

CALGARY BIRD BANDING SOCIETY
2001 ANNUAL TECHNICAL REPORT



Prepared

by

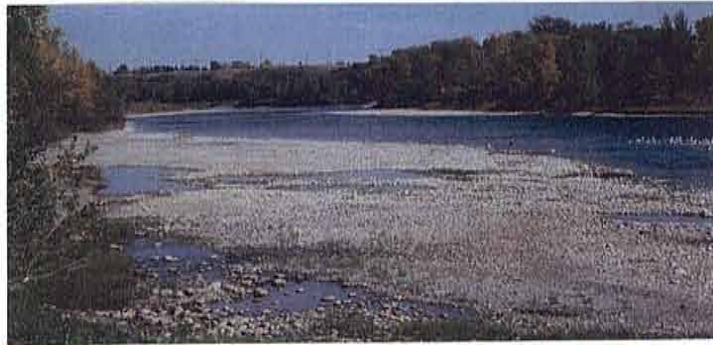
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and
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Custodire aves
Keep watch on birds



Clockwise: 1. **Baltimore Oriole** (ASY-M&F Cominco 21 May) 2. **Cooper's Hawk** (AHY-M Cominco 17 May) 3. **Clay-coloured Sparrow nest with cowbird eggs** (Cominco 30 May) 4. **Varied Thrush** (HY-U Inglewood 25 Sep) 5. **Northern Saw-whet Owl** (SY-F Inglewood 12 Oct 2000) 6. **Great-crested Flycatcher** (AHY-U Inglewood 16 Sep) 7. **Townsend's Warbler** (AHY-M Inglewood 24 Aug) 8. **Black-and-white Warbler** (ASY-M Cominco 15 May) 9. **Low water** at Inglewood during fall 10. **Yellow-rumped Warbler moult limit** (SY-M Cominco 17 May)

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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 2001 CBBS received support from the James L. Baillie Memorial Fund, Petro Canada Volunteer Grant Fund, Canadian Wildlife Service, the Canada Millennium Partnership Fund, Friends of Environment, and the Alberta Gaming and Liquor Commission.

The fall 2001 migration monitoring program at IBS follows pilot programs in 1992 and 1994 and full fall programs in 1995 through 2000. Twelve mist-nets were operated for approximately 6 hours on 73 of the 74 days between 25 July and 6 October. A total of 5,152 net-hours resulted in 1,404 new bandings of 64 species. Approximately 71% were Neotropical Migrants. Forty-seven percent of new bandings occurred during August and 40% in September. A Varied Thrush on 25 September and a Great-crested Flycatcher on 16 September were new species. The IBS MAPS site was operated again in 2001, adding to previous data gathered since 1992. New bandings totaled 77.

2001 marked the second year of spring migration monitoring at Cominco Natural Area (CNA), approximately 5-km south of IBS along the Bow River. Twelve mist-nets were operated for 24 of 28 days from 7 May to 3 June. A total of 1,625 net-hours during spring resulted in 523 new bandings of 44 species, 80% of which were Neotropical Migrants. A SY-M Lazuli Bunting captured on 2 June was a highlight.

IBS and CNA are just 5-km apart along the Bow River. Three birds, two Eastern Kingbirds and a Gray Catbird, banded at CNA in 2000 were recaptured at IBS in 2001. Three 7-year old Black-capped Chickadees and a 6-year old Northern Flicker and Downy Woodpecker were interesting recaptures.

Trend analysis was undertaken on 27 species occurring as migrants at IBS and captured in sufficient quantity to allow analysis. Three species evidenced significant or nearly significant change over the evaluation period:

Solitary Sandpiper	- 2.9%/year (p=0.10);
Dark-eyed Junco	- 3.5%/year (p=0.03); and
Baltimore Oriole	- 2.9%/year (p=0.04).

Volunteers and Banders-in-Charge contributed a total of 260 man-days to the banding projects.

Seven mortalities occurred during the mist-netting of 2,709 birds (0.26%), 5 of which resulted from predation by Black-billed Magpies, deer and accipiters. In addition 23 injuries were recorded, most of them wing abrasions.

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 at Inglewood Bird Sanctuary;
- 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 1995-2001;
- 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;
- 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
- a Northern Saw-whet Owl migration monitoring pilot program was carried out at Inglewood Bird Sanctuary in 2000.

One new initiative is underway for 2002: pilot neotropical landbird migration monitoring on the west coast of Costa Rica.

As of 1998 the Calgary Bird Banding Society's Inglewood Bird Sanctuary site is a fully designated member of the Canadian Migration Monitoring Network coordinated and administered by Bird Studies Canada. Establishment of this formal association of migrant monitoring sites across Canada significantly increases the value of the work conducted at each site.

FUNDING AND ACKNOWLEDGEMENTS

Funding proceeds during 2001 were:

- a grant through The James L. Baillie Memorial Fund from a contribution by Environment Canada, supplemented with funds raised through the annual Baillie Birdathon (\$500);
- funds raised by the CBBS through participation in the Baillie Birdathon (approximately \$2,585 net);
- a grant from Canadian Wildlife Service through Mr. Loney Dickson (\$2,000);
- a grant from the Petro Canada Volunteer Grant Program (\$500);
- a grant through Bird Studies Canada from the Canada Millennium Partnership Fund (\$2,000);
- a grant from Friends of the Environment (\$4,000);
- donations (\$400); and
- a grant from the Alberta Gaming and Liquor Commission Lottery Proceeds (\$31,700).

Funds were used to provide a per diem to Banders-in-Charge (BICs), purchase mist-nets, produce the annual technical report and cover migration monitoring miscellaneous costs (field data sheets, propane, batteries, film etc.).

Field data forms for migration monitoring were modified from forms designed for the Last Mountain Bird Observatory in Saskatchewan. CBBS acknowledges LMBO's spirit of cooperation in sharing digital copies of these forms for our use.

Data and photographs to support our study of Mourning and MacGillivray's Warbler morphometrics at Inglewood Bird Sanctuary were contributed by Mackenzie Bird Observatory thanks to Vi Lambie.

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). Recent (1978-1988) trends in data from the Breeding Bird Survey indicate 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 addition to the Canadian Migration Monitoring Network coordinated and administered by Bird Studies Canada. IBS is located within Calgary which greatly facilitates the potential for volunteer involvement. Pilot Neotropical migrant monitoring covering only a portion of the fall migration season was undertaken in 1992 and 1994 while full fall migration monitoring has occurred since 1995. 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

The fall migration of Neotropical migrants was monitored in 2001 at Inglewood Bird Sanctuary (IBS). IBS' 35 hectares includes mature riverine balsam poplar forest known for its number and diversity of songbirds during 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 30-mm mesh mist-nets were operated in permanent net lanes for approximately 6 hours each day beginning at sunrise. Spring migration was not monitored by request of the IBS manager because of potential adverse environmental impact due to wetter conditions. However permission has been granted to undertake spring migration monitoring commencing in 2002.

Migration monitoring procedures have been developed for IBS based on standardizations 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), modified to accommodate the specific requirements of the IBS site. Net locations and the daily census route are shown on Figure 2.

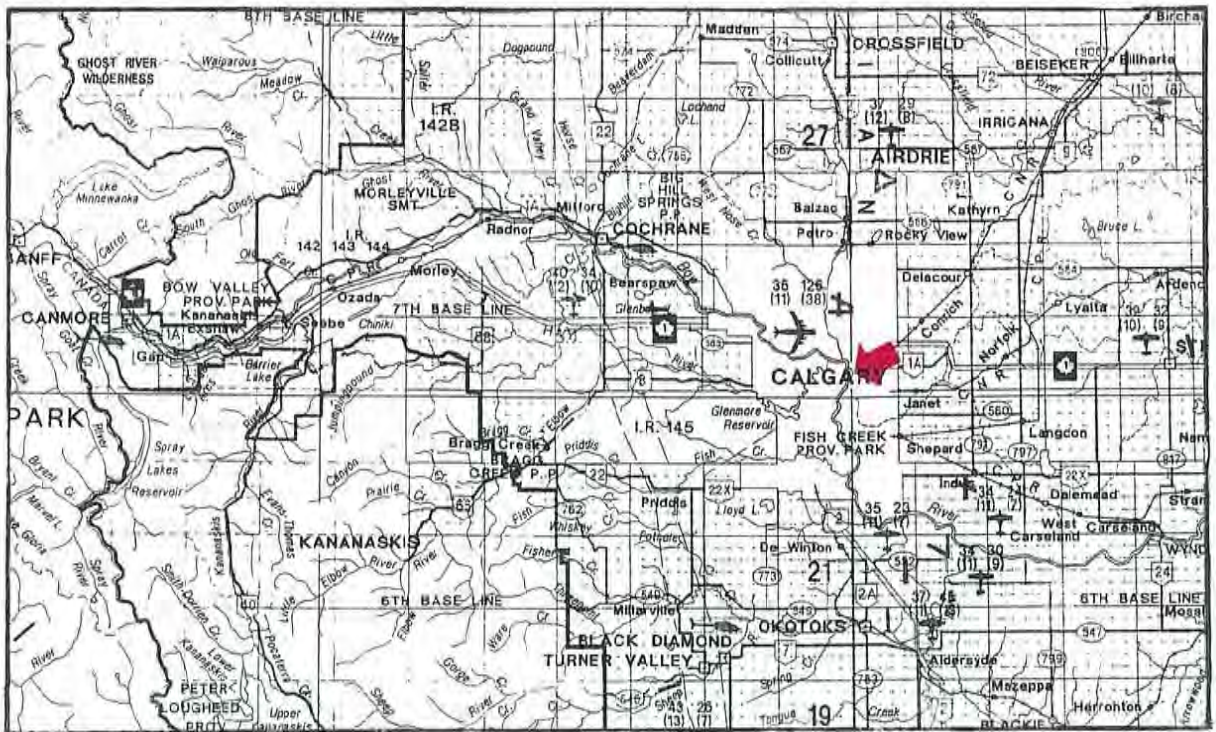


Figure 1. Topographic maps at 1:250,000 (top) and 1:50,000 (bottom) scales showing location of Inglewood Bird Sanctuary in southwestern Alberta. North is up.

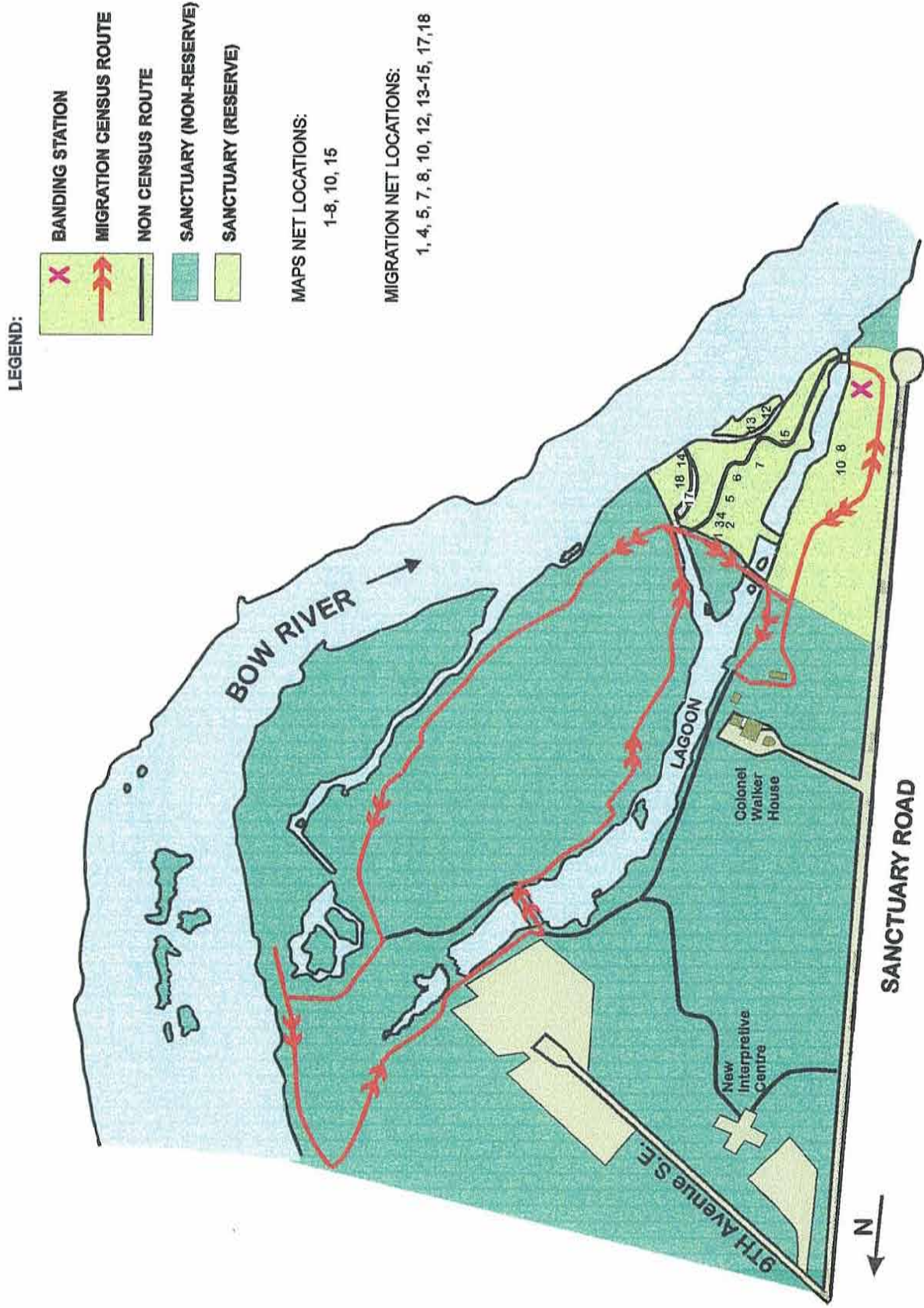


Figure 2. Schematic of Inglewood Bird Sanctuary migration monitoring station

Monitoring Schedule and Coverage

Fall migration monitoring at IBS was conducted from 25 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. During 2001, a coverage of 98.6% was achieved. That is, mist-netting occurred on 73 of the 74 target days for a total of 5152 net-hours (Table 1, Figure 3). Inclement weather resulted in 1 day of the monitoring period without banding.

A daily census was obtained on 72 of the 73 days of mist-netting. 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).

New Bandings

A total of ¹⁴⁰²1404 new bands were placed on birds of 64 species (Table 2, Appendix 1). Of these, 1003 of 40 species or approximately 71% were Neotropical migrants (Finch 1991). Days on which 40 or more new bandings occurred were 16 and 24 August and 2, 11 and 17 September. Approximately 47% of new bandings occurred in August and 40% in September (Figure 3). New bandings at IBS from 1992-2001 are presented in Table 2. The top 20 banded species overall, and by year, 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.

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 Great-crested Flycatcher on 16 September, a Philadelphia Vireo on 29 August, a Townsend's Solitaire on 10 September, a Varied Thrush on 25 September, a Nashville Warbler on 20 September, a Swamp Sparrow on 30 September, and a Harris' Sparrow on 4 October. The Great-crested Flycatcher and Varied Thrush were new species banded at Inglewood Bird Sanctuary.

The *Oporornis* warblers are often difficult to detect and identify by bird watching with binoculars. During 2001 migration monitoring at IBS four Connecticut Warblers, 5 Mourning Warblers and 4 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. Data from Mackenzie Bird Observatory was obtained in 2001 to investigate whether *Oporornis* warblers at IBS may be hybrids. DNA analysis offers another potential avenue of investigation into this issue. Appendix 4 provides additional details on this interesting work in progress. The cooperation of these other banding sites in our study is greatly appreciated and CBBS looks forward to additional data and further insight in future years.

Table 1. Coverage and Capture Rates During 2001 Fall Banding at Inglewood Bird Sanctuary

Date	Net-hours	Captures				Total	Captures/100 Net-hours
		New Bandings	Recaptures	Escapes	Mortalities		
25-Jul	64.1	23	6	7		36	56
26-Jul	82.1	17 19	3			22 20	27 24
27-Jul	73.5	13	6	3		22	30
28-Jul	71.9	16	2	3		21	29
29-Jul	68.7	4	2			6	9
30-Jul	73.4	30	16	2		48	65
31-Jul	72.6	21	3	2		26	36
01-Aug	71.6	15	6			21	29
02-Aug	73.4	25	3	2		30	41
03-Aug	71.2	19	8			27	38
04-Aug	72.2	16	5	4		25	35
05-Aug	73.3	18	3	1		22	30
06-Aug	72.4	15	2	5		22	30
07-Aug	71.9	19	5	1		25	35
08-Aug		Rain				0	0
09-Aug	71.7	31	5			36	50
10-Aug	71.7	31	7	4		42	59
11-Aug	72.5	28	7	3		38	52
12-Aug	72.0	32	7	3		42	58
13-Aug	71.4	30	4	2		36	50
14-Aug	73.2	34	18	2		54	74
15-Aug	71.9	18	18			36	50
16-Aug	72.0	44	9	7		60	83
17-Aug	72.0	39	6	3	1	49	68
18-Aug	54.0	17	9			26	48
19-Aug	73.9	26	14			40	54
20-Aug	72.7	29	11	1		41	56
21-Aug	73.2	17	9			26	36
22-Aug	72.3	31	15			46	64
23-Aug	72.1	20	13			33	46
24-Aug	73.2	49	20			69	94
25-Aug	72.9	20	10			30	41
26-Aug	73.0	7	6	1		14	19
27-Aug	73.1	12	5			17	23
28-Aug	72.4	6	7			13	18
29-Aug	72.4	13	2			15	21
30-Aug	72.1	3	2			5	7
31-Aug	72.4	2	4		1	7	10
01-Sep	72.7	6				6	8
02-Sep							
03-Sep							
04-Sep							
05-Sep							
06-Sep							
06-Oct							
Total							

Figure 3. New Bandings at Inglewood Bird Sanctuary - Fall 2001

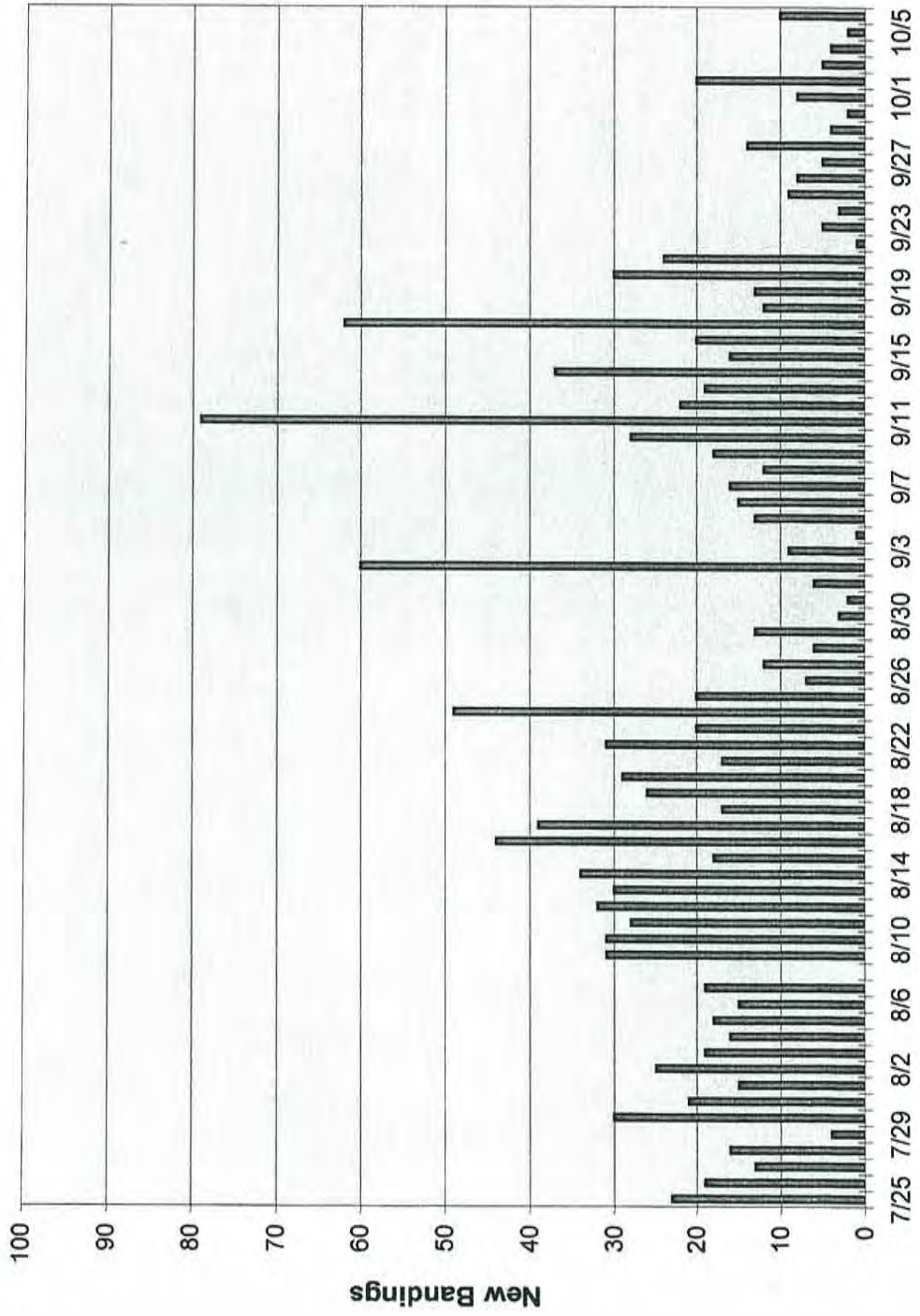


Table 2. New Bandings at Inglewood Bird Sanctuary

Year	1992	1994	1995	1996	1997	1998	1999	2000	2001
Start	03-Aug	18-Aug	01-Aug	31-Jul	31-Jul	25-Jul	26-Jul	01-Aug	25-Jul
Finish	22-Sep	09-Sep	30-Sep	12-Oct	15-Oct	02-Oct	08-Oct	30-Sep	06-Oct
# Days	26	20	54	70	65	61	68	55	73
Total	841	466	1549	1121	1455	1898	1276	1262	1404
Species	52	48	61	59	64	64	66	68	64
Net-hours	934	1078	3456	4547	4608	4371	4426	3842	5152
Bandings/100 Net-hours	90.0	43.2	44.8	24.7	31.6	43.4	28.8	32.8	27.3
Wood Duck			1						
Mallard							1		
Sharp-shinned Hawk	2	2		1	5	4	3	1	1
Cooper's Hawk				1	1			1	
Northern Goshawk				1					
Broad-winged Hawk						1			
Solitary Sandpiper	3	2	3	14	13	14	2	8	4
Spotted Sandpiper		1	2		3	3	2		
Common Snipe								1	
Belted Kingfisher	2	2	8	8	6	8	10	7	2
Yellow-bellied Sapsucker			1						
Downy Woodpecker		1	2	3	5	7	3	9	9
Hairy Woodpecker								1	
Northern Flicker	2	1	4	8	7	3	11	2	
Olive-sided Flycatcher	3		3		5	2		2	
Western Wood-Pewee	6	4	11	2	33	8	10	7	14
Yellow-bellied Flycatcher			1				1		
Trill's Flycatcher*	24	16	29	25	50	36	24	40	46
Least Flycatcher	16	5	16	9	30	14	11	21	20
Dusky Flycatcher			2	1					
Pacific-slope Flycatcher			1		1				
Eastern Phoebe		1						1	
Great-crested Flycatcher									1
Eastern Kingbird	1	2	7	18	17	19	2	7	17
Blue-headed Vireo	1		1	1	2			1	
Warbling Vireo	8	15	13	18	27	18	8	7	12
Philadelphia Vireo	1							1	1
Red-eyed Vireo	3	1	2	4	3	12	2	4	2
Blue Jay				1				1	
Black-billed Magpie			2	1	8	2	2	1	3
N Rough-winged Swallow					2				
Black-capped Chickadee	9	12	7	17	5	19	10	19	14
Red-breasted Nuthatch		3		2		4	2	20	7
White-breasted Nuthatch	1	1	6		4	4	4	5	5
Brown Creeper	1						1	1	
House Wren	3	3	50	45	52	49	33	57	59
Winter Wren								1	
Golden-crowned Kinglet	2		2	1	1	1	2	1	
Ruby-crowned Kinglet	3	1	10	18	20	14	5	11	15
Townsend's Solitaire				1					1
Veery	2					1			
Gray-cheeked Thrush	1					1		1	
Swainson's Thrush	34	13	17	52	10	28	19	13	30
Hermit Thrush	4		3	14	6	9	9	4	11
American Robin	5	11	114	81	81	31	60	32	105

1402

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Table 2. New Bandings at Inglewood Bird Sanctuary

Year	1992	1994	1995	1996	1997	1998	1999	2000	2001
Varied Thrush									1
Gray Catbird		1		5	7	6	5	4	14
Brown Thrasher					3				
European Starling			2						4
Bohemian Waxwing							1		
Cedar Waxwing	12	1	42	14	67	11	25	26	49
Tennessee Warbler	43	5	33	30	52	74	106	167	46
Orange-crowned Warbler	24	36	177	116	86	207	91	84	58
Nashville Warbler				1	2	1	1	2	1
Yellow Warbler	56	19	44	62	137	91	138	89	101
Chestnut-sided Warbler	1						1		
Magnolia Warbler	9	4	2	2	4	4	2	2	1
Yellow-rumped Warbler	293	171	496	92	191	638	195	200	246
Black-throated Green Warbler					1	1	1		
Townsend's Warbler	1				1	2	3	1	2
Palm Warbler		3	7	4	3	8	7	1	6
Bay-breasted Warbler			1				1	1	
Blackpoll Warbler	17	5	17	8	6	30	5	8	11
Black-and-white Warbler	4	1	1	2		3			2
American Redstart	19	4	3	6	4	20	5	3	16
Ovenbird	22	6	10	30	11	38	11	11	24
Northern Waterthrush	22	8	23	56	46	26	41	34	44
Connecticut Warbler	2	2	4	4	1	3	3	3	4
Mourning Warbler	4	2	5	10	3	9	1	4	5
MacGillivray's Warbler	2		3	8	10	6	2	5	4
Common Yellowthroat		1	6	1	8	10	8	4	12
Wilson's Warbler	121	68	102	175	119	113	100	167	152
Canada Warbler	1			2	1	3	1	1	1
Western Tanager	1	1	12	1	3	2	4	1	5
American Tree Sparrow			10	3	3	7	2	1	1
Chipping Sparrow	4	1	29	14	151	27	83	50	47
Clay-coloured Sparrow		1	1	6	21	37	26	9	30
Brewer's Sparrow							1		
Savannah Sparrow		1			2			1	1
Fox Sparrow	1	1	1			2	1		2
Song Sparrow		1	9	9	15	18	21	9	3
Lincoln's Sparrow	9	7	53	28	13	59	48	30	39
Swamp Sparrow				2		7	3		1
White-throated Sparrow	13	11	73	28	39	77	54	18	35
Harris' Sparrow			1						1
White-crowned Sparrow	5	4	20	24	22	21	22	23	27
Dark-eyed Junco	5	3	15	15	3	10	8	6	1
Rose-breasted Grosbeak	6				1	3	2	3	1
Red-winged Blackbird			4				2		
Common Grackle			3						
Brown-headed Cowbird			1	2	2	1		2	4
Baltimore Oriole	4		21	12	12	8	5	1	8
Purple Finch		1			2	1	1	2	6
Pine Siskin					2				
American Goldfinch	3			2	4	2	2	1	4
House Sparrow									3

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

Other areas of research have involved, or have the potential to involve, data from IBS. Firstly, 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 provides insight into the quality of IBS as a refueling stop for Neotropical migrants. A copy of the pre-publication version of her paper appeared in Appendix 5 of the 2000 ATR. Secondly, 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 of their respective locations. Preliminary results involving 1999 samples from Delta Marsh Bird Observatory and Atlantic Bird Observatory indeed indicate that CMMN stations are capturing birds from a broad area, not simply from a small region close to the station.

Recaptures

Recaptures at IBS totaled 353 of 251 different birds of 38 species. Recaptures were highest in resident species (e.g. House Wren, Black-capped Chickadee, Gray Catbird). However some resident species evidence a lower recapture rate suggesting that migrants swell the ranks (e.g. Eastern Kingbird, Yellow Warbler, Cedar Waxwing). A few migrant species appear to use IBS for moulting or extended pre-migratory foraging (e.g. Mourning Warbler, Northern Waterthrush, White-throated Sparrow, Tennessee Warbler). Yet other migrant species do not appear to linger at IBS (e.g. White-crowned Sparrow, Orange-crowned Warbler, Traill's Flycatcher).

Species Recaptured at Inglewood Bird Sanctuary – Fall 2001					
Species	Recap	Banded	Species	Recap	Banded
Solitary Sandpiper	1	4	Yellow-rumped Warbler	21	246
Downy Woodpecker	3	9	Palm Warbler	1	6
Traill's Flycatcher	7	46	Blackpoll Warbler	6	14
Least Flycatcher	4	20	Black-and-white Warbler	1	2
Eastern Kingbird	2	17	American Redstart	2	16
Red-eyed Vireo	1	2	Ovenbird	8	24
Black-capped Chickadee	49	14	Northern Waterthrush	28	44
White-breasted Nuthatch	4	5	Connecticut Warbler	2	4
House Wren	68	59 61	Mourning Warbler	8	4
Ruby-crowned Kinglet	2	15	Common Yellowthroat	4	12
Townsend's Solitaire	1	1	Wilson's Warbler	42	152
Swainson's Thrush	2	30	American Tree Sparrow	1	1
Hermit Thrush	5	11	Clay-coloured Sparrow	12	30
American Robin	9	105	Lincoln's Sparrow	10	39
Gray Catbird	14	14	Swamp Sparrow	1	1
Cedar Waxwing	2	49	White-throated Sparrow	18	35
Tennessee Warbler	20	46	White-crowned Sparrow	2	27
Orange-crowned Warbler	4	58	Brown-headed Cowbird	1	4
Yellow Warbler	30	101	American Goldfinch	2	4

Year-to-year recaptures from 1992-2001 are presented in Appendix 5. 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 show up for the first time a number of years after banding. Of note are three birds, two Eastern Kingbirds and one Gray Catbird, which were banded at Cominco Natural Area in 2000 and recaptured at IBS in 2001. The two sites are 5-km apart.

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 Inglewood. 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. DET data is inputted into the CMMN-DET management program and provided to Bird Studies Canada for trend analysis and other CMMN cooperative projects.

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 2001 field season was MAPS 13th 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". For IBS MAPS initiates during period 4 (31 May - 9 June) and coverage entails 7 of the 10 ten-day periods.

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 type and distribution of the vegetation must be described each year.

MAPS Schedule and Coverage

2001 marked the 9th year of the MAPS project at IBS since 1992. Lack of availability of qualified personnel precluded gathering data in 1994. In 2001 a total of 420.8 net-hours were achieved over 7 periods.

Results

The number of each species banded, by date, during 2001 are summarized in Table 3. The number of each species that were banded is summarized in Table 4 for 2001 as well as the eight previous years.

Discussion

As indicated in Table 4, the number of new bandings has fluctuated from year to year. The number of migrants detected during MAPS has also varied from year to year. Very few northbound warblers were detected in 2001 suggesting an early spring migration.

Table 3. Inglewood Bird Sanctuary MAPS New Bandings - 2001

	Jun 09	Jun 16	Jun 28	Jul 06	Jul 16	Jul 27	Aug 01	Total
Downy Woodpecker		1						1
Western Wood-Pewee	1						2	3
Trall's Flycatcher	2	1	1					4
Least Flycatcher	1		1					2
Eastern Kingbird		1	1					2
Warbling Vireo						1		1
Black-capped Chickadee	1		1	1	1			4
House Wren	2	2	1		1	5		11
Swainson's Thrush	2				1			3
American Robin	5	1	3	5	2	2	2	20
Gray Catbird	2	1	1	2				6
Cedar Waxwing	2		2		1			5
Tennessee Warbler						1		1
Yellow Warbler	2		1			1		4
Myrtle Warbler							1	1
Northern Waterthrush							1	1
Clay-coloured Sparrow					1	1		2
Brown-headed Cowbird					1			1
Baltimore Oriole		1	2	1	1			5
Total Species	20	8	14	9	9	11	6	77
Total Species	10	7	10	4	8	6	4	19

Table 4. Inglewood Bird Sanctuary MAPS Summary - 1992-2001

	New Bandings										Total
	1992	1993	1995	1996	1997	1998	1999	2000	2001		
American Kestrel			1								1
Downy Woodpecker	1	3	1	5	4	1			1		16
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		16
Trail's Flycatcher				3	3		1	1	4		12
Least Flycatcher	14	8	3	2	3	4	2	1	2		39
Eastern Kingbird	2	1			3	1	3		2		12
Warbling Vireo	7	7	1	4	2		2	2	1		26
Red-eyed Vireo	1										1
Black-billed Magpie				1	2						3
Tree Swallow	3						2				5
Bank Swallow	1										1
Black-capped Chickadee	5	7	5	9	2	3	5	4	4		44
White-breasted Nuthatch	3	4		2							9
House Wren	5	11	9	9	13	8	9	18	11		93
Veery	2					1					3
Swainson's Thrush	10	8	6	4	3	1	4		3		39
Hermit Thrush								1			1
American Robin	21	6	26	25	23	10	8	14	20		153
Gray Catbird	3			1	1	4	8	1	6		24
European Starling			1								1
Cedar Waxwing	27	8		6	1	9	5	7	5		68
Tennessee Warbler	1	6		7	1	3	4	22	1		45
Orange-crowned Warbler						1					1
Yellow Warbler	20	14	7	2	6	9	24	13	4		99
Myrtle Warbler	10					2		2	1		15
American Redstart		1									1
Ovenbird	3			1		1					5
Northern Waterthrush						1	1		1		3
Mourning Warbler	1										1
Wilson's Warbler				2		1	1				4
Western Tanager		1	3	1	2		4				11
Chipping Sparrow		7			1						8
Clay-coloured Sparrow		1				6	17	1	2		27
Song Sparrow		1		1		1	4				7
Lincoln's Sparrow		3	1	2	5	2		1			14
White-throated Sparrow				2							2
Rose-breasted Grosbeak				1							1
Common Grackle			1		2						3
Brown-headed Cowbird	6				3			1	1		11
Baltimore Oriole	3	7	2	8	9	1	2	1	5		38
Purple Finch		1						1			2
American Goldfinch	2	2		1							5
House Sparrow	2					2					4
Total	161	110	72	102	90	75	108	92	77		887
Species	27	24	18	25	21	24	20	18	19		47

MIGRATION MONITORING AT COMINCO NATURAL AREA

Introduction

CBBS was granted permission to monitor migration at a site along the Bow River approximately 5-km south of IBS in 2000. Both spring and fall migration were monitored in 2000. During 2001, only spring was monitored. Fall was not monitored due to a lack of resources, particularly BICs, although banding did occur during a short period during fall on an opportunistic basis.

Study Site

The Cominco Natural Area (CNA) is the eastern portion of an approximately 136-ha property currently owned by Cominco Ltd., which bought the chemical fertilizer plant and lands in 1946. Deerfoot Trail now separates the riverside CNA from the larger former industrial site. The CNA's other boundaries are Heritage Drive to the north, the Bow River to the east and Southland Park to the south (Figure 4).

There are five major habitat types in the area: aquatic and marginal aquatic habitats; grasslands; disturbed areas; shrub communities; and Balsam Poplar (*Populus balsamifera*) and Aspen (*Populus tremuloides*) woods, as described by Sherrington (1975). The current health of these habitats appears related to the amount of their use by the resident population of White-tailed deer (*Odocoileus virginianus*). The shrub communities are primarily large patches of Chokecherry (*Prunus virginiana*) and Saskatoon (*Amelanchier alnifolia*) that have no branches near the ground and large old willow (*Salix* sp.). Red-osier dogwood (*Cornus stolonifera*), a favourite browse of deer, is abundant across the river and upstream in other city parks and natural areas but virtually absent here.

The two large cattail marshes attract large numbers of Red-winged Blackbirds, Song Sparrows, and ducks. American Robins feed in the disturbed areas. Grassy areas, that include patches of Western snowberry (*Symphoricarpos occidentalis*) and Wild rose (*Rosa woodsii*) support Clay-colored and Savannah Sparrows. Large chokecherry and willow shrubs are ideal for Cedar Waxwing and House Wren nests. Treed areas attract flocks of migrating warblers and Common Grackles during fall. It appears that about 45%, or 29 of the 65 passerines and near-passerines species are possible or probable nesting species, based on 2000 spring and fall monitoring.

Most of the CNA has been exposed to limited human use for more than 50 years with some major exceptions. A large canal formerly used as a water inlet source for the Cominco plant bisects CNA and completion of Deerfoot Trail in 1982 created a noisy dissection of the area.

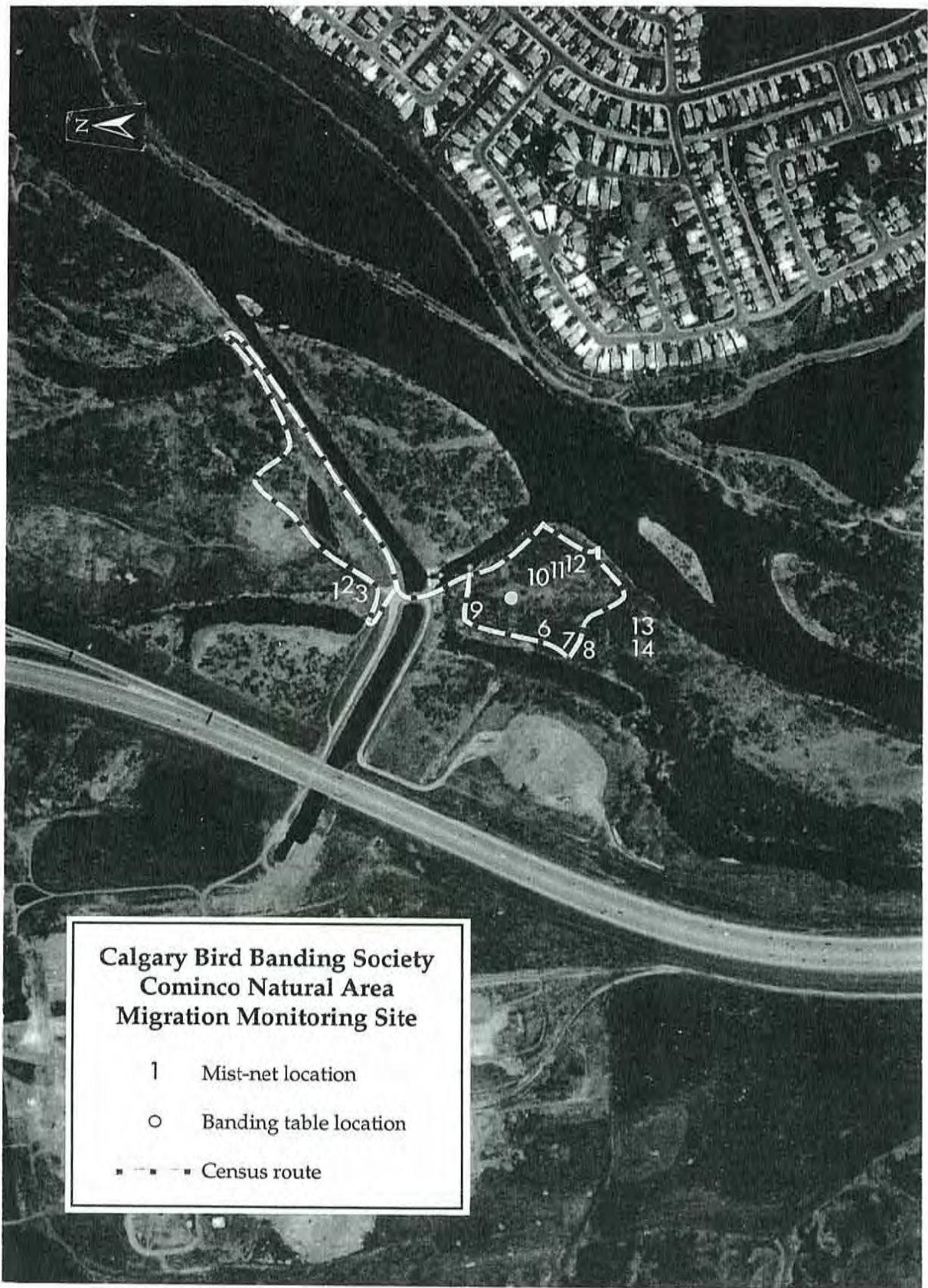


Figure 4. Cominco Natural Area migration monitoring site.

A grassy area north of the canal is cut annually in midsummer to reduce the potential fire hazard. Duck nest boxes and goose nest platforms have been erected throughout the property.

Methods

Migration monitoring methods used during spring 2001 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. During spring migration, twelve 12-m long 30-mm mesh mist-nets were operated for approximately 6 hours each day beginning at sunrise. Two net lanes (4 and 5) used during 2000 were discontinued and two new net lanes (13 and 14) were established at the south end of the setup. The field banding lab was relocated slightly south of its 2000 location.

Migration monitoring procedures have been developed for Cominco as at IBS based on standardization outlined in McCracken *et al.* (1993) and Hussell and Ralph (1996), modified to accommodate the requirements of the site. Net locations and the daily census route are indicated in Figure 4.

Monitoring Schedule and Coverage

Spring migration monitoring was conducted from 7 May to 3 June. Fall banding occurred during 3-11 August. Standardized constant effort mist-netting was conducted for 6 consecutive hours starting at sunrise on each day that conditions allowed.

During spring 2001, coverage of 86% was achieved; mist-netting occurred on 24 of 28 days for a total of 1625 net-hours. Inclement weather, particularly high winds, forced early net closures on several days as well. During fall mist-netting occurred on 8 of 9 days. No census data was obtained at CNA during 2001.

New Bandings - Spring

During spring monitoring, a total of 523 new bands were placed on 44 species at CNA (Table 5). Of these, 417 or approximately (80%) are Neotropical migrants (Finch 1991). Timing of migration based on new bandings shows peaks of 40 birds or more on 12 and 15 May (Figure 5). The top 20 banded species are identified in Appendix 7.

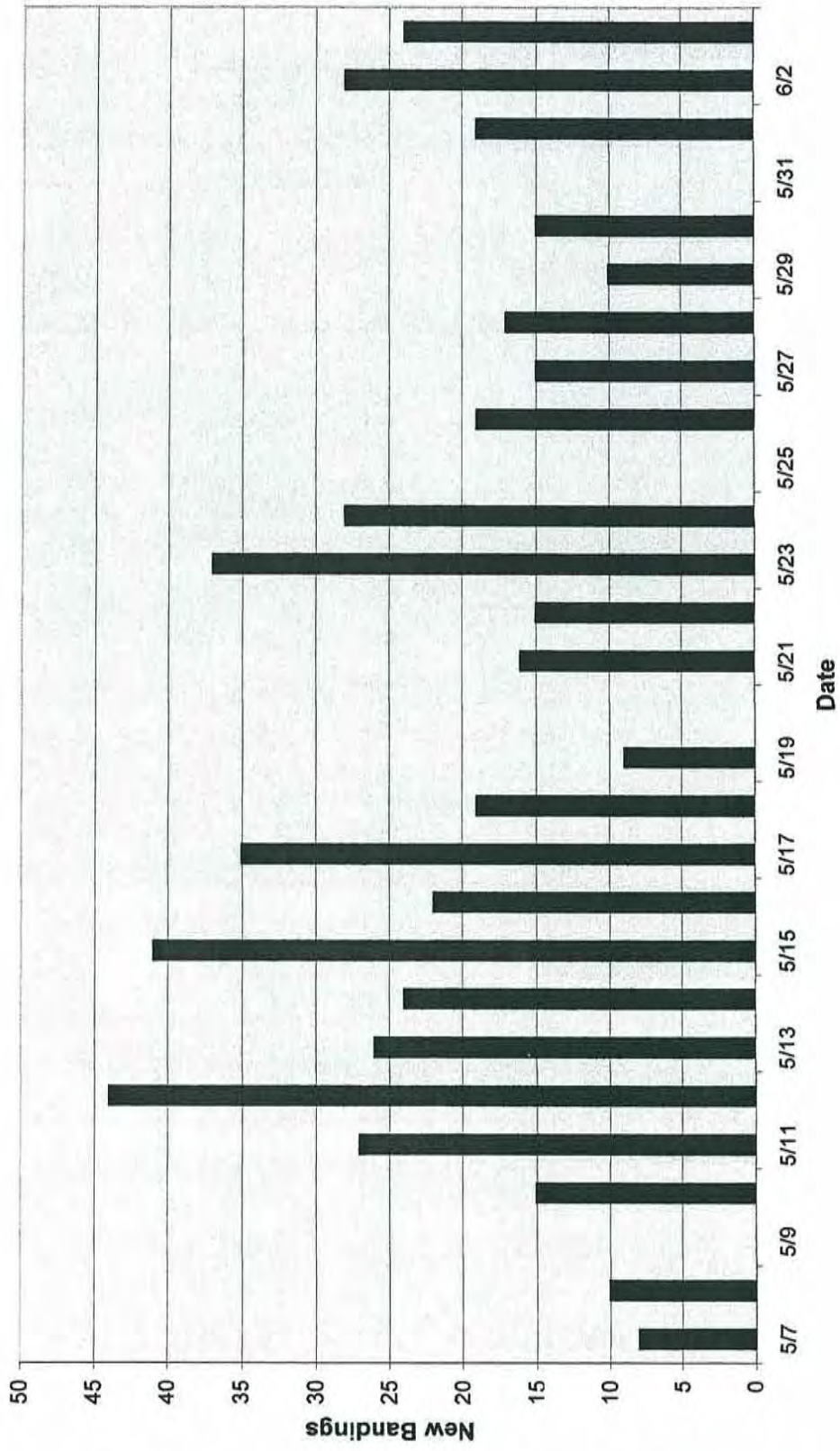
Table 5. New Bandings at Cominco Natural Area

Year	2000		2001
	Spring	Fall	Spring
Start	08-May	01-Aug	07-May
Finish	04-Jun	30-Sep	03-Jun
# days	27	55	24
Total bandings	560	1848	523
Species	43	59	44
Net-hours	1398	3733	1625
Bandings/100 Net-hours	40.1	49.5	32.2
Sharp-shinned Hawk	1	3	
Cooper's Hawk			1
Downy Woodpecker	3	14	2
Hairy Woodpecker		2	
Northern Flicker	2		1
Olive-sided Flycatcher		1	
Western Wood-Pewee		13	1
Alder Flycatcher	16	19	
Willow Flycatcher		2	
Least Flycatcher	7	45	10
Eastern Kingbird	4	13	5
Blue-headed Vireo	1	1	2
Warbling Vireo	2	16	5
Red-eyed Vireo	1		1
Black-billed Magpie		5	
Tree Swallow	2		6
Barn Swallow		1	
N Rough-winged Swallow	3	2	
Black-capped Chickadee	6	45	1
Boreal Chickadee		1	
Red-breasted Nuthatch		2	3
White-breasted Nuthatch		3	2
House Wren	7	79	7
Ruby-crowned Kinglet		3	4
Gray-cheeked Thrush	2		
Swainson's Thrush	39	4	28
Hermit Thrush	1	1	1
American Robin	16	44	15
Gray Catbird	12	18	5
Cedar Waxwing	15	450	19

Table 5. New Bandings at Cominco Natural Area

Year	2000		2001
	Spring	Fall	Spring
Tennessee Warbler		68	1
Orange-crowned Warbler	12	37	10
Northern Parula		1	
Yellow Warbler	38	187	41
Magnolia Warbler		1	
Yellow-rumped Warbler	20	400	53
Palm Warbler		3	1
Blackpoll Warbler	5	13	1
Black-and-white Warbler			1
American Redstart	2	3	
Ovenbird	1	3	
Northern Waterthrush	7	7	1
Connecticut Warbler		1	
Mourning Warbler	1		
MacGillivray's Warbler	1		
Common Yellowthroat	15	11	24
Wilson's Warbler	4	23	5
Western Tanager	1	1	1
American Tree Sparrow		3	
Chipping Sparrow	86	46	20
Clay-coloured Sparrow	86	64	81
Vesper Sparrow		1	
Savannah Sparrow	14	15	21
Fox Sparrow		3	
Song Sparrow	12	27	4
Lincoln's Sparrow	13	9	44
White-throated Sparrow	1	12	6
White-crowned Sparrow	9	9	28
Dark-eyed Junco		11	
Rose-breasted Grosbeak		2	
Lazuli Bunting			1
Red-winged Blackbird	63	1	41
Yellow-headed Blackbird	1		
Common Grackle		9	
Brown-headed Cowbird	14	3	10
Baltimore Oriole	7	12	4
Purple Finch		3	
Pine Siskin		10	
American Goldfinch	7	62	4
House Sparrow			1

Figure 5. New Bandings at Cominco Natural Area - Spring 2001



2001 marked the second year of standardized migration monitoring at CNA during spring. Resident species are highly represented in the bandings suggesting that CNA may not be a high quality migration monitoring site (compared to IBS). A SY-M Lazuli Bunting banded on 2 June was the highlight from a rare species perspective. Passerines associated with wetlands and grasslands make a significant contribution to the banding totals.

New Bandings – Fall

During fall 217 new bands were placed on 20 species at CNA. No rare species were encountered during the 8 days of coverage. As in 2000 Cedar Waxwings dominated the totals.

New Bandings at Cominco Natural Area - Fall 2001	
Downy Woodpecker	2
Western Wood-Pewee	6
Trail's Flycatcher	4
Least Flycatcher	13
Warbling Vireo	2
Black-capped Chickadee	6
White-breasted Nuthatch	2
House Wren	14
American Robin	26
Gray Catbird	1
Cedar Waxwing	56
Tennessee Warbler	10
Orange-crowned Warbler	1
Yellow Warbler	48
Yellow-rumped Warbler	5
Northern Waterthrush	1
Clay-colored Sparrow	14
Song Sparrow	1
Baltimore Oriole	4
American Goldfinch	1
Total	217

Recaptures

There were a total of 141 recaptures representing 126 different birds of 26 species at CNA in spring 2001. A high percentage of recaptures at this site are year-to-year, a reflection of the high percentage of residents that are banded. Year-to-year recaptures from 1992-2001 are presented in Appendix 5. 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 show up for the first time a number of years after banding. Of note are three birds, two Eastern Kingbirds and one Gray Catbird, which were banded at CNA in 2000 and recaptured at IBS in 2001. The two sites are 5-km apart.

Fall monitoring at CNA was undertaken, in part, to discover if migrant species “short-hop” along the Bow River. That is, does a migrating bird get its food (and fat buildup) requirements at one or at a series of locations between migration flights? No records of this phenomena were detected during 2001.

Species Recaptured at Cominco – Spring 2001					
Species	Recap	Banded	Species	Recap	Banded
Downy Woodpecker	4	2	Wilson's Warbler	1	5
Least Flycatcher	2	10	Western Tanager	1	1
Eastern Kingbird	1	5	Chipping Sparrow	2	20
Warbling Vireo	3	5	Clay-coloured Sparrow	23	81
Black-capped Chickadee	4	1	Savannah Sparrow	4	21
House Wren	2	7	Song Sparrow	3	4
Ruby-crowned Kinglet	1	4	Lincoln's Sparrow	12	44
Swainson's Thrush	9	28	White-throated Sparrow	1	6
Gray Catbird	5	5	White-crowned Sparrow	6	28
Cedar Waxwing	1	19	Red-winged Blackbird	3	41
Yellow Warbler	25	41	Brown-headed Cowbird	9	10
Yellow-rumped Warbler	10	53	Baltimore Oriole	2	4
Common Yellowthroat	4	24	American Goldfinch	3	4



Figure 6. Relative location of Inglewood Bird Sanctuary (I) and Cominco Natural Area (C) 1:50,000 scale (1-cm = 500-m).

SIGNIFICANT RECAPTURES

Interesting recaptures of birds banded in previous years are listed below. All recaptures of birds banded prior to 2001 are indicated in Appendix 5. The Northern Flicker banded in 1998 and recaptured for the first time this year and the Downy Woodpecker banded in 1995 and not seen since 1997 illustrate how the absence of recapture does not necessarily indicate mortality. No occurrences of migration stopover site fidelity were detected this year, the first time since 1995. Three birds, two Eastern Kingbirds and a Gray Catbird, banded at Cominco Natural Area in 2000 were recaptured at Inglewood Bird Sanctuary.

Downy Woodpecker 1451-67033 Banded as HY-U by Grahame Booth at Inglewood Bird Sanctuary on 29 July 1995. Recaptured there as AHY-M on 23 June and 13 July 1996, 19 August 1997 and 19 Aug 2001. 6-years old.

Northern Flicker 1383-76804 Banded as ASY-M by Rainer Ebel at Inglewood Bird Sanctuary on 16 September 1998. Recaptured there on 16 June 2001. At least ~~6~~⁵-years old. Had not been detected since 1998.

Eastern Kingbird 1461-50853 Banded as HY-U by Ross Dickson at Cominco Natural Area on 15 August 2000. Recaptured at Inglewood Bird Sanctuary on 2 August 2001. 5-km N.

... 1461-50898 Banded as HY-U by Ross Dickson at Cominco Natural Area on 17 August 2000. Recaptured at Inglewood Bird Sanctuary on 30 July 2001. 5-km N.

Black-capped Chickadee 1950-45254 Banded as HY-U by Doug Collister at Inglewood Bird Sanctuary on 6 September 1994. Recaptured there on 17 June and 17 September 1995, 21 September 1996, 5 June and 24-25, 30 September 1999, 11 Aug 2000 and 28 August and 2 September 2001. 7-years old.

... 1950-45255 Banded as HY-U by Doug Collister at Inglewood Bird Sanctuary on 6 September 1994. Recaptured there on 20 September 2001. 7-years old.

... 1980-79991 Banded as AHY-F by Grahame Booth at Inglewood Bird Sanctuary on 22 July 1995. Recaptured there 6 times in 1996, twice in 1997, 9 September 1998, 4 September 2000 and 2,22&26 August and 20 September 2001. At least 7-years old.

Gray Catbird 1681-67028 Banded as HY-U on 25 August 2000 at Cominco Natural Area on 25 August 2000. Recaptured at Inglewood Bird Sanctuary on 24 August 2001. 5-km N.

TREND ANALYSIS

Table 6 presents the results of trend analysis on those species which are monitored according to the criteria developed by Bird Studies Canada (Appendix 3). Figure 7 illustrates graphically the trend to date for the 3 species with the lowest P values and for the White-crowned Sparrow a species showing an unbelievable consistency in annual index over the analysis period.

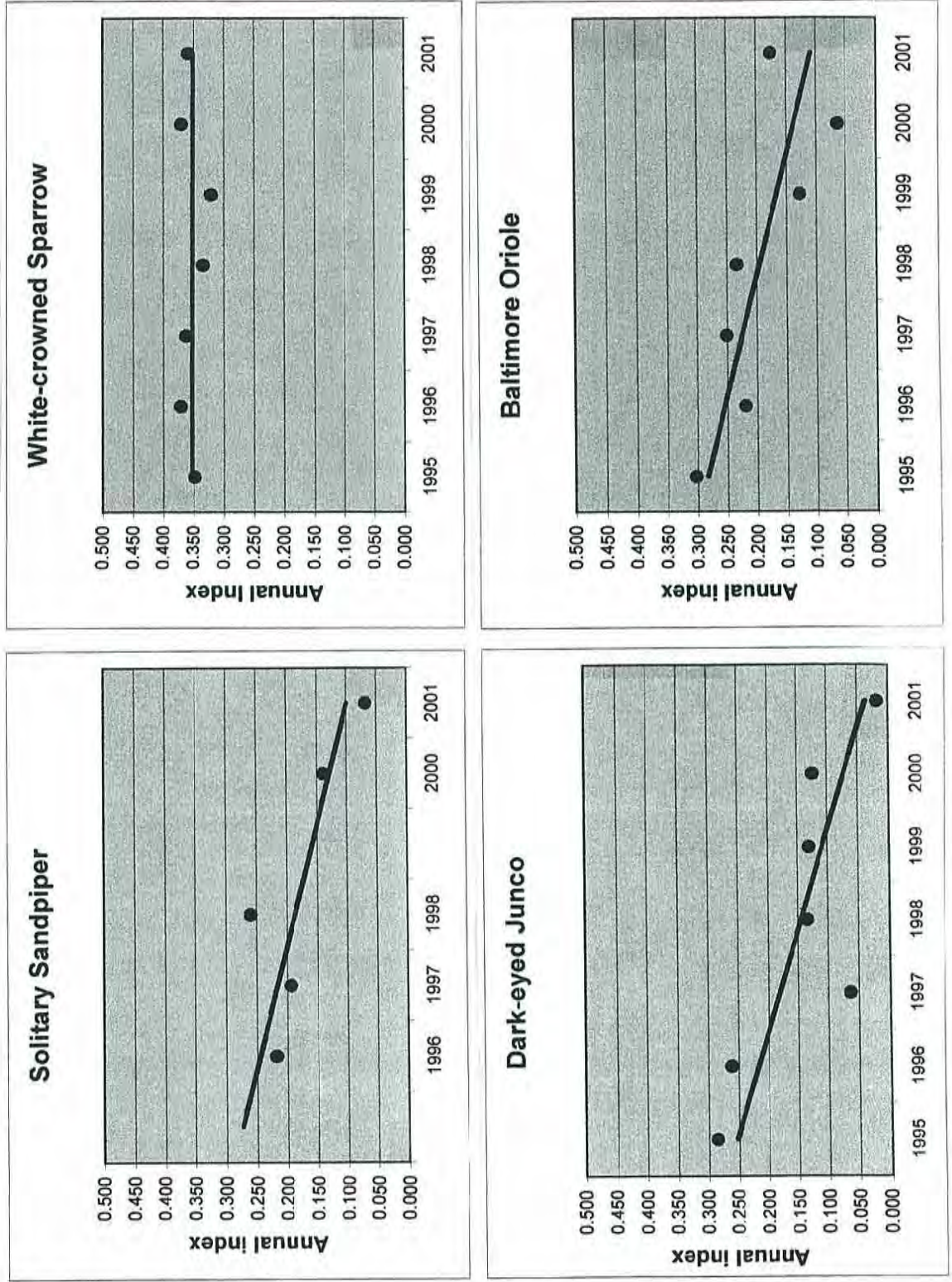
Trend analysis is based on total captures from 1995-2001 and represents the results of simple linear regression within Microsoft EXCEL. Daily captures were log-transformed, summed and normalized by dividing by the number of days monitored within the species' "window" of migration as inferred from the overall 1995-2001 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 several 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.

**Table 6. Trend Analysis of Monitored Species
at Inglewood Bird Sanctuary 1995-2001**

Species	Analysis Interval	Trend	P
		% per year	value
Solitary Sandpiper	1996-1998, 2000-2001	- 2.9	0.10
Western Wood-Pewee	1996-2001	+ 0.5	0.90
Trail's Flycatcher	1995-2001	+ 1.4	0.48
Least Flycatcher	1995-2001	+ 0.5	0.78
Eastern Kingbird	1995-1998, 2000-2001	+ 0.5	0.81
Warbling Vireo	1995-2001	- 2.2	0.17
House Wren	1995-2001	0.0	1.00
Ruby-crowned Kinglet	1995-2001	- 0.9	0.61
Swainson's Thrush	1995-2001	- 1.9	0.43
American Robin	1995-2001	- 3.3	0.35
Cedar Waxwing	1995-1998, 2000-2001	+ 1.4	0.74
Tennessee Warbler	1996-1998, 2000-2001	+ 4.5	0.44
Orange-crowned Warbler	1995-2001	- 7.3	0.27
Yellow Warbler	1995-2001	+ 4.3	0.15
Yellow-rumped Warbler	1996-2001	+ 6.3	0.67
Blackpoll Warbler	1996-2001	+ 0.4	0.87
Ovenbird	1996-2001	- 2.4	0.50
Northern Waterthrush	1996-1998, 2000-2001	- 2.1	0.24
Wilson's Warbler	1995-2001	+ 1.2	0.61
Chipping Sparrow	1996-1998, 2000-2001	+ 0.4	0.97
Clay-coloured Sparrow	1996-1998, 2000-2001	+ 3.6	0.44
Song Sparrow	1995-1998, 2000-2001	- 1.1	0.41
Lincoln's Sparrow	1995-2001	- 1.2	0.69
White-throated Sparrow	1995-2001	- 4.8	0.32
White-crowned Sparrow	1995-2001	0.0	0.93
Dark-eyed Junco	1995-2001	- 3.5	0.03
Baltimore Oriole	1995-2001	- 2.9	0.04

Figure 7. Trends in Select Species at Inglewood Bird Sanctuary



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. The Area Manager has made it a condition of operation 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 up to 2 volunteers carry out the banding.

Without donated time, primarily by members of the Calgary Bird Banding Society, the high degree of success achieved would not have been possible. Sincere appreciation is extended to all of the volunteers listed in Table 7 who donated approximately 8 hours on each day indicated.

Banders-in-Charge (BIC)

No salaried staff are involved in any CBBS projects. However, a daily per diem and travel allowance (for out-of-town banders only) is offered to all Banders-in-Charge (BIC). 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 2001 field season was \$100/day.

Table 7. Bander-in-Charge and Volunteer Effort 2001

	Bander-in-Charge			Vounteer		
	Inglewood		Cominco	Inglewood		Cominco
	MAPS ³	Fall MM	Spring MM	MAPS	Fall MM	Spring MM
Christine Bennett					1	2
Lorne Bogdon						1
Grahame Booth			15 ²			
Doug Collister		1 ¹			1	
Ross Dickson		52 ²				
Ami Gemmel				3	8	
Mary Huston						1
Steve Lane				2	10	7
Shonna McLeod				2	18	5
Greg Meyer	2 ²		9 ²		2	
Pat Mitchell				1	12	4
Mike Mulligan					3	1
Alexandra Oakwood					3	
El Peterson					1	8
Carl Savignac					1	
Gwen Smiley						2
Don Stiles					6	
Bill Taylor				1	13	3
Laszlo Tordai						2
Barry Trakalo					2	
Catherine Watson					6	2
Catherine Watson-McDonald					12	4
Linda Wiggins					1	
Bruce Wilson					5	1
Scott Wilson	3 ²	21 ²				

Notes 1. Donated

2. Received per diem

3. Final MAPS day was during fall MM

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 8 presents all casualties during the 2001 migration monitoring and MAPS projects. Note that the number captured, by species, is only given where that species experienced injury or mortality. Mortality rates for all CBBS banding projects continues to remain low and is dominated by predation. The injury rate in 2001 was 0.85% compared to 1.48% in 2000. This significant improvement is welcome and it is our hope that this low rate of injury will be maintained or reduced in future years.

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. In spite of apparent improvement the CBBS continues to review each casualty to determine potential for reduction or avoidance of similar occurrences in the future.

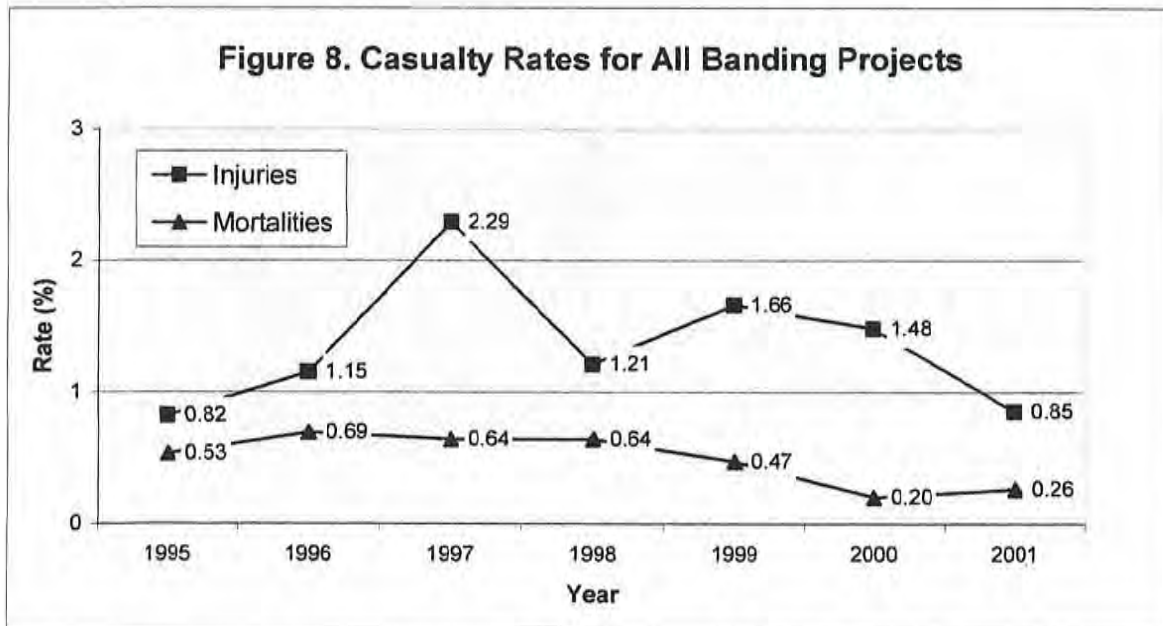


Table 8. Injuries and Mortalities Sustained During CBBS 2001 Research

Species	Number Captured	Injuries		Mortalities	
		Number	Type	Number	Cause
Sharp-shinned Hawk	2			1	Cooper's Hawk predation in net
Western Wood-Pewee	20	1	Wing strain		
Trail's Flycatcher	59			1	Died during processing
Warbling Vireo	21	2	Cut toe		
Swainson's Thrush	75	1	Cut neck		
American Robin	157	8	Wing abrasion		
		4	Cut tongue		
		2	Tongue torn out in net		
Tennessee Warbler	66	1	Wing abrasion		
Yellow Warbler	226	1	Wing strain		
Yellow-rumped Warbler	338			1	Magpie predation in net
Ovenbird	33			1	Deer predation in net
Western Tanager	7	1	Cut toe		
Lincoln's Sparrow	112	1	Head abrasion	1	Accipiter predation in net
White-crowned Sparrow	65			1	Magpie predation in net
Red-winged Blackbird	48			1	Dead in net
American Goldfinch	14	1	Wing abrasion		
Total	2709	23	(0.85%)	7	(0.26%)

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APPENDIX 1

APPENDIX 2

Appendix 2. Top 20 New Bandings at Inglewood Bird Sanctuary

	Total		2001	
	Rank	Number	Rank	Number
Yellow-rumped Warbler	1	2058	1	246
Wilson's Warbler	2	928	2	152
Orange-crowned Warbler	3	819	6	58
Yellow Warbler	4	662	4	101
Tennessee Warbler	5	508	9	46
American Robin	6	504	3	105
Chipping Sparrow	7	401	8	47
House Wren	8	347	5	59 61
White-throated Sparrow	9	324	13	35
Northern Waterthrush	10	270	11	44
Lincoln's Sparrow	10	270	12	39
Traill's Flycatcher	12	250	9	46
Cedar Waxwing	13	234	7	49
Swainson's Thrush	14	169	14	30
White-crowned Sparrow	15	159	16	27
Ovenbird	16	135	17	24
Clay-colored Sparrow	17	130	14	30
Least Flycatcher	18	121	18	20
Warbling Vireo	19	103		12
Ruby-crowned Kinglet	20	93		15
Black-capped Chickadee		91		14
Eastern Kingbird		87	19	17
Western Wood-Pewee		85		14
Blackpoll Warbler		85		11
Song Sparrow		84		3
Baltimore Oriole		67		8
Solitary Sandpiper		58		4
Dark-eyed Junco		58		1
American Redstart		57	20	16

APPENDIX 3

Appendix 3. Monitored Species at Inglewood Bird Sanctuary

Species	1995-2001		Group	
	Multi-year Mean		BSC	Baillie
	Number	Frequency		
Solitary Sandpiper	8	6		
Western Wood-Pewee	12	7	A	3
Trail's Flycatcher	36	20	A	1
Least Flycatcher	17	14	A	1
Eastern Kingbird	12	10	C	
Warbling Vireo	15	11	A	
House Wren	50	24	C	
Ruby-crowned Kinglet	13	9	B	2
Swainson's Thrush	24	15	A	1
American Robin	72	24	B	4
Cedar Waxwing	33	11	B	
Tennessee Warbler	73	24	A	1
Orange-crowned Warbler	117	28	A	1
Yellow Warbler	94	24	A	3
Yellow-rumped Warbler	294	36	B	2
Blackpoll Warbler	12	8	A	1
Ovenbird	19	13	A	3
Northern Waterthrush	39	18	A	1
Wilson's Warbler	132	32	A	1
Chipping Sparrow	57	16	B	4
Clay-colored Sparrow	19	12	A	
Song Sparrow	12	11	B	4
Lincoln's Sparrow	39	23	B	3
White-throated Sparrow	46	17	B	2
White-crowned Sparrow	23	13	B	2
Dark-eyed Junco	8	5	B	4
Baltimore Oriole	9	5	C	
Group A		13		
Group B		10		
Group C		3		
Other		1		
Total		27		

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 breeding range covered by the Breeding Bird Survey and $> 50\%$ of winter range south of the United States, thereby not covered by the Christmas Bird Count
- B** Those species that have $< 50\%$ of Canadian breeding range covered by the Breeding Bird Survey but $> 50\%$ of winter range within the United States, thereby covered by the Christmas Bird Count
- C** Those species with $> 50\%$ coverage of Canadian breeding range by the Breeding Bird Survey and that have a wintering range largely south of the United States

APPENDIX 4

Appendix 4. Mourning/MacGillivray's Warbler Research

Since 1996 the CBBS has been gathering additional morphometric and plumage data on Mourning and MacGillivray's Warblers. Immatures and females of these two species can be very difficult to identify. Birds of these two species captured at IBS exhibit considerable overlap in the flat wing minus tail measurement and plumage characteristics typically used to identify the two species. Geographically, IBS is situated near the overlap zone of these two species and attracts sufficient numbers of each to fuel a research project. CBBS may be capturing hybrid Mourning/MacGillivray Warblers.

An example of the data sheet created by CBBS to gather additional data on these species is included in this appendix. With the assistance of other CMMN stations particularly MacKenzie Bird Observatory but also Last Mountain Bird Observatory and Delta Marsh Bird Observatory, as well as data personally gathered by Douglas M. Collister in Manitoba and Alberta, CBBS is compiling data of known pure Mourning Warblers and MacGillivray's Warblers. It is hoped that with sufficient data, CBBS can determine whether captured birds at IBS likely represent hybrids or are simply a reflection of the identification problems between these two species.

Below is a summary through the 2001 banding season of data gathered:

CMMN Station	Mourning Warbler	MacGillivray's Warbler
Calgary Bird Banding Society	30	37
MacKenzie Bird Observatory	1	38
Douglas Collister (Manitoba)	10	
Last Mountain Bird Observatory	5	
Delta Marsh Bird Observatory	3	
Douglas Collister (Alberta)	1	1

MacGillivray's-Mourning Warbler Complex

Band Number: _____

Date: _____

Location: _____

Bander: _____

Species: _____

Photo #'s: _____

New band	Recapture
----------	-----------

Age:	HY	AHY	SY	ASY	U
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Sex:	M	F	U
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Wing Chord:	_____ mm	Flat Wing:	_____ mm	Tail:	_____ mm
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Eye Ring:	complete	broken	almost full	
	narrow	wide		
	tapered ends	ends abruptly		
	white	whitish	buffy	yellow

Throat:	yellow	buffy yellow	grayish white
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Breast:	grayish	gray with black
	appearance of complete breast band	
	breast band broken allowing throat colour to continue into the breast uninterrupted	

Flanks:	bright yellow	greenish suffusion
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Undertail Coverts:	relatively pale yellow	relatively bright yellow
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Notes:

1. Take 1 or 2 photographs of every new banding (assume recaps were previously photographed)
2. Circle or check only 1 characteristic per line
3. Measure the tail between the central retrices from the tip to the point the feathers enter the body
4. Draw a sketch of the eye to the right of the eye ring descriptors

APPENDIX 5

**Appendix 5. 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
Belted Kingfisher	1363-70918	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
Hairy Woodpecker	0962-90911	IBS				B					r	
Hairy Woodpecker	1152-38713	IBS							B		r	
Northern Flicker	1383-76804	IBS							B			r
Northern Flicker	1453-31301	IBS				B	r					
Western Wood-Pewee	2160-19068	IBS							B			r
Western Wood-Pewee	2160-19487	IBS								B		r
Least Flycatcher	2050-70767	Dunbow						B		r		
Eastern Kingbird	1451-38640	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		
Eastern Kingbird	1461-63750	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	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	2220-34455	Cominco									B	r
Warbling Vireo	3101-45254	IBS								B	r	
Warbling Vireo	3121-21265	Cominco									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						o	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			

APPENDIX 6

APPENDIX 7

Appendix 7. Top 20 New Bandings During Spring at Cominco Natural Area

Species	Total		2001		2000	
	Rank	Number	Rank	Number	Rank	Number
Clay-coloured Sparrow	1	167	1	81	1	86
Chipping Sparrow	2	106	10	20	1	86
Red-winged Blackbird	3	104	4	41	3	63
Swainson's Thrush	6	67	6	28	4	39
Yellow Warbler	4	79	4	41	5	38
Yellow-rumped Warbler	5	73	2	53	6	20
American Robin	12	31	12	15	7	16
Alder Flycatcher	17	16			7	16
Common Yellowthroat	8	39	8	24	9	15
Cedar Waxwing	11	34	11	19	9	15
Savannah Sparrow	10	35	9	21	11	14
Brown-headed Cowbird	13	24	13	10	11	14
Lincoln's Sparrow	7	57	3	44	13	13
Orange-crowned Warbler	14	22	13	10	14	12
Gray Catbird	15	17	19	5	14	12
Song Sparrow	19	12			14	12
White-crowned Sparrow	9	37	6	28	17	9
Least Flycatcher	15	17	13	10	18	7
House Wren	18	14	16	7	18	7
American Goldfinch	20	7			18	7
Baltimore Oriole	20	7			18	7
Northern Waterthrush	20	7			18	7
Tree Swallow		8	17	6		2
White-throated Sparrow		7	17	6		1
Eastern Kingbird		9	19	5		4
Warbling Vireo		7	19	5		2
Wilson's Warbler		9	19	5		4

APPENDIX 8

**CALGARY BIRD BANDING SOCIETY
2001 MEMBERSHIP LIST**

Christine Bennett
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Grahame Booth
Doug Collister
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