward until 2004. This year recorded the second highest numbers of birds and species since 1992. Both Least Flycatcher and Warbling Vireo were notable by their absence perhaps indicating deterioration in habitat quality for these species. Lack of regeneration of balsam poplar continues to be an issue at IBS. Gray Catbirds continued to be recorded in relatively high numbers. A large number of migrants recorded on 3 August, the last MAPS day swelled the overall species count and to a lesser extent the number of birds.

MIGRATION MONITORING AT LAS CALETAS, COSTA RICA

Introduction

A migration monitoring site on the Osa Peninsula on the Pacific coast of Costa Rica was identified in 1998 and pilot migration monitoring was initiated in 2002 and continued in 2003 (Figure 4). A full migration monitoring program was initiated in 2004 to monitor Neotropical migrants on their northward migration through Central America as a complement to the migration monitoring carried out at IBS.

Study Site

The Las Caletas migration monitoring site is located on the Pacific coast of southwest Costa Rica on the Osa Peninsula just north of Corcovado National Park in the vicinity of the Las Caletas ecotourism lodge. Las Caletas is located on the south coast of Drake Bay, a few kilometres southwest of the small village of Agujitas and is accessed by a 2 hour boat trip from the town of Sierpe, down the Sierpe River and southwest across Drake Bay. The lodge is on a hill looking north over the Pacific Ocean. The monitoring station is 200-m further uphill south of the lodge.

Methods

Migration monitoring methods used during spring 2004 were similar to those at IBS. Constant-effort mist-netting 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 on each day, weather permitting. Thirteen 12-m long x 30-mm mesh mist-nets were operated for approximately 6 hours each day beginning at sunrise (~ 0530 to 1130). USFWS aluminum bands were applied to migrants while CBBS-purchased bands were applied to species resident in the area including hummingbirds.

Monitoring Schedule and Coverage

Spring migration monitoring was conducted from 28 March – 29 April. Mist-netting occurred on all 33 days for a total of 2468 net-hours (Table 6).

Captures

In total, 1283 birds of 79 species were captured of which 983 (77%) were new bandings, 45 (3.5%) were released or otherwise un-banded and 255 (20%) were recaptures (Table 6, Appendix 5). New species captured in 2004 included Ruddy Quail-Dove (5), Green Kingfisher (4), Golden-naped Woodpecker (1), Philadelphia Vireo (1), Clay-colored Robin (1) and Yellow Warbler (1). Also noteworthy in 2004 was a second capture of a Snowy-bellied Hummingbird, a species not expected to occur at Las Caletas. Fifty-six percent (574) of the new bandings

were migrants of which 95% (546) were Swainson's Thrushes and 2% were Alder/Willow Flycatchers. Forty-four percent (454) of the new bandings were resident birds of which 37% (167) were hummingbirds. Ninety-one percent (232) of the recaptures were resident species. Eighteen Swainson's Thrushes were recaptured: 8 (44%) same day; 3 one day after banding; and 1 each two, three, four, six and nine days post-banding. Although this species appears to be moving through the Las Caletas area with purpose at least a few birds are lingering to forage prior to continuing their northward migration. None of the Alder/Willow Flycatchers were recaptured. A Mourning Warbler was recaptured four times up to 17 days post-banding, perhaps a wintering bird. A Northern Waterthrush was recaptured 3 days post-banding.



Recapture of resident birds allows quantification of year-to-year survivorship. Ninety-seven birds banded in either 2002 or 2003 were recaptured in 2004. Based on year-to-year data we get an indication of the survivorship that neotropical resident birds exhibit (see below).

It should be kept in mind that many of these survival rates are based on small sample sizes. Data from future years of monitoring will increase sample sizes and refine survivorship rates.



Species	Y-Y survival	N
Gray-chested Dove	13%	8
Black-throated Trogon	50%	2
Blue-crowned Motmot	50%	4
Rufous-tailed Jacamar	100%	1
Olivaceous Piculet	50%	4
Buff-throated Foliage-gleaner	25%	11
Plain Xenops	45%	11
Scaly-throated Leafhopper	25%	4
Tawny-winged Woodcreeper	54%	7
Wedge-billed Woodcreeper	41%	22
Black-hooded Antshrike	38%	16
Streak-headed Woodcreeper	13%	8
Slaty Antwren	50%	2
Dot-winged Antwren	20%	32
Chestnut-backed Antbird	26%	21
Bicolored Antbird	17%	11
Ochre-bellied Flycatcher	25%	42
Northern Bentbill	33%	8

Species	Y-Y survival	N
Red-capped Manakin	39%	49
Tawny-crowned Greenlet	33%	3
Riverside Wren	8%	13
Long-billed Gnatwren	41%	13
Bananaquit	18%	21
Gray-headed Tanager	28%	13
White-shouldered Tanager	26%	14
Black-cheeked Ant-Tanager	21%	13
Cherrie's Tanager	24%	11
Thick-billed Seed-Finch	18%	10
Orange-billed Sparrow	36%	29
Blue-black Grosbeak	23%	13
Ruddy-tailed Flycatcher	44%	6
Yellow-bellied Flycatcher	100%	1
Bright-rumped Attila	25%	10
Thrush-like Schiffornis	58%	4
Orange-collared Manakin	45%	42
Blue-crowned Manakin	35%	18

Discussion

Migration monitoring at Las Caletas in 2004 confirmed the encouraging results from the pilot migration monitoring programs in 2002 and 2003. Figure 6 presents the daily captures of all migrants including Swainson's Thrushes during 2002-2003 and 2004. CBBS intends to replicate this standardized migration monitoring at Las Caletas during 2005.

Stable Isotope Ecology

One hundred and ten rectrices were collected from Swainson's Thrushes at Las Caletas in 2004. Every fifth bird was sampled. These samples have been prepared and submitted for analysis. A Swainson's Thrush banded at Las Caletas in 2002 was recovered in Ohio (see Significant Re-encounters). Stable isotope analysis should provide interesting insight into the natal and breeding origins, as well as migration phenology, of the birds passing through Las Caletas in spring.

NORTHERN SAW-WHET OWL MIGRATION MONITORING

Background

During 2003 a site in the foothills southwest of Calgary 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-18 November with encouraging results. A full monitoring program was implemented in 2004.

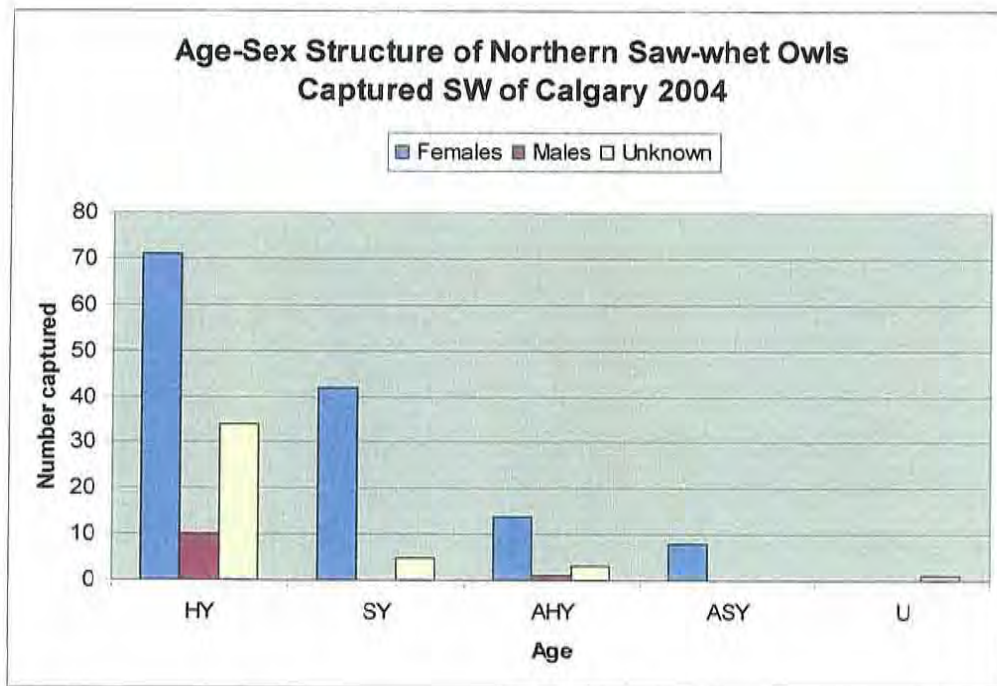
Methods

Monitoring was begun 16 September and continued through 19 November based on data from Delta Marsh Bird Observatory (2000-2003) and Beaverhill Bird Observatory that indicates the majority of Northern Saw-whet Owl movement occurs between 15 September and 31 October peaking in mid-October. A continuous recording of Northern Saw-whet Owl calls was played at 80% volume in a portable CD "ghetto-blasters" from the center of an array (double H) of five 12-m long 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. Tape 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 1-2 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 188 Northern Saw-whet Owls and 1 Boreal Owl were captured and banded during 890 luring hours on 44 days between 16 September and 19 November (Figure 7). The 21 days when monitoring did not occur were primarily due to access being denied by the landowner. Adverse weather played a secondary role. Although peak movement occurred during the last 10 days of September and the first few days of October owls were captured as late as 13 November. One Boreal Owl was captured on 25 October.

HY, SY, AHY, ASY and U age birds comprised 61%, 25%, 9.5%, 4.2% and 0.5% of Northern Saw-whet Owl captures respectively (see histogram below). Females comprised 71% and males 6% while 23% could not be sexed with confidence. Three owls were recaptured: 1 same evening; 1 seven nights later; and the other 25 nights later. One owl originally banded elsewhere was captured (see Significant Recaptures).



Discussion

This site southwest of Calgary appears to be suitable 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 8). CBBS intends to continue a full monitoring program in 2005 and the future. More complete coverage during the monitoring period is desirable but will depend on the inclination of the landowner.



SIGNIFICANT RE-ENCOUNTERS

Interesting re-encounters of birds banded in previous years are listed below. All recaptures (53) of birds banded prior to 2004 are indicated in Appendix 4. As in 2003 no recoveries of Swainson's Thrushes banded in previous years occurred. The choice of which recaptures to include here 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 more infrequently and for which longevity data may be lacking are included even if inferred age is <5 years.

Swainson's Hawk 0987-28130 Banded as ASY-F on 3 May 2000 at Calgary Airport and relocated to Balzac. Found dead in next LL block S (Calgary Airport vicinity) on 10 May 2004.

Northern Saw-whet Owl 1204-27931 Banded as L-U in a nest box at the S end of Miquelon Lake on 10 June 2002. Recaptured SW of Calgary on 1 October 2004 as a female. **2-years old. 284-km SSW (204°).**

Western Wood-Pewee 2200-47351 Banded as SY-U at Inglewood Bird Sanctuary on 9 June 2001. Recaptured there on 5 June 2004. **At least 4-years old.**

Eastern Kingbird 1791-21021 Banded as AHY-F at Inglewood Bird Sanctuary on 15 August 2001. Recaptured there on 7 August 2004. **At least 4-years old.**

Swainson's Thrush 1431-59160 Banded as SY-U at Las Caletas, CR on 29 March 2002. Found dead on 18 May 2002 in Lima, OH. **Migrated approximately 3553-km due N (359°) at a rate of 71-km/day.**

American Robin 1152-38721 Banded as AHY-U at Inglewood Bird Sanctuary on 25 July 1998. Recaptured there on 23 May 2004 as a male. **At least 7-years old.**

American Goldfinch 2190-10309 Banded as AHY-M at Inglewood Bird Sanctuary on 28 July 2001. Recaptured there on 9 August 2004. **At least 4-years old.**

TREND ANALYSIS

Table 8 presents the results of trend analysis on those species that are monitored at Inglewood Bird Sanctuary during fall migration. Monitored species are those for which at least 10 individuals are captured on at least 5 different days (Appendix 3). Figure 9 illustrates graphically the trend to date for 7 species that are evidencing significant or nearly significant trends plus White-crowned Sparrow which is a species that has shown extraordinary constancy in terms of the numbers of new captures each year..

Trend analysis is based on total captures from 1995-2004 and represents the results of simple linear regression within Microsoft EXCEL. Daily captures were log-transformed, summed and normalized by dividing by the number of days monitored within the species' "window" of migration as inferred from the overall 1995-2004 capture data. Captures were left as 0 on days when monitoring did not occur. Actual confidence level (P) is indicated. Note that scientific investigation normally requires a P level of <0.05 and preferably <0.01 in order to consider results significant. Due to net-lane inconsistencies year-to-year 11 species could only be analyzed using a subset of the data.

Although the trends with low P values are likely real, the cause behind them is unclear. Only time and comparison to other CMMN stations will indicate whether significant trends are due to changes in regional populations or to other confounding variables such as weather or habitat change in and around IBS.

Annual indices 1995-2004 were obtained from Last Mountain Bird Observatory (Al Smith). The table below presents the comparison for 6 species monitored at IBS with a trend P value of ≤ 0.30 also monitored during fall at Last Mountain Bird Observatory. One species, Orange-crowned Warbler, is showing a nearly significant decline at both stations. Correlating trends between migration monitoring stations adds strength to the interpretation that a trend is reflecting regional population(s).

Species	Inglewood		Last Mountain	
	Trend (%/yr)	P value	Trend (%/yr)	P value
Traill's Flycatcher	4.2	.09	0.6	.60
Warbling Vireo	-1.3	.11	-0.5	.93
American Robin	-2.8	.13	0.9	.82
Orange-crowned Warbler	-4.9	.10	-2.4	.16
Yellow Warbler	3.2	.08	-0.8	.40
Dark-eyed Junco	-1.4	.15	2.1	.46

PERSONNEL

Volunteers

Volunteer participation in all of the 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 no more than 3 people are in the reserve at one time, in order to minimize impact. Thus, on any given day, a Bander-in-Charge and 1 or 2 volunteers carry out the banding.

Without donated time, primarily by members of the Calgary Bird Banding Society, the high degree of success of CBBS projects would not have been possible. Sincere appreciation is extended to all of the banders-in-charge and volunteers listed in Table 10 who contributed approximately 8 hours on each day indicated (465 man-days or 3,720 hours).

Banders-in-Charge (BIC)

No salaried staff are involved in any CBBS projects. However, a daily per diem is available to all Banders-in-Charge (BICs) during migration monitoring and MAPS at IBS. 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 discharged. The per diem established by the general membership for the 2004 field season continued at \$100/day.



MORTALITIES AND INJURIES

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

Table 11 presents all casualties during the 2004 migration monitoring, including the Costa Rica and Northern Saw-whet Owl projects, and MAPS projects. 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 continues to remain low and is dominated by predation. The injury rate in 2004 declined slightly to 0.86% and overall remains low due to the commitment and skill of CBBS members (Figure 10).

Increases through 1997 were in part due to an increased awareness of banding personal to record even slight abrasions. In other words, the data pre-1998 likely underestimates the rate of injury. Notwithstanding demonstrated improvement the CBBS continues to review each casualty to identify potential for reduction or avoidance of similar occurrences in the future.



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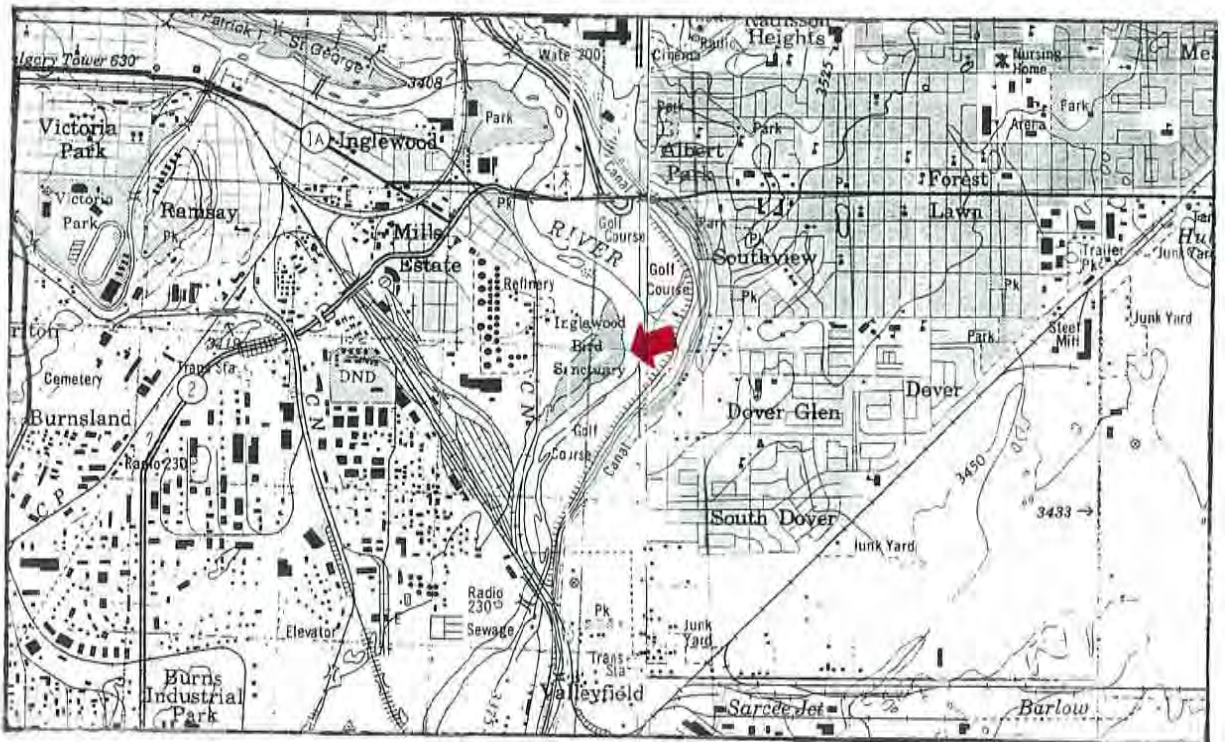
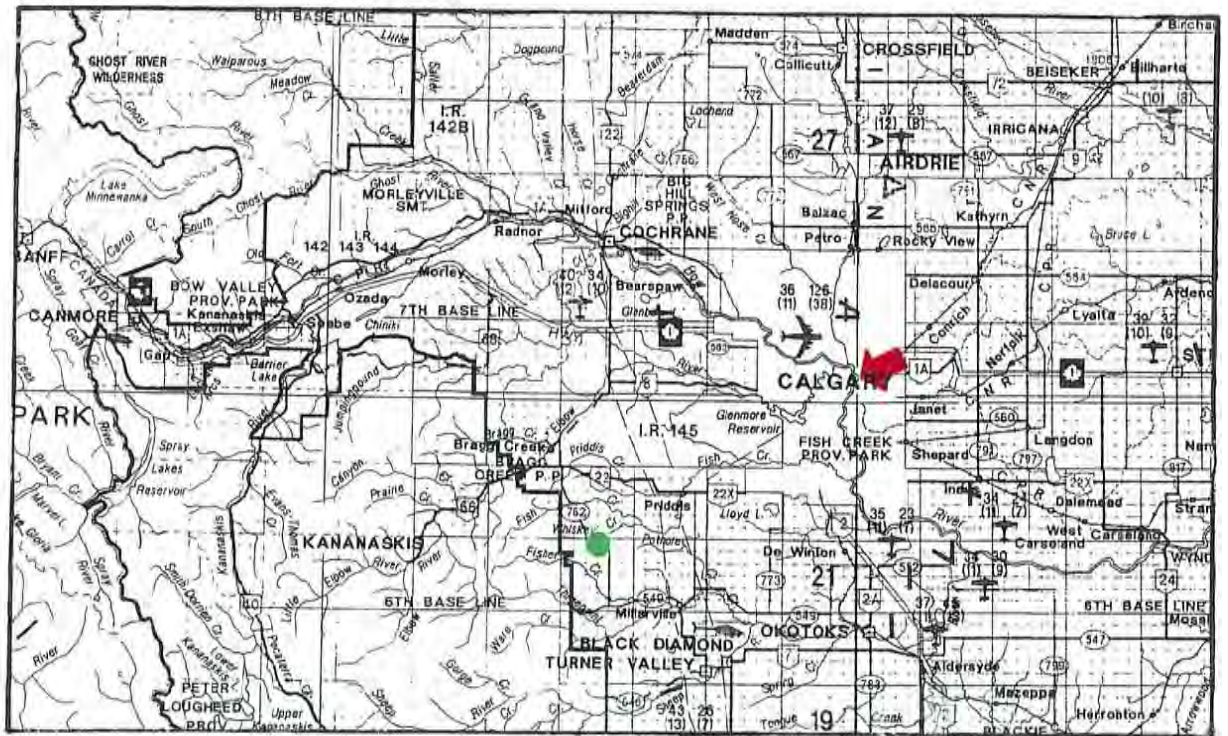


Figure 1. Topographic maps at 1:250,000 (top) and 1:50,000 (bottom) scales showing location of Inglewood Bird Sanctuary in southwestern Alberta. North is up. Green dot indicates location of CBBS Northern Saw-whet Owl migration monitoring site.

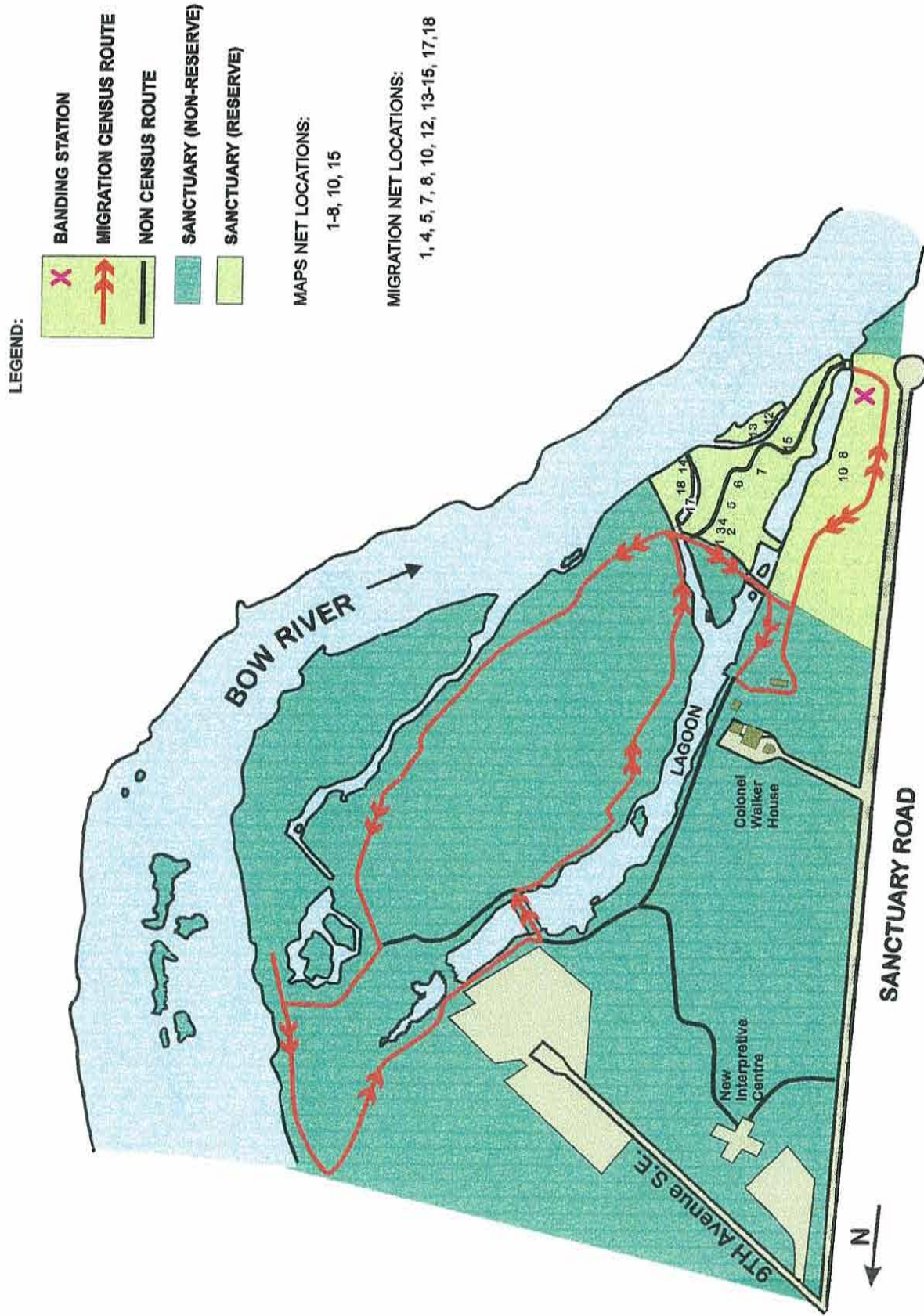


Figure 2. Schematic of Inglewood Bird Sanctuary migration monitoring station

Figure 3a. New bandings at Inglewood Bird Sanctuary - Spring 2004

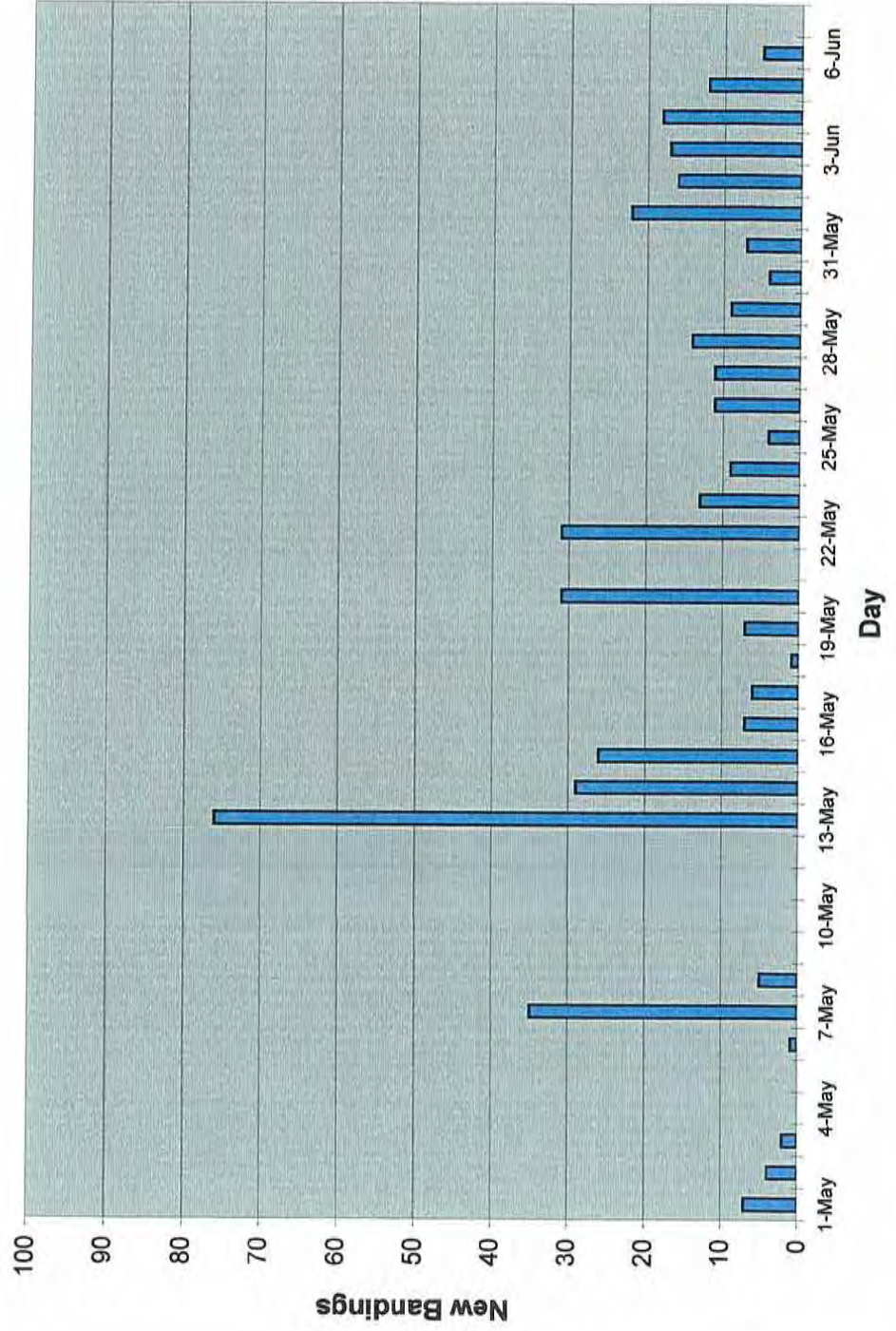
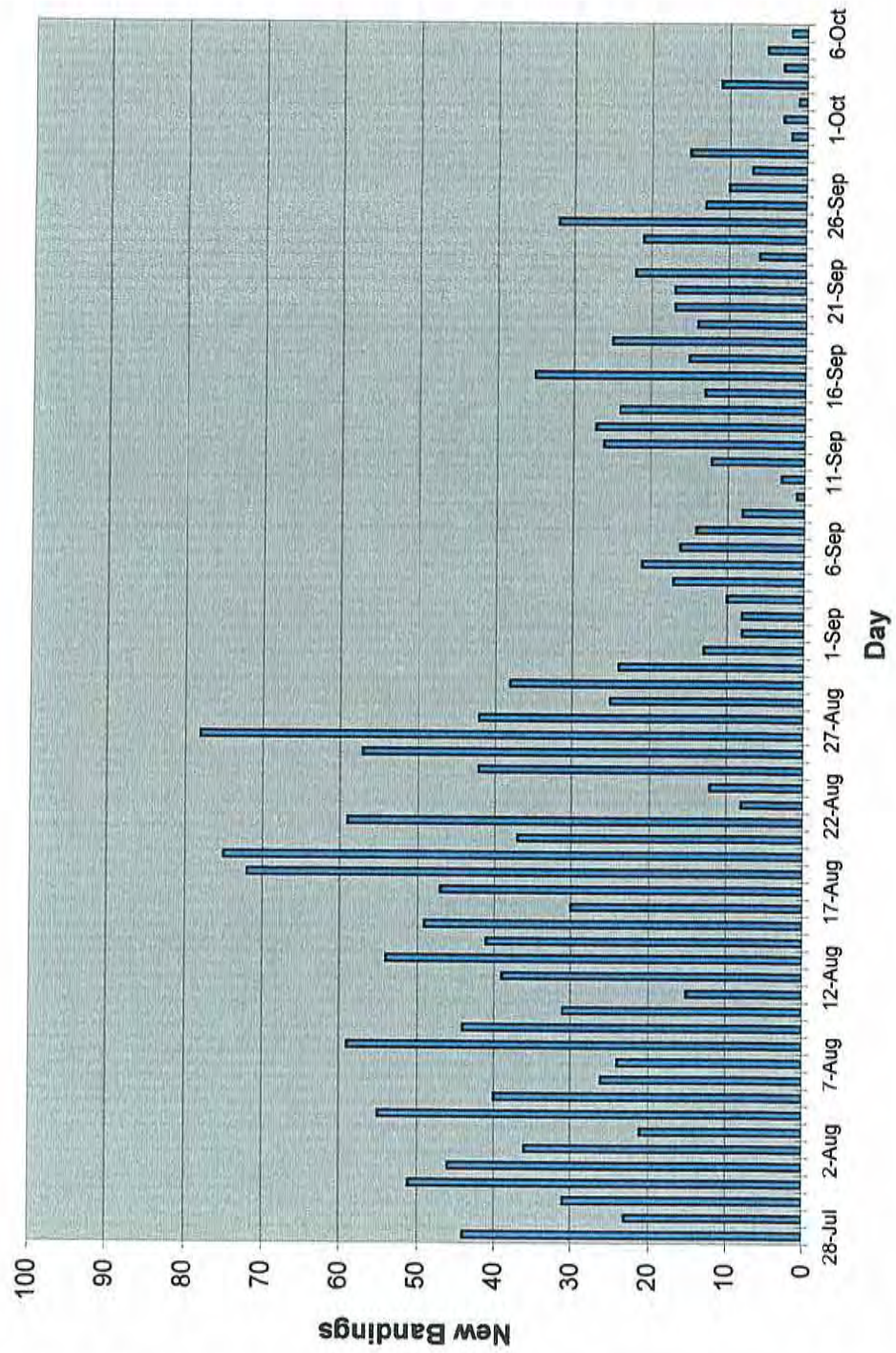


Figure 3b. New Bandings at Inglewood Bird Sanctuary - Fall 2004





PACIFIC OCEAN

GULF OF CORONADO

COSTA RICA
Central America

EASTERN SECTION

LEGEND

- National Capital **SAN JOSE**
- Provincial Capital **HEREDIA**
- Cantonal Capital **ESCAZU**
- District Town **San Antonio**
- Primary Route Number
- Secondary Route Number
- Emergency Hospital
- Hotels
- Gasoline Station
- Mountain Peaks
- Points of Interest **Atenas**
- Distances in Kilometers
- Protected Areas
- Wetland Areas
- Elevation in Meters **Iglesias Hill 634**

1:200,000 APPROX.
1 INCH = 6.2 MILES

0 30 40 KILOMETERS
0 20 MILES

Kilometers
Conic Projection
Scale: 1:200,000, National Geographic Institute
Cartographer Tec.

Figure 4. Location of CBBS Migration Monitoring Site at Las Caletas, Costa Rica

Figure 5. MAPS at Inglewood Bird Sanctuary 1992-2004

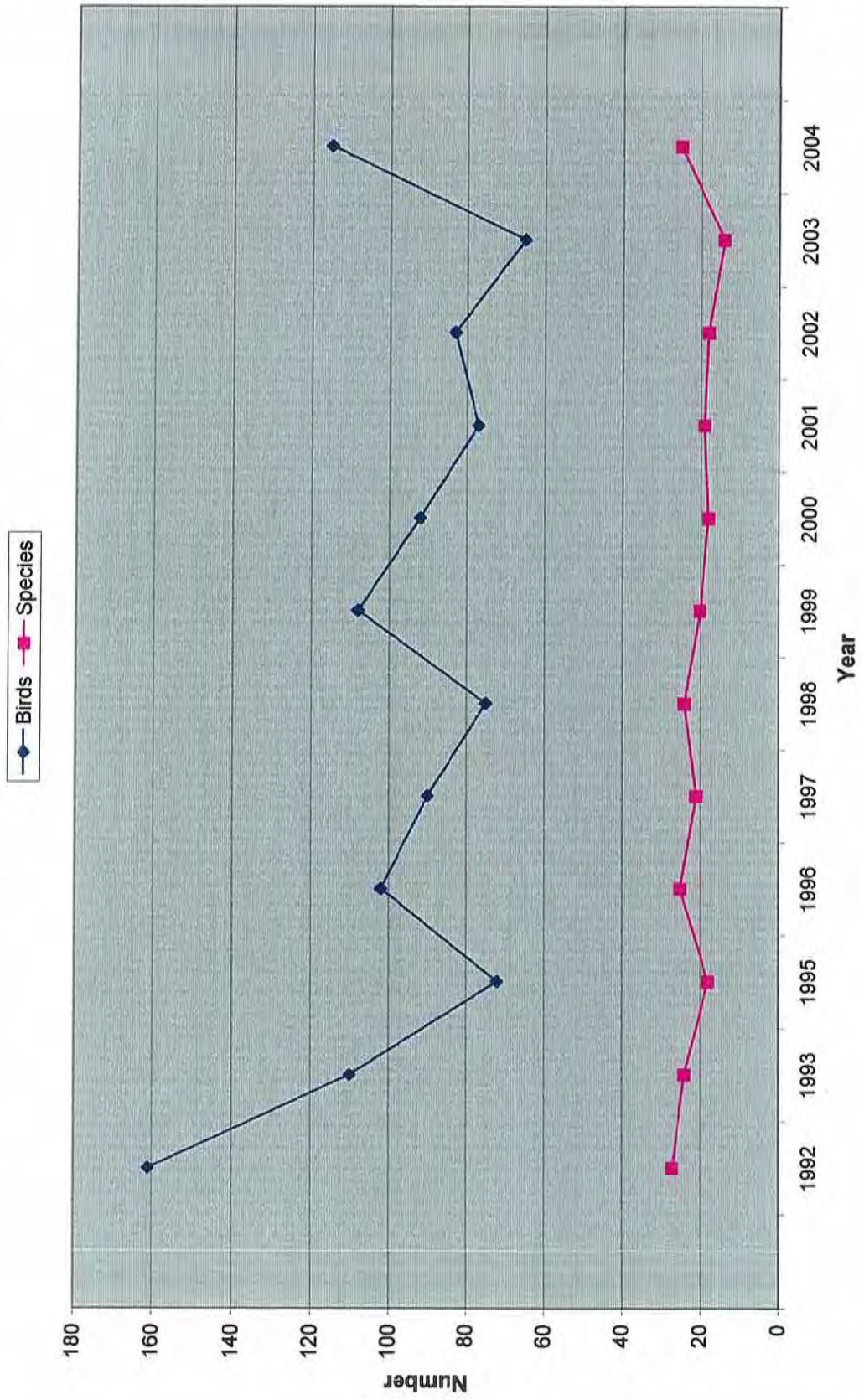


Figure 6. Migrant New Captures at Las Caletas, CR

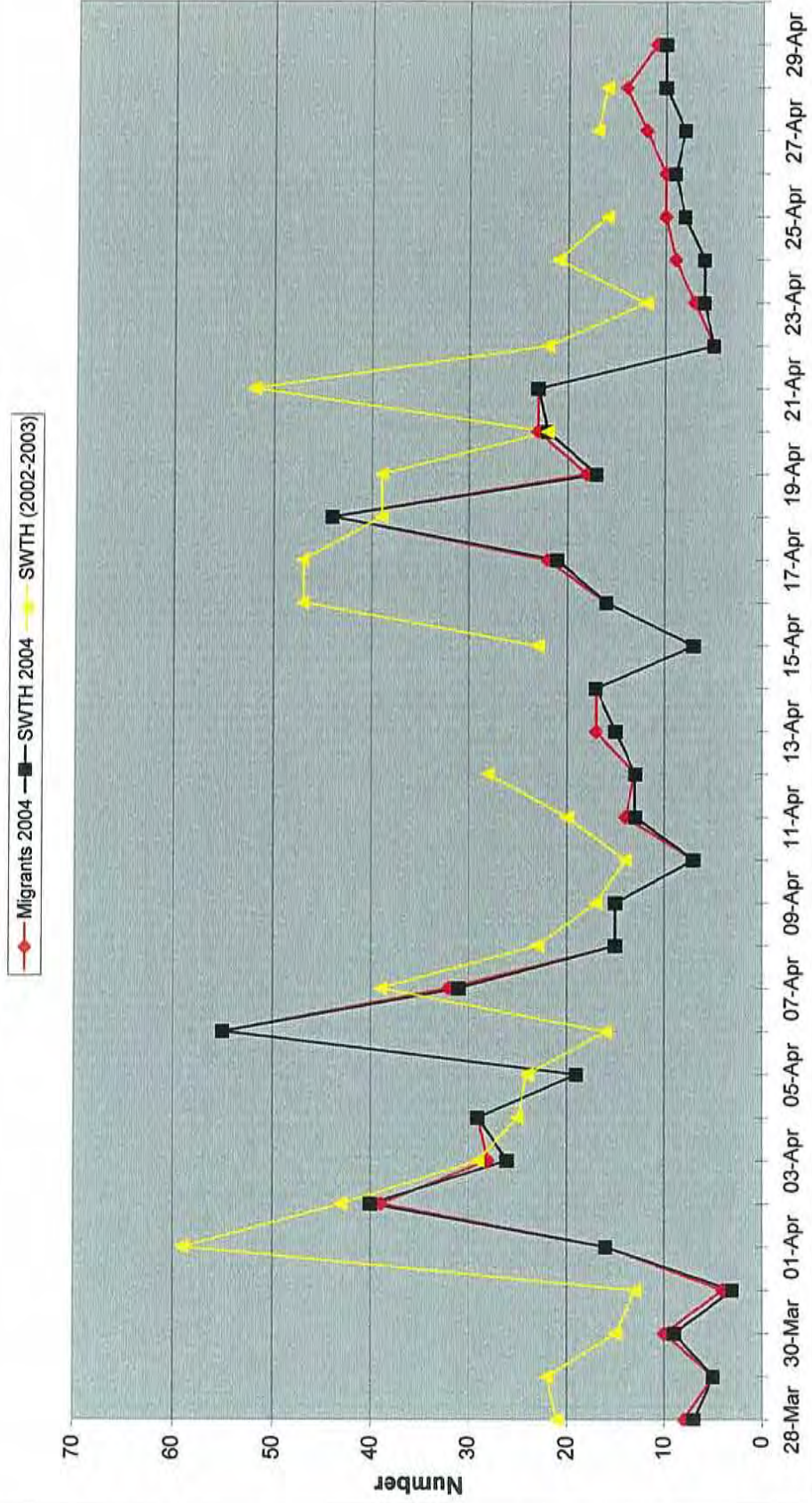


Figure 7. Northern Saw-whet Owl New Captures 2004
 (new bands=188, unbanded=1)

Number = 0.1 indicates nets up but no owls captured

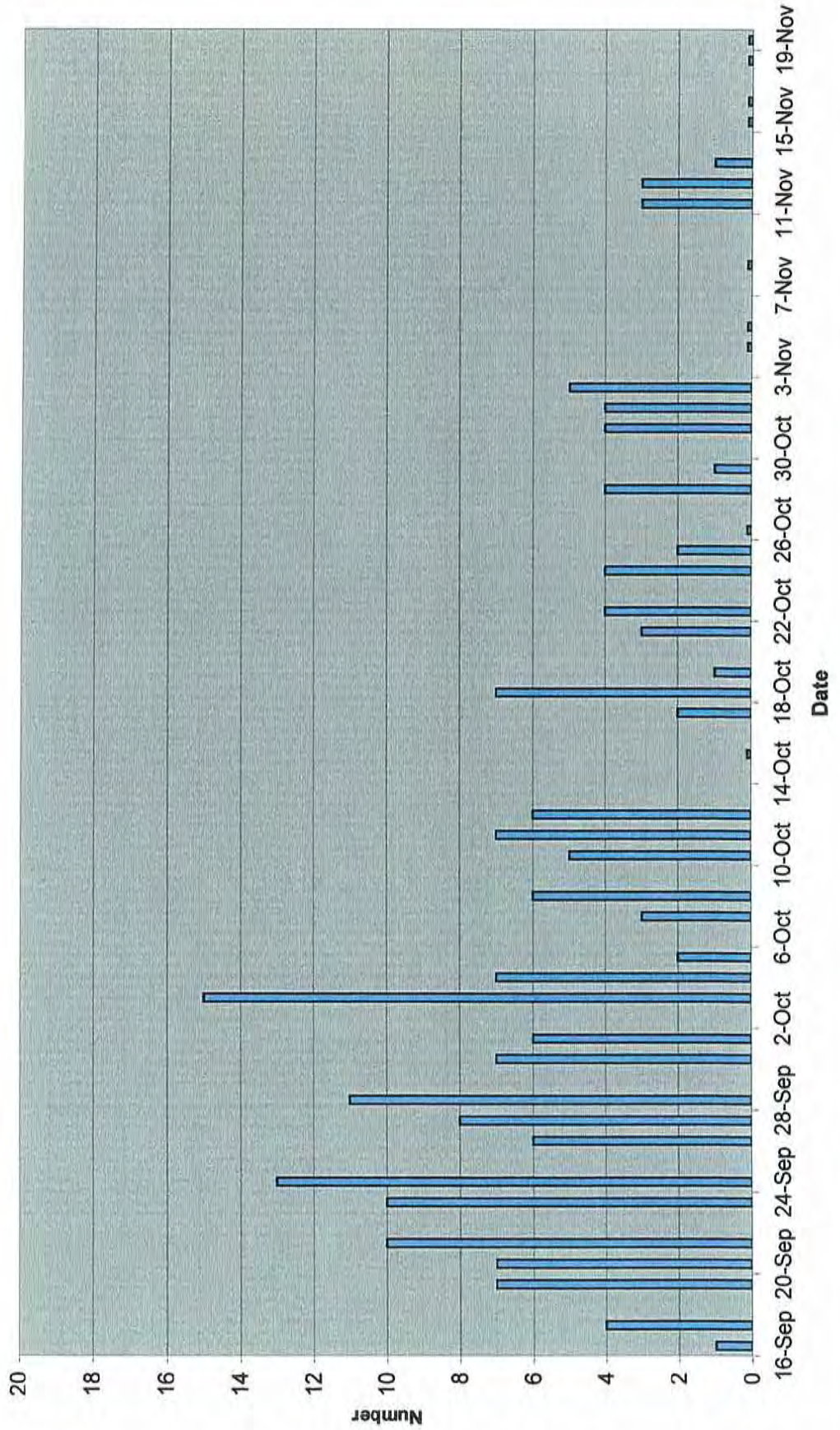


Figure 8. Northern Saw-whet Owl Migration Monitoring Stations Across North America

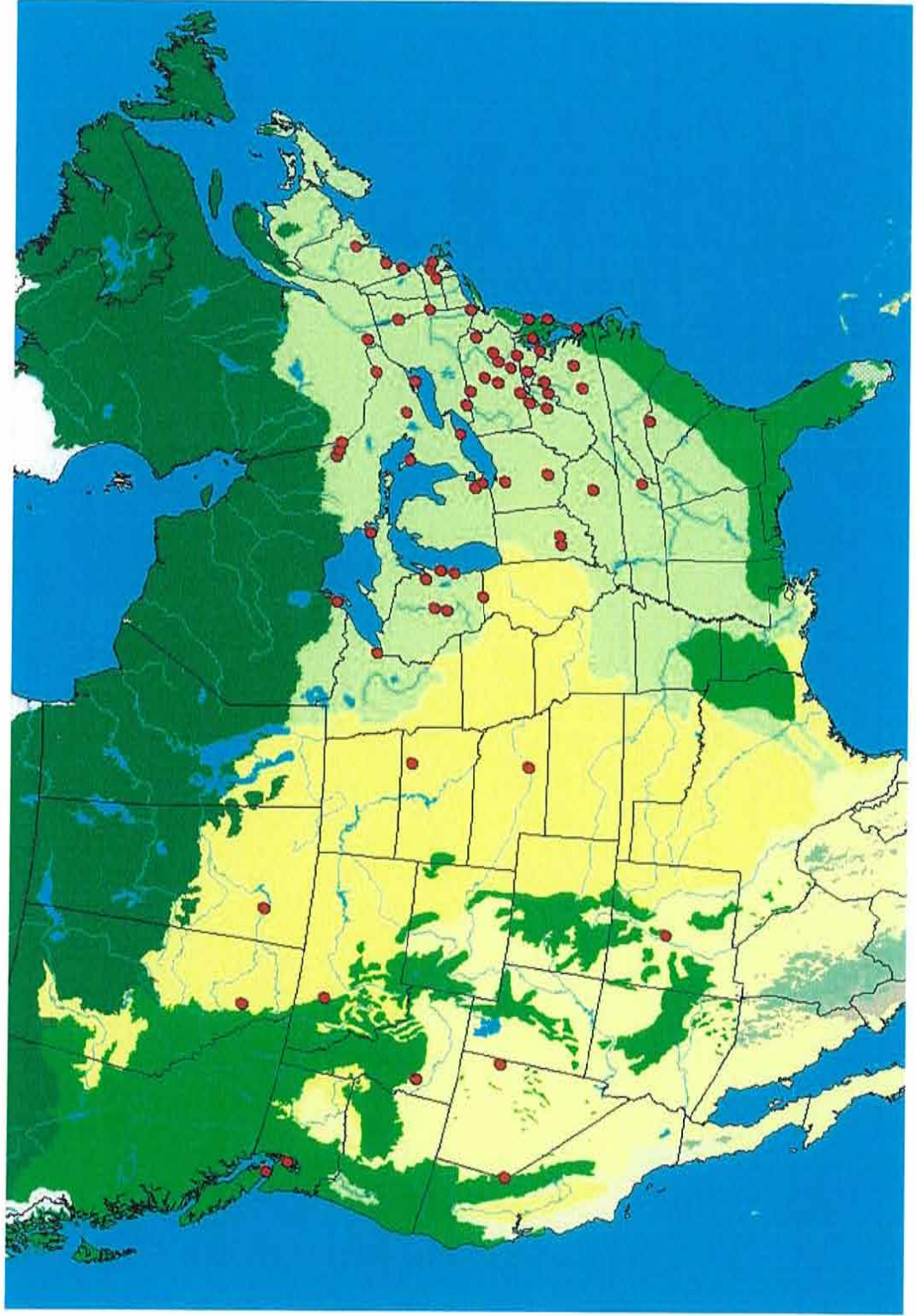


Figure 9. Trends in Select Species at Inglewood Bird Sanctuary

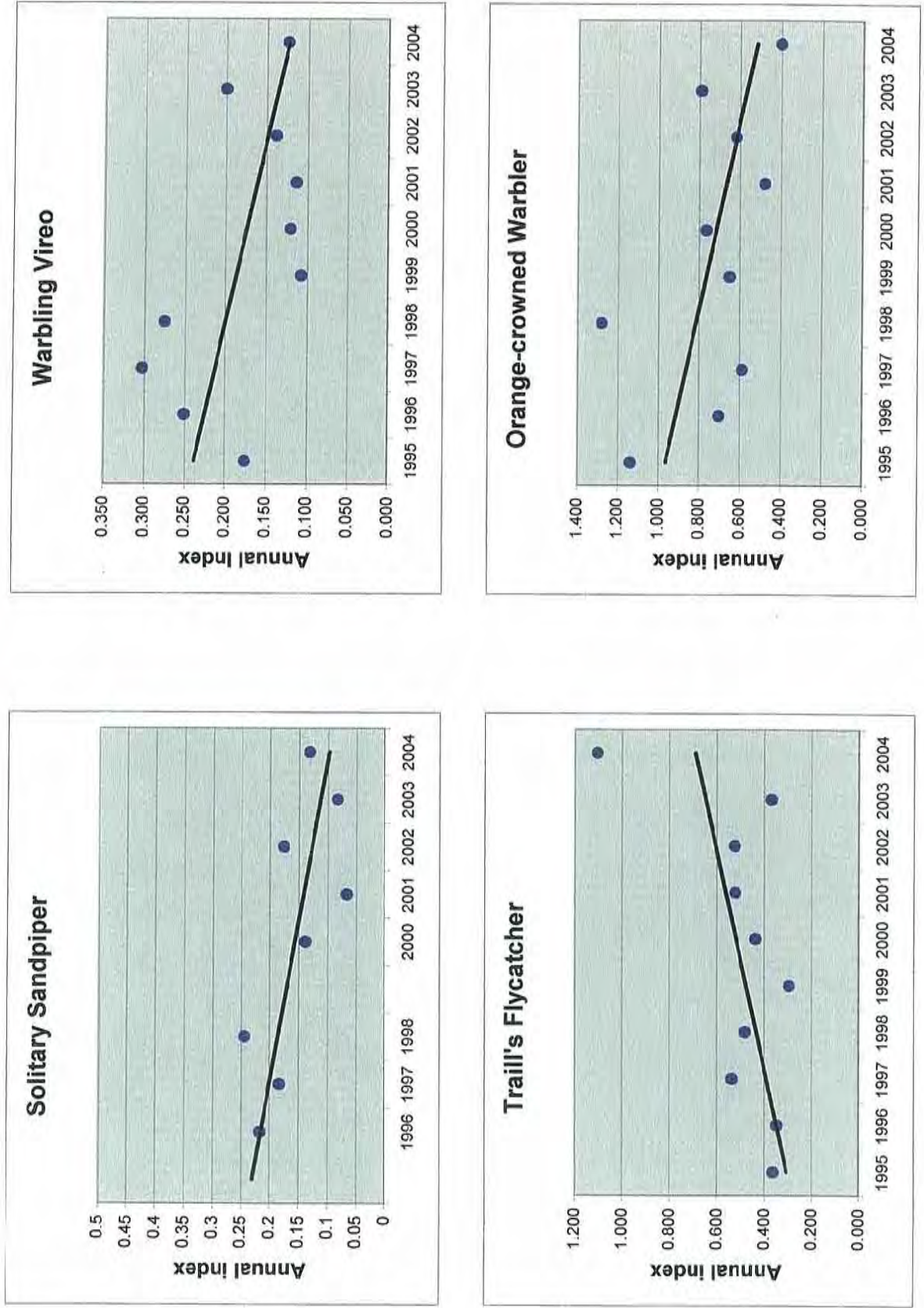


Figure 9. Trends in Select Species at Inglewood Bird Sanctuary

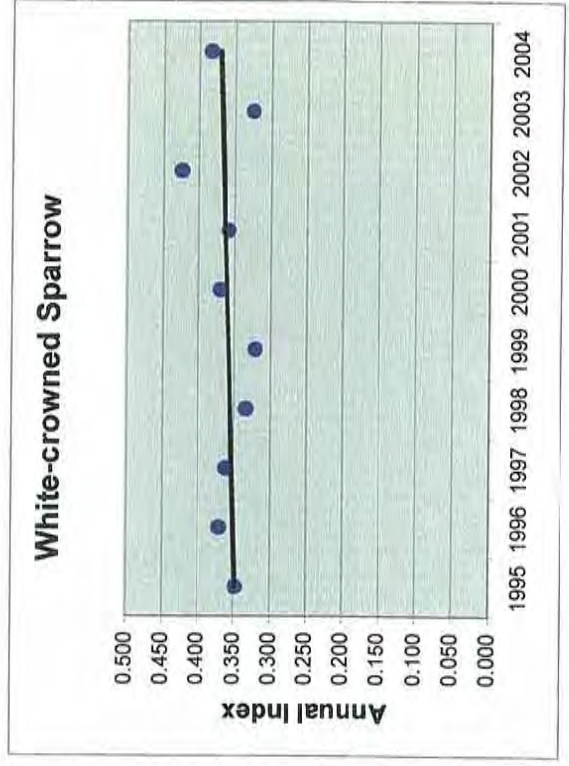
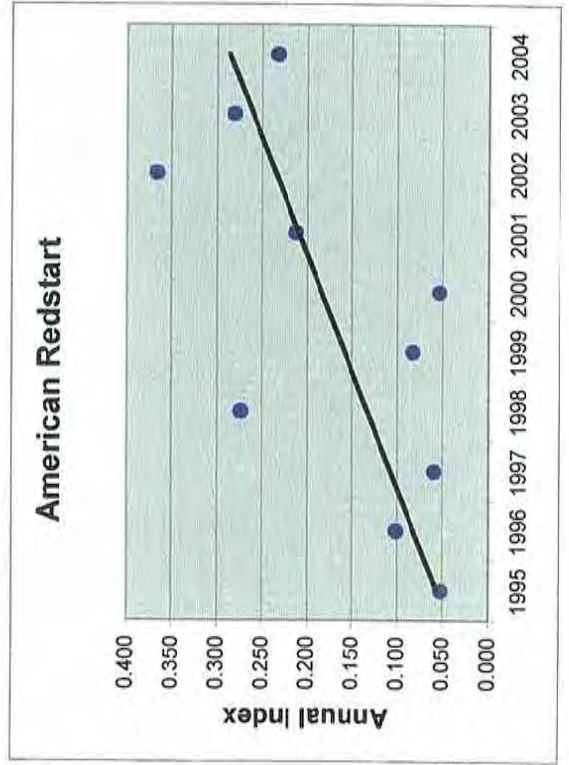
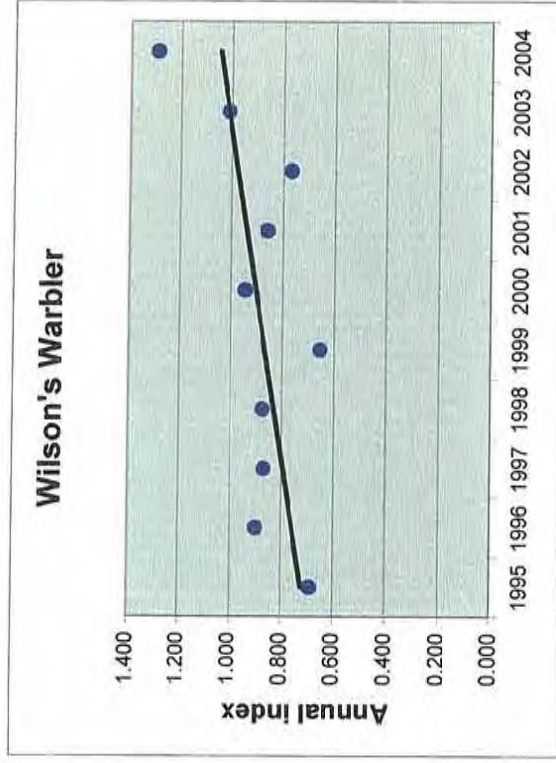
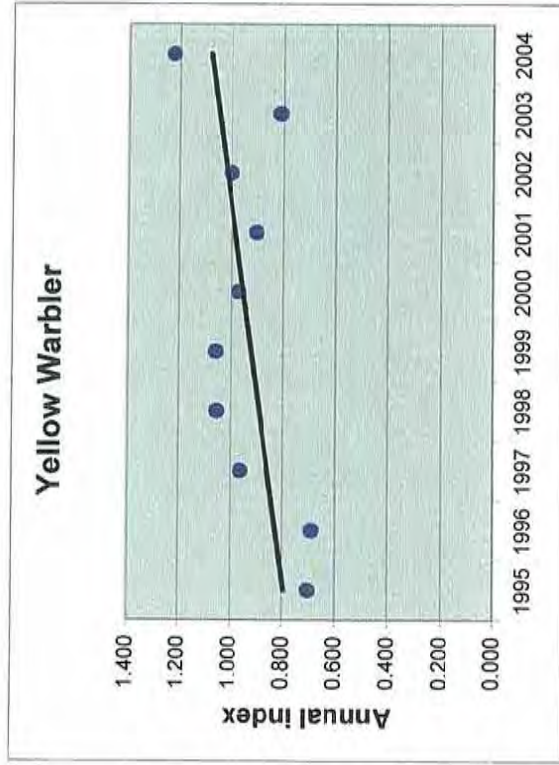


Figure 10. Casualty Rates for all CBBS Projects

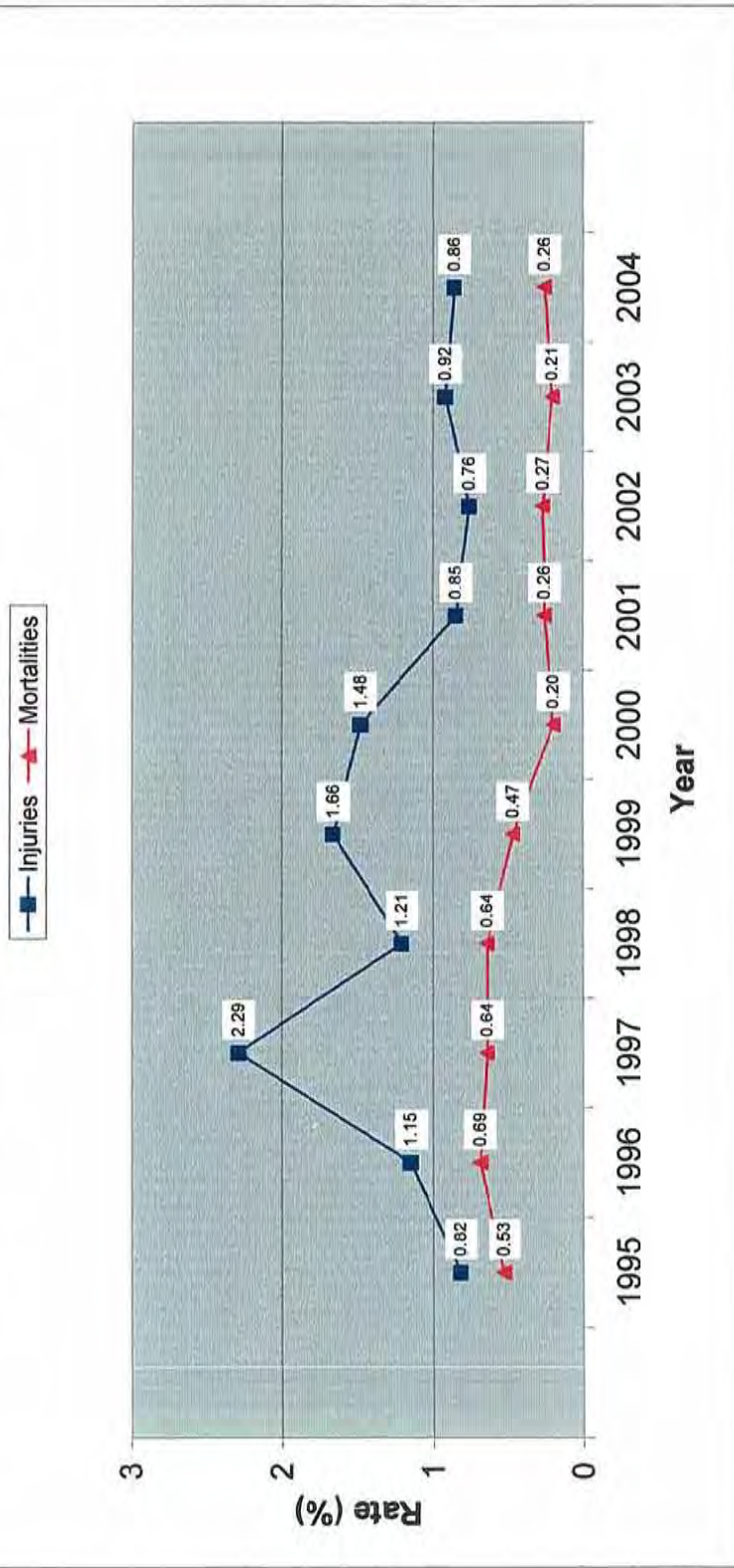


Table 1a. Coverage and Capture Rates During 2004 Spring MM at IBS

Date	Net-hours	Captures				Total	Captures/100 Net-hours
		New Bandings	Recaptures	Escapes	Mortalities		
01-May	72.6	7	3			10	13.8
02-May	73.3	4	6	1		11	15.0
03-May	72.9	2	4			6	8.2
04-May	72.3		1	1		2	2.8
05-May	weather					0	
06-May	38.8	1	2			3	7.7
07-May	74.0	35	4	4		43	58.1
08-May	72.2	5	5			10	13.9
09-May	weather					0	
10-May	weather					0	
11-May	weather					0	
12-May	weather					0	
13-May	75.1	76	15			91	121.2
14-May	73.5	29	6			35	47.6
15-May	72.6	26	8			34	46.8
16-May	72.0	7	2			9	12.5
17-May	73.8	6	3	1		10	13.6
18-May	71.7	1	1			2	2.8
19-May	60.4	7	2	1		10	16.6
20-May	56.0	31	3			34	60.7
21-May	BIC sick					0	
22-May	73.0	31	5	1		37	50.7
23-May	72.3	13	10			23	31.8
24-May	72.6	9	1			10	13.8
25-May	72.3	4	4			8	11.1
26-May	71.3	11	10	1		22	30.9
27-May	72.5	11	8			19	26.2
28-May	72.9	14	2	1		17	23.3
29-May	72.0	9	5			14	19.4
30-May	72.2	4	2			6	8.3
31-May	72.8	7	3	1		11	15.1
01-Jun	72.1	22	4	1		27	37.4
02-Jun	72.0	16	6			22	30.6
03-Jun	73.0	17	3	1		21	28.8
04-Jun	72.1	18	8	1	1	28	38.8
05-Jun	72.9	12	7			19	26.1
06-Jun	59.9	5	8			13	21.7
07-Jun	weather					0	
Total	2177	440	151	15	1	607	27.9

Table 1b. Coverage and Capture Rates During 2004 Fall MM at IBS

Date	Net-hours	Captures				Total	Captures/100 Net-hours
		New Bandings	Recaptures	Escapes	Mortalities		
28-Jul	74.2	44	7		1	52	70
29-Jul	74.8	23	8	2		33	44
30-Jul	72.1	31	9	5		45	62
31-Jul	73.8	51	15	1		67	91
01-Aug	73.8	46	14			60	81
02-Aug	73.0	36	10			46	63
03-Aug	72.7	21	9	5		35	48
04-Aug	73.5	55	13			68	93
05-Aug	72.4	40	16	4		60	83
06-Aug	73.8	26	19	2		47	64
07-Aug	53.5	24	12			36	67
08-Aug	73.9	59	27			86	116
09-Aug	76.6	44	30	7	1	81	106
10-Aug	72.2	31	13	2	1	47	65
11-Aug	72.9	15	19			34	47
12-Aug	73.8	39	14	2		55	75
13-Aug	73.3	54	20	3		77	105
14-Aug	73.4	41	19	1		61	83
15-Aug	73.8	49	22	2	1	74	100
16-Aug	72.2	30	22			52	72
17-Aug	72.2	47	13	2		62	86
18-Aug	70.0	72	12	4	1	89	127
19-Aug	74.1	75	19	5	1	100	135
20-Aug	71.0	37	19	1		57	80
21-Aug	74.6	59	25			84	113
22-Aug	13.0	8	2			10	77
23-Aug	11.9	12	7			19	160
24-Aug	72.4	42	23	1	2	68	94
25-Aug	73.5	57	26	2		85	116
26-Aug	73.4	78	36	4		118	161
27-Aug	72.6	42	21			63	87
28-Aug	73.4	25	29			54	74
29-Aug	72.9	38	3			41	56
30-Aug	74.2	24	19	1		44	59
31-Aug	72.0	13	6			19	26
01-Sep	72.8	8	7	1		16	22
02-Sep	38.2	8	1			9	24
03-Sep	68.9	10	2			12	17

Table 1b. Coverage and Capture Rates During 2004 Fall MM at IBS

Date	Net-hours	Captures				Total	Captures/100 Net-hours
		New Bandings	Recaptures	Escapes	Mortalities		
04-Sep	73.0	17	10	1		28	38
05-Sep	72.3	21	5			26	36
06-Sep	72.4	16	5			21	29
07-Sep	72.0	14	4	1		19	26
08-Sep	72.6	8	4			12	17
09-Sep	72.0	1	1			2	3
10-Sep	72.6	3	5			8	11
11-Sep	72.3	12	1			13	18
12-Sep	72.3	26	7	1		34	47
13-Sep	71.8	27	4	1		32	45
14-Sep	72.2	24	3			27	37
15-Sep	72.2	13	5			18	25
16-Sep	72.1	35	5			40	55
17-Sep	71.8	15	6		1	22	31
18-Sep	73.0	25	7			32	44
19-Sep	73.1	14	4			18	25
20-Sep	12.9	17	3	1		21	163
21-Sep	65.0	17	2	1		20	31
22-Sep	71.1	22	8			30	42
23-Sep	72.1	6	2	1		9	12
24-Sep	73.2	21	1			22	30
25-Sep	72.0	32	3			35	49
26-Sep	72.4	13	3			16	22
27-Sep	76.5	10	7	1		18	24
28-Sep	78.8	7	4			11	14
29-Sep	73.8	15	3	1	1	20	27
30-Sep	74.5	2		1		3	4
01-Oct	76.3	3	2			5	7
02-Oct	73.0	1				1	1
03-Oct	72.9	11	3	1		15	21
04-Oct	73.1	3	1			4	5
05-Oct	75.4	5				5	7
06-Oct	72.4	2	2			4	6
Total	4944	1872	708	68	10	2657	54

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

Year	2002	2003	2004	Total
Start	01-May	01-May	01-May	
Finish	07-Jun	07-Jun	07-Jun	
# Days	27	31	31	
Total	624	347	440	1411
Species	46	36	41	57
Net-hours	1884	2138	2177	6199
Bandings/100 Net-hours	33.1	16.2	20.2	22.8
Sharp-shinned Hawk			1	1
American Kestrel	1			1
Solitary Sandpiper	1			1
Spotted Sandpiper	2		2	4
Belted Kingfisher	1			1
Downy Woodpecker	5	1	1	7
Northern Flicker	1		1	2
Olive-sided Flycatcher			1	1
Western Wood-Pewee	5	1	5	11
Traill's Flycatcher*	6	4	6	16
Least Flycatcher	16	6	6	28
Eastern Phoebe	1			1
Eastern Kingbird		3	1	4
Blue-headed Vireo	2	1		3
Warbling Vireo	4	2		6
Red-eyed Vireo		1		1
Black-billed Magpie			2	2
Tree Swallow	18	6	11	35
N Rough-winged Swallow	5		4	9
Bank Swallow		1	1	2
Barn Swallow	1			1
Black-capped Chickadee	3		2	5
Red-breasted Nuthatch	1		4	5
White-breasted Nuthatch	2			2
House Wren	13	15	8	36
Ruby-crowned Kinglet		2		2
Veery		1		1

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

Year	2002	2003	2004	Total
Swainson's Thrush	54	38	50	142
Hermit Thrush	2	2	1	5
American Robin	28	35	32	95
Gray Catbird	13	13	11	37
Cedar Waxwing	3		12	15
Orange-crowned Warbler	19	6	12	37
Yellow Warbler	33	20	13	66
Yellow-rumped Warbler	249	100	136	485
Blackpoll Warbler	30	2	1	33
American Redstart	2	1		3
Ovenbird			1	1
Northern Waterthrush	8	3	7	18
MacGillivray's Warbler			1	1
Common Yellowthroat	21	6	12	39
Wilson's Warbler	4	1	3	8
Western Tanager	1		6	7
Chipping Sparrow	3	6	1	10
Clay-coloured Sparrow	15	9	10	34
Savannah Sparrow	3		2	5
Fox Sparrow		1		1
Song Sparrow	3	1	8	12
Lincoln's Sparrow	19	31	37	87
White-throated Sparrow	5	2	7	14
White-crowned Sparrow	6	7	7	20
Dark-eyed Junco	1			1
Rose-breasted Grosbeak	1			1
Red-winged Blackbird	3	5	1	9
Brown-headed Cowbird	5	3	7	15
Baltimore Oriole	4	7	6	17
American Goldfinch	1	4		5

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

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

Year	1992	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	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	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	years
# Days	26	20	54	70	65	61	68	55	73	68	69	71	
Total	841	466	1549	1121	1455	1898	1276	1262	1402	1466	1452	1872	16060
Species	52	48	61	59	64	64	66	68	64	66	60	73	101
Net-hours	934	1078	3456	4547	4608	4371	4426	3842	5152	4838	4928	4944	42182
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	38.1
Wood Duck			1										1
Mallard							1						1
Green Heron												1	1
Sharp-shinned Hawk	2	2		1	5	4	3	1	1	3		1	23
Cooper's Hawk				1	1			1		1			4
Northern Goshawk				1									1
Broad-winged Hawk							1						1
Solitary Sandpiper	3	2	3	14	13	14	2	8	4	12	5	8	88
Spotted Sandpiper		1	2		3	3	2	2		5	1	4	21
Common Snipe								1		1			2
Mourning Dove												1	1
Belted Kingfisher	2	2	8	8	6	8	10	7	2	5	6	7	71
Yellow-bellied Sapsucker			1							1			2
Downy Woodpecker		1	2	3	5	7	3	9	9	13	12	16	80
Hairy Woodpecker								1		1		2	4
Northern Flicker	2	1	4	8	7	3	11	2		4	7	6	55

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

	1992	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Total
Olive-sided Flycatcher	3		3		5	2		2		2			19
Western Wood-Pewee	6	4	11	2	33	8	10	7	14	14	11	16	136
Yellow-bellied Flycatcher			1				1					2	4
Trail's Flycatcher*	24	16	29	25	50	36	24	40	46	45	32	197	564
Least Flycatcher	16	5	16	9	30	14	11	21	20	21	9	40	212
Dusky Flycatcher			2	1									3
Pacific-slope Flycatcher			1		1							1	3
Eastern Phoebe		1						1			1		3
Great-crested Flycatcher									1				1
Eastern Kingbird	1	2	7	18	17	19	2	7	17	7	15	17	129
Yellow-throated Vireo											1		1
Blue-headed Vireo	1		1	1	2			1		2		2	10
Warbling Vireo	8	15	13	18	27	18	8	7	12	9	17	12	164
Philadelphia Vireo	1							1	1		1	1	5
Red-eyed Vireo	3	1	2	4	3	12	2	4	2	2	4		39
Blue Jay				1				1					2
Black-billed Magpie			2	1	8	2	2	1	3	1	3	3	26
Tree Swallow										1			1
N Rough-winged Swallow					2							1	3
Black-capped Chickadee	9	12	7	17	5	19	10	19	14	13	19	20	164
Red-breasted Nuthatch		3		2		4	2	20	7	1	2	4	45
White-breasted Nuthatch	1	1	6		4	4	4	5	5	5	7	5	47
Brown Creeper	1						1	1				1	4
House Wren	3	3	50	45	52	49	33	57	59	72	58	138	619

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

	1992	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Total
Winter Wren								1				2	3
Golden-crowned Kinglet	2		2	1	1	1	2	1		2		1	13
Ruby-crowned Kinglet	3	1	10	18	20	14	5	11	15	14	24	18	153
Townsend's Solitaire				1					1		1		3
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	279
Hermit Thrush	4		3	14	6	9	9	4	11	11	5	8	84
American Robin	5	11	114	81	81	31	60	32	105	37	89	28	674
Varied Thrush									1			5	6
Gray Catbird		1		5	7	6	5	4	14	8	19	14	83
Brown Thrasher					3						1		4
European Starling			2						4				6
Bohemian Waxwing							1						1
Cedar Waxwing	12	1	42	14	67	11	25	26	49	27	21	43	338
Tennessee Warbler	43	5	33	30	52	74	106	167	46	76	147	98	877
Orange-crowned Warbler	24	36	177	116	86	207	91	84	58	71	115	45	1110
Nashville Warbler				1	2	1	1	2	1	1			9
Yellow Warbler	56	19	44	62	137	91	138	89	101	119	82	165	1103
Chestnut-sided Warbler	1						1				1	1	4
Magnolia Warbler	9	4	2	2	4	4	2	2	1	9	6	4	49
Cape May Warbler											2		2
Yellow-rumped Warbler	293	171	496	92	191	638	195	200	246	248	223	148	3141
Black-throated Green Warbler					1	1	1	1					3

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

	Year	1992	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Total
Townsend's Warbler		1				1	2	3	1	2	2		1	13
Palm Warbler			3	7	4	3	8	7	1	6	4	1	2	46
Bay-breasted Warbler				1				1	1			1		4
Blackpoll Warbler		17	5	17	8	6	30	5	8	11	7	7	1	122
Black-and-white Warbler		4	1	1	2		3			2	3	3	1	20
American Redstart		19	4	3	6	4	20	5	3	16	27	18	19	144
Ovenbird		22	6	10	30	11	38	11	11	24	7	18	37	225
Northern Waterthrush		22	8	23	56	46	26	41	34	44	33	29	78	440
Connecticut Warbler		2	2	4	4	1	3	3	3	4	1		6	33
Mourning Warbler		4	2	5	10	3	9	1	4	5	7	10	7	67
MacGillivray's Warbler		2		3	8	10	6	2	5	4	4	5	6	55
Common Yellowthroat			1	6	1	8	10	8	4	12	8	9	7	74
Wilson's Warbler		121	68	102	175	119	113	100	167	152	145	224	251	1737
Canada Warbler		1			2	1	3	1	1	1	2		8	20
Western Tanager		1	1	12	1	3	2	4	1	5	6	3	5	44
American Tree Sparrow				10	3	3	7	2	1	1	2	4	4	37
Chipping Sparrow		4	1	29	14	151	27	83	50	47	92	23	155	676
Clay-coloured Sparrow			1	1	6	21	37	26	9	30	26	6	12	175
Brewer's Sparrow								1						1
Savannah Sparrow			1			2			1	1				5
Fox Sparrow		1	1	1			2	1		2	1	1	2	12
Song Sparrow			1	9	9	15	18	21	9	3	13	5	15	118
Lincoln's Sparrow		9	7	53	28	13	59	48	30	39	88	43	30	447
Swamp Sparrow					2		7	3		1	2	1	2	18

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

	1992	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Total
White-throated Sparrow	13	11	73	28	39	77	54	18	35	51	25	40	464
Harris' Sparrow			1						1			1	3
White-crowned Sparrow	5	4	20	24	22	21	22	23	27	30	18	31	247
Dark-eyed Junco	5	3	15	15	3	10	8	6	1	6	3	11	86
Rose-breasted Grosbeak	6				1	3	2	3	1	3	7	5	31
Red-winged Blackbird			4				2			3		1	10
Common Grackle			3								1		4
Brown-headed Cowbird			1	2	2	1		2	4	5	1	4	22
Baltimore Oriole	4		21	12	12	8	5	1	8	9	20	7	107
Purple Finch		1			2	1	1	2	6				13
Pine Siskin					2							1	3
American Goldfinch	3			2	4	2	2	1	4	2		2	22
House Sparrow									3				3

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

Table 3. Stable Isotope Samples - Inglewood Bird Sanctuary 2003

Species	Date	Age	Sex	Delta 2H	Mass (mg)	Delta C13	Delta N15
Warbling Vireo	01-Aug-03	HY	U	-170.2	0.354		
Warbling Vireo	24-Aug-03	HY	U	-161.5	0.360		
Warbling Vireo	01-Aug-03	HY	U	-158.9	0.352		
Warbling Vireo	25-Aug-03	HY	U	-158.0	0.340		
House Wren	31-Jul-03	HY	U	-174.9	0.347		
House Wren	28-Jul-03	HY	U	-167.9	0.355		
House Wren	29-Jul-03	HY	U	-161.2	0.351	-23.494	9.125
House Wren	28-Jul-03	HY	U	-160.6	0.272		
House Wren	28-Jul-03	HY	U	-158.5	0.360		
House Wren	28-Jul-03	HY	U	-157.0	0.333	-23.292	9.120
House Wren	28-Jul-03	HY	U	-156.7	0.341	-23.492	9.996
House Wren	05-Aug-03	HY	U	-155.9	0.356		
House Wren	28-Jul-04	HY	U	-153.1	0.347		
House Wren	28-Jul-03	HY	U	-151.5	0.354		
House Wren	29-Jul-03	HY	U	-148.2	0.300	-23.407	7.505
House Wren	31-Jul-03	HY	U	-140.2	0.344		
House Wren	06-Jul-03	AHY	U	-60.8	0.346		
Swainson's Thrush	01-Oct-03	HY	U	-156.6	0.348	-22.608	5.171
Swainson's Thrush	24-Sep-03	HY	U	-149.4	0.342	-23.976	7.156
Swainson's Thrush	24-Sep-03	HY	U	-147.8	0.352	-24.054	8.199
Swainson's Thrush	22-Sep-03	HY	U	-147.5	0.352	-25.659	7.823
Swainson's Thrush	21-Sep-03	HY	U	-147.4	0.340	-23.864	8.383
Swainson's Thrush	10-Sep-03	HY	U	-146.0	0.351	-22.124	5.680
Swainson's Thrush	21-Sep-03	HY	U	-144.8	0.344	-22.029	7.762
Swainson's Thrush	10-Sep-03	HY	U	-142.3	0.350	-22.997	6.190
Swainson's Thrush	21-Sep-03	HY	U	-141.8	0.348	-22.956	8.041
Swainson's Thrush	13-Jul-03	SY	U	-130.9	0.318	-23.244	6.230
Swainson's Thrush	04-Sep-03	HY	U	-128.9	0.342	-21.183	6.113
Swainson's Thrush	29-Sep-03	HY	U	-128.3	0.346	-24.322	6.361
Swainson's Thrush	26-Sep-03	HY	U	-127.9	0.339	-23.315	6.049
Swainson's Thrush	12-Sep-03	HY	U	-121.2	0.366	-23.226	6.947
Yellow Warbler	15-Jun-03	ASY	M	-186.0	0.346	-22.238	8.847
Yellow Warbler	28-Jul-03	HY	U	-184.9	0.337		
Yellow Warbler	28-Jul-03	HY	U	-177.0	0.340		
Yellow Warbler	16-Aug-03	HY	U	-175.2	0.356		
Yellow Warbler	31-Jul-03	HY	U	-174.0	0.343	-21.951	10.927
Yellow Warbler	28-Jul-03	HY	U	-170.2	0.249	-22.819	9.801
Yellow Warbler	29-Jul-03	HY	U	-169.9	0.351		
Yellow Warbler	06-Jul-03	AHY	F	-166.2	0.243		
Yellow Warbler	28-Jul-03	HY	U	-164.5	0.342	-23.609	10.273
Yellow Warbler	31-Jul-03	HY	U	-163.7	0.351		
Yellow Warbler	31-Jul-03	HY	U	-157.8	0.352		
Mourning Warbler	20-Aug-03	HY	U	-168.0	0.342		
Mourning Warbler	20-Aug-03	HY	U	-158.9	0.354	-23.803	6.618
Mourning Warbler	20-Aug-03	HY	U	-157.8	0.356	-24.110	6.216
Mourning Warbler	26-Aug-03	HY	U	-155.2	0.357	-23.935	6.392
Mourning Warbler	01-Sep-03	HY	F	-153.9	0.332		
Mourning Warbler	26-Aug-03	HY	U	-150.4	0.344		
Mourning Warbler	17-Aug-03	HY	U	-147.4	0.340		
Mourning Warbler	22-Aug-03	HY	U	-146.5	0.342		
MacGillivray's Warbler	21-Aug-03	HY	U	-162.5	0.353	-24.180	7.457
MacGillivray's Warbler	26-Aug-03	HY	U	-150.6	0.347	-23.712	5.987
MacGillivray's Warbler	26-Aug-03	HY	U	-149.2	0.358	-23.890	5.450
MacGillivray's Warbler	19-Aug-03	HY	M	-145.0	0.348		
MacGillivray's Warbler	01-Sep-03	AHY	M	-138.4	0.357	-23.005	6.582

Table 4. Inglewood Bird Sanctuary MAPS New Bandings - 2004

	5 Jun	16 Jun	25 Jun	4 Jul	14 Jul	24 Jul	3 Aug	Total
Downy Woodpecker				2	1			3
Western Wood-Pewee						1	2	3
Traill's Flycatcher	1						1	2
Eastern Kingbird	1	1		1				3
Black-billed Magpie		1		1				2
Tree Swallow			1		3			4
Black-capped Chickadee		2	1	7				10
White-breasted Nuthatch				2				2
House Wren		1				4	4	9
Swainson's Thrush	1				2		1	4
American Robin	2		5	1	10	2	1	21
Gray Catbird	4	2	2	1	3			12
Cedar Waxwing		1	2	6	7	1		17
Tennessee Warbler						1	4	5
Orange-crowned Warbler							1	1
Yellow Warbler				1	1	1	1	4
Yellow-rumped Warbler							1	1
Common Yellowthroat	1							1
Wilson's Warbler							1	1
Western Tanager							1	1
Chipping Sparrow							1	1
Lincoln's Sparrow					1		1	2
White-throated Sparrow						2		2
Brown-headed Cowbird	1			1				2
Baltimore Oriole							2	2
Total birds	10	8	11	20	26	9	17	115
Total species	7	6	5	10	8	7	14	25

Table 5. Inglewood Bird Sanctuary MAPS Summary - 1992-2004

Species	New Bandings													Total
	1992	1993	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004		
American Kestrel			1										1	
Downy Woodpecker	1	3	1	5	4	1			1		1		20	
Hairy Woodpecker	1	1	1			1							4	
Yellow-shafted Flicker	1	1	1										3	
Flicker Intergrade			2				2						4	
Northern Flicker				2									2	
Western Wood-Pewee	6	1	1	1	1	2		1	3				19	
Trail's Flycatcher				3	3	3	1	1	4	1	1	2	16	
Least Flycatcher	14	8	3	2	3	4	2	1	2	1			40	
Eastern Kingbird	2	1			3	1	3		2	1			16	
Warbling Vireo	7	7	1	4	2		2	2	1	4	3		33	
Red-eyed Vireo	1												1	
Black-billed Magpie				1	2								5	
Tree Swallow	3						2						9	
Bank Swallow	1												1	
Black-capped Chickadee	5	7	5	9	2	3	5	4	4	2	4	10	60	
White-breasted Nuthatch	3	4		2						1			12	
House Wren	5	11	9	9	13	8	9	18	11	2	11	9	115	
Veery	2					1							3	
Swainson's Thrush	10	8	6	4	3	1	4		3	1	1	4	45	
Hermit Thrush								1					1	
American Robin	21	6	26	25	23	10	8	14	20	19	19	21	212	
Gray Catbird	3			1	1	4	8	1	6	16	9	12	61	
European Starling			1										1	
Cedar Waxwing	27	8		6	1	9	5	7	5	13	3	17	101	
Tennessee Warbler	1	6		7	1	3	4	22	1	1	1	5	52	
Orange-crowned Warbler						1						1	2	

Table 5. Inglewood Bird Sanctuary MAPS Summary - 1992-2004

Species	New Bandings													Total
	1992	1993	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004		
Yellow Warbler		14	7	2	6	9	24	13	4	7	9	4	119	
Yellow-rumped Warbler	10					2		2	1		1	1	17	
American Redstart		1									1		2	
Ovenbird	3			1		1							5	
Northern Waterthrush						1	1		1				3	
Mourning Warbler	1												1	
Common Yellowthroat												1	1	
Wilson's Warbler				2		1	1					1	5	
Western Tanager		1	3	1	2		4					1	12	
Chipping Sparrow		7			1							1	9	
Clay-colored Sparrow		1				6	17	1	2				27	
Song Sparrow		1		1		1	4				1		8	
Lincoln's Sparrow		3	1	2	5	2		1				2	16	
White-throated Sparrow				2						1		2	5	
Rose-breasted Grosbeak				1									1	
Common Grackle			1		2					1			4	
Brown-headed Cowbird	6				3			1	1	2		2	15	
Baltimore Oriole	3	7	2	8	9	1	2	1	5	9		2	49	
Purple Finch		1						1					2	
American Goldfinch	2	2		1						1			6	
House Sparrow	2					2							4	
Total	161	110	72	102	90	75	108	92	77	83	65	115	970	
Species	27	24	18	25	21	24	20	18	19	18	14	25	47	

**Table 6. Coverage and Capture Rates During 2004 Spring MM
at Las Caletas, CR**

Date	Net-hours	Captures			Total	Captures/100 Net-hours
		New Bandings	Recaptures	Unbanded		
28-Mar	49.4	21	8	6	35	71
29-Mar	79.5	19	17	11	47	59
30-Mar	77.3	24	11	5	40	52
31-Mar	77.7	21	6	1	28	36
01-Apr	77.9	30	14	3	47	60
02-Apr	61.4	51	6	9	66	107
03-Apr	78.3	39	12	3	54	69
04-Apr	77.7	45	6	1	52	67
05-Apr	77.6	28	4	1	33	43
06-Apr	78.4	59	8		67	85
07-Apr	78.1	47	15	2	64	82
08-Apr	79.0	22	11		33	42
09-Apr	78.4	29	4		33	42
10-Apr	53.9	14	7	1	22	41
11-Apr	78.6	21	3		24	31
12-Apr	78.7	24	7		31	39
13-Apr	78.8	31	7		38	48
14-Apr	78.6	34	5		39	50
15-Apr	78.1	27	10		37	47
16-Apr	78.3	35	10		45	57
17-Apr	78.0	31	3		34	44
18-Apr	78.3	60	7		67	86
19-Apr	78.3	40	7		47	60
20-Apr	78.0	32	10		42	54
21-Apr	78.0	30	10		40	51
22-Apr	38.4	5	3		8	21
23-Apr	78.4	26	9	1	36	46
24-Apr	78.0	21	3	1	25	32
25-Apr	78.0	22	8		30	38
26-Apr	79.2	25	7		32	40
27-Apr	77.4	22	2		24	31
28-Apr	79.0	26	10		36	46
29-Apr	73.7	22	5		27	37
Total	2468	983	255	45	1283	52

Table 7. New Captures at Las Caletas, CR

Species	2002*	2003*	2004	Total
Start date	17 Mar	15 Apr	28 Mar	
Finish date	12-Apr	9 May	29 Apr	
net-hours	2041	2123	2468	
Tiny Hawk	1	2		3
Barred Forest-Falcon	2	1		3
Ruddy Ground-Dove		1		1
Blue Ground-Dove		1		1
White-tipped Dove	1	1		2
Gray-chested Dove	5	8	4	17
Ruddy Quail-Dove			5	5
Dove sp.	1			1
Pigeon sp.	1			1
Bronzy Hermit		8	6	14
Band-tailed Barbthroat	1	20	14	35
Long-billed Hermit	2	15	23	40
Stripe-throated Hermit		16	7	23
White-tipped Sicklebill	2			2
White-necked Jacobin	1	5	4	10
Violet-crowned Woodnymph		11	13	24
Blue-throated Goldentail		59	52	111
Charming Hummingbird		40	33	73
Snowy-bellied Hummingbird		1	1	2
Rufous-tailed Hummingbird		10	14	24
Hummingbird sp.	89			89
Black-throated Trogon	2			2
Blue-crowned Motmot	1	4		5
Green Kingfisher			4	4
American Pygmy Kingfisher	2	1	2	5
White-necked Puffbird		1	1	2
White-whiskered Puffbird	1		1	2
Rufous-tailed Jacamar		1	1	2
Olivaceous Piculet	3	1	1	5
Golden-naped Woodpecker			1	1
Buff-throated Foliage-gleaner	4	7	1	12
Plain Xenops	5	6	3	14
Scaly-throated Leaf-tosser	1	3	3	7
Tawny-winged Woodcreeper	6	2	3	11
Long-tailed Woodcreeper	1	1		2
Wedge-billed Woodcreeper	16	6	11	33
Northern Barred-Woodcreeper	2	4		6
Black-striped Woodcreeper	1			1
Streak-headed Woodcreeper	4	4	7	15
Woodcreeper sp.	1			1
Great Antshrike	1			1
Black-hooded Antshrike	8	9	4	21
Russet Antshrike	1		2	3
Slaty Antwren		2	1	3
Dot-winged Antwren	16	18	7	41
Chestnut-backed Antbird	9	15	6	30
Bicolored Antbird	2	9	4	15
Black-faced Antthrush	2	1		3
Streak-chested Antpitta	1	1		2
Ochre-bellied Flycatcher	21	23	35	79
Northern Bentbill	5	4	5	14
Eye-ringed Flatbill	1			1
Yellow-olive Flycatcher		3		3
Golden-crowned Spadebill	2	1	2	5
Ruddy-tailed Flycatcher	2	4	1	7
Sulphur-rumped Flycatcher	1	3	2	6
Black-tailed Flycatcher		1	1	2
Yellow-bellied Flycatcher	1		3	4

Species	2002*	2003*	2004	Total
Alder Flycatcher		35	10	45
Willow Flycatcher		3	3	6
Bright-rumped Attila	7	3	6	16
Dusky-capped Flycatcher	4		5	9
Great-crested Flycatcher	2			2
Thrushlike Schiffornis	2	2	2	6
Rufous Pina- Houner		3	1	4
White-winged Becard		1		1
Orange-collared Manakin	28	16	17	61
Blue-crowned Manakin	7	11	12	30
Red-capped Manakin	23	31	23	77
Red-eyed Vireo	1	6	2	9
Yellow-green Vireo	9	10	4	23
Philadelphia Vireo			1	1
Tawny-crowned Greenlet	2	1	3	6
Lesser Greenlet		1	1	2
Riverside Wren	6	7	5	18
Black-bellied Wren		1	1	2
House Wren	2		1	3
Scaly-breasted Wren		2	1	3
Long-billed Gnatwren	13	1	3	17
Tropical Gnatcatcher		1		1
Swainson's Thrush	439	406	547	1392
Clay-colored Robin			1	1
Yellow Warbler			1	1
Chestnut-sided Warbler	2			2
Worm-eating Warbler	1			1
Northern Waterthrush	1	1	1	3
Louisiana Waterthrush	1			1
Kentucky Warbler	3		1	4
Mourning Warbler	1		1	2
MacGillivray's Warbler	1			1
Bananaquit	9	12	9	30
Gray-headed Tanager	5	9	5	19
White-throated Shrike-Tanager		2	1	3
White-shouldered Tanager	4	10	6	20
Black-cheeked Ant-Tanager	5	8	6	19
Scarlet Tanager	1			1
Cherrie's Tanager	7	5	7	19
Bay-headed Tanager	2		3	5
Golden-hooded Tanager		2		2
Blue Dacnis			1	1
Green Honeycreeper	5	4		9
Red-legged Honeycreeper		3		3
Blue-black Grassquit	2		2	4
Variable Seedeater	15	10	10	35
Yellow-bellied Seedeater		2	4	6
Thick-billed Seed-Finch	6	4	6	16
Orange-billed Sparrow	12	17	19	48
Black-striped Sparrow	1	1	2	4
Buff-throated Saltator	8	4		12
Blue-black Grosbeak	4	9	4	17
Scarlet-rumped Cacique			2	2
Spot-crowned Euphonia	1	1		2
Species	78	60	79	112
Total	871	979	1028	2878

* pilot programs

**Table 8. Trend Analysis of Monitored Species
at Inglewood Bird Sanctuary 1995-2004**

Species	Analysis Interval	Trend	P
		%/year	value
Solitary Sandpiper	1996-1998, 2000-2004	-1.5	0.06
Western Wood-Pewee	1996-2004	0.6	0.63
Traill's Flycatcher	1995-2004	4.2	0.09
Least Flycatcher	1995-2004	0.4	0.71
Eastern Kingbird	1995-1998, 2000-2004	0.0	0.99
Warbling Vireo	1995-2004	-1.3	0.11
House Wren	1995-2004	1.9	0.21
Ruby-crowned Kinglet	1995-2004	0.4	0.69
Swainson's Thrush	1995-2004	-1.0	0.39
American Robin	1995-2004	-2.8	0.13
Cedar Waxwing	1995-1998, 2000-2004	0.8	0.52
Tennessee Warbler	1996-1998, 2000-2004	3.2	0.25
Orange-crowned Warbler	1995-2004	-4.9	0.10
Yellow Warbler	1995-2004	3.2	0.08
Yellow-rumped Warbler	1996-2004	0.8	0.88
Blackpoll Warbler	1996-2004	-1.0	0.45
American Redstart	1995-2004	2.5	0.03
Ovenbird	1996-2004	-0.6	0.74
Northern Waterthrush	1996-1998, 2000-2004	0.1	0.90
Wilson's Warbler	1995-2004	3.6	0.06
Chipping Sparrow	1996-1998, 2000-2004	1.6	0.68
Clay-coloured Sparrow	1996-1998, 2000-2004	-0.2	0.89
Song Sparrow	1995-1998, 2000-2004	-0.5	0.44
Lincoln's Sparrow	1995-2004	-0.1	0.94
White-throated Sparrow	1995-2004	-1.4	0.40
White-crowned Sparrow	1995-2004	0.3	0.47
Dark-eyed Junco	1995-2004	-1.4	0.15
Baltimore Oriole	1995-2004	-0.8	0.43

Table 9. Bander-in-Charge and Volunteer Effort 2004

Member/Guest	Bander-in-Charge						Volunteer												
	Inglewood			NSWO	CR		Inglewood			NSWO	CR								
	Spring MM	MAPS	Fall MM		Spring MM	MM	Spring MM	MAPS	Fall MM		Spring MM	MM							
Sandy Ayer																			
Christine Bennett																			
Grahame Booth			1																
Vivian Brissette*																			
John Cartwright																			
Amanda Cole																			
Doug Collister				1															
Judi Crawford-Parr																			
Ross Dickson																			
Rainer Ebel					9														
Doug Finkbinder*																			
Dick Flynn																			
Lenora Flynn																			
Gabrielle Gareau																			
Carole Hachey																			
Bev Kissinger																			
Maryanne Kissinger																			
Michelle Koch																			
Jennifer Lane																			
Steve Lane	10	3	24	5															
David Lieske																			
Al MacDonald*																			
Shonna McLeod	4			12	21														
Greg Meyer	8	1	15																
Pat Mitchell	6	3	10	14															
Kerry Moffat																			

Table 9. Bander-in-Charge and Volunteer Effort 2004

Member/Guest	Bander-in-Charge						Volunteer							
	Inglewood			NSWO	CR		Inglewood			NSWO	CR			
	Spring MM	MAPS	Fall MM		Spring MM	MM	Spring MM	MAPS	Fall MM		Spring MM	MM		
Mike Mulligan							1					7	1	
Chuck Newyar													4	
Jeff Nugent							1					1	1	
Alexandra Oakwood							3					7	2	
Marc Pauze							1					1		
EI Peterson													4	11
Mark Raymond							4					3	1	
Gwen Smiley							1	1				4	2	11
Cyndi Smith													1	
Don Stiles													1	
Bill Taylor							6	5				7		11
Barry Trakalo							2					1	3	11
Catherine Watson							3					3	2	11
Catherine Watson-MacDonald							2	1				6		
Linda Wiggins												1		
Bruce Wilson							2					2	2	
Scott Wilson											11			

* guest volunteer

Table 10. Injuries and Mortalities Sustained During 2004 CBBS Projects

Species	Number Captured	Injuries		Mortalities	
		Number	Type	Number	Cause
Solitary Sandpiper	13	1	wing abrasion		
Northern Saw-whet Owl	193	1	wing strain		
Stripe-throated Hermit	7	1	stress		
Rufous-tailed Hummingbird	14			1	shock?
American Pygmy Kingfisher	4	1	leg		
Tawny-winged Woodcreeper	7	1	wing strain		
Ochre-bellied Flycatcher	53	2	wing strain		
		1	shock		
		1	leg		
Traill's Flycatcher	281	1	wing abrasion		
		1	leg cut		
Orange-collared Manakin	33	1	foot cut		
Tree Swallow	25	1	foot cut		
Black-capped Chickadee	76	1	wing strain		
		2	foot cut	1	shock?
		1	shock?		
House Wren	334	2	wing abrasion		
		2	wing strain		
Swainson's Thrush	661	2	foot cut	1	hawk predation
		1	wing strain	1	monkey? predation
Hermit Thrush	11	1	foot cut	1	unknown predator
American Robin	114	1	predator attack		
		2	tongue cut		
		1	wing abrasion		
Tennessee Warbler	152	1	wing strain	1	broken leg
				1	shock?
Yellow Warbler	256	1	wing strain	1	shock?
Yellow-rumped Warbler	321	1	wing strain	1	shock?
		1	broken leg		
Ovenbird	62	1	shock	1	unknown predator
Northern Waterthrush	157	1	tongue cut	1	deer predation
Wilson's Warbler	343	1	foot cut		
Western Tanager	13	1	wing abrasion		
Orange-billed Sparrow	45	1	wing strain		
Chipping Sparrow	175	2	wing strain	1	shock?
		1	leg dislocated		
White-throated Sparrow	88	1	wing abrasion	1	hawk predation
Brown-headed Cowbird	18	1	foot cut		
Scarlet-rumped Cacique	2	1	foot cut		
Total Captures	5095	44	0.86%	13	0.26%

Appendix 1a. New Bandings at Inglewood Bird Sanctuary - Spring 2004

Species	May														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Sharp-shinned Hawk													1		
Spotted Sandpiper															
Downy Woodpecker															
Northern Flicker															
Olive-sided Flycatcher															
Western Wood-Pewee													1		1
Alder Flycatcher													1		
Least Flycatcher													2		
Eastern Kingbird															
Black-billed Magpie															
Tree Swallow							4							1	
N Rough-winged Swallow															
Bank Swallow															
Black-capped Chickadee													1		
Red-breasted Nuthatch	1														
House Wren															
Swainson's Thrush															
Hermit Thrush															
American Robin	4	2												3	
Gray Catbird															
Cedar Waxwing															
Orange-crowned Warbler							2						5		3
Yellow Warbler													1	1	
Yellow-rumped Warbler							16	1					49	22	19
Blackpoll Warbler															
Ovenbird															
Northern Waterthrush															
MacGillivray's Warbler															
Common Yellowthroat															
Wilson's Warbler													2		
Western Tanager															
Chipping Sparrow							1								
Clay-colored Sparrow													1		
Savannah Sparrow						1	1								
Song Sparrow	2	1					1						1		
Lincoln's Sparrow							9	3					9	2	2
White-throated Sparrow													1		
White-crowned Sparrow		1	2				1						1		1
Red-winged Blackbird															
Brown-headed Cowbird								1							
Baltimore Oriole															

Appendix 1a. New Bandings at Inglewood Bird Sanctuary - Spring 2004

Species	May														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Sharp-shinned Hawk															
Spotted Sandpiper										1					
Downy Woodpecker															
Northern Flicker															
Olive-sided Flycatcher								1							
Western Wood-Pewee							2							1	
Alder Flycatcher															
Least Flycatcher							1					1			
Eastern Kingbird															
Black-billed Magpie															
Tree Swallow	1									1		1	1		
N Rough-winged Swallow													1		
Bank Swallow														1	
Black-capped Chickadee															
Red-breasted Nuthatch				2							1				
House Wren	1										1		1		
Swainson's Thrush		1		1	11		8	1					5	2	1
Hermit Thrush												1			
American Robin				1			3	1	3	2	2	2	3	1	
Gray Catbird													1		1
Cedar Waxwing															
Orange-crowned Warbler	1						1								
Yellow Warbler											1		1		
Yellow-rumped Warbler	1		1		14		7	3	3						
Blackpoll Warbler															
Ovenbird							1								
Northern Waterthrush							2	1	1		1	1	1		
MacGillivray's Warbler															
Common Yellowthroat							2	4				1		2	
Wilson's Warbler															
Western Tanager				4								1		1	
Chipping Sparrow															
Clay-colored Sparrow		2									1				
Savannah Sparrow															
Song Sparrow	1										1				1
Lincoln's Sparrow	2	2		2	1		2	1	2						
White-throated Sparrow		1					2					2			
White-crowned Sparrow				1											
Red-winged Blackbird												1			
Brown-headed Cowbird								1			3			1	
Baltimore Oriole				1											1

Appendix 1a. New Bandings at Inglewood Bird Sanctuary - Spring 2004

Species	June							Total	
	31	1	2	3	4	5	6		7
Sharp-shinned Hawk									1
Spotted Sandpiper							1		2
Downy Woodpecker							1		1
Northern Flicker				1					1
Olive-sided Flycatcher									1
Western Wood-Pewee									5
Alder Flycatcher					3	2			6
Least Flycatcher				2					6
Eastern Kingbird						1			1
Black-billed Magpie					1		1		2
Tree Swallow			2						11
N Rough-winged Swallow		2			1				4
Bank Swallow									1
Black-capped Chickadee		1							2
Red-breasted Nuthatch									4
House Wren				1	4				8
Swainson's Thrush	3	2	6	6	2	1			50
Hermit Thrush									1
American Robin	1	2			1	1			32
Gray Catbird	1			1	1	4	2		11
Cedar Waxwing		7	3		2				12
Orange-crowned Warbler									12
Yellow Warbler	1	3		3	1	1			13
Yellow-rumped Warbler									136
Blackpoll Warbler				1					1
Ovenbird									1
Northern Waterthrush									7
MacGillivray's Warbler			1						1
Common Yellowthroat	1		1			1			12
Wilson's Warbler			1						3
Western Tanager									6
Chipping Sparrow									1
Clay-colored Sparrow		5	1						10
Savannah Sparrow									2
Song Sparrow									8
Lincoln's Sparrow									37
White-throated Sparrow				1					7
White-crowned Sparrow									7
Red-winged Blackbird									1
Brown-headed Cowbird						1			7
Baltimore Oriole			1	1	2				6

Appendix 1b. New Bandings at Inglewood Bird Sanctuary - Fall 2004

Species	Total	July							August																	
		28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Green Heron	1																									
Sharp-shinned Hawk	1																									
Solitary Sandpiper	8					2	1	1		1			1	1											1	
Spotted Sandpiper	4											1											1			
Mourning Dove	1	1																								
Belted Kingfisher	7				1		1																			
Downy Woodpecker	16			2	2	2			2	1	2					1							1	2		
Hairy Woodpecker	2						1																			
Northern Flicker	6			1	1													1								
Olive-sided Flycatcher	2																							1		
Western Wood-Pewee	16		1		1		1	1	1	2	1	2		1	1						1	1				
Yellow-bellied Flycatcher	2																									
Alder Flycatcher	191							1			2	1	1	2		1	4	1		4	10	5	6	24	10	
Willow Flycatcher	6																		2							
Least Flycatcher	40	1	1					1					2	1				1	1	2			3	3		
Pacific-slope Flycatcher	1																						1			
Eastern Kingbird	17	1	1		2	2					2		1										1			
Blue-headed Vireo	2																							1		
Warbling Vireo	12				1																		1	2		
Philadelphia Vireo	1																									
Black-billed Magpie	3																									
N Rough-winged Swallow	1					1																				
Black-capped Chickadee	20	1		3					1				2											1		
Red-breasted Nuthatch	4												1											1		
White-breasted Nuthatch	5																									
Brown Creeper	1																									
House Wren	138	20	10	10	17	11	8	5	7	5	6		2	2		5	1	4	1	2		3	1	1	4	
Winter Wren	2																									
Golden-crowned Kinglet	1																									
Ruby-crowned Kinglet	18																									
Veery	1																									
Swainson's Thrush	31		1					1																	1	
Hermit Thrush	8													1			2	1	1		2					
American Robin	28	4		2	3	3	2	2	1																	
Varied Thrush	5									1																
Gray Catbird	14					1	2		1		1														4	
Cedar Waxwing	43	7	4	3	2	9	3		1	1	2		2	1		1	1	1		2		2				
Tennessee Warbler	98	2	2	2	4	6	6	2	2	6	2	4	6	4	1	2	1	13	5	11	2	3	3	2	2	
Orange-crowned Warbler	45							1					1					1								
Yellow Warbler	165		1	1	4	2	4	1	3	7	8	8	11	5	3	1	6	14	12	13	4	18	11	16	3	
Chestnut-sided Warbler	1																									
Magnolia Warbler	4																									
Yellow-rumped Warbler	148	5		1	7	3	3	1	3	2		1	2	5	1	1	5	4	3		3	6	6	4	1	
Townsend's Warbler	1																									
Palm Warbler	2																									
Blackpoll Warbler	1																								1	
Black-and-white Warbler	1																								1	
American Redstart	19																									
Ovenbird	37																									
Northern Waterthrush	78											2	6	1			3	2	9	4	4	5	8	2	3	
Connecticut Warbler	6																								1	
Mourning Warbler	7																								1	1
MacGillivray's Warbler	6																								1	
Common Yellowthroat	7																									
Wilson's Warbler	251							1													1	1		7	2	5
Canada Warbler	8																								3	
Western Tanager	5		1						1			1		1											1	
American Tree Sparrow	4																									
Chipping Sparrow	155		1	4	2	1	2	2	31	10	1	3	20	16	20		15	12	8			2	5			
Clay-colored Sparrow	12					3						1				2									1	
Fox Sparrow	2																									
Song Sparrow	15				1					1					1	1				1	1	1	1	2		
Lincoln's Sparrow	30	1						1																		
Swamp Sparrow	2																									
White-throated Sparrow	40				1		1	1					1				1									
Harris' Sparrow	1																									
White-crowned Sparrow	31																									
Dark-eyed Junco	11																									
Rose-breasted Grosbeak	5	1					1						1		1										1	
Red-winged Blackbird	1				1																					
Brown-headed Cowbird	4				1									1	1		1									
Baltimore Oriole	7			2														2		2	1					
Pine Siskin	1																									
American Goldfinch	2							1																		

Appendix 1b. New Bandings at Inglewood Bird Sanctuary - Fall 2004

Species	Total	August										September														
		21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	
Green Heron	1																									
Sharp-shinned Hawk	1																									
Solitary Sandpiper	8																									
Spotted Sandpiper	4				1					1																
Mourning Dove	1																									
Belted Kingfisher	7							1	2					1										1		
Downy Woodpecker	16																									
Hairy Woodpecker	2																									
Northern Flicker	6							2																		
Olive-sided Flycatcher	2																1									
Western Wood-Pewee	16						2																			
Yellow-bellied Flycatcher	2		1		1																					
Alder Flycatcher	191	14	6	4	20	22	23	7	1	9	2						2	2	4					1		
Willow Flycatcher	6				1			1			1	1														
Least Flycatcher	40	5		2	3	4	6		1		1													2		
Pacific-slope Flycatcher	1																									
Eastern Kingbird	17						2	3	1		1															
Blue-headed Vireo	2				1																					
Warbling Vireo	12					4					2	1														
Philadelphia Vireo	1																									
Black-billed Magpie	3																									
N Rough-winged Swallow	1																									
Black-capped Chickadee	20											1								1						
Red-breasted Nuthatch	4																									
White-breasted Nuthatch	5							1																		
Brown Creeper	1																									
House Wren	138	2				1		1			1				1			1					2	1		
Winter Wren	2				1																					
Golden-crowned Kinglet	1																									
Ruby-crowned Kinglet	18																							1		
Veery	1											1														
Swainson's Thrush	31				1										1						1	6	2	6		
Hermit Thrush	8																									
American Robin	28										1												1	1		
Varied Thrush	5																									
Gray Catbird	14	1											1						1				2			
Cedar Waxwing	43				1																					
Tennessee Warbler	98						1					1														
Orange-crowned Warbler	45									1	1						4	1						1	2	
Yellow Warbler	165	2			1	1	3	1	1																	
Chestnut-sided Warbler	1																1									
Magnolia Warbler	4				1	1		1								1										
Yellow-rumped Warbler	148				1	2	2	1	3	1			1							1				3	5	
Townsend's Warbler	1										1															
Palm Warbler	2																								1	
Blackpoll Warbler	1																									
Black-and-white Warbler	1																									
American Redstart	19	1			3	2	2			1						1										
Ovenbird	37	2				2		7			2	1	1			1	2							1	1	
Northern Waterthrush	78	15		1	1	3	3	1		2	1	1														
Connecticut Warbler	6	1			1		1									1										
Mourning Warbler	7	1						1											1							
MacGillivray's Warbler	6						3												1					1		
Common Yellowthroat	7					1									1											
Wilson's Warbler	251	11	1	1	4	18	19	24	13	15	11	3	4	5	6	11	16	6	5	1	1	2		10	5	
Canada Warbler	8	3			1		1																			
Western Tanager	5																									
American Tree Sparrow	4																									
Chipping Sparrow	155																									
Clay-colored Sparrow	12									2			1												1	
Fox Sparrow	2																									
Song Sparrow	15																									
Lincoln's Sparrow	30	1				1	1			1		2		1		1		2						1		
Swamp Sparrow	2																									
White-throated Sparrow	40									2		2		1		1	1	1	2						1	
Harris' Sparrow	1																									
White-crowned Sparrow	31																2			1					5	
Dark-eyed Junco	11																									1
Rose-breasted Grosbeak	6																									
Red-winged Blackbird	1																									
Brown-headed Cowbird	4																									
Baltimore Oriole	7																									
Pine Siskin	1																									
American Goldfinch	2									1																

Appendix 2. Top 20 New Bandings at Inglewood Bird Sanctuary

Species	Spring			Fall		
	Total 2002-2004		2004	Total 1995-2004		2004
	Rank	Number	Rank	Rank	Number	Rank
Yellow-rumped Warbler	1	485	1	1	2677	5
Swinson's Thrush	2	142	2	2	1548	1
American Robin	3	95	4	3	1050	9
Lincoln's Sparrow	4	87	3	4	1028	3
Yellow Warbler	5	66	5	5	829	7
Common Yellowthroat	6	39	6	6	671	4
Orange-crowned Warbler	7	37	6	7	658	17
Gray Catbird	7	37	9	8	613	6
House Wren	9	36	12	9	524	2
Tree Swallow	10	35	9	10	440	11
Clay-colored Sparrow	11	34	11	11	431	16
Blackpoll Warbler	12	33		12	410	8
Least Flycatcher	13	28	18	13	325	10
White-crowned Sparrow	14	20	14	14	238	14
Northern Waterthrush	15	18	14	15	232	14
Baltimore Oriole	16	17	18	16	197	13
Alder Flycatcher	17	16	18	17	182	11
Cedar Waxwing	18	15	6	18	156	12
Brown-headed Cowbird	18	15	14	19	149	20
White-throated Sparrow	20	14	14	20	143	18
Song Sparrow		12	12		112	12
Western Wood-Pewee		11			103	19
Chipping Sparrow		10				
N Rough-winged Swallow		9				
Red-winged Blackbird		9				
Wilson's Warbler		8				
Western Tanager		7	18			
Yellow-rumped Warbler						148
Wilson's Warbler						251
Orange-crowned Warbler						45
Yellow Warbler						165
Tennessee Warbler						98
Chipping Sparrow						155
American Robin						28
House Wren						138
Trail's Flycatcher*						197
White-throated Sparrow						40
Lincoln's Sparrow						30
Northern Waterthrush						78
Cedar Waxwing						43
White-crowned Sparrow						31
Swinson's Thrush						31
Ovenbird						37
Least Flycatcher						40
Clay-colored Sparrow						12
Ruby-crowned Kinglet						18
Black-capped Chickadee						20
Warbling Vireo						12
American Redstart						19

* includes Alder and Willow Flycatcher

CRITERIA USED TO DEFINE AND PRIORITIZE MONITORED SPECIES
(From Bird Studies Canada)

Monitored Species

Mean number banded each year ≥ 10 , and mean number of days each year on which individuals banded ≥ 5 .

Priority for Migration Monitoring

- A Those species that have <50% of Canadian and Alaskan breeding range covered by the Breeding Bird Survey and <60% of winter range within Canada and U.S.
- B Those species that have <50% of Canadian and Alaskan breeding range covered by the Breeding Bird Survey but 60% of their winter range is within Canada and U.S.
- C Those species with <60% coverage of Canadian and Alaskan breeding range (but 50% of NA range) covered by the Breeding Bird Survey and have <60% of wintering range in Canada and U.S.
- D Those species with <60% coverage of Canadian and Alaskan breeding range covered by the Breeding Bird Survey but have >60% of their wintering range in Canada and U.S.
- E Those species with >60% coverage of Canadian and Alaskan breeding range covered by the Breeding Bird Survey but have <60% of their wintering range in Canada and U.S.
- F Those species with >60% coverage of Canadian and Alaskan breeding range covered by the Breeding Bird Survey and have >60% of their wintering range in Canada and U.S.

Appendix 3. Monitored Species at Inglewood Bird Sanctuary

	Spring		Fall		Priority
	2002-2004		1995-2004		
	Mean		Multi-year Mean		
	Number	Frequency	Number	Frequency	
Solitary Sandpiper			8	6	
Western Wood-Pewee			13	8	C
Trail's Flycatcher	5	4	52	21	A
Least Flycatcher	9	6	19	14	C
Eastern Kingbird			12	9	C
Tree Swallow	12	8			C
House Wren	12	7	62	25	E
Ruby-crowned Kinglet			15	10	B
Swainson's Thrush	47	15	23	14	A
American Robin	32	17	66	23	D
Gray Catbird	12	8			E
Cedar Waxwing			32	12	D
Warbling Vireo			14	12	C
Tennessee Warbler			83	24	A
Orange-crowned Warbler	13	7	105	26	A
Yellow Warbler	22	10	103	25	C
Yellow-rumped Warbler	162	15	268	39	B
Blackpoll Warbler	11	3	10	6	A
American Redstart			12	8	C
Ovenbird			20	12	C
Northern Waterthrush	6	5	41	19	A
Common Yellowthroat	13	7			C
Wilson's Warbler			155	33	A
Chipping Sparrow			67	16	C
Clay-colored Sparrow	11	7	17	12	C
Song Sparrow			11	10	D
Lincoln's Sparrow	29	13	44	24	A
White-throated Sparrow			44	19	B
White-crowned Sparrow			24	13	B
Dark-eyed Junco			7	5	B
Baltimore Oriole			11	5	E

**Appendix 4. Year-to-Year Recaptures at Inglewood Bird Sanctuary,
Dunbow Road and Cominco Natural Area**

Species	Band	Location	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Belted Kingfisher	1363-70918	IBS			B	r									
Belted Kingfisher	1363-70961	IBS												B	r
Yellow-bellied Sapsucker	8051-65119	Dunbow						B	r						
Red-naped Sapsucker	8041-54901	Dunbow							B	r					
Downy Woodpecker	1451-67033	IBS				B	r	r				r			
Downy Woodpecker	1461-02314	IBS					B	r	r	r					
Downy Woodpecker	1461-05307	Dunbow						B		r					
Downy Woodpecker	1461-50837	Cominco									B	r			
Downy Woodpecker	1461-63690	IBS			B	r									
Downy Woodpecker	1461-84563	Cominco									B	r			
Downy Woodpecker	1761-28014	Cominco									B	r			
Downy Woodpecker	1791-28009	IBS											B	r	r
Downy Woodpecker	1791-28131	IBS										B	r	r	r
Hairy Woodpecker	0962-90911	IBS				B					r		r		
Hairy Woodpecker	1152-38713	IBS							B		r		r		
Northern Flicker	1383-76804	IBS							B			r			
Northern Flicker	1383-76830	IBS											B	r	r
Northern Flicker	1453-31301	IBS				B	r								
Western Wood-Pewee	2160-19068	IBS							B			r			
Western Wood-Pewee	2160-19487	IBS								B		r			
Western Wood-Pewee	2190-10406	IBS										B	r		
Western Wood-Pewee	2200-47351	IBS										B	r	r	r
Least Flycatcher	2050-70767	Dunbow						B		r					
Eastern Kingbird	1451-38640	IBS	B			r									
Eastern Kingbird	1461-31482	IBS							B				r		
Eastern Kingbird	1461-50853	Cominco									B	r			
Eastern Kingbird	1461-50898	Cominco									B	r			
Eastern Kingbird	1461-50899	Cominco									B	r			
Eastern Kingbird	1461-63719	IBS					B	r		r			r		
Eastern Kingbird	1461-63727	IBS					B				r				
Eastern Kingbird	1461-63750	IBS						B	r	r			r		
Eastern Kingbird	1761-28292	IBS										B	r		
Eastern Kingbird	1791-21021	IBS										B		r	r
Warbling Vireo	1910-52290	IBS	B			r	r								
Warbling Vireo	1950-45045	IBS			B	r									
Warbling Vireo	1950-45076	IBS			B		r	r	r						
Warbling Vireo	1950-48110	IBS		B		r									
Warbling Vireo	1990-57936	IBS									B		r	r	
Warbling Vireo	2050-70837	IBS						B	r						
Warbling Vireo	2050-70961	IBS					B		r						
Warbling Vireo	2161-14605	IBS				B			r						
Warbling Vireo	2171-56330	Cominco									B	r			
Warbling Vireo	2190-10445	IBS										B	r		
Warbling Vireo	2220-34455	Cominco									B	r			
Warbling Vireo	2270-23115	IBS											B		r
Warbling Vireo	2270-80426	IBS												B	r
Warbling Vireo	3101-45254	IBS								B	r				
Warbling Vireo	3101-89999	IBS								B			r		
Warbling Vireo	3121-21265	Cominco									B	r			
Tree Swallow	1671-56106	IBS												B	r
Tree Swallow	1671-56126	IBS												B	r
Tree Swallow	2171-56486	IBS											B		r

**Appendix 4. Year-to-Year Recaptures at Inglewood Bird Sanctuary,
Dunbow Road and Cominco Natural Area**

Species	Band	Location	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Tree Swallow	2171-56493	IBS											B		r
Black-capped Chickadee	1950-45065	IBS			B	r									
Black-capped Chickadee	1950-45186	IBS			B	r	r	r							
Black-capped Chickadee	1950-45254	IBS			B	r	r			r	r	r			
Black-capped Chickadee	1950-45255	IBS			B						r	r			
Black-capped Chickadee	1950-45256	IBS			B	r	r								
Black-capped Chickadee	1950-45258	IBS			B	r	r	r	r						
Black-capped Chickadee	1950-45786	IBS					B	r							
Black-capped Chickadee	1980-79991	IBS				B	r	r	r	r	r	r			
Black-capped Chickadee	1990-57154	IBS						B	r						
Black-capped Chickadee	2050-70142	IBS				B		r							
Black-capped Chickadee	2050-70427	IBS					B	r							
Black-capped Chickadee	2050-70849	IBS						B	r						
Black-capped Chickadee	2120-00102	Dunbow						B	r	r					
Black-capped Chickadee	2120-00103	Dunbow						B	r						
Black-capped Chickadee	2120-00105	Dunbow						B	r	r					
Black-capped Chickadee	2120-00107	Dunbow						B	r	r					
Black-capped Chickadee	2120-00109	Dunbow						B	r	r					
Black-capped Chickadee	2120-00110	Dunbow						B	r						
Black-capped Chickadee	2120-00113	Dunbow						B	r						
Black-capped Chickadee	2120-00114	Dunbow						B	r						
Black-capped Chickadee	2120-00117	Dunbow						B	r	r					
Black-capped Chickadee	2120-00124	Dunbow						B		r					
Black-capped Chickadee	2120-00125	Dunbow						B	r						
Black-capped Chickadee	2120-00128	Dunbow						B	r						
Black-capped Chickadee	2120-00197	Dunbow						B	r						
Black-capped Chickadee	2160-18085	Dunbow							B	r					
Black-capped Chickadee	2160-18180	IBS						B	r						
Black-capped Chickadee	2160-18704	IBS							B	r					
Black-capped Chickadee	2160-19059	IBS							B	r					
Black-capped Chickadee	2160-19120	IBS							B	r	r	r	r	r	
Black-capped Chickadee	2160-19174	IBS							B	r					
Black-capped Chickadee	2160-19522	IBS								B	r	r	r	r	r
Black-capped Chickadee	2190-10126	IBS									B	r	r		
Black-capped Chickadee	2190-10128	IBS									B		r		
Black-capped Chickadee	2200-47365	IBS										B	r		
Black-capped Chickadee	2220-34017	Cominco									B	r			
Black-capped Chickadee	2220-34132	Cominco									B	r			
Black-capped Chickadee	2220-34593	Cominco									B	r			
Black-capped Chickadee	2270-23454	IBS											B	r	r
Black-capped Chickadee	2270-80108	IBS											B	r	r
Black-capped Chickadee	2270-80454	IBS												B	r
Black-capped Chickadee	2270-80480	IBS												B	r
Black-capped Chickadee	2270-80687	IBS												B	r
Black-capped Chickadee	2290-92058	IBS												B	r
Black-capped Chickadee	2290-92141	IBS												B	r
Black-capped Chickadee	2290-92174	IBS												B	r
Black-capped Chickadee	2390-30780	IBS										B	r		
Black-capped Chickadee	2390-30780	IBS										B		r	
Black-capped Chickadee	2390-30962	IBS											B	r	
Black-capped Chickadee	3500-89670	Dunbow						B	r	r					
White-breasted Nuthatch	1461-31479	IBS							B	r	r				

M
H
K

**Appendix 4. Year-to-Year Recaptures at Inglewood Bird Sanctuary,
Dunbow Road and Cominco Natural Area**

Species	Band	Location	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
White-breasted Nuthatch	1461-84757	IBS				B	r		r						
White-breasted Nuthatch	1761-15767	IBS											B	r	
White-breasted Nuthatch	1761-28100	IBS													
White-breasted Nuthatch	1791-28150	IBS										B	r		
House Wren	1910-52261	IBS	B	r		r	r	r	r						
House Wren	1950-45790	IBS					B	r							
House Wren	1950-45886	IBS					B	r							
House Wren	1950-48126	IBS		B		r									
House Wren	1990-57803	Cominco									B	r			
House Wren	1990-57943	IBS									B	r			
House Wren	1990-57981	IBS									B	r	r	r	r
House Wren	2060-28447	IBS						B	r						
House Wren	2160-18063	Dunbow							B	r					
House Wren	2160-18082	Dunbow							B	r					
House Wren	2160-19002	Dunbow							B	r					
House Wren	2190-10308	IBS									B	r			
House Wren	2190-10325	IBS										B	r		
House Wren	2200-47352	IBS										B	r		
House Wren	2200-47377	IBS										B	r	r	r
House Wren	2220-13252	IBS											B		r
House Wren	2220-13258	IBS											B		r
House Wren	2270-23312	IBS											B	r	
House Wren	2270-23375	IBS											B	r	
House Wren	2270-23485	IBS											B	r	
House Wren	2270-80132	IBS											B	r	
House Wren	2270-80192	IBS												B	r
House Wren	2270-80297	IBS												B	r
House Wren	2270-80336	IBS												B	r
House Wren	2270-80346	IBS												B	r
House Wren	2270-80400	IBS												B	r
House Wren	2270-80454	IBS												B	r
House Wren	2290-92112	IBS												B	r
House Wren	2290-92203	IBS												B	r
Swainson's Thrush	1451-67159	IBS					B		r						
Swainson's Thrush	1461-63572	IBS						B	r						
Swainson's Thrush	1461-63682	IBS			B		r								
Swainson's Thrush	1461-63692	IBS			B			r							
Swainson's Thrush	1461-63741	IBS					B	r							
Swainson's Thrush	1461-69595	IBS					B	r							
Swainson's Thrush	1541-17673	IBS								B	r		r		
American Robin	0942-93635	IBS											B	r	
American Robin	0942-93643	IBS											B	r	
American Robin	0942-93654	IBS												B	r
American Robin	0942-93655	IBS												B	r
American Robin	0942-93660	IBS												B	r
American Robin	0942-93747	IBS												B	r
American Robin	0962-90991	IBS				B		r							
American Robin	0972-30082	IBS										B	r		
American Robin	0972-30083	IBS										B	r	r	
American Robin	0972-30087	IBS										B	r		
American Robin	0972-30095	IBS										B		r	
American Robin	0972-30466	IBS				B		r							

**Appendix 4. Year-to-Year Recaptures at Inglewood Bird Sanctuary,
Dunbow Road and Cominco Natural Area**

Species	Band	Location	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
American Robin	1142-49046	IBS						B	r						
American Robin	1142-49201	Dunbow						B	r						
American Robin	1142-49212	Dunbow						B		r					
American Robin	1142-49217	Dunbow						B	r						
American Robin	1142-49221	Dunbow						B	r						
American Robin	1142-49261	IBS											B	r	
American Robin	1142-49270	IBS											B		r
American Robin	1142-55013	IBS									B	r			
American Robin	1152-38703	Dunbow							B	r					
American Robin	1152-38721	IBS							B						r
American Robin	1152-38740	IBS							B	r		r		r	
American Robin	1152-38887	IBS									B	r			
Gray Catbird	1681-67028	Cominco									B	r			
Gray Catbird	1681-67080	IBS										B	r		
Gray Catbird	1681-67087	IBS										B	r		
Gray Catbird	8041-54948	IBS							B	r					
Gray Catbird	8041-54987	IBS								B		r		r	
Gray Catbird	8041-83021	Cominco									B	r			
Gray Catbird	8041-83028	Cominco									B	r			
Gray Catbird	8041-83041	Cominco									B	r			
Gray Catbird	8041-83086	IBS											B	r	
Gray Catbird	8041-83101	IBS												B	r
Cedar Waxwing	1461-50802	Cominco									B	r			
Cedar Waxwing	1461-63733	IBS					B	r							
Orange-crowned Warbler	2160-18542	IBS							B	r					
Yellow Warbler	1910-52230	IBS	B			r									
Yellow Warbler	1950-45519	IBS				B	r		r						
Yellow Warbler	1950-45878	IBS					B	r	r						
Yellow Warbler	1950-48086	IBS		B		r	r								
Yellow Warbler	1950-48129	IBS		B		r	r								
Yellow Warbler	1950-48133	IBS		B		r									
Yellow Warbler	1980-79983	IBS				B	r	r	r	r					
Yellow Warbler	1990-57104	Dunbow						B	r						
Yellow Warbler	1990-57734	Cominco									B	r			
Yellow Warbler	1990-57738	Cominco									B	r			
Yellow Warbler	1990-57802	Cominco									B	r			
Yellow Warbler	1990-57864	Cominco									B	r			
Yellow Warbler	1990-57898	Cominco									B	r			
Yellow Warbler	1990-57916	Cominco									B	r			
Yellow Warbler	1990-57935	IBS									B		r		
Yellow Warbler	2050-70144	IBS				B	r								
Yellow Warbler	2070-42756	IBS						B	r						
Yellow Warbler	2120-00181	Dunbow						B	r						
Yellow Warbler	2160-19158	IBS							B	r					
Yellow Warbler	2160-18045	Dunbow							B	r					
Yellow Warbler	2160-18068	Dunbow							B	r					
Yellow Warbler	2160-18077	Dunbow							B	r					
Yellow Warbler	2160-19059	IBS							B	r					
Yellow Warbler	2160-19576	IBS								B		r			
Yellow Warbler	2160-19766	IBS								B	r	r			
Yellow Warbler	2190-10407	IBS									B		r		
Yellow Warbler	2200-47358	Cominco									B		r		

**Appendix 4. Year-to-Year Recaptures at Inglewood Bird Sanctuary,
Dunbow Road and Cominco Natural Area**

Species	Band	Location	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Yellow Warbler	2200-47371	IBS										B			r
Yellow Warbler	2200-47400	IBS										B	r		
Yellow Warbler	2220-13037	IBS											B	r	
Yellow Warbler	2220-13250	IBS											B	r	
Yellow Warbler	2220-13258	IBS											B	r	
Yellow Warbler	2220-13262	IBS											B	r	
Yellow Warbler	2220-13397	IBS											B	r	
Yellow Warbler	2220-34098	Cominco									B	r			
Yellow Warbler	2220-34171	Cominco									B	r			
Yellow Warbler	2220-34293	Cominco									B	r			
Yellow Warbler	2220-34320	Cominco									B	r			
Yellow Warbler	2220-34423	Cominco									B	r			
Yellow Warbler	2220-34438	Cominco									B	r			
Yellow Warbler	2270-23132	IBS											B	r	
Yellow Warbler	2270-23288	IBS											B	r	
Yellow Warbler	2270-23333	IBS											B	r	
Yellow Warbler	2270-23346	IBS											B	r	
Yellow Warbler	2270-80288	IBS												B	r
Yellow Warbler	2270-80307	IBS												B	r
Yellow Warbler	2270-80421	IBS												B	r
Yellow Warbler	2290-92197	IBS												B	r
Yellow Warbler	2390-30570	IBS									B	r			r
Yellow Warbler	3500-89667	Dunbow						B		r					
Yellow-rumped Warbler	1910-52603	IBS	B	r											
Clay-colored Sparrow	1990-57805	Cominco									B			r	
Clay-colored Sparrow	2050-70675	Dunbow						B		r					
Clay-colored Sparrow	2120-00157	Dunbow						B	r	r					
Clay-colored Sparrow	2120-00170	Dunbow						B		r					
Clay-colored Sparrow	2120-00176	Dunbow						B	r						
Clay-colored Sparrow	2160-18022	Dunbow							B	r					
Clay-colored Sparrow	2160-18028	Dunbow							B	r					
Clay-colored Sparrow	2160-18030	Dunbow							B	r					
Clay-colored Sparrow	2160-19504	IBS								B			r		
Clay-colored Sparrow	2220-34456	Cominco									B	r			
Clay-colored Sparrow	2220-34615	Cominco									B	r			
Clay-colored Sparrow	2390-30503	IBS										B		r	
Vesper Sparrow	1461-05331	Dunbow						B	r						
Vesper Sparrow	1461-31412	Dunbow							B	r					
Savannah Sparrow	2171-56304	Cominco									B	r			
Song Sparrow	1541-17836	Cominco									B	r			
Song Sparrow	1541-17895	Cominco									B	r			
Lincoln's Sparrow	1671-56128	IBS												B	r
Lincoln's Sparrow	2161-14607	IBS				B	r								
Lincoln's Sparrow	3121-21261	Cominco									B	r			
White-throated Sparrow	1791-28046	IBS											B	r	
Red-winged Blackbird	8041-83032	Cominco									B	r			
Brown-headed Cowbird	1461-05333	Dunbow						B	r						
Brown-headed Cowbird	1461-31414	Dunbow							B	r					
Brown-headed Cowbird	1541-17842	Cominco									B	r			
Brown-headed Cowbird	1761-28251	IBS										B	r		
Brown-headed Cowbird	1791-28013	IBS											B	r	r
Brown-headed Cowbird	8041-54991	Cominco									B	r			

**Appendix 4. Year-to-Year Recaptures at Inglewood Bird Sanctuary,
Dunbow Road and Cominco Natural Area**

Species	Band	Location	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Brown-headed Cowbird	8041-54992	Cominco									B	r			
Brown-headed Cowbird	8041-83003	Cominco									B	r			
Brown-headed Cowbird	8041-83005	Cominco									B	r			
Brown-headed Cowbird	8041-83019	Cominco									B	r			
Baltimore Oriole	8041-54908	IBS							B	r					
Baltimore Oriole	8041-83030	Cominco									B	r			
Baltimore Oriole	8041-83090	IBS											B	r	r
Baltimore Oriole	8051-65131	IBS						B	r						
American Goldfinch	1990-57875	Cominco									B	r			
American Goldfinch	2120-00188	Dunbow						B		r					
American Goldfinch	2190-10309	IBS										B		r	r
American Goldfinch	2220-34131	Cominco									B	r			
American Goldfinch	2220-34245	Cominco									B	r			
American Goldfinch	2270-23364	IBS											B		r
American Goldfinch	2270-80350	Cominco												B	r
American Goldfinch	2270-80353	Cominco												B	r

B year banded
 r recaptured
 [redacted] banding location different than recapture location

Appendix 5. Captures at Las Caletas, CR 2004

Species	Total	28-Mar	29-Mar	30-Mar	31-Mar	01-Apr	02-Apr	03-Apr	04-Apr	05-Apr	06-Apr	07-Apr	08-Apr	09-Apr	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr		
New bandings																																				
Grey-chested Dove	4				1																															
Ruddy Quail Dove	5					1																														
Bronzy Hermit	5																																			
Band-tailed Barbthroat	13				1																															
Long-billed Hermit	21					1																														
Stripe-throated Hermit	3																																			
White-necked Jacobin	3																																			
Violet-crowned Woodnymph	11																																			
Blue-throated Goldfinch	38					1																														
Charming Hummingbird	26																																			
Snowy-bellied Hummingbird	1																																			
Rufous-billed Hummingbird	11																																			
Green Kingfisher	4																																			
American Pygmy Kingfisher	2																																			
White-necked Puffbird	1																																			
White-whiskered Puffbird	1																																			
Rufous-billed Jacamar	1																																			
Olivaceous Piculet	1																																			
Golden-naped Woodpecker	1																																			
Golden-capped Woodpecker	1																																			
Buff-breasted Flycatcher	1																																			
Plain Xenops	3																																			
Scaly-throated Leafhopper	3																																			
Tawny-winged Woodcreeper	3																																			
Wedge-billed Woodcreeper	11																																			
Streak-headed Woodcreeper	7																																			
Black-headed Antshrike	4																																			
Russet Antshrike	2																																			
Slaty Antwren	1																																			
Dot-winged Antwren	7																																			
Chestnut-backed Antbird	5																																			
Bicolored Antbird	4																																			
Ochre-bellied Flycatcher	33																																			
Northern Barnbill	6																																			
Golden-crowned Spadebill	2																																			
Ruddy-tailed Flycatcher	1																																			
Sulphur-rumped Flycatcher	2																																			
Black-bellied Flycatcher	1																																			
Yellow-bellied Flycatcher	3																																			
Alder Flycatcher	10																																			
Willow Flycatcher	3																																			
Bright-rumped Attila	6																																			
Dusky-capped Flycatcher	5																																			
Thrushlike Sciffornis	2																																			
Rufous Bab... MARSHAL	1																																			
Orange-collared Manakin	17																																			
Blue-crowned Manakin	12																																			
Red-capped Manakin	22																																			
Red-eyed Vireo	2																																			
Yellow-green Vireo	4																																			
Philadelphus Vireo	1																																			
Tawny-crowned Greenlet	3																																			
Lesser Greenlet	1																																			
Riverside Wren	5																																			
Black-bellied Wren	1																																			

Appendix 5. Captures at Las Caletas, CR 2004

Species	28-Mar	29-Mar	30-Mar	31-Mar	01-Apr	02-Apr	03-Apr	04-Apr	05-Apr	06-Apr	07-Apr	08-Apr	09-Apr	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	15-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr				
House Wren	1																																			
Scaly-breasted Wren	1																																			
Long-billed Gnabivore	2																																			
Swainson's Thrush	546	7	5	9	3	16	39	26	29	19	55	31	15	15	7	13	13	15	17	7	16	21	44	17	22	23	5	6	6	6	8	10	10			
Yellow Warbler	1																																			
Northern Waterthrush	1																																			
Kentucky Warbler	1																																			
Mourning Warbler	1																																			
Bananaquit	7																																			
Gray-headed Tanager	4																																			
White-throated Shrike-Tanager	1																																			
White-shouldered Tanager	5																																			
Black-cheeked Ant-Tanager	6																																			
Cherrie's Tanager	7																																			
Bay-headed Tanager	3																																			
Blue Dacnis	1																																			
Blue-black Grassquit	2																																			
Variable Seedeater	10																																			
Yellow-bellied Sapsucker	4																																			
Thick-billed Seed-Finch	6																																			
Orange-billed Sparrow	19	2	1	2	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Black-striped Sparrow	2																																			
Blue-black Grosbeak	4	1	1																																	
Scarlet-rumped Cacique	2																																			
Species	92	11	11	15	17	11	12	11	14	9	5	12	7	12	6	8	9	14	12	16	18	10	12	18	11	7	1	13	11	11	11	10	12	9		
Total	983	21	19	24	21	30	51	39	45	28	59	47	22	29	14	21	24	31	34	27	35	31	60	40	32	30	5	26	21	22	25	22	26	22		

Species	28-Mar	29-Mar	30-Mar	31-Mar	01-Apr	02-Apr	03-Apr	04-Apr	05-Apr	06-Apr	07-Apr	08-Apr	09-Apr	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	15-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr				
Unbanded other captures																																				
Bronzy Hermit	1																																			
Blind-billed Barbtroop	1																																			
Long-billed Hermit	2																																			
Stripe-throated Hermit	4	1																																		
White-necked Jacobin	1																																			
Violet-crowned Woodnymph	2																																			
Blue-throated Goldentail	14	2	3																																	
Charming Hummingbird	7	1	3	1																																
Rufous-tailed Hummingbird	3	1																																		
Chestnut-backed Antbird	1																																			
Ochre-bellied Flycatcher	2																																			
Red-capped Manakin	1																																			
Swainson's Thrush	1																																			
Chy-colored Robin	1																																			
Bananaquit	2																																			
Gray-headed Tanager	1																																			
White-shouldered Tanager	1																																			
Total unbanded other captures	45	6	11	5	1	3	6	3	1	1	2																									
Total new captures	1028	27	30	29	22	33	60	42	46	29	59	49	22	28	15	21	24	31	34	27	35	31	60	40	32	30	5	27	22	22	25	22	26	22		
New captures																																				
Migrants	574	8	5	10	4	16	39	28	29	19	55	32	15	15	7	14	13	17	17	7	16	22	44	18	23	23	5	7	9	10	10	12	14	11		
Residents	454	19	25	19	16	17	21	14	17	10	4	17	7	14	8	7	11	14	17	20	19	9	16	22	9	7	20	13	12	15	10	12	14	11		
Hummingbirds	107	6	7	5	4	11	6	7	5	2	7	3	4	6	4	2	2	8	7	7	5	8	4	3	3	7	5	3	6	5	3	6	8	6		
SWTN	547	7	5	9	3	16	40	26	29	19	55	31	15	15	7	13	13	15	17	7	16	21	44	17	22	23	5	6	6	8	9	8	10	10		

Appendix 5. Captures at Las Caletas, CR 2004

Species	Total	28-Mar	29-Mar	30-Mar	31-Mar	01-Apr	02-Apr	03-Apr	04-Apr	05-Apr	06-Apr	07-Apr	08-Apr	09-Apr	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr				
Recaptures																																						
Gray-chested Dove	4	1										2																										
Ruddy Quail-Dove	1																																					
Band-tailed Barbthroat	1																																					
Long-billed Hermit	2																																					
White-necked Jacobin	1																																					
Blue-throated Goldentail	1																																					
Charming Hummingbird	1																																					
Black-throated Trogon	1																																					
Blue-crowned Motmot	2																																					
American Pygmy Kingfisher	2																																					
Purplish-tailed Jacamar	2																																					
Buff-throated Fulvous-gleaner	2																																					
Plain Xenops	5																																					
Scaly-throated Leafhopper	3																																					
Tawny-winged Woodcreeper	4																																					
Wedge-billed Woodcreeper	31																																					
Streak-headed Woodcreeper	7																																					
Black-hooded Antshrike	7																																					
Slaty Antwren	2																																					
Duck-winged Antwren	7																																					
Chestnut-backed Antbird	8																																					
Bicolored Antbird	1																																					
Green-billed Flycatcher	18																																					
Northern Bantail	6																																					
Ruddy-tailed Flycatcher	1																																					
Bright-rumped Attila	2																																					
Thrustlike Schiffornis	2																																					
Orange-collared Manakin	16																																					
Blue-crowned Manakin	10																																					
Red-capped Manakin	18																																					
Tawny-crowned Greenlet	4																																					
Riverside Wren	4																																					
Long-billed Gnatwren	4																																					
Swinson's Thrush	18																																					
Northern Waterthrush	1																																					
Mourning Warbler	4																																					
Bananaquit	2																																					
Gray-headed Tanager	4																																					
Black-cheeked Ant-Tanager	4																																					
White-shouldered Tanager	5																																					
Chirree's Tanager	2																																					
Thick-billed Seed-Finch	1																																					
Orange-billed Sparrow	26																																					
Black-striped Sparrow	1																																					
Blue-black Grosbeak	7																																					
Total recaptures	255	8	17	11	6	14	6	12	6	4	8	15	11	4	7	3	7	7	10	10	3	7	7	7	7	10	10	3	9	3	8	7	2	10	5			
Total new captures + recaptures	1283	35	47	40	28	47	66	54	52	33	67	84	33	33	22	24	31	38	39	37	45	34	67	47	42	42	40	8	35	25	30	32	24	36	27			

**CALGARY BIRD BANDING SOCIETY
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