EXECUTIVE SUMMARY

Lesser Slave Lake Bird Observatory core programs enjoyed success in 2002. A somewhat low total of 867 birds of 49 species and forms was banded during the spring migration monitoring season. Capture rates were consequently low at 34.7 birds per 100 net-hours. Fall capture rates were considerably higher at 76.3 birds per 100 net-hours. It was the busiest fall ever at LSLBO and a new single-season record banding total was set comprising of 3496 birds of 58 species and forms. Thirteen species were banded in numbers that tied or exceeded previous fall record totals. During the 2002 migration seasons, 173 species were recorded at the station. Harlequin Duck, Marbled Godwit, and Northern Pygmy-Owl, were added to the LSLBO checklist, bringing the total of birds recorded in the area to 237.

The three MAPS stations operated by LSLBO received full coverage in 2002. From June 11 to August 2, a total of 278 birds of 25 species were captured on the MAPS stations comprising of 188 banded, 83 recaptured, and 7 unbanded. The Residence MAPS site was again most productive with 145 captures, followed by Road Side (98) and Far Away (35). A Ruby-throated Hummingbird captured at the Residence station was the sole addition to the MAPS captures list. Breeding status was determined for the 64 species recorded at the stations. Return rates and the productivity of the 10 most commonly captured species were examined.

Quality of coverage during migration monitoring was again very good and consistent with the last two years. The spring season had 54 days of coverage from Apr 19 - Jun 11 inclusive and fall coverage ran from July 13 - Oct 4 inclusive for a total of 84 days of continuous coverage. Lower average daily net-hours in both spring and fall as compared to those in 2001 were attributed to more days of inclement weather. Volunteer participation in field operations was highly satisfactory. Long-term volunteers committed to over 8 weeks of assistance to field operations. Long-term volunteer recruitment for 2003 is already underway and looks quite promising.

There were 361 retrap records from the 2002 Migration Monitoring and MAPS seasons. The vast majority of these were repeats (birds caught during the same season of banding). Sixty-three birds recaptured in 2002 were banded at LSLBO stations in previous years or banded elsewhere. A foreign recovery of a Sharp-shinned Hawk, new longevity record for Alder Flycatcher (at least 7 years old) and the return of a Swainson's Thrush which was at least nine years old were some of the more interesting recaptures.

Educational aspects of Lesser Slave Lake Bird Observatory continue to grow. In 2002, over 1,000 including 11 organized tours, came to the observatory and many were given banding demonstrations. A larger than average turnout for the Songbird Festival was partly responsible for the increase in visitors from previous years. A last minute drop out of a workshop participant forced cancellation of the Assistant Bander training workshop in August. Interest has already been expressed for the 2003 course.

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MIGRATION MONITORING

Spring Summary

The spring of 2002 will certainly be remembered as a cold one in northern Alberta. Staff opened the station on April 19 and the first order of business was shovelling out the snow from the net lanes and trails. As usual, weather was the driving force of the pace of migration through the Slave Lake area. Not surprisingly, the pace and pattern of migration was as unpredictable as ever. Very cold dawn temperatures (-15°C on April 24) prevented or reduced netting on most days in April and into the first week of May. The cold weather also delayed the arrival of many migrants especially those returning from the tropics. Some, however, were surprisingly early despite the weather. Below is a summary of migration as seen at the observatory this spring.

Coverage at the station began on April 19 and on this day there was some indication that migration was already underway for several species. Small numbers of Canada Geese, Sharp-shinned Hawks and Sandhill Cranes were recorded, along with a few American Robins. A few Common Redpolls were also seen. This irruptive finch species was present in the area over winter in large numbers. Southeasterly winds brought in several new migrants over the next two days including Mallard, American Wigeon and Common Goldeneye as well as several songbirds including Ruby-crowned Kinglet, American Pipit, Yellow-rumped Warbler, American Tree and Savannah sparrows, Dark-eyed Juncos, and some unusual species such as Townsend's Solitaire and Bohemian Waxwing. Peak numbers of American Robins (1086) and Northern Harrier (32) were recorded on April 21.

The fourth week of April was generally quiet but saw the arrival of more waterfowl including Tundra Swans and Common Mergansers. Several hawks were also arriving including Red-tailed and Rough-legged hawks and the first of an impressive total of six Peregrine Falcons recorded this spring at the station. Other new migrants included Lesser Yellowlegs, Eastern Phoebe, Common Grackle and Pine Siskin. Peak day-totals were recorded for Common Redpoll (501) and American Pipit (58). Only 17 birds were banded in seven days of netting in April. Cold and windy weather either eliminated or reduced netting effort during this period.

The first week of May was relatively quiet with swan and goose numbers starting to increase. A few Northern Harriers were still moving through daily. Northern Flickers first appeared on May 1 but as many as 25 were seen on May 2. American Robin and Yellow-rumped Warbler numbers were fairly low on most days but jumped to 230 robins and 55 Yellow-rumps on May 5, which was by far the busiest day of the week. Good numbers of American Tree Sparrows and Red-winged Blackbirds came through on this day and Dark-eyed Juncos peaked with 72 birds recorded. The first Say's Phoebe, Hermit Thrush, Orange-crowned Warbler, Song, Lincoln's and White-crowned sparrows arrived during this week. The third warbler species arriving this spring was an improbably early male Blackpoll Warbler seen on May 7. This species normally arrives closer to the middle of the month. Very cold morning temperatures hampered banding efforts considerably in the first week of May and only 36 birds were caught with Dark-eyed Juncos, American Tree Sparrows and Yellow-rumped Warblers most common.

During the second week of May, 20 - 50 Sandhill Cranes were being seen almost daily. Northern Flickers continued to move through and peaked at 30 on May 9. American Robin numbers were down to about 10 birds a day by about May 10. The last Common Redpolls and American Tree Sparrows had gone through by the May 12, about a week later than previously recorded at the station. The arrival of a front on the night of May 13 brought warmer but unsettled and overcast conditions but triggered a strong push of migration through the area, particularly between May 13 and 16. These days were dominated by a large waterbird passage with peak day-totals for several ducks shorebirds and gulls including Lesser Scaup (202), Mallard (177), Common Goldeneye (51), Northern Pintail (47), Red-breasted Merganser (24), Gadwall (12), Blue-winged Teal (11), Green-winged Teal (10), Lesser Yellowlegs (216), Greater Yellowlegs (51), American Avocet (10), Franklin's Gull (642) and Bonaparte's Gull (22). Several temperate migrant songbirds were also peaking during these four days including Red-winged Blackbirds (699), White-throated (26), White-crowned (15), Lincoln's (7), and Song (4) sparrows. Many neotropical species were just arriving in these four days including Least Flycatcher, Gray-cheeked Thrush, Rose-breasted Grosbeak, Western Tanager, and several warblers such as Tennessee and Yellow warblers, Northern Waterthrush, Common Yellowthroat and a very early Canada Warbler. During the latter part of the third week of May more neotropical migrants were arriving with small numbers of Alder Flycatchers, Barn and Bank swallows, Magnolia Warblers, Ovenbirds and Baltimore Orioles. Chipping Sparrow numbers which had peaked at this time in the past few years were quite low but reached 268 on the 21st of May.

Water bird numbers on the lake were generally low during the fourth week of May, however, some late arriving species were increasing and peaking during this week including Common Loon (19), Surf Scoter (27), Bufflehead (12) and Forster's Tern (6). More neotropical songbirds were arriving during the fourth week of May including Cliff Swallow, American Redstart, Wilson's Warbler, Blue-headed Vireo and Black-throated Green Warbler. The latter two were much later than in previous years. Peak numbers of Yellow-rumped Warbler (627), Tennessee Warbler (45), Brown-headed Cowbird (42), Tree Swallow (32), Swainson's Thrush (25), Clay-colored Sparrow (14), Black-and-white Sparrow (10), and Northern Waterthrush (4) were recorded during this week. This week was the busiest for banding with 236 birds banded. Tennessee Warbler, Swainson's Thrush and Least Flycatchers dominated the captures but there were also several Black-and-white Warblers and Clay-colored Sparrows.

The last few days of May provided still more activity with the arrivals of Eastern Kingbirds, Red-eyed and Philadelphia vireos, and Cedar Waxwings. Peak numbers of Bank Swallows (467), American Redstart (57), Yellow Warbler (14), and Baltimore Orioles (4) were moving through. American Redstarts became the most commonly captured birds, with Least Flycatchers and Swainson's Thrushes still common but decreasing.

The first week of June saw the arrival of several late migrants including the first American White Pelicans on the lake. Pelicans had been seen along the river in April but not at the station until early June, possibly due to the very late break-up of ice on the lake. Other new arrivals included

Western Wood-Pewee, Warbling Vireo, Mourning and Connecticut warblers and American Goldfinch. Perhaps the most notable sighting of the spring was a beautiful male Harlequin Duck seen bobbing along the whitecaps on a windy June 7. While migration activity was definitely waning, peak numbers were recorded for Common (14) and Black (38) terns, Eastern Kingbirds (5), Cedar Waxwings (69), Canada (8), Magnolia (5) and Wilson's (4) warblers, Ovenbird (6), and Common Yellowthroat (5) in the first week of June.

The last few days of monitoring were more active than usual probably owing to the late spring. Peak numbers of late migrants included Alder Flycatchers (8), Red-eyed Vireos (6) and Mourning Warblers (4).

The season was wrapped up on June 11 to begin with other breeding bird work projects. A total of 54 days of consecutive coverage were accumulated with 153 species were recorded at the observatory. A banding total of 867 of 48 species and forms was somewhat lower than the spring tallies for last few years.

Table 1. Spring 2002 daily net-hours and capture rates.

Date	Net-hours	Banded	Recaptured	Unbanded	Total Captured	Birds/100 net-hours
20-Apr	48	6	1	1	8	16.67
21-Apr	84	1			1	1.19
22-Apr	72	1			1	1.39
23-Apr	0				0	N/A
24-Apr	0				0	N/A
25-Apr	36				0	0.00
26-Apr	0				0	N/A
27-Apr	24	2			2	8.33
28-Apr	0				0	N/A
29-Apr	36	7			7	19.44
30-Apr	0				0	N/A
01-May	54	1			1	1.85
02-May	69	7			7	10.14
03-May	0				0	N/A
04-May	0				0	N/A
05-May	24	25			25	104.17
06-May	0				0	N/A
07-May	24	3			3	12.50
08-May	24	2			2	8.33
09-May	39	16			16	41.03
10-May	54	10	1		11	20.37
11-May	64.5	9			9	13.95
12-May	84	12			12	14.29
13-May	84	7	1		8	9.52
14-May	84	8	1		9	10.71
15-May	63.3	27		1	28	44.23
16-May	84	23		1	24	28.57
17-May	54	14	2		16	29.63
18-May	26.25	15		2	17	64.76

19-May	52.5	13		1	14	26.67
20-May	41.75	46	2		48	114.97
21-May	84	67	2	1	70	83.33
22-May	84	70	8		78	92.86
23-May	72	28	7		35	48.61
24-May	57	63	5	2	70	122.81
25-May	57	18	8		26	45.61
26-May	31	14	1		15	48.39
27-May	60	21	1		22	36.67
28-May	61.5	22	1	1	24	39.02
29-May	78	31	3		34	43.59
30-May	82.75	19	7		26	31.42
31-May	83.75	31	3		34	40.60
01-Jun	84	31	3	1	35	41.67
02-Jun	84	57	7		64	76.19
03-Jun	84	31	3		34	40.48
04-Jun	77.25	33	7	1	41	53.07
05-Jun	70.5	12	7		19	26.95
06-Jun	84	10	2		12	14.29
07-Jun	83	14	4		18	21.69
08-Jun	50	5	2		7	14
09-Jun	84	12	4	1	17	20.24
10-Jun	84	9	6		15	17.86
11-Jun	73.33	14	4		18	24.55
Totals	2835.38	867	103	13	983	

Fall Migration Summary

Fall migration monitoring began on July 13. There were a few birds around during the third week of July but little evidence of real migration. Very little on nothing was seen on the hourly visible migration watches. Twenty to forty-five species were being recorded daily with 35 species on most days. Small numbers of loons, grebes, pelicans, and a few ducks were seen daily in from the shore by the banding lab. Songbirds of several species were seen daily. Many still seemed to be holding territory and were being seen in the same location day after day. Birds caught were mostly still in juvenal plumage and adults were in early stages of flight feather moult. Most common species captured included Tennessee, Yellow, Yellow-rumped, and Black-and-white warblers and American Redstarts. The banding total for the third week of July was 228 with the best day being July 18 when 62 birds were banded (almost half were Tennessee Warblers). The third week of July had peak day-totals for Red-eyed Vireos (7), and Chipping Sparrows (17).

Songbird migration became more noticeable during the fourth week of July until a low pressure system came in during the evening of July 25. Tennessee and Yellow-rumped warblers were still abundant, with more than 100 individuals counted on some days. Yellow Warbler and American Redstart numbers were also relatively high. Rain showers and strong winds reduced

netting effort but the inclement weather decreased songbird activity dramatically for the remainder of the month. Tennessee and Yellow-rumped numbers dropped to 20 or so birds a day. The first Canada Geese, Sharp-shinned Hawk, Killdeer, Cape May Warblers and Baltimore Orioles of the fall were noted during this week. Perhaps most noteworthy, blustery conditions proved ideal for a Franklin's Gull movement on July 28 as a steady stream of over 3500 gulls flew south along the shoreline in the short period during the early morning. Two-hundred and fifty-eight birds were banded during the fourth week of July with 62 birds banded on July 22.

The first week of August was marked by unseasonably cool weather and overcast skies. Dawn temperatures were around 5 degrees but dipped to as low as 2.5°C on August 3. Lesser Yellowlegs were being seen daily from August 4. The fall's first Horned and Western grebes, Great Blue Herons, Northern Pintail, Blue-winged Teal, Palm, Bay-breasted and Blackpoll warblers and Brewer's Blackbirds were recorded. In general, small passerine numbers, warbler numbers in particular were still quite low for most of the week and were quite possibly suffering from low insect activity due to the cold snap. Swainson's Thrush numbers while still low, were increasing to 6- 7 birds on some days. By the end of the week, however, songbird migration reached a torrid pace. Three-hundred and thirty-four birds were banded during the first week of August, including 145 banded on August 7, by far the busiest day of the season yet. Hundreds of Tennessee and Yellow- rumped warblers were moving through this day and they accounted for half the days' banding totals. American Redstarts, Ovenbirds, Black-and-white, and Canada warblers were also caught in good numbers. Peak season day-counts were recorded for Red-necked Grebes (12), Least Flycatchers (10) Bank Swallows (34), Black-and-white Warblers (10) American Redstarts (41), Clay-colored Sparrow (13), Song Sparrow (8), Rose-breasted Grosbeak (11), and Red-winged Blackbird (73).

The sizeable passage of songbirds continued well into the second week of August. Nearly 40 species were being recorded on most days, and a hundred or more birds were banded on several days. Four-hundred and fifty-three birds were banded this week including the first Wilson's and Connecticut warblers of the fall. Tennessee and Yellow-rumped warblers continued to account for the bulk of birds seen and caught. Sometimes 100 or more of these birds were counted flying through in five-minutes. During the morning of August 13, a "reverse" migration was noted. Almost all the songbirds observed were flying north instead of south. This was observed on several other days during the third week of August. The reasons for this phenomenon are not entirely understood but it is thought that birds may do this to avoid flying into foul weather ahead of them. On particularly overcast days, birds may become disoriented and confused and fly the wrong way. Overcast conditions did exist on the morning of August 13 but not in subsequent days where reverse migration was noted. By contrast, the second week of August was still quiet for non-passerines. The first Buffleheads, and Greater Yellowlegs of the fall were recorded. The occasional Sharp-shinned or Northern Harrier was seen migrating south. Western Grebes (50), Least Sandpipers (5), and Western Tanagers (9) had peak day-totals in the second week of August.

The third week of August was mostly clear and calm with only a couple of overcast days with

periods of rain. Mallard, Blue-winged and Green-winged teal were the most common puddle ducks seen. Harriers and Sharp-shinned Hawks were seen daily. The latter gradually building to more than ten birds per day by the end of the week. Up to sixty yellowlegs were recorded daily and small numbers of other "peeps" including Least, Semiplamated, and Baird's sandpipers were seen sporadically through the week. A rain shower forced net closure on the morning of Aug 19 but not before a Northern Pygmy-Owl decided to fly into a net. A worthy cause for celebration, this little owl was a new banding and sight record for the park and area. Many photos were taken and hopes raised for a second owl once we were able to open nets after the rain had ceased. Tennessee and Yellow-rumped warblers were still pouring through on most days but Tennessees were decreasing while the Yellow-rumps were increasing. As mentioned earlier, reverse migration was noted on a couple of days during the week despite the clear mild weather. On Aug 21, nearly 1000 Yellow-rumped Warblers were seen flying overhead in a slow steady stream throughout the morning and early afternoon. Although most of these were flying high overhead, over fifty were caught and banded. Five-hundred and ninety-four birds were banded during the third week of August. Nearly 200 were banded on Aug 16 alone. The first The first of four Cooper's Hawks–a good fall total– Red-tailed Hawks and Orange-crowned Warblers were noted and peak day-totals of Great Blue Herons (4), American Green-winged Teals (8), Common Mergansers (30), Lesser Yellowlegs (53), Semipalmated Sandpipers (15), Swainson's Thrush (11), Tennessee Warblers (408), Ovenbirds (11), Mourning Warblers (5),and Pine Siskins (133) were recorded this week.

The fourth week of August was an extremely busy one for migration. Particularly Aug 23, 24, and 25. Fifty to 64 species were record on those days and a hundred or more birds were caught each day. The last big push of warblers happened on Aug 25 and yielded an impressive 18 species. Almost all regularly occurring species were recorded as well as two Connecticut Warblers banded and a Chestnut-sided Warbler seen. Peak totals for warblers included Magnolias (13), Cape May (4), Yellow-rumped (4540), Common Yellowthroat (5). Peak day-totals were also recorded for Common Loon (76), Sharp-shinned Hawk (13), Common Tern (40), Blue-headed (2), Warbling (3), and Philadelphia (4) vireos, Lincoln's Sparrows (4), and Purple Finches (4). New for the fall during the fourth week of August were American Magpie, American Pipit, Le Conte's and White-crowned sparrows, Dark-eyed Junco, and a very early Snow Bunting. It was also the busiest week of the season for banding. An average of 100 birds per day. The season peak on August 25 had over 210 birds banded. Over half of this total was Yellow-rumped Warblers but diversity was also high with 26 species banded. The last few days of August were generally quiet but of note were the fist passages of White-fronted Geese which were records in skeins of over 100 birds on August 29 and 31 and the first Lapland Longspur on August 28.

September began with unsettled weather. Strong winds and rain showers decreased migration activity as well as drastically reducing or eliminating netting altogether. Weather improved towards the end of the week. Despite achieving less than 20% of normal daily net-hours, 146 birds were banded on Sep 6, by far the busiest day of the week. Over 1500 Yellow-rumped Warblers were counted on both Sep 6 and 7. Eleven warbler species were recorded on Sep 6,

most were single but still an impressive total for such a late date. The first Northern Shovelers, and a Peregrine Falcon turned up this week and peak day-totals for Horned Grebe (40), Canada Goose (74), Mallard (59), American Wigeon (18), Greater Yellowlegs (15), Cedar Waxwing (155), and Orange-crowned Warbler (9) were recorded.

The second week of September was mostly clear with light to moderate winds from the west or northwest on most days. There were overcast days with rain showers later in the week. Less than 25 birds were banded on most days, especially if there was any wind. The busiest day of the week was September 10, which was quite calm. A substantial passage of Yellow-rumps was again recorded on this day with over 1200 counted. This species made up the bulk of the 110 birds were banded that day. September 12 had the fall's first American Kestrels and Sanderlings and the only White-winged Scoters and Hooded Mergansers of the fall. Also new for the fall this week were Sandhill Cranes–which peaked this week at 59 on September 13. A noticeable movement of Black-capped Chickadees began, which peaked at 113 on Sep 14. Other peak season day-totals were noted this week for Northern Harriers (6), Sanderling (25), Baird's Sandpipers (12), Blue Jays (5), American Crows (58), and Lapland Longspurs (20).

Moderate to strong westerly winds blew for much of the third week of September and rain was recorded on several days, particularly in the latter part of the week. The busiest day of the week was September 16 when nearly 50 birds were banded and almost as many species were observed. The first Fox Sparrow of the fall was banded on September 15. Peak day-totals were noted for Northern Pintail (7), Bald Eagles (6), Red-breasted Nuthatch (3) during the week.

The fourth week of September saw dawn temperatures drop to below freezing. The first hard frost occurred during the night of September 22 - 23. Perhaps as a response to the impending cold front, migration activity increased on September 22. A flock of 160 Snow Geese were seen and nearly 20 Ruby-crowned Kinglets were recorded. The first American Tree Sparrows of the fall were also seen and banded that day. Throughout the week a variety of temperate migrants were moving through but in relatively low numbers. Most days, less than 50 Yellow-rumped warblers were counted. Peak fall day-totals were recorded for Common Goldeneyes (38), Bufflehead (82), and Ruby-crowned Kinglets (19). A couple of stragglers, a Least Flycatcher and a Blackpoll Warbler were banded during the week. The season's only Northern Shrike, was seen on September 24. Also new for the week were Tundra Swans (30) and Rusty Blackbirds (41) were reported on September 28.

September 30 was a relatively busy late-fall day with 43 birds banded. A season peak of 6 Palm Warblers were recorded and a noticeable passage of sparrows took place peak numbers of Dark-eyed Juncos (25), American Tree (16), Lincoln's (4), and Swamp (3). Several other sparrows were recorded this day including Clay-colored, Fox, White-throated and White-crowned and the season's only Harris's Sparrow.

The first few days of October were relatively quiet. Twenty or so species were recorded daily. Common Goldeneye and Bufflehead were still quite common as well as Mallards. Small

numbers of Northern Shoveler and Northern Pintail were seen on some days. One or two Greater Yellowlegs were seen feeding along exposed sandbars. Bald Eagles were about the only raptors seen although three Red-tailed Hawks were observed on October 3. Songbird activity was equally quiet. A couple of Ruby-crowned Kinglets were being seen daily and small numbers of American Robins were seen feeding on the few berries still around. Yellow-rumped Warblers were no longer being seen daily. Sparrows were the most commonly encounter groups with small numbers of several species still recorded moving through. Most common were American Tree Sparrows and Dark-eyed Juncos. White-crowned sparrows which had a season peak of 7 birds on Oct 3. Although the peak of Juncos and Tree Sparrows had yet to come through, clear and dry conditions on the fourth were ideal for taking down nets and calling it quits for 2002. With 84 days of consecutive coverage and a record setting season banding total of 3496 birds of 58 species and forms. The season could only be called a success for the observatory.

Table 2. Fall 2002 daily net-hours and capture rates.

Date	Net-hours	Banded	Recap'd	Unbanded	Tot. Caps.	Birds/100 net-hours
14-Jul	67.6	25	5		30	44.38
15-Jul	84	5	3		8	9.52
16-Jul	84	20	3		23	27.38
17-Jul	54.5	25	5		30	55.05
18-Jul	76	63	7	1	71	93.42
19-Jul	58.2	35	5	2	42	72.16
20-Jul	65.58	9	5	2	16	24.40
21-Jul	84	48	14	2	64	76.19
22-Jul	84	62	3	1	66	78.57
23-Jul	84	40	4		44	52.38
24-Jul	84	41	3	1	45	53.57
25-Jul	84	27	4	1	32	38.10
26-Jul	78.12	13	3		16	20.48
27-Jul	60	34	4	2	40	66.67
28-Jul	63.57	41	11	1	53	83.37
29-Jul	70	28	7		35	50.00
30-Jul	33.63	3	4		7	20.81
31-Jul	0	0			0	N/A
01-Aug	57.17	22	5		27	47.23
02-Aug	56	32	2		34	60.71
03-Aug	42	23	3		26	61.90
04-Aug	84	53	5	2	60	71.43
05-Aug	30	16	2		18	60.00
06-Aug	84	43	5		48	57.14
07-Aug	83	145	2	4	151	181.93
08-Aug	84	98	2	1	101	120.24
09-Aug	53	49	2	1	52	98.11
10-Aug	73.6	112	5	1	118	160.33
11-Aug	54.17	124	4		128	236.29
12-Aug	84	26	4	1	31	36.90

13-Aug	84	42	3		45	53.57
14-Aug	14.27	2			2	14.02
15-Aug	13	91		2	93	715.38
16-Aug	82.5	188	1	8	197	238.79
17-Aug	21.17	69	1	2	72	340.10
18-Aug	68.2	121	1	3	125	183.28
19-Aug	68.27	19	2		21	30.76
20-Aug	84	30	2		32	38.10
21-Aug	84	77	4		81	96.43
22-Aug	76.87	31	1		32	41.63
23-Aug	84	99		3	102	121.43
24-Aug	84	114			114	135.71
25-Aug	70.48	215	2	4	221	313.56
26-Aug	68	16	2		18	26.47
27-Aug	80.9	130	1	5	136	168.11
28-Aug	84	95			95	113.10
29-Aug	84	47		1	48	57.14
30-Aug	41.33	45		3	48	116.14
31-Aug	35.33	26	1	1	28	79.25
01-Sep	44.25	3			3	6.78
02-Sep	37	20	2		22	59.46
03-Sep	0	0			0	N/A
04-Sep	0	0			0	N/A
05-Sep	42	14			14	33.33
06-Sep	16	146		8	154	962.50
07-Sep	44.6	41			41	91.93
08-Sep	64.5	16			16	24.81
09-Sep	70	5			5	7.14
10-Sep	84	111		1	112	133.33
11-Sep	77	22			22	28.57
12-Sep	30.8	23		1	24	77.92
13-Sep	60	9			9	15.00
14-Sep	48.52	54	1		55	113.36
15-Sep	70.1	20	1		21	29.96
16-Sep	84	46	1	1	48	57.14
17-Sep	60	2			2	3.33
18-Sep	70	9	1		10	14.29
19-Sep	0	0			0	N/A
20-Sep	0	0			0	N/A
21-Sep	32	1			1	3.13
22-Sep	30.75	44			44	143.09
23-Sep	57	5			5	8.77
24-Sep	84	32	1		33	39.29
25-Sep	38	3	1		4	10.53
26-Sep	36	12		1	13	36.11
27-Sep	40	13	1		14	35.00
28-Sep	70.67	35	3	1	39	55.19
29-Sep	72.67	9	3		12	16.51

30-Sep	83	43	4		47	56.63
01-Oct	84	17		2	19	22.62
02-Oct	71.38	11	2		13	18.21
03-Oct	50	8	3	1	12	24.00
04-Oct	22.42	3	2		5	22.30
Totals	4903.12	3496	178	71	3745	

MONITORING AVIAN PRODUCTIVITY and SURVIVORSHIP (MAPS)

The Monitoring Avian Productivity and Survivorship (MAPS) program is a continent wide project run by the Institute for Bird Populations. It is a cooperative effort among public agencies, private organizations , and bird banders. It provides long-term data on population and demographic parameters for target landbird species across the continent. More specific information about the program and site specific information about the three LSLBO stations can be found in Desante (2001), Jungkind (2000), and Savignac (2000).

The LSLBO has participated in the MAPS program since 1994. Three MAPS stations have been run each year, but not all have received enough coverage to contribute sufficient data for the rigorous analyses done by the MAPS coordinators each year. For the fifth year in a row the constant-effort mist-netting was accomplished in all six ten-day periods for FAWA and ROAD stations. Both had the full complement of 360 net-hours of operation. RESI had its third consecutive season of operation and had slightly fewer hours of operation with 321.5 due to a rain interruption on July 4 and strong winds forcing a net closure on July 30. The dates of operation were:

	FAWA	**ROAD**	**RESI**
Period 5 (Jun 10 - 19)	Jun 14	Jun 13	Jun 12
Period 6 (Jun 20 - 29)	Jun 22	Jun 21	Jun 23
Period 7 (Jun 30 - Jul 9)	Jul 3	Jul 1	Jul 4
Period 8 (Jul 10 - 19)	Jul 11	Jul 13	Jul 12
Period 9 (Jul 20 - 29)	Jul 21	Jul 23	Jul 22
Period 10 (Jul 30 - Aug 9)	Aug 1	Aug 2	Jul 30

Captures

Capture totals were up from 2001 for each station except Far Away, which had its lowest capture total in six years (Tables 3a, 3b, & 3c). The Roadside station had its best capture total in four years and had a higher number of recaptures than original bandings. However, several of these recaptures were birds originally banded at the migration station in the spring and fall of 2002 and in previous years. This is not surprising given the proximity and overlap of the two stations. As in previous years, the Residence station had the greatest number of captures at 145. This station was also responsible for the addition of a new species to the MAPS captures list with a

female Ruby-throated Hummingbird caught on July 12.

The cold, late spring seemed to have the effect of delaying the chronology of breeding. Birds appeared to arrive later on the breeding grounds as captures were low during the first two rounds of MAPS banding. This was particularly true at the ROAD and FAWA stations which had a combined total for the first two visits of 17 and 6 birds respectively. Contrary to previous years, the fourth MAPS round, near mid July, was as productive or more so than the three earlier visits. The timing of the fourth round generally coincides with adults and juveniles dispersing from breeding grounds, vacating the forest interior and seeking out edge habitat. The large number of captures on the final visit to RESI was probably due to similar circumstances as last year when strong westerly winds may have pushed birds further inland into the forest interior to take shelter from the winds which buffeted the shoreline and forest edge.

Breeding Status

Breeding status was determined through banding and observational evidence for each species detected at each station (Table 4). Observations were restricted to MAPS banding site visits only.

Productivity

LSLBO MAPS stations have contributed to productivity estimates for 7 species in the recently published reports for 1997 and 1998. However, several of the most common species captured at the LSLBO stations are not included in the Alaska and Boreal Canada Regions. Hopefully, as more stations are established in the Boreal Canada region, more species can used by MAPS analysts. For productivity analyses described here, the number of young birds captured (HY) was divided by the number of known aged birds (HY and AHY combined). Data from the three stations were pooled. Only species that had at least one capture during each year of MAPS operation were used for the analysis (Table 5). The methodology is not as rigorous as the used by MAPS organizers and the results are quite preliminary but informative. The 2002 productivity estimates are consistent with those of 2001 for most species. Of the ten species examined, four had higher productivity rates and five had lower productivity rates than 2001. Differences for most were small and the sample size probably does not make these differences significant. Of note is the continued high productivity of Tennessee Warblers. This high productivity noted last year seems to have led to an increase in breeding birds. Thirteen adult Tennessee Warblers were caught at the MAPS stations in 2002, up from eight in 2001. Spruce Budworm activity in northern Alberta was considerable in 2002 which suggests that Tennessee Warbler numbers could remain high for the next few years.

Returns and Survivorship

A minimum of four consecutive years of operation is required for survivorship analyses to be meaningful for MAPS analysts. The 2002 season marks the fifth consecutive year of coverage in which at least three periods during the early part of the season were in operation for the ROAD and FAWA stations and the third year of coverage for the RESI station. Given MAPS results for 1997 and 1998 have only recently been published, it will still be a few years before LSLBO

survivorship data are published in a MAPS report but they are likely to contribute data for nearly all of the top ten species captured at LSLBO. The most commonly captured species in which at least one capture was recorded every year were examined for inter-year return rates. These rates can give us some index of survivorship (Table 6). Because of their proximity to each other, ROAD and FAWA station data were pooled and treated as a "super station", which is how they would be treated by MAPS biologists. RESI was not included but it will be examined after the 2003 season when it has had four full years of coverage. Return rates of 0.148±0.08 for LSLBO birds are quite consistent with those of the combined Alaska and Boreal Canada region (0.165±0.073) from 1992- 1998. From 1995 - 2002, returns of birds banded in the previous year accounted for 55% of inter-year recaptures at LSLBO. In 2002, 55% of inter-year recaptures were banded in 2000 or earlier. Canada Warblers appear to have a higher survivorship or at least a higher nest site fidelity, accounting for 36% of returning birds. The return of a Swainson's thrush at least 5 years old was the oldest return. Other recaptures are listed in the "Recaptures" section (see below).

Table 3a. Captures at the Far Away (FAWA) MAPS station.

Species	2002 Captures			Previous Years' Total Captures							
	Band	Recap	Unband	94	95	96	97	98	99	0	1
Downy Woodpecker										1	
Least Flycatcher		1		3	1						9
Swainson's Thrush		1			4	1		1		1	
American Robin		2	1[1]	3	1	1			1		1
Cedar Waxwing				1							
Phialdelphia Vireo								1			
Red-eyed Vireo				2	2						1
Tennessee Warbler		4			1		1				1
Yellow-warbler				2			1				2
Chestnut-sided Warbler				1							
Magnolia Warbler									1		
Yellow-rumped Warbler		3	1[2]	1			5	3		3	4
Black-and-white Warbler									1		
American Redstart		2		18	10		2	4	2	8	7
Ovenbird		2	1	1	1	1	10	1	4	5	4
Connecticut Warbler									1		
Mourning Warbler		1	1[3]	11	19	1	3	7	9	4	
Common Yellowthroat					1				1		
Canada Warbler		1	6[4]	4	12	2	8	13	15	10	8
Western Tanager		1						1			
Rose-breasted Grosbeak										1	
White-throated Sparrow		4	3[5]	16	26	12	10	8	10	10	11
Total		22	13	63	78	18	40	39	45	43	49

[1]- Originally banded at the migration station in 2000.

[2]- Originally banded at the Canopy Project site in 2000.

[3]- Originally banded at FAWA in 2001.

[4]- Includes one bird banded at FAWA in 2000 and another at the migration station in 2000.

[5]- Includes one bird banded at FAWA in 2000.

Table 3b. Captures at the Road Side (ROAD) MAPS station.

Species	2002 Captures			Previous Years' Total Captures							
	Banded	Recap'd	Unband	94	95	96	97	98	99	0	1
Ruffed-Grouse								2			
Yellow-bellied Sapsucker				1	3	2					
Pileated Woodpecker											1
Yellow-bellied Flycatcher				1							
Alder Flycatcher	1			1		3		1			
Least Flycatcher	1		1	4				3			
Black-capped Chickadee	1			1					1		1
Red-breasted Nuthatch								1			
Brown Creeper											1
Winter Wren					1					1	
Swainson's Thrush	4	4[1]		11	3	1	2	11	8	12	5
American Robin		2[2]			1			1			
Cedar Waxwing				2				1			
Warbling Vireo								1			
Red-eyed Vireo		1[3]		1	1						
Tennessee Warbler	4	4		22	2		2	10	5		1
Orange-crowned Warbler				1							
Yellow Warbler	1	1		6							
Chestnut-sided Warbler				4							
Magnolia Warbler		8[4]		11	6	4	11	10	24	10	15
Cape May Warbler								2			
Yellow-rumped Warbler	2			16	5	4	1	22	2	1	1
Black-throated Green Warbler						1		4		1	
Palm Warbler				1							
Blackpoll Warbler								2			
Black-and-white Warbler				9			2	3	1	3	
American Redstart	16	15[5]		37	22	12	13	21	15	8	12
Ovenbird	9	5		6	1		3	22	9	8	12
Northern Waterthrush						1					
Mourning Warbler				5	2	1	5		2		
Common Yellowthroat								2			
Canada Warbler	6	3[6]		32	19	8	20	13	12	13	13
Western Tanager				1	1			1			
Rose-breasted Grosbeak				1				3			
Chipping Sparrow		5		2				4	1		
Song Sparrow				2							
Lincoln's Sparrow						1					
White-throated Sparrow	2	2[3]		22	16	9	18	16	5	3	6
Purple Finch								1			
Pine Siskin								1			
Total	47	50	1	200	83	47	77	158	85	60	68

[1]- Includes one bird banded at ROAD in 2001 and another at the FEGU MAPS station in 1998.

[2]- Originally banded at the migration station in 2000.
[3]- Includes one bird originally banded at the migration station in 2001.
[4]- Includes one bird banded at ROAD in 2001, and 2 birds banded at the migration station in 2001.
[5]- Includes 5 birds banded at the migration station in 2001, two in 2000, and one in 1999.
[6]- Includes one bird banded at ROAD in 2000 and one at the migration station in 1999.

Table 3c. MAPS captures at Residence (RESI) station in 2002.

Species	2002 Captures			Previous Year Totals	
	Banded	Recaptured	Unbanded	2000	2001
Sharp-shinned Hawk				1	
Ruby-throated Hummingbird			1		
Yellow-bellied Sapsucker	4	2[1]		2	3
Western Wood-Pewee				1	
Alder Flycatcher					1
Least Flycatcher	13	1[2]		11	8
Black-capped Chickadee	6			1	
Red-breasted Nuthatch	1				
Winter Wren	1		1		1
Swainson's Thrush	6	1[2]		8	7
Hermit Thrush	2			4	1
American Robin				2	
Red-eyed Vireo					2
Philadelphia Vireo					1
Warbling Vireo					1
Blue-headed Vireo					1
Tennessee Warbler	26		2	9	27
Yellow Warbler	3			4	4
Magnolia Warbler	5	2[1]	1	7	2
Yellow-rumped Warbler	12	4[2]		7	11
Black-throated Green Warbler	1			1	1
Bay-breasted Warbler				2	3
Blackpoll Warbler					1
Black-and-white Warbler				3	4
American Redstart	10	3[3]		10	21
Ovenbird	8	1[2]		5	6
Mourning Warbler	1			4	
Common Yellowthroat					1
Canada Warbler	2	2[4]		3	7
Western Tanager				1	1
Rose-breasted Grosbeak	2		1	1	1
Chipping Sparrow	5			2	
Lincoln's Sparrow				1	
White-throated Sparrow	10	4[2]		14	19
Purple Finch	1				
Pine Siskin				1	

Total	119	20	6	105	139

[1]- Includes one originally banded at RESI in 2000.

[2]- Includes one originally banded at RESI in 2001.

[3]- Includes two birds originally banded at RESI in 2001.

[4]- Includes one originally banded at RESI in 2000 and another in 2001.

Table 4. Breeding Status of MAPS birds in 2002.

Species	RESI	ROAD	FAWA	Species	RESI	ROAD	FAWA
Common Loon	T	T	T	American Robin	B	B	B
Red-necked Grebe		T	T	Gray Catbird			T
Common Goldeneye		T		Cedar Waxwing	B	B	L
Osprey		T	T	Tennessee Warbler	B	B	B
Bald Eagle		T		Yellow Warbler	B	B	B
Sharp-shinned Hawk			T	Magnolia Warbler	B	B	
Ruffed Grouse	B	B	B	Yellow-rumped Warbler	B	B	B
Spotted Sandpiper		L		Black-throated Green Warbler	L	L	
Common Snipe	T			Bay-breasted Warbler	B		
Franklin's Gull			T	Black-and-white Warbler	B	L	B
Ring-billed Gull		T	T	American Redstart	B	B	B
Common Tern		T		Ovenbird	B	B	B
Belted Kingfisher		T	T	Mourning Warbler	B	T	B
Ruby-throated Hummingbird	L			Common Yellowthroat		T	
Yellow-bellied Sapsucker	B	T	B	Canada Warbler	B	B	B
Hairy Woodpecker	L			Western Tanager	L	T	T
Northern Flicker	T	L	L	Chipping Sparrow	B	B	L
Pileated Warbler	T	L		Clay-colored Sparrow	T	B	L
Alder Flycatcher	L	B	T	Song Sparrow	T	B	
Least Flycatcher	B	B	B	Lincoln's Sparrow	L		
Eastern Phoebe		B		White-throated Sparrow	B	B	B
Warbling Vireo	B			Rose-breasted Grosbeak	B	L	B
Blue-headed Vireo		L		Red-winged Blackbird		T	
Red-eyed Vireo	B	B	B	Brown-headed Cowbird	T	T	T
Blue Jay	L			Purple Finch	T		T
Gray Jay	L			White-winged Crossbill		T	T
American Crow		T	T	Pine Siskin	L	L	L
Common Raven	T	T	T	Evening Grosbeak		T	T
Tree Swallow	T						
Black-capped Chickadee	B	B	L				

Red-breasted Nuthatch	B	B		Total sp. Breeder (B)	25	21	16
Winter Wren	B	L	T	Total sp. Likely (L)	10	10	6
Ruby-crowned Kinglet	L	L		Total sp Transient (T)	8	18	17
Swainson's Thrush	B	B	B				
Hermit Thrush	B			Total sp.	43	49	39

Table 5. Comparison of productivity (number of HY birds divided by the number of known aged birds) of the 10 most commonly captured species at the three MAPS sites in Lesser Slave Lake Provincial Park, 2002 and the 1994 - 2001 average.

Species	AHY 2002	HY 2002	HY Ratio 2002	HY Ratio 2001	Average HY Ratio 1994 - 2001
American Redstart	27	13	0.325	0.389	0.347
White-throated Sparrow	19	0	0	0.067	0.215
Canada Warbler	14	3	0.176	0.13	0.278
Swainson's Thrush	10	5	0.333	0.083	0.29
Tennessee Warbler	13	27	0.675	0.733	0.68
Mourning Warbler	3	0	0	0	0.24
Myrtle Warbler	14	5	0.263	0.467	0.414
Magnolia Warbler	7	3	0.3	0.538	0.34
Ovenbird	16	7	0.304	0.13	0.233
Least Flycatcher	13	4	0.235	0	0.184

Table 6. Annual return rates for the most commonly captured MAPS species at LSLBO

Species	2002	2001	2000	1999	1998	1997	1996	1995	95 - 02 Average
American Redstart	0.11	0	0	0.14	0.4	0.28	0.45	0.21	0.20±0.17
White-throated Sparrow	0.13	0.33	0.13	0.06	0	0.25	0.28	0.04	0.15±0.12
Canada Warbler	0.36	0.4	0.18	0.14	0.12	0.19	0.36	0.6	0.29±0.16
Ovenbird	0	0.08	0.2	0.17	0	0	0	0	0.05±0.08
Swainson's Thrush	0.40	0.25	0.13	0.38	0	0	0.5	0.22	0.23±0.18

Yellow-rumped Warbler	0	0.5	0	0	0.12	0	0	0	0.08±0.18
Mourning Warbler	0.5	0	0.33	0.25	0.08	0.33	0.5	0.07	0.26±0.19
Magnolia Warbler	0.67	0.25	0.4	0.23	0	0.17	0	0	0.21±0.23

RECAPTURES

There were 361 captures of previously banded birds accumulated during the migration monitoring and MAPS programs in 2002. The vast majority of these where birds banded at LSLBO earlier in 2002. Thirty-three recaptures were originally banded in 2001. Another 30 recaptured birds were originally banded at LSLBO prior to 2001 or elsewhere. These are listed below.

Sharp-shinned Hawk 1383-64476. Banded by Edgar Jones of Edmonton, AB on July 31 2001. Recaptured at the migration station on May 30. This represents the first foreign recovery at LSLBO in several years.

Yellow-bellied Sapsucker 8041-65706. Banded at the RESI MAPS station in Jun 2000. Recaptured there July 4, 2002. At least four years old.

Alder Flycatcher 1990-60111. Banded at the migration station in July 1996. Recaptured there on June 10. At least seven years old. This represents a new longevity record for the species based on banding recoveries.

... 2160-63506. Banded at the migration monitoring station in July 1998. Recaptured there July 28, 2002. At least four years old.

... 2160-64581. Banded at the migration station in July 1999. Recaptured there on June 4. At least four years old.

Eastern Phoebe 1671-46871. Banded at the migration station in May 2000. Recaptured there on May 17. Three years old.

Red-eyed Vireo 1671-47729. Banded at the migration monitoring station in July 2000. Recaptured there July 17, 2002. At least three years old.

... 3111-41227. Banded at the migration station in August 2000. Recaptured there July 27, 2002. At least three years old.

Black-capped Chickadee 1671-46871. Banded at the migration station in May 2000. Recaptured there on May 13 and October 4, 2002. At least four years old.

... 1671-47675. Banded at the migration station in June 2000.

	Recaptured there April 20 and August 5, 2002. At least three years old.
...	2031-61702. Banded at the migration station in August 1997. Recaptured there on May 14. Five years old.
Swainson's Thrush	1451-56627. Banded at the Road MAPS station in July 1994. Recaptured at the migration station May 23. At least nine years old.
...	1451-87937. Banded at the Fern Gulley MAPS station in June 1998. Recaptured at the migration station on May 25. At least six years old.
American Robin	1152-42438. Banded at the migration station in May 2000. Recaptured at the ROAD MAPS station July 1, 20002. Three years old.
...	1152-42442. Banded at the migration station in May 2000. Recaptured at the FAWA MAPS station July 11, 2002. Three years old.
Magnolia Warbler	2160-63014. Banded at the RESI MAPS station in July 2000. Recaptured at the RESI station July 22, 2000. Three years old.
...	2220-41304. Banded at the migration station in July 2000. Recaptured there on June 2. At least four years old.
Yellow-rumped Warbler	2160-71405. Banded at the migration station in May 1999. Recaptured there on June 4. Four years old.
...	2120-51853. Banded at canopy project site in 2000. Recovered at the FAWA MAPS station on July 3, 2002. Original information unavailable.
American Redstart	2230-71050. Banded at the migration station in August 2000. Recaptured there July 17, 2002. Two years old.
...	2130-37235. Banded at the migration monitoring station in July 1999. Recovered at the ROAD MAPS station on July 13, 2002.
...	2130-38700. Banded at the migration station in June 2000. Recovered at the Road MAPS station on June 21, 2002. Three years old.
...	2130-38786. Banded at the migration station in July 2000.

	Recaptured there Jul 28, 2002. At least three years old.
Canada Warbler	1980-87081. Banded at the ROAD MAPS station in June 2000. Recaptured at the FAWA station on July 3, 2002. Three years old.
...	1980-87085. Banded at the ROAD MAPS station in June 2000. Recaptured there on July 1, 2002. At least four years old.
...	1980-87090. Banded at the FAWA MAPS station in June 2000. Recaptured there on June 14, 2002. At least three years old.
...	2100-07600. Banded at the FEGU MAPS station in June 1999. Recaptured at the migration station on August 19, 2002. At least five years old.
...	2130-37110. Banded at the migration station in June 1999. Recaptured there on June 11. At least five years old.
...	2160-63006. Banded at the RESI MAPS station in July 2000. Recaptured there on June 23, 2002. At least four years old.
White-throated Sparrow	1451-87937. Banded at the FEGU MAPS station June 1998. Recaptured at the FAWA MAPS station July 13, 2002. At least six years old.

COVERAGE

Coverage at the migration monitoring station in 2002 was very good and comparable to that of the last two years. Fifty-four days of consecutive coverage in spring (April 19 - June 11) was consistent with the last two years when the observatory increased spring coverage to include the latter half of April. Fall had 84 consecutive days of coverage from July 13 - October 4 inclusive.

Standardized components of the Daily Totals, including netting and banding, census, and visible-migration watches received excellent coverage (Table 7a & 7b). Banding remains the most highly variable of the standardized components due to constraints of weather and staffing. Number of days of banding and daily net-hours were down considerably from spring 2001 owing to the much colder morning temperatures delaying net opening times. Fall average daily net-hours were also lower than in 2001 despite the longer season. This was largely due to hours lost to bad weather (nearly 25% of possible net-hours). Rain and winds precluded banding on 5 days. Cold snaps in early August and in late September and early October often delayed net opening for several hours. To a lesser extent, net closures due to high volume of birds passing through the area were also responsible for the decreased netting effort accounting for nearly 8% of possible net-hours. The resultant loss of net hours had a negative effect on the quality of coverage. Since 2000, an overall coverage code has been assigned each day based on a set

minimum criteria that must be met (Table 8). These criteria include number of net-hours as well as number of field hours, conduct of census and visible-migration watches. A detailed account can be found in the protocol located in the station manual. The number of days of "fair" coverage were a bit higher than desired. This was largely the result of weather reducing net-hours below the minimum 42 net-hours needed to meet the "good" criteria.

A total of 332 person-days were accumulated during the 2002 migration monitoring and MAPS seasons. This is slightly lower than last year but very comparable when the volunteer-days attributed to workshop participants in 2001 are discounted. The continued assistance received from dedicated local volunteers and those from further afield enabled the observatory to function much more effectively and made a tremendous difference in the quality of coverage in 2002. The help was fairly evenly spread but could have been improved during the latter half of May–normally the peak of the spring season. Fall coverage had at least one volunteer present throughout much of the peak of migration. In 2002, two volunteers committed to two or more weeks of help and another two were present for a period of one to two weeks. Volunteer participation is anticipated to be substantially higher in 2003 as several long-term (6 month) applications have already been received. A sincere and well deserved thank-you is extended to all the 2002 volunteers listed below (Table 9).

Table 7a. Summary of effort during spring migration monitoring at LSLBO, 1994 - 2002.

SPRING	1994	1995	1996	1997	1998	1999	2000	2001	2002
Coverage									
First day	15-May	28-Apr	04-May	30-Apr	04-May	26-Apr	18-Apr	16- Apr	19 - Apr
Last day	09-Jun	09-Jun	07-Jun	17-Jun	09-Jun	12-Jun	13-Jun	11- Jun	11 - Jun
Number of days	19	39	28	37	36	46	57	57	54
Person-days	40	92	62	67	72	N/A	126	130	125
Banding[1]									
First day	22-May	30-Apr	06-May	37376	04-May	29-Apr	20-Apr	16- Apr	20- Apr
Last day	08-Jun	09-Jun	07-Jun	17-Jun	09-Jun	12-Jun	13-Jun	11- Jun	11- Jun
Number of days	15	35	25	34	36	42	52	54	45
Avg daily net-hours	37.2	65.5	62.1	58.6	74.5	69.1	62	72.9	63
Census									
First day	17-May	29-Apr	04-May	30-Apr	04-May	27-Apr	18-Apr	16- Apr	19- Apr
Last day	09-Jun	09-Jun	07-Jun	14-Jun	09-Jun	12-Jun	13-Jun	11- Jun	11- Jun
Number of days	13	35	27	34	32	34	55	57	54
Vis-Migs[2]									
First day		04-May	06-May	30-Apr	05-May	27-Apr	18-Apr	16- Apr	19- Apr
Last day		08-Jun	07-Jun	14-Jun	21-May	25- May	13-Jun	11- Jun	11- Jun
Number of days		22	26	33	8	16	57	57	54
Avg daily # Vis-Migs		2.8	3.7	4.5	3.8	N/A	8.2	7.8	8.4

[1]- Protocol changes in 2000 included increasing the six-hour standard banding period to seven hours

[2]- Starting in fall 1999 Vis-Migs were reduced from 10 minutes to five minutes

Table 7b. Summary of effort during fall migration monitoring at LSLBO, 1994 - 2000.

FALL	1994	1995	1996	1997	1998	1999	2000	2001	2002
Daily Estimated Totals									
First day	27-Jul	17-Jul	27-Jul	05-Aug	14-Jul	10-Jul	07-Jul	14 -Jul	13 - Jul
Last day	11-Sep	24-Sep	29-Sep	26-Sep	24-Sep	25-Sep	06-Oct	22- Sep	4 - Oct
Number of days	31	51	41	35	66	78	91	69	84
Number of person-days	62	116	76	45	126	N/A	207	192	173
Banding[1]									
First day	27-Jul	17-Jul	27-Jul	06-Aug	14-Jul	10-Jul	07-Jul	14 - Jul	14 - Jul
Last day	11-Sep	24-Sep	29-Sep	26-Sep	24-Sep	25-Sep	06-Oct	22- Sep	4 - Oct
Number of days	30	50	35	33	62	76	89	69	78
Average daily net-hours	35.7	50.5	40.1	60.9	48.5	56.7	74	74.6	62.9
Census									
First day	02-Aug	17-Jul	27-Jul	06-Aug	19-Jul	10-Jul	07-Jul	14 -Jul	13 - Jul
Last day	11-Sep	23-Sep	29-Sep	03-Sep	24-Aug	08-Aug	06-Oct	22- Sep	4 - Oct
Number of days	18	43	39	8	10	15	90	69	84
Vis-Mig[2]									
First day	16-Aug	28-Jul	30-Jul	06-Aug	25-Jul	13-Jul	07-Jul	14 -Jul	13 - Jul
Last day	28-Aug	31-Aug	29-Sep	26-Sep	02-Sep	25-Sep	06-Oct	22 -Sep	4 - Oct
Number of days	8	18	28	29	20	43	91	69	84
Ave. # daily Vis-Migs	N/A	2.7	3.3	1.7	2.8	3.9	7.7	7.9	7.7

[1]- Protocol changes in 2000 included increasing the six-hour standard banding period to seven hours

[2]- Starting in fall 1999 Vis-Migs were reduced from 10 minutes to five minutes

Table 8. Quality of coverage in Spring and Fall at LSLBO 2000 - 2002.

Coverage	Number of days in Spring			Number of days in Fall		
	2000	2001	2002	2000	2001	2002
poor	8	1		1		3
fair	16	12	15	29	15	35
good	32	43	39	56	46	44
excellent	1	1		5	8	2

Table 9. Person-days during the 2002 field operations at LSLBO.

Personnel	Spring Migration	MAPS	Fall Migration
Staff			
Jul Wojnowski	32	8	59
Carl Savignac	12		
Tyler Flockhart	32	17	54
Gordon Eadie	6		6

Total staff-days	**82**	**25**	**119**
Volunteers			
Hanneke Brooymans	1		
Nancy Davis	5		
Gordon Eadie	6		3
Monica Giesbrecht			1
Kevin Hannah			2
Stefan Jungkind	2		
Aaron Lehman	1		3
George Livingston		6	16
Darren McGregor	2		
Kristi Millner			17
Kerry Moffat	7		5
Theresa Morcos			2
Chuck Priestley			2
Lisa Priestley			2
C.John Ralph	2		
Amber Robinson	2		
Linda Saville	5		
Dave Stepnisky			2
Andrea Thompson	2		
Drajs Vujnovic			2
Jason Weir	8		
Total volunteer-days	**43**	**6**	**57**

VISITORS AND EDUCATION

Visitors

Nearly 1,100 visitors came to the observatory in 2002 (Table 10). This higher than average number was largely due to a very good turnout for the Songbird Festival, which benefited from more aggressive advertising and beautiful weather. The event brought 300 visitors to the observatory. Most people came from Alberta but some came as far away as Mississippi. Several of the groups included school classes, a summer boreal forest camp and organised tours.

Training Programs

In conjunction with Northen Lakes College, a week-long intensive Assistant Bander Training course was again offered during the summer of 2002. The aim of the course is to provide knowledge and skills for safe and ethical handling of birds as well as an introduction to banding. It is intended as a banding primer. The target audience is biologists and members of the general public who wish to assist at banding stations. A minimum enrolment was met to run a course but a last minute drop out forced a cancellation of course. We remain optimistic for the future of this course and have already had inquiries for 2003.

Table 10. Number of visitors to the LSLBO banding station in 2002.

Season	Adults	Children	Age not recorded	# of groups	Total Visitors
Spring (Apr 16 - Jun 11)	195	154	303	7	652
Summer (Jun 12 - Jul 12)	4	28		1	32
Fall (Jul 13 - Sep 22)	289	102		3	394
Total	**488**	**284**	**303**	**11**	**1078**

OTHER OBSERVATORY ACTIVITIES

Moult Study

After breeding, adult birds of most passerine species undergo a complete body moult which includes flight feathers. There are several different strategies in the timing of this moult but the most common and most commonly seen at LSLBO is to complete the moult on breeding grounds prior to fall migration. With MAPS banding and the relatively early start to the fall migration season, LSLBO has the opportunity to study the timing and progression of this moult. At LSLBO moult has been recorded on adult birds at LSLBO during the MAPS season and fall migration since 1994. However, this has been done on a limited basis and not consistently over the years. In many years, a short-hand form of scoring moult has been used. While still useful and quick to record, it may have limited value for some analyses.

In 2002, an effort was made by observatory staff to record the primary moult on adult birds captured in summer and fall. Primary moult was examined and scored according to Ginn and Melville (1983). Each primary was scored 0 - 5 (old and unmoulted feather - completely grown new feather, respectively). Over 200 moult scores were collected on 175 individuals of 27 species. Most common were American Redstart, Tennessee Warbler (26), Ovenbird (19), and Myrtle Warbler (18). While banders were diligent in recording moult, a high volume of birds captured on some days during the peak of moulting period meant minimal data was collected excluding and moult scoring. This amounted to over forty birds. In 2003 and future years we will try and be more diligent in collecting moult data.

RECOMMENDATIONS

Migration monitoring and the MAPS programs remain core monitoring programs of the Lesser Slave Lake Bird Observatory. These programs lend themselves well to other research oriented projects that LSLBO should begin to explore in the near future. Much of the equipment and staff expertise is already at LSLBO's disposition. A fairly small investment can considerably enhance LSLBO's role as a leader in avian research in the boreal region.

Recommendations here include the expansion of the MAPS and migration monitoring programs at LSLBO through the establishment of more MAPS stations and extension of the banding period at new and previously existing LSLBO MAPS stations. The establishment of more MAPS sites in the area should be a high priority for the observatory. The value of MAPS data in understanding the boreal songbird population dynamics cannot be underestimated. The "Boreal Canada" region is grossly under-represented with less than 1% of MAPS stations currently operated in the region. LSLBO operates three of the five stations in what is probably the largest of the eight MAPS regions. The Institute for Bird Populations could be contacted with the aim of exploring partnership possibilities or to see if they have any resources they could allocate to help LSLBO establish and operate more MAPS stations in Boreal Canada. The establishment of one to two more stations should be attainable goals for 2003. The resurrection of the Fern Gulley station should also be given strong consideration. Previously existing net-lanes and trails would reduce the work required for station start-up. According to IBP biologists, resumption of operating an abandoned station after a few years is preferable to the start of a new one, particularly if the site was fairly productive. New techniques make it possible to analyse survivorship even in the absence of data during intervening years. Over and above the contribution to the MAPS program, the resumption of banding at Fern Gulley could enable the establishment of a fairly sizeable plot for intensive breeding ecology research.

Extending the mist-netting period at the MAPS stations into late August or early September could give valuable information as to habitat use and preferences of dispersing and migrating birds. Examining post-breeding flight feather moult on adult birds would be an example of such a study. In fall 2002, about 6% of captured birds at the migration station were adults. Most adults were caught from mid July to late August, a period coinciding with that of flight feather moult. In September, adults accounted for only 3% of the fall captures. These low percentages suggest adults are being disproportionately under-sampled. This may mean that adults somehow can avoid nets better, or more likely, they choose a different migratory corridor. Sampling in other habitat types could answer this and other questions.

It is highly recommended that banders pay particular attention and record moult on all adult birds caught during late summer and early fall. The bander-in-charge will ensure that all banders are informed as to how to look for and properly record primary moult on birds so it is recorded consistently between observers. A section on moult and its record keeping will be added to the LSLBO station manual prior to the 2003 field season.

By extending the banding season at MAPS stations, a cost-effective network of less intensively sampled satellite stations can corroborate the population trends derived from the migration monitoring station. Dr. C. J. Ralph, in California has demonstrated the effectiveness and value of several monitoring stations operated less intensively in different habitat types throughout an area. Running a station once per week can still provide meaningful information on population trends and allow for the operation of several stations sampling different habitat types concurrently.

The largest obstacle facing the observatory in carrying out this extra research is probably a lack of a lack of personnel. A second experienced field assistant along with increased volunteer help would be tremendously beneficial. Several avenues could be explored to help offset some of

these costs. Proposals should be made and submitted to industry for additional funding. Long-term commitments (up to 6 months) from 2 volunteers have already been secured for the 2003 field season. This significant help could go a long way towards expansion of LSLBO programs. LSLBO should also seek to attract a graduate student for a project that would meet goals of the organization.

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APPENDIX I. Species arrival and departure dates and maxima at LSLBO in 2002.

The following list includes seasonal first and last dates and maximum total (in bold) for each species in **S**pring (April 19 - June 11) and **F**all (July 13 - October 4) encountered in 2001. Unless otherwise stated, all sightings are from the migration monitoring station in Lesser Slave Lake Provincial Park.

Common Loon: S: May 12 - 2; Jun 11 - 2; **19** - May 22; **F:** Jul 13 - 5; Oct 4 - 1; **76** - Aug 26
Pied-billed Grebe: S: May 14 - **8**; sole record
Horned Grebe: S: Jun 7 - 2; Jun 9 - 2; **2** - Jun 7 & 9: **F:** Aug 6 - 5; Oct 2 - 1; **40** - Sep 3
Red-necked Grebe: S: May 20 - 1; Jun 11 - 1; **4** - May 28: **F:** Jul 14 - 1; Sep 29 - 1; **12** - Aug 6
Eared Grebe: F: Aug 19 - **1**; Aug 21 - **1**
Western Grebe: F: Aug 6 - 48; Oct 4 - 5; **50** - Aug 8
American White Pelican: S: Jun 3 - 2; Jun 11 - 4; **5** - Jun 9 & 10: **F:** Jul13 - 5; Oct 3 - **16**
Double-crested Cormorant: S: May 20 - 4; Jun 9 - 1; **4** - May 20: **F:** Jul 21 - **1**; Sep 16 - **1**
Great Blue Heron: S: May 26 - **1**; May 29 - **1**: **F:** Aug 7 - 1; Sep 8 - 1; **4** - Aug 19
Tundra Swan: S: Apr 27 - 6; May 16 - 2; **114** - May 1: **F:** Sep 28 - **30**; Oct 4 - 5

Greater White-fronted Goose: **S:** May 1 - 103; May 16 - 80; **2775** - May 13: **F:** Aug 29 -111; Aug 31 - **120**
Snow Goose: S: May 12 - **18**; May 13 - 8: **F:** Sep 22 - **120**
Canada Goose: S: Apr 19 - 2; Jun 11 - 20; **906** - May 13: **F:** Jul 23 - 2; Oct 4 - 9; **74** - Sep 3
American Green-winged Teal: **S:** May 6 - 6; Jun 7 - 2; **10** - May 13 & 15: **F:** Aug 15 - **8**; Oct 4 - 2
Mallard: S: Apr 21 - 8; Jun 11 - 10; **177** - May 15: **F:** Jul 13 - 3;Oct 4 - 25; **59** - Sep 7
Northern Pintail: **S:** May 6 - 6; May 24 - 2; **47** - May 15: **F:** Aug 1 - 1; Oct 4 - 1; **7** - Sep 19
Blue-winged Teal: **S:** May 11 - 2; Jun 10 - 2; **11** - May 14: **F:** Aug 1 - 2; Sep 28 - 1; **22** - Aug 29
Northern Shoveler: **S:** May 15 - **30**; Jun 8 - 4: **F:** Sep 7 - 1; Oct 4 - **8**;
Gadwall: **S:** May 7 - 2; May 30 - **12**
American Wigeon: **S:** Apr 21 - 1; Jun 11 - 1; **98** - May 11: **F:** Jul 28 - 1; Sep 29 - 2; **18** - Sep 5
Canvasback: **S:** May 9 - 5; May 16 - 5; **10** - May 15
Redhead: **S:** May 9 - **1**; sole spring record
Ring-necked Duck: **S:** May 16 - **4**; sole spring record
Lesser Scaup: **S:** May 8- 3; Jun 2 - 3; **202** - May 15
Long-tailed Duck: S: May 9 - 4; May 20 - **61**
Harlequin Duck: S: Jun 7 - **1**; Jun 17 - **1**; new species for the area
Surf Scoter: S: May 13 - 12; May 30 - 2; **27** - May 24
White-winged Scoter: S: May 16 - 3; Jun 8 - 2; **4** May 20 & 26: **F:** Sep 12 - **5**
Common Goldeneye: S: Apr 21- 5; Jun11 - 20; **51** - May 14: **F:** Jul 13 - 4;Oct 4 - 16; **38** - Sep 24
Bufflehead: S: May 12 - 2; Jun 7 - 3; **12** - May 28: **F:** Aug 12 - 4; Oct 4 - 12; **82** - Sep 26
Hooded Merganser: S: Sep 12 - **2**
Common Merganser: S: Apr 22 - 4; Jun 11 - 4; **80** - Jun 2: **F:** Jul 14 - 11; Oct 3 - 6; **30** - Aug 20 & Sep 6
Red-breasted Merganser: S: May 2 - 3; Jun 9 - 5; **24** - May 16
Osprey: S: May 5 - 1; Jun10 - 2; **2** - several dates: **F:** Jul 13 - 1; Sep 16 - 1; **2** - 10 dates
Bald Eagle: S: Apr 19 - 2; Jun 11 - 2; **5** - May 22: **F:** Jul 14; Oct 3 - 1; **6** - Sep 18
Northern Harrier: S: Apr 21 - **32**; May 30 - 1: **F:** Jul 13 - 1; Sep 29 - 1; **6** - Sep 14
Sharp-shinned Hawk: S: Apr 19 - **2**; Jun 8 - 1; **2** - several dates: **F:** Jul 23 - 1; Sep 29 - 1; **13** - Aug 23
Northern Goshawk: S: Apr 28 - **1**
Broad-winged Hawk: S: May 28 - **1**
Red-tailed Hawk: S: Apr 23 - **1**; Jun 2 - **1**: **F:** Aug 17 - 1; Oct 3 - **3**
Rough-legged Hawk: S: Apr 26 - **1**; May - **1**; **1** - 3 dates
American Kestrel: S: May 2 - **1**; May 24 - **1**: **F:** Sep 12 - **2**; Sep 16 - 1
Merlin: **S:** Apr 21- 1; Jun 2 - 1; **2** - several dates: **F:** Jul 17 - 1; Sep 27 - 1; **2** - 5 dates
Peregrine Falcon: **S:** Apr 22 - **1**; May 15 - **1**; **1** - six dates: **F:** Sep 7 - **1**; Sep 12 - **1**
Ruffed Grouse: **S:** Apr 20 - 1; Jun 11 - 2; **3** - May 10 & 11: **F:** Jul 17 - 1; Oct 4 - **2**; **2** - 6 dates
American Coot: **S:** May 16 - **30**
Sandhill Crane: **S:** Apr 19 - 1; May 20 - 1; **50** - May 11: **F:** Sep 13 - **59**; Sep 16 - 57
Black-bellied Plover: **S:** May 16 - 5; Jun 1 - **16**
Semipalmated Plover: **S:** May 15 - **4**: **F:** Aug 8 - **1**
Killdeer: **S:** Apr 21 - 1; Jun 11 - 1; **4** - May 7 & 15: **F:** Jul 23 - **1**; Oct 3 - **1**; **1** - 6 dates
Ruddy Turnstone: **S:** May 20 - **2**; May 21 - **2**
American Avocet: **S:** May 16 - **10**; Jun 7 - 1
Marbled Godwit: **S:** May 18 - **1**; May 20 - **1**
Greater Yellowlegs: **S:** May 1 - 2; Jun 8 - 1; **51** - May 15: **F:** Aug 8 - 4; Oct 4 - 2; **15** - Sep 4
Lesser Yellowlegs: **S:** Apr 28 - 1; Jun 9 - 1; **216** - May 15: **F:** Jul 31 - 2; Sep 15 - 5; **53** - Aug 19
Solitary Sandpiper: **S:** May 9 - **2**; May 14 - 1
Spotted Sandpiper: **S:** May 15 - 1; Jun 11 - 2; **6** - Jun 3: **F:** Jul 13 - **4**; Sep 5 - 1; **4** - Jul 13, Aug 9 & 15
Sanderling: F: Sep 12 - 6, Sep 13 - **25**
Semipalmated Sandpiper: Aug 15 - 7; Sep 21 - 2; **15** - Aug 19
Least Sandpiper: S: Jun 6 - **1**: **F:** Aug 8 - 1;Aug 15 - 1; **5** - Aug 12
Baird's Sandpiper: F: Aug 15 - 3; Sep 12 - **10**

Pectoral Sandpiper: F: Sep 5 - **1**
Short-billed Dowitcher: S: May 15 - **72**
Franklin's Gull: S: Apr 29 - 15; Jun 9 - 1; **642** - May 15: **F:** Jul 15 - 1;Sep 13 - 8; **3504** - Jul 28
Bonaparte's Gull: S: May 8 - 1; May 30 - 13; **22** - May 15: **F:** Jul 31 - **1**
Mew Gull: S: May 9 - 4; May 13 - 2; **11** - May 12
Ring-billed Gull: S: Apr 29 - 6; Jun 11 - 2; **20** - Jun 8 & 9: **F:** Jul 14 - 5; Oct 4 - 5; **110** - Jul 29 & Sep 9
California Gull: S: May 12 - **3**; Jun 7 - 1; **3** - several days: **F:** Jul 28 - **1**
Herring Gull: S: May 1 - 2; Jun 9 - 2; **6** - May 30: **F:** Jul 15 - 1; Sep 29 - 1; **2** - 5 dates
Caspian Tern: S: May 24 - 1; Jun 2 - **2**: **F:** Aug 5 - **1**
Common Tern: S: May 19 - 1; Jun 11 - 2; **14** - Jun 4: **F:** Jul 13 - 3; Sep 7 - 1; **40** - Aug 22
Forster's Tern: S: May 22 - 2; May 31 - 3; **6** - May 23: **F:** Jul 17 - **3**; Jul 28 - 2
Black Tern: S: May 22 - 1; Jun 1 - **38**: **F:** Jul 28 - 1; Aug 30 - 21
Mourning Dove: S: May 15 - **3**; Jun 2 - 1
Northern Pygmy-Owl: F: Aug 19 - **1**
Belted Kingfisher: S: May 9 - **3**; Jun10 - 1; **3** - May 9, 18, & 19: **F:** Jul 13 - 1; Sep 25 - 1; **3** - 4 dates
Yellow-bellied Sapsucker: S: May 7 - 1; Jun 2 - 1; **4** - May 13: **F:** Jul 16 - 1; Aug 15 - 1; **1** - 4 dates
Downy Woodpecker: S: Apr 19 - **2**; May 28 - 1: **F:** Jul 18 - 1; Oct 4 - 1; **2** - Jul 21 & 22
Hairy Woodpecker: S: Apr 28 - **1**; Jun 2 - **1**; **1** - several dates: **F:** Aug 6 - 1; Oct 4 - **2**
Northern Flicker: S: May 1 - 1; Jun 5 - 1; **30** - May 9: **F:** Jul 13 - 1; Aug 27 -1; **2** - Jul 14
Pileated Woodpecker: S: Apr 20 - 1; Jun 11 - 1; **2** - Apr 25 & 28: **F:** Aug 20 - 1; Oct 4- 1; **2** - Sep 15 & 16
Western Wood-Pewee: S: Jun 2 - **1**; Jun 10 - **1**; **1** - 4 dates: **F:** Jul 13 - **1**; Aug 9 - **1**; **1** - 5 dates
Yellow-bellied Flycatcher: F: Aug 16 - **1**
Least Flycatcher: S: May 15 - 1; Jun 11 - 2; **21** - May 21: **F:** Jul 13 - 3; Sep 25 - 1; **10** - Aug 6 & 8
Alder Flycatcher: S: May 20 - 1; Jun 11 - 5; **8** - Jun 9 & 10: **F:** Jul 13 - 2; Sep 8 - 1; **10** - Aug 2
Eastern Phoebe: S: Apr 27 - 1; Jun 11 - 2; **4** - several dates: **F:** Jul 15 - 1; Aug 30 - 1; **3 -** Jul 16 & 18
Say's Phoebe: S: May 6 - 1; May 15 - **2**; **2** - 3 dates; **F:** Aug 19 - **1**
Eastern Kingbird: S: May 29 - 2; Jun 9 - 2; **5** - Jun 1: **F:** Aug 12 - **2**; Aug 29 - 1; **2** - Aug 12 & 15
Northern Shrike: F: Sep 24 - **1**
Blue-headed Vireo: S: May 23 - 1; May 30 - 1; **2** - May 24: **F:** Jul 19 - 1; Aug 25 - **2**
Warbling Vireo: S: Jun 10 - **1**; only spring record: **F:** Jul 18 - 3; Aug 25 - **3**
Philadelphia Vireo: S: May 29 - **1**; Jun 4 - **1**; **1** - only 2 dates: **F:** Jul 16 - 1; Sep 10 - 1; **4** - Aug 25
Red-eyed Vireo: S: May 29 - 2; Jun 11 - 4; **6** - Jun 10: **F:** Jul 13 - 1; Sep 12 - 1; **7** - Jul 18
Blue Jay: S: Apr 27 - 1; Jun 2 - 1; **6** - May 15: **F:** Jul 29 - 1; Oct 4 - 1; **5** - Sep 9
Gray Jay: S: May 20 - 1; Jun 10 - **2**; **2** - Jun 9 & 10
American Magpie: S: Apr 19 - **3**; Jun 11 - 2: **F:** Aug 27 - 1; Oct 4 - 3; **11** - Sep 28
American Crow: S: Apr 19 - 1; Jun 11 - 3; **25** - May 12: **F:** Jul 14 - 4; Sep 29 - 2; **58** - Sep 14
Common Raven: S: Apr 19 - 2; Jun 11 - 2; **6** - Apr 21, 22, & 27: **F:** Jul 13 - 2; Oct 4 - 3; **20** - Sep 29
Tree Swallow: S: Apr 21 - 1; Jun 10 - 1; **32** - May 22: **F:** Jul 13 - **1**; Jul 20 - **1**; **1** - 3 dates
Bank Swallow: S: May 20 - 34; Jun 4 - 2; **467** - May 30: **F:** Jul 16 - 3; Aug 29 - 1; **34** - Aug - 4
Cliff Swallow: S: May 22 - 1; May 31 - **3**
Barn Swallow: S: May 19 - 1; Jun 11 - 2; **4** - May 21: **F:** Jul 17 - 1; Sep 5 - 1; **2** - 4 dates
Black-capped Chickadee: S: Apr 19 - **6**; Jun 11 - 1; **6** - 3 dates: **F:** Jul 13 - 1; Oct 4 - 5; **113** - Sep 14
Boreal Chickadee: F: Jul 16 - **1**; Sep 24 - **1**; **1** - 7 dates
Red-breasted Nuthatch: S: May 10 - 1; Jun 9 - 1; **2** - May 15: **F:** Jul 13 - 1; Oct 1 -1; **3** - Sep 15
White-breasted Nuthatch: S: Apr 26 - **1**
House Wren: S: May 27 - **1**: **F:** Jul 13 -**1**; Aug 25 - **1**; **1** - 4 dates
Winter Wren: S: May 7 - **1**; Jun 10 - **1**; **1** - several dates: **F:** Jul 18 - 1; Jul 27 - 1; **2** - Jul 19
Golden-crowned Kinglet: F: Aug 24 - 1; Oct 4 - 2; **4** - Sep 29
Ruby-crowned Kinglet: S: Apr 20 - 1; Jun 11 - 1; **5** - May 5: **F:** Jul 14 - 1; Oct 1 - 1; **19** - Sep 22
Gray-cheeked Thrush: S: May 15 - 1; Jun 2- 1; **2** - May 22, 24, & 25
Swainson's Thrush: S: May 11 - 1; Jun 11 - 1; **25** - May 23: **F:** Jul 18 - 1; Sep 26 - 1; **11** - Aug 16

Hermit Thrush: S: May 2 - **2**; Jun 5 - 1; **2** - May 2 & 16: **F:** Jul 17 - 1; Oct 4 - 2; **8** - Sep 30
Townsend's Solitaire: S: Apr 21 - **2**
European Starling: S: Apr 21 - **5**; Jun 4 - 1
Gray Catbird: S: Jun 2 - **1**
American Pipit: S: Apr 21 - 43; May 31 - 1; **58** - Apr 22: **F:** Aug 26 - 3; Oct 1 - 1; **39** - Sep 4
Bohemian Waxwing: S: Apr 21 - **1**
Cedar Waxwing: S: May 29 - 10; Jun 11 - 8; **69** - Jun 2: **F:** Jul 13 - 7; Oct 4 - 1; **155** - Sep 6
Tennessee Warbler: S: May 14 - 1; Jun 11 - 5; **45** - May 22: **F:** Jul 13 - 1; Sep 10 - 1; **408** - Aug 18
Orange-crowned Warbler: S: May 7 - 1; Jun 4 - 1; **7** - May 20: **F:** Aug 18 - 1; Oct 3 - 1: **9** - Sep 6 & 28
Yellow Warbler: S: May 15 - 3; Jun 11 - 2; **14** - May 29: **F:** Jul 13 - 6; Sep 6 - 1; **46** - Jul 23
Chestnut-sided Warbler: F: August 24 - **1**
Magnolia Warbler: S: May 20 - 1; Jun 11 - 2; **5** - Jun 2: **Ju**l 14 - 2; Sep 6 - 1; **13** - Aug 25
Yellow-rumped Warbler: S: Apr 20 - 1; Jun 11 - 2; **627** - May 24: **F:** Jul 13 - 2; Oct 1 - 2; **4540** - Aug 25
Black-throated Green Warbler: S: May 25 - **1**; Jun 2 - **1**; **1** - 5 dates: **F:** Aug 3 - 1; Aug 28 - 1; **2** - Aug 9 & 25
Palm Warbler: S: May 11 - 1; May 29 - 2; **3** - May 22: **F:** Aug 7 - 1; Sep 30 - **6**
Bay-breasted Warbler: F: Aug 4 - 1; Aug 28 - **2**
Blackpoll Warbler: S: May 7 - **1**; Jun 2 - **1**; **1** - eight dates: **F:** Aug 4 - 1; Sep 28 - 1; **5** - Aug 28
Black-and-white Warbler: S: May 9 - 1; Jun 11 - 1; **10** - May 22: **F:** Jul 14 - 5; Sep 2 - 1; **10** - Aug 7
American Redstart: S: May 23 - 1; Jun 11 - 5; **57** - May 29: **F:** Jul 13 - 6; Sep 11 - 1; **41** - Aug 7
Ovenbird: S: May 21 - 2; Jun 11 - 2; **6** - Jun 2: **F:** Jul 13 - 1; Sep 14 - 1; **11** - Aug 16
Northern Waterthrush: S: May 16 - 2; Jun 1 - 1; **4** - May 22: **F:** Jul 21 - 1; Sep 5 - 1; **2** - 5 dates
Connecticut Warbler: S: Jun 3 - **1**; Jun 4 - **1**: **F:** Aug 13 - 1; Aug 25 - **2**
Mourning Warbler: S: Jun 2 - 2; Jun 11 - **4**: **F:** Jul 14 - 1; Sep 7 - 3; **5** - Aug 16
Common Yellowthroat: S: May 15 - 1; Jun 11 - 1; **5** - Jun 4: **F:** Jul 13 - 2; Sep 25 - 1; **5** - Aug 24
Wilson's Warbler: S: May 22 - 1; Jun 3 - **4**: **F:** Aug 10 - 1; Oct 1 - 1; **4** - Aug 15 & Sep 6
Canada Warbler: S: May 15 - 1; Jun 11 - 4; **8** - Jun 3 & 4: **F:** Jul 15 - 1; Sep 6 - 1; **9** - Aug 7
Western Tanager: S: May 14 - 1; Jun 10 - 1; **3** - May 22: **F:** Jul 18 - 1; Sep 6 - 1; **9** - Aug 8
American Tree Sparrow: S: Apr 20 - 17; May 12 - 3; **68** - May 9: **F:** Sep 22 - 4; Oct 3 - 5; **16** - Sep 30
Chipping Sparrow: S: May 9 - 2; Jun 11 - 3; **432** - May 29: **F:** Jul 14 - 7; Aug 26 - 1; **17** - Jul 19
Clay-colored Sparrow: S: May 15 - 2; Jun 11 - 3; **14** - May 25: **F:** Jul 13 - 4; Sep 30 - 1; **13** - Aug 3 & 5
Vesper Sparrow: S: May 15 - **1**
Savannah Sparrow: S: Apr 21 - 1; May 31 - 1; **15** - May 2: **F:** Jul 24 - **1**; Sep 13 -**1**; **1** - 6 dates
Le Conte's Sparrow: S: May 20 - **1**: **F:** Aug 25 - **1**
Fox Sparrow: S: May 5 - 1; May 10 - 1; **4** - May 8: **F:** Sep 15 - **1**; Sep 30 - **1**; **1** - 3 dates
Song Sparrow: S: May 2 - 2; Jun 11 - 2; **4** - May 13: **F:** Jul 13 -2; Aug 31 - 1; **8** - Aug3
Lincoln's Sparrow: S: May 2 - 1; Jun 7 - 1; **7** - May 15: **F:** Jul 22 - 1; Sep 30 - **4**; **4** - Aug 25 & Sep 30
Swamp Sparrow: S: May 20 - 1; Jun 2 - **2**: **F:** Jul 24 - 1; Oct 1 - 1; **3** - Sep 30
White-throated Sparrow: S: May 9 - 6; Jun 11 - 4; **26** - May 16 & 18: **F:** Jul 13 - 4; Oct 2 - 4; **12** - Sep 8
White-crowned Sparrow: S: May 2 - 4; May 27 - 3; **15** - May 15: **F:** Aug 25 - 6; Oct 3 - **7**
Dark-eyed Junco: S: Apr 20 - 11; May 22 - 1; **72** - May 5: **F:** Aug 25 - 1; Oct 4 - 1; **25** - Sep 30
Lapland Longspur: S: Apr 21 - 1; May 13 - 1; **9** - May 2: **F:** Aug 28 - 1; Oct 4 - 2; **20** - Sep 12
Snow Bunting: S: Apr 21 - 2; May 1 - 2; **6** - Apr 25 & 26: **F:** Aug 25 - **1**
Rose-breasted Grosbeak: S: May 15 - 3; Jun 5 - 2; **8** - May 18: **F:** Jul 18 - 2; Aug 26 - 1; **11** - Aug 7
Red-winged Blackbird: S: May 1 - 8; Jun 11 - 2; **699** - May 15: **F:** Sep 26 - 41; Sep 15 - 2; **73** - Aug 7 & 8
Yellow-headed Blackbird: S: May 11 - 1; Jun 2 - **11**
Rusty Blackbird: S: May 2 - 28; May 10 - 13; **74** - May 3: **F:** Sep 26 - **41**; Oct 4 - 2
Brewer's Blackbird: S: May 20 - **8**: **F:** Aug 2 - **12**
Common Grackle: S: Apr 22 - 3; May 26 - 2; **67** - May 9: **F:** Aug 4 - 1; Sep 16 - 7; **14** - Aug 25
Brown-headed Cowbird: S: May 13 - 3; Jun 9 - 2; **42** - May 25
Baltimore Oriole: S: May 18 - 1; Jun 10 - 1; **4** - May 30: **F:** Jul 22 - 1; Jul 23 - **2**
Purple Finch: S: Apr 20 - 1; May 21 - 1; **9** - May 9: **F:** Jul 21 - 1; Sep 22 - 1; **4** - Aug 7 & 25

White-winged Crossbill: **S:** Apr 27 - **1**: **F:** Jul 13 - **6**; Aug 25 - 4; **6** - Jul 13 & 22
Common Redpoll: **S:** Apr 19 - 2; May 10 - 14; **501** - Apr 24
Pine Siskin: **S:** Apr 27 - 2; Jun 10 - 1; **159** - May 4: **F:** Jul 13 - 2; Oct 4 - 6; **133** - Aug 21
American Goldfinch: **S:** Jun 3 - 1; Jun 10 - **3**; **3** - Jun 8 & 10: **F:** Jul 15 - **1**; Aug 20 - **1**; **1** - 5 dates
Evening Grosbeak: **S:** Apr 20 - 1; May 25 - 5; **16** - Apr 21: **F:** Jul 16 - 2; Oct 1 - 1; **8** - Aug 28

APPENDIX II. LSLBO 2002 banding totals.

Species	Spring Migration	MAPS	Fall Migration	Total
Yellow-rumped Warbler	44	17	1270	1331
Tennessee Warbler	83	34	715	832
American Redstart	63	28	242	333
Yellow Warbler	23	4	169	196
Swainson's Thrush	93	11	89	193
Ovenbird	19	19	103	141
Least Flycatcher	72	15	50	137
White-throated Sparrow	68	16	49	133
Black-and-White Warbler	28		71	99
Canada Warbler	24	9	61	94
Alder Flycatcher	42	1	42	85
Black-capped Chickadee	6	7	56	69
Clay-colored Sparrow	36		30	66
Magnolia Warbler	10	5	45	60
Slate-colored Junco	25		34	59
Chipping Sparrow	39	5	14	58
Hermit Thrush	4	2	46	52
American Tree Sparrow	14		33	47

Orange-crowned Warbler	18		29	47
Mourning Warbler	13	2	29	44
Gambel's White-crowned Sparrow	10		25	35
Ruby-crowned Kinglet	9		23	32
American Robin	13	2	16	31
Blackpoll Warbler	6		24	30
Western Palm Warbler	7		20	27
Rose-breasted Grosbeak	6	2	17	25
Lincoln's Sparrow	12		13	25
Wilson's Warbler	8		15	23
Red-eyed Vireo	3		18	21
Common Yellowthroat	12		9	21
Northern Waterthrush	8		11	19
Sharp-shinned Hawk	5		13	18
Eastern Phoebe	12		4	16
Western Tanager	1	1	11	13
Song Sparrow	7		6	13
Cape May Warbler			11	11
Cedar Waxwing			11	11
Golden-crowned Kinglet			11	11
Philadephia Vireo			10	10
Black-throated Green Warbler		1	8	9
Swamp Sparrow	2		5	7
Savannah Sparrow	4		3	7
Yellow-bellied Sapsucker	1	4	1	6
Gray-cheeked Thrush	6			6
Purple Finch		1	4	5
Fox Sparrow	2		3	5
Bay-breasted Warbler			4	4
Downy Woodpecker			4	4
Connecticut Warbler	1		3	4
Pine Siskin			3	3
Blue-headed Vireo	1		2	3
Red-breasted Nuthatch		1	2	3
Hairy Woodpecker			2	2
Warbling Vireo			2	2
Blue Jay	1		1	2
Unidentified Dark-eyed Junco	1		1	2
White-crowned Sparrow	2			2
Boreal Chickadee			1	1
Northern Pygmy-Owl			1	1
Yellow-bellied Flycatcher			1	1
Gray Catbird	1			1
House Wren	1			1
Oregon Junco	1			1
Winter Wen		1		1
Total	867	188	3496	4551