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The Canadian Breeding Bird Survey, 1967–2000

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Introduction

The North American Breeding Bird Survey (BBS) is a large-scale survey initiated in 1966 to monitor the status and trends of breeding bird populations across North America. It is a cooperative effort among skilled amateur and professional ornithologists, jointly coordinated by the U.S. Geological Survey's (USGS) Patuxent Wildlife Research Center and the Canadian Wildlife Service's (CWS) National Wildlife Research Centre (NWRC). Starting in Maryland and Delaware, the BBS quickly spread throughout the continental United States and Canada, including Alaska, Yukon, and a few places in the Northwest Territories and Nunavut. It has provided more than 30 years of data on abundance, distribution, and population trends for more than 400 bird species, including most landbirds and some noncolonial waterbirds and shorebirds.

Efforts to make the BBS a truly continental monitoring program continue. In 1993, a three-year pilot project was initiated, investigating the feasibility of expanding the BBS into Mexico. Although the results were promising, a permanent partnership with Mexico has still to be established. The BBS program has expanded to the Caribbean, where, in 1997, the first modified BBS routes were surveyed on the island of Puerto Rico. Efforts continue to increase BBS coverage in northern Canada.

This Progress Note presents population trends from 1967 to 2000 for the 256 species of birds recorded on BBS routes in Canada for which sample sizes are sufficient for analysis. Results are also available on the CWS website (http://www.cws-scf.ec.gc.ca/birds/trends/disclaimer_e.cfm), including provincial trends and annual indices of population trends not reported here. Results of North American analyses are available on the USGS Patuxent Wildlife Research Center BBS website (<http://www.mp2-pwrc.usgs.gov/bbs/>). Raw data can be downloaded directly from the USGS Patuxent Wildlife Research Center BBS website or are available from the first author upon request.

Methods

Data collection

The BBS consists of routes established along roadsides that are surveyed annually by skilled volunteers and professional biologists. In Canada, the acceptable dates for running a BBS route are between 28 May and 7 July, although partici-

pants are encouraged to run their routes after 1 June or, for the boreal regions, after 5 June. Each route is 39.4 km long, with three-minute point counts conducted at 0.8-km intervals, for a total of 50 point count stops. All birds heard or seen within a 0.4-km radius of each stop are recorded. These surveys begin 30 minutes before sunrise and normally require 4–5 hours for completion. Sky condition, wind speed, and temperature are also recorded at the beginning and end of each survey, and traffic conditions are recorded throughout. Routes are located along all-weather secondary roads. The starting point and starting direction of routes are selected randomly in order to sample a range of habitats representative of the region.

Because the BBS is designed to monitor long-term changes in bird populations, the path of a route is changed only if the road system has been altered, traffic has increased to the point that noise interferes with bird identification and detection, or traffic creates conditions under which it is dangerous for a participant to stop a car. Participants are encouraged to run their routes for as many consecutive years as possible in order to reduce the effects of observer variability on data analysis (Collins and Wendt 1989; Sauer et al. 1994).

Canadian participants submit data forms to the NWRC for data entry or enter the data themselves over the Internet. Most data submitted to NWRC are forwarded to the USGS Patuxent Wildlife Research Center, where they are electronically scanned into the database. Forms that are illegible to the scanner are entered manually at NWRC. All BBS data are stored in the North American BBS database housed at the USGS Patuxent Wildlife Research Center. Original data sheets for Canada from 1991 to the present are stored at NWRC, while those for earlier years are stored at the USGS Patuxent Wildlife Research Center.

Data analysis

Several factors, in addition to changes in bird populations, contribute to variation within BBS data; these include changes in weather, date of the survey, starting and finishing time, and differences among observers. To help control these sources of variation, data are screened to determine which surveys should be included in analyses and how they should be subdivided. Individual routes that were run under similar conditions are grouped into "subroutes" for analytical purposes. The matching conditions used to define a subroute are that all surveys within the subroute must have been run by the same observer and were done within a date span of 19 or fewer days.

A particular year's survey is excluded from analysis if any of the following proves true:

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- 1) winds are of force 4 (Beaufort scale) at both the beginning and end or force 5 at either point;
- 2) rain is combined with winds equal to force 4 or greater, except on the Prairies (where high winds are frequent), where surveys are excluded only if winds are force 5 at the beginning and end of a route;
- 3) the survey was outside the allowable dates (28 May through 7 July);
- 4) the survey started more than one hour after the prescribed time or finished after 11:00 a.m. (local time).

Analyses for a particular species include only those routes for which the species was recorded at least twice within at least one subroute. An analysis is run only if there are 15 or more routes recording the species in all years and a total of at least 40 individuals was recorded (across all years).

Trend estimates were calculated for various periods at a variety of spatial scales and both for individual species (Appendix 1) and for birds grouped according to habitat use (grassland, woodland, scrub/successional, urban, and wetland) and migration patterns (Neotropical migrants, temperate migrants, and residents) (Table 1). Trends for individual species were calculated for the full period of the survey and for each of the last three decades. However, the BBS was not established in all areas at the same time, so the initial year for the full period of the survey varies among regions. Trends for these time periods were calculated for Canada as a whole and for each of 10 biogeographic areas, known as Bird Conservation Regions (BCRs) (Fig. 1), for which there were sufficient data (i.e., excluding Arctic Plains and Mountains and Taiga Shield and Hudson Plains). There are 12 BCRs in Canada, many of which cross international borders. If a BCR boundary overlaps the U.S. border, the trend is presented only for the Canadian portion of the BCR.

In previous years, we used Canadian ecozones as the geographic unit for analysis. However, in 1998, the North American Bird Conservation Initiative adopted the use of BCRs in order to develop a consistent spatial framework for bird conservation for North America (for more information, see the North American Bird Conservation Initiative website <http://www.bsc-eoc.org/nabci.html>). The new BCRs in Canada are similar, but not identical, to the ecozones used previously. The United States had previously used units called Geophysical Strata. With the adoption of BCRs as an analysis unit, both countries, as well as Mexico, will be using the same system of ecological zoning, and data analyses should become more comparable.

Analytical method

The BBS trends for a region are a weighted average of the trend estimates for individual routes. The current analysis assumes that each route has an exponential trend over the period being studied. The trends for each route are estimated through maximum likelihood, assuming that the trend is linear in the log scale and the underlying counts have a Poisson distribution (Link and Sauer 1994). The model incorporates partitioning of the observations into blocks of routes

measured under similar conditions (subroutes), as described above.

To combine the trends for individual routes into a regional trend, the routes are weighted by a factor that incorporates both the precision of the local trend estimate and the local population density (which is a product of two subfactors: area and local population level), as detailed below:

- 1) BBS routes are established within “degree blocks” of one degree of latitude and longitude, which form the basic sampling unit for the BBS. Although efforts are made to establish routes in an even pattern across the country, the distribution of the routes that are run by volunteers is uneven, with distinct concentrations of routes near major population centres (Fig. 1). Area weighting is used to reduce this potential bias. Each degree block is given an area value of 1, except that the value is reduced according to the proportion of a block occupied by major water bodies. The weight given to each route in the degree block is equal to the total area of the block divided by the number of routes in it. The justification for assigning an area weight to a route is based on the assumption that the population trends are representative of the habitat within a degree block. However, because the BBS is a roadside survey, some habitat types (e.g., interior forest) may be underrepresented. The area weighting described here differs from that used by the USGS Patuxent Wildlife Research Center, which uses a biogeographic stratum as the basic sampling block. Routes are assigned an area weight equal to the area of the biogeographic region within which the route is found, divided by the number of routes in the same stratum. This method is effective in the 48 contiguous states, where a higher human population density and more extensive road network make it possible to achieve a more even distribution of routes. In addition, the BCRs and states used for the summary of the data are generally much smaller than the BCRs and provinces used for summarizing data within Canada. The degree block weighting scheme is more appropriate for the analysis of the BBS in Canada.
- 2) The population density weighting factor adjusts for differences in the number of individual birds detected on a route. The use of such a weighting factor is justified by the argument that the BBS should attempt to measure the magnitude of change in the species’ population, and changes in areas with higher density will have more impact on overall population size than changes in areas with lower densities. Hence, the local population density should influence the weight given to a route in calculating overall population trend. The

Table 1Long-term^a mean annual percent change for species grouped according to habitat use^b and migration pattern^c

Geographic area	Habitat group			Migration group				
	Grassland	Woodland	Scrub/ successional	Urban	Wetland	Neotropical	Temperate	Resident
Canada^a	-1.8 *	0.0	-0.2	-0.8 *	0.0	-0.4 *	-0.6 *	-0.2
Bird Conservation Region^a								
Northwestern Interior Forest	-19.9 *	-6.4	-6.6 +	-4.9	-5.3	-6.9 *	-5.7 +	-11.0
Northern Pacific Rainforest	-3.8 *	-1.0	-0.9	-2.1 +	1.3	-0.9 +	-2.0 *	-0.6
Boreal Taiga Plains	-1.5 *	1.2 *	-0.6	-1.2	-0.4	-0.8	-0.7	-0.8
Boreal Softwood Shield	-5.1	0.7	-0.2	0.0	1.9	-0.3	0.1	2.6
Great Basin	-2.2 *	-1.1 +	-1.0	-0.6	3.3	-1.4 *	-0.5	1.1
Northern Rockies	1.5	-0.3	1.3 *	-0.9	1.2	-0.3	-0.4	1.0
Prairie Potholes	-1.7 *	1.1	0.4	0.1	0.2	0.3	-0.7 *	-0.4
Boreal Hardwood Transition	-2.5 *	-0.1	-1.1 *	-0.3	0.0	-0.8 *	-0.7 *	2.1 +
Lower Great Lakes/St. Lawrence Plain	-1.8 *	1.4	0.3	-0.8	0.0	-0.5	-0.4	-0.7
Atlantic Northern Forest	-2.1 *	-0.3	-1.0	-0.8	-1.3 +	-0.8 *	-0.7 *	0.0

^a Trends are calculated for the period 1969–2000, except for Canada and the Atlantic Northern Forest BCR (1967–2000) and for the Northwestern Interior Forest BCR (1986–2000).

^b Species are assigned to groups based on habitat use and migration pattern according to Peterjohn and Sauer (1993). A few additional species not covered by that paper were classified by the authors (Appendix 2).

^c Statistical significance: * indicates $P < 0.05$; “+” indicates $0.10 \leq P < 0.05$. No symbol indicates a nonsignificant trend.

weighting factor used to represent density is the average count on the route.

It can be argued that density weighting is not appropriate, because the reported counts are a good measure of local population density only if the areas sampled by all routes are identical. However, routes pass through different habitats, and the distance at which birds can be detected will vary among habitats as well as among observers. In the absence of a reliable index of local density, routes could perhaps be given equal weight. Although this weakness is acknowledged, we nonetheless believe that the density weighting adopted provides a more accurate measure of trend than no density weighting at all.

- 3) A slope precision factor is used to adjust for differences in the precision of the regression line. The precision of the estimate of slope depends on the number and spacing of the annual surveys done on each route. Routes with more precise estimates, generally those with a longer run of years, are given more weight.

The Canadian BBS analysis program developed by CWS is written in C++ and is available for distribution (from the second author upon request) to individuals interested in running their own analyses. The program includes options to customize the analysis by changing the data screening, matching, and weighting procedures. Documentation for the program includes a more detailed description of the analytical techniques and calculation of weighting factors.

Results

BBS coverage in Canada has grown steadily since the late 1980s, although the number of participants fluctuates annually. Coverage peaked in 2000, with 482 routes (Fig. 2) conducted by some 324 volunteers.

Long-term Canada-wide results (34 years from 1967 to 2000) were calculated for 256 species (Appendix 1). Starting years for BCR trends are later if data were insufficient for trend calculation in early years of the survey. Results with $P \# 0.10$ are considered statistically significant.

The ratio of increasing (48%) to decreasing (50%) species (Canada-wide) was close to that expected by chance (Table 2). However, approximately two-thirds of these species had nonsignificant trends, meaning that the results cannot be reliably distinguished from no change at all. Of the 86 species with statistically significant trends, more species were decreasing than increasing (62% vs. 38%, respectively; $P < 0.05$). Significantly decreasing species outnumbered significantly increasing species in six of the nine individual BCRs (excluding Northwestern Interior Forest, where only one species showed a significant trend). The Northern Rockies and Prairie Potholes had exactly 50% increasing and 50% decreasing, while only the Lower Great Lakes/St. Lawrence Plain had slightly more increasing (54%) than decreasing (46%) species.

Canada-wide, during the last decade (1991–2000), 59% of all species with significant results ($P \# 0.10$) showed decreasing trends (Table 3). At the BCR level, 9 of the 10 BCRs had more than 50% of all species showing decreasing trends. However, Northwestern Interior Forest, Northern Pacific Rainforest, and Boreal Softwood Shield had few species with significant change, so overall percentages are easily skewed by a few species. Only the Prairie Potholes had

Figure 1

Map of Bird Conservation Regions in Canada, showing all available BBS routes and indicating those routes that were run between 1967 and 2000

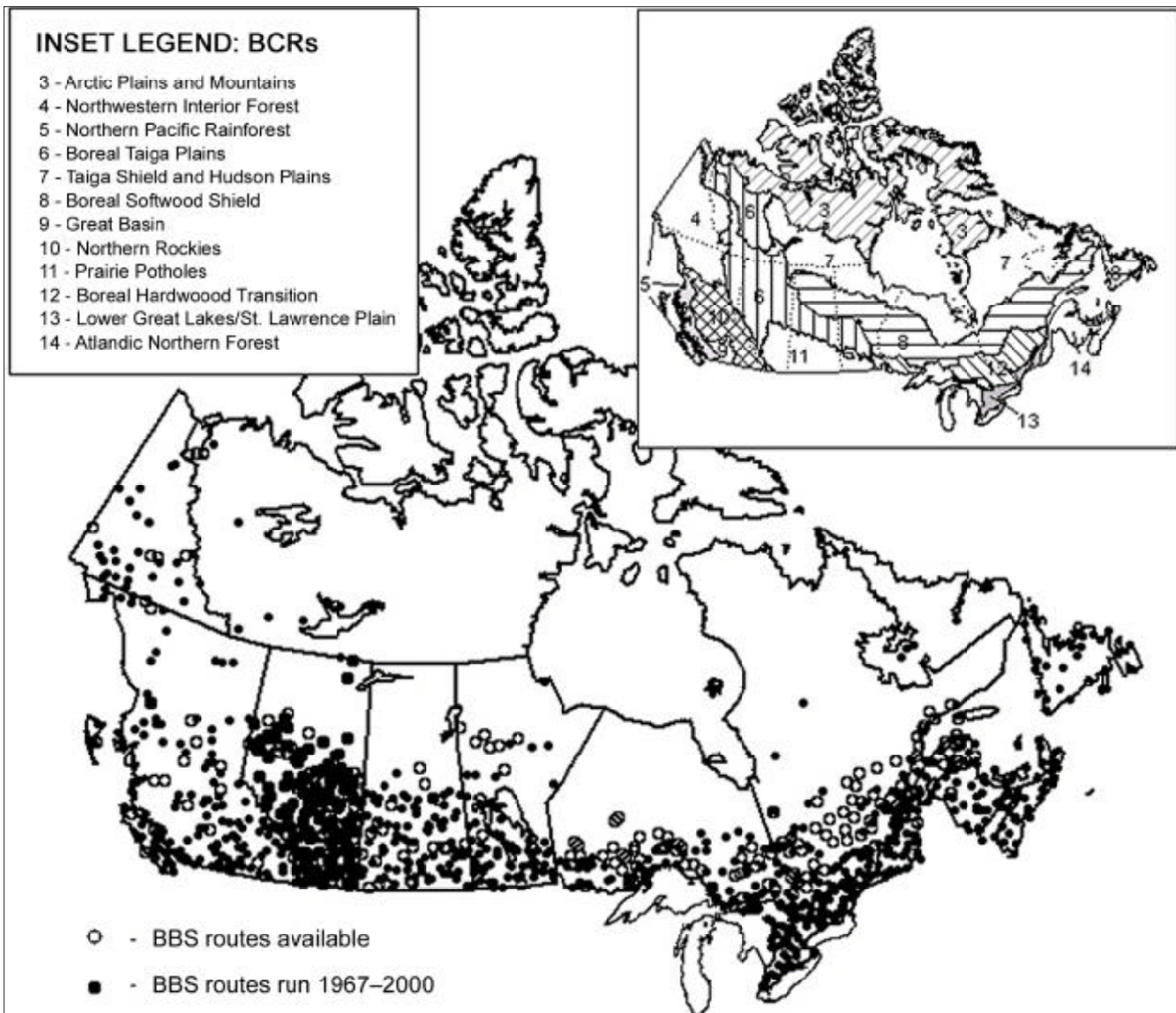
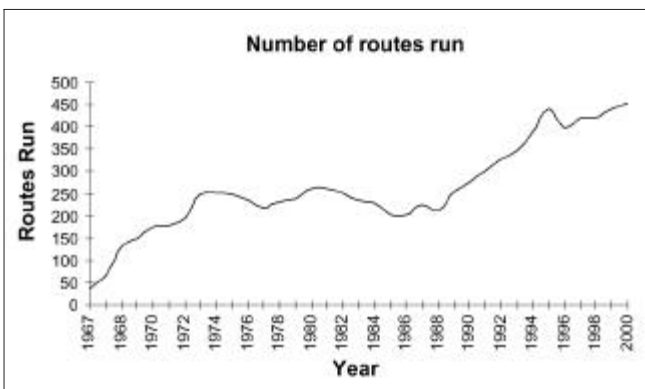


Figure 2

Number of BBS routes conducted in Canada, 1967–2000



more species increasing than decreasing, with 15 of the 25 species showing a positive trend. However, with the exception of the Savannah Sparrow, all the grassland species (seven) in the Prairie Potholes showed declining trends.

Species with significant declines over the entire survey period (1967–2000) are shown in Table 4, grouped according to the persistence of decline over the last three decades. Table 5 shows the same results for species with significantly positive long-term trends. Twenty-one species showed consistent decline in all three decades, while only nine species showed consistently positive trends.

Canada-wide, long-term trends for birds grouped by habitat use and migration patterns over the entire period of the study show significant declines in grassland, urban, Neotropical, and temperate groups (Table 1). Most grassland and urban birds are temperate migrants. There were no groups with significantly positive long-term trends. The trends in

Table 2

Percentage of long-term trends^a that are positive or negative for all species grouped geographically (for Canada and by Bird Conservation Region) and, for Canada only, by migratory status and habitat group

Group	All trends		No. of species	Significant trends only ^b		
	Positive (%)	Negative (%)		Positive (%)	Negative (%)	No. of species
Canada	48	50	256	38	62	86
Bird Conservation Region^a						
Northwestern Interior Forest	58	38	26	100	0	1
Northern Pacific Rainforest	37	60	65	19	81	16
Boreal Taiga Plains	53	47	125	41	59	27
Boreal Softwood Shield	48	52	82	33	67	18
Great Basin	38	61	74	14	86	14
Northern Rockies	47	52	89	50	50	14
Prairie Potholes	52	47	122	50	50	42
Boreal Hardwood Transition	40	59	122	34	66	44
Lower Great Lakes/St. Lawrence Plain	45	54	110	54	46	35
Atlantic Northern Forest	44	55	119	38	62	39
Migratory status (Canada)						
Neotropical	44	53	91	35	65	34
Temperate	46	53	77	39	61	31
Resident	57	43	28	50	50	8
Habitat group (Canada)						
Grassland	19	81	21	9	91	11
Woodland	51	47	90	48	52	29
Scrub/successional	39	58	33	29	71	7
Urban	58	42	12	50	50	10
Wetland	62	38	55	50	50	12

^a Trends are calculated for the period 1969–2000, except for Canada and the Atlantic Northern Forest BCR (1967–2000) and for the Northwestern Interior Forest BCR (1986–2000). Species with trend = 0.0 were not included in the calculation of the percentage of species increasing or decreasing. Therefore, in regions where these species occurred, the percentages will not add up to 100.

^b Using significance level of $P \leq 0.10$.

grassland birds were fairly consistent regionally, with 8 of the 10 BCRs showing significant declines. Only the Boreal Softwood Shield and Northern Rockies, both of which have few grassland species, showed no significant trends. Regional trends for urban birds were all nonsignificant except in the Northern Pacific Rainforest. Neotropical migrants showed significant declines in 4 of the 10 BCRs; there were no BCRs that showed a significantly positive trend for this group. Similarly, temperate migrants declined significantly in five BCRs, and there were no BCRs that showed a significantly positive trend. Scrub/successional and woodland had nonsignificant Canada-wide trends. Regional trends varied for these groups. Woodland birds significantly increased in the Boreal Taiga Plains and decreased in the Great Basin. Other BCRs had nonsignificant trends. Scrub/successional birds significantly decreased in the Northwestern Interior Forest, Boreal Hardwood Transition, and Atlantic Northern Forest, but increased in the Northern Rockies. Wetland birds showed no significant trends Canada-wide or in 9 of the 10 BCRs but decreased significantly

in the Atlantic Northern Forest. Similarly, resident birds showed a significant result only in the Boreal Hardwood Transition, where they increased significantly.

Percentages of individual species in each group for the Canada-wide analysis that had positive or negative trends are shown in Table 2. Urban birds had 50% of species significantly increasing and decreasing (Table 2), although the Canada-wide trend was significantly negative (Table 1). Both the abundance and the magnitude of trends of individual species influence the overall group trend; the occurrence of abundant urban species with negative trends (e.g., European Starling) or those with a large negative trend (e.g., Chimney Swift) strongly influence the overall trend. Wetland and resident groups had as many species increasing as decreasing (Table 2), and the Canada-wide trends (Table 1) were not significant in either group. All other groups had higher percentages of decreasing species than increasing.

Population trends for wetland birds improved in the most recent decade, with 80% of species increasing (Table 3) compared with only 50% over the long term (Table 2).

Table 3

Percentage of trends^a between 1991 and 2000 that are positive or negative for all species grouped by migratory status and habitat group

	All trends		No. of species	Significant trends only ^b		No. of species
	Positive (%)	Negative (%)		Positive (%)	Negative (%)	
Canada						
Bird Conservation Region^a						
Northwestern Interior Forest	5	95	22	0	100	10
Northern Pacific Rainforest	22	76	41	36	64	11
Boreal Taiga Plains	47	52	109	40	60	35
Boreal Softwood Shield	45	55	38	29	71	7
Great Basin	32	66	53	14	86	14
Northern Rockies	45	54	74	36	64	14
Prairie Potholes	55	45	109	60	40	25
Boreal Hardwood Transition	50	49	109	39	61	31
Lower Great Lakes/St. Lawrence Plain	42	58	97	44	56	32
Atlantic Northern Forest	48	51	100	37	63	30
Migratory status (Canada)						
Neotropical	35	64	83	13	87	30
Temperate	40	60	73	36	64	22
Resident	35	65	23	83	17	6
Habitat group (Canada)						
Grassland	20	80	20	12	88	8
Woodland	48	51	79	32	68	25
Scrub/successional	39	61	31	27	73	11
Urban	55	45	11	100	0	3
Wetland	67	33	54	80	20	15

^a Trends are calculated for the period 1969–2000, except for Canada and the Atlantic Northern Forest BCR (1967–2000) and for the Northwestern Interior Forest BCR (1986–2000). Species with trend = 0.0 were not included in the calculation of the percentage of species increasing or decreasing. Therefore, in regions where these species occurred, the percentages will not add up to 100.

^b Using significance level of $P \leq 0.10$.

Resident and urban groups also showed higher percentages of species decreasing than increasing; however, the number of species with significant trends was small (six species in resident group and three in urban). The strong long-term decline in grassland birds continued in the last decade, with 88% of species with significant results showing a decrease. Temperate, Neotropical, woodland, and scrub/successional groups showed a similar or higher percentage of decreasing species during the most recent decade relative to the long-term trends.

Discussion

The overall Canada-wide percentages of species increasing and decreasing are fairly consistent with earlier reports (Dunn et al. 2000), with the exception of the higher percentages of increasing wetland species in this report. In this report, grassland birds showed the strongest overall declines of all groups, both Canada-wide (-1.8 , $P \leq 0.10$) and in most BCRs, consistent with earlier reports from Canada (Downes and Collins 1996) and the United States (Pardieck and Sauer 2000). Dunn et al. (2000) combined grassland and

scrub/successional birds into one category, “open-country birds,” so their results are not directly comparable with the separate analyses for these two groups presented here. However, their combined category showed a significant decline in population.

In most species with statistically significant national trends, the trends in each BCR were similar to the national trends, with a few notable exceptions (Appendix 1). Among nationally decreasing species, the Western Meadowlark increased in the Northern Rockies, and both the Veery and Chipping Sparrow increased in Boreal Softwood Shield. The Red-tailed Hawk increased nationally but decreased in Lower Great Lakes/St. Lawrence Plain, consistent with results in Dunn et al. (2000).

Most species that show significant long-term Canada-wide declines in population in this report were also showing these declines in earlier analyses (Dunn et al. 2000). Several species with previously nonsignificant long-term negative trends (Dunn et al. 2000) have continued to decline and now show significant long-term declines; these include Field Sparrow, Swainson’s Thrush, and Sprague’s Pipit. Conversely, other species that had been declining signifi-

Table 4

Species with significant declines over the entire survey period, showing trends in each of the most recent three decades (sample size allowing)

Species	Decade trends							
	1967–2000		1971–1980		1981–1990		1991–2000	
	Trend	P ^a	Trend	P	Trend	P	Trend	P
Consistently negative								
Northern Harrier	-4.6	*	-0.9		-7.1	*	-2.9	
Lesser Yellowlegs	-7.2	*	-3.4		-15.3	*	-6.8	
Herring Gull	-1.9	+	-4.4		-4.4		-11.7	
Common Nighthawk	-7.4	*	-3.0		-4.2		-10.8	
Chimney Swift	-7.0	*	-6.8		-4.7		-7.5	
Olive-sided Flycatcher	-3.3	*	-3.8		-0.1		-3.2	+
Eastern Wood-Pewee	-3.3	+	-5.0		-3.8		-5.5	*
Veery	-1.5	*	-0.4		-1.1	+	-2.1	*
European Starling	-2.1	*	-1.9		-2.3		-0.9	
Sprague's Pipit	-3.5	*	-0.1		-5.9		-1.3	
Chestnut-sided Warbler	-1.6	*	-1.6		-1.1		-3.2	*
Canada Warbler	-6.2	+	-0.8		-3.8		-2.4	
Chipping Sparrow	-1.0	*	-0.5		-0.6		-0.4	
Field Sparrow	-5.1	*	-3.9		-1.8		-8.8	*
Eastern Meadowlark	-2.3	*	-2.1		-4.5	*	-1.7	
Western Meadowlark	-1.5	*	-1.7		-0.9		-1.9	+
Rusty Blackbird	-14.7	*	-16.2	+	-11.7		-21.6	
Common Grackle	-1.8	*	-4.6	*	-3.1	+	-0.8	
Brown-headed Cowbird	-2.2	*	-0.3		-3.8	*	-4.3	*
Purple Finch	-4.2	*	-2.1		-2.9		-6.1	*
Pine Siskin	-2.6	*	-3.5		-1.2		-4.9	*
Declining in most recent two decades								
Killdeer	-1.8	*	2.1	+	-4.5	*	-1.6	*
Spotted Sandpiper	-4.0	*	4.3	+	-1.0		-4.0	+
Horned Lark	-3.3	*	1.8		-1.2		-11.1	*
Bank Swallow	-6.3	+	3.8		-0.7		-7.1	*
Barn Swallow	-2.8	*	0.9		-4.1	*	-5.1	*
Swainson's Thrush	-0.5	+	2.3	+	-1.3		-1.2	*
Connecticut Warbler	-8.9	*	2.2		-7.9	+	-6.7	
Chestnut-collared Longspur	-2.0	*	3.5		-5.6		-8.8	*
Bobolink	-2.8	*	2.5	*	-7.4	*	-4.3	*
Red-winged Blackbird	-1.0	*	1.9	+	-3.0	*	-1.2	
Pine Grosbeak	-8.5	*	2.9		-10.0		-14.3	+
Declining in most recent decade								
Black Tern	-4.9	*	-6.5	*	8.4		-7.9	
Western Wood-Pewee	-2.7	*	-0.7		4.4	*	-4.2	+
Cassin's Vireo	-1.7	+	-2.2		4.7		-5.8	*
Gray Jay	-3.4	*	-3.5		0.2		-7.8	*
Baird's Sparrow	-4.2	*	-4.4		2.9		-9.2	*
Song Sparrow	-0.9	*	-2.8	*	0.3		-0.6	

^a Statistical significance: * indicates $P < 0.05$; "+" indicates $0.10 \geq P > 0.05$.

cantly over the long term (Dunn et al. 2000) now show nonsignificant long-term negative trends, perhaps indicating an increase in numbers; these include Northern Flicker, Least Flycatcher, Great Crested Flycatcher, Eastern Kingbird,

Brown Thrasher, Boreal Chickadee, and Evening Grosbeak. For species that have been split taxonomically in the last few years, the trends in this report cannot be directly compared with those in Dunn et al. (2000). For example, in this report,

Table 5

Species with significant or near-significant increases over the entire survey period, showing trends in each of the most recent three decades (sample size allowing)

	Decade trends							
	1967–2000		1971–1980		1980–1991		1991–2000	
	Trend	P ^a	Trend	P	Trend	P	Trend	P
Consistently positive								
Canada Goose	12.4	*	12.9	+	7.3		9.7	*
Downy Woodpecker	3.4	*	9.8	*	0.8		4.7	*
Warbling Vireo	1.2	*	3.0	+	3.0	*	0.9	
Red-eyed Vireo	1.3	+	1.7		1.9	*	2.2	*
Common Raven	3.6	*	6.2	*	1.0		0.5	
Black-capped Chickadee	3.0	*	1.0		4.6	*	3.7	*
American Robin	0.9	*	0.5		1.3	*	0.8	*
Magnolia Warbler	1.6	*	1.0		1.3		2.7	*
Blackburnian Warbler	2.8	*	4.8		2.0		0.2	
Increasing in most recent two decades								
Ring-necked Duck	3.5	*	-4.0		3.3		3.6	
Ruddy Duck	3.0	+	-1.1		4.7		2.9	
Red-tailed Hawk	2.6	+	-5.1	+	1.4		1.5	
Blue Jay	1.8	*	-1.8		1.2		4.5	*
Cape May Warbler	2.8	+	-9.5		0.4		8.4	+
Western Tanager	1.6	+	-3.3		5.0		2.3	
Increasing in most recent decade								
Broad-winged Hawk	3.9	*	8.7		-6.5		7.2	
Mourning Dove	3.4	*	5.2	*	-0.8		2.6	*
American Crow	0.7	*	0.7		-0.9		3.0	*
Sedge Wren	8.2	*	-9.5	*	-7.4		12.1	*
Marsh Wren	5.7	*	18.7	+	-7.2	+	3.8	
Nashville Warbler	1.2	*	-1.3		-0.7		1.0	
Yellow-rumped Warbler	1.2	*	5.6	*	-0.3		0.5	
Apparent levelling off (negative trend in most recent decade)								
Red-breasted Nuthatch	0.8	+	3.9		10.2	*	-4.8	*
Black-and-white Warbler	2.5	*	0.8		4.5	*	-0.1	

^a Statistical significance: * indicates $P < 0.05$; "+" indicates $0.10 \geq P > 0.05$.

Cassin's Vireo (*Vireo cassinii*) has a significant declining trend, whereas Blue-headed Vireo (*Vireo solitarius*) has a nonsignificant positive trend; in Dunn et al. (2000), these two species were referred to collectively as Solitary Vireo and had a nonsignificant increase, suggesting that the trend had been driven by changes in the eastern population, now called Blue-headed Vireo.

Most species that show significant long-term Canada-wide positive trends in this report were consistent with those reported in Dunn et al. (2000). In some species, the direction of the trend in this analysis remained consistent with earlier analyses, but the earlier positive trend (Dunn et al. 2000) was not statistically significant. These species include Ring-necked Duck, Blue Jay, Western Tanager, Nashville Warbler, and Yellow-rumped Warbler. Others have trends that are still positive but are now nonsignificant, perhaps indicating a levelling off of population; these include

Hermit Thrush, Bald Eagle, American White Pelican, Mew Gull, Yellow Warbler, Common Loon, Lincoln's Sparrow, and Ring-billed Gull. In only one species, Ruddy Duck, did the trend show a change in direction from a nonsignificant negative trend in Dunn et al. (2000) to the current significantly positive trend.

The BBS is the major population monitoring program for landbirds in North America and is the main source of information on population trends for a wide variety of research and conservation purposes. However, there are gaps in BBS data, and analysis of the data is very challenging. Consistent methodology, observer expertise, and use of the same stops each year are necessary to produce comparable data over time. New training tools such as instructional videos and birdsong identification aids have recently been designed for BBS participants in order to improve data quality. Efforts are being made to collect precise geograph-

ical coordinates for each of the 50 stops along all BBS routes. Over the next few years, these coordinates will be indicated on the route maps sent to BBS participants, thus helping to standardize the location of individual stops. The BBS relies on a large sample size (number of routes) in order to average local variations and reduce the effects of sampling error (variation in counts attributable to both sampling technique and real variation in trends). Although participation has increased steadily since the mid-1980s, most routes are still concentrated in the southern part of Canada, and the territories and the northern portions of most provinces are sparsely covered. Efforts are being made to recruit skilled observers in these regions or, if necessary, to develop alternative methods. E.H. Dunn (pers. commun.) has reviewed BBS trends to determine which species are well monitored by the BBS in Canada and in each of the provinces. Such information will help determine the reliability of BBS trends for individual species and guide activities for improving BBS coverage (Downes et al. 2000).

The methods for data analysis for the BBS are the subject of ongoing research. Because of the large number of species and geographic regions, it is necessary to develop analytical techniques that are applicable in a wide variety of situations — i.e., over a wide range of population densities and for both widespread and localized populations. In order to evaluate whether this has been accomplished, diagnostic tools that assess the quality of the data analysis need to be developed. The current analysis program provides estimates of annual indices (available on website http://www.cws-scf.ec.gc.ca/birds/trends/disclaimer_e.cfm), which can be compared with a graph of the trend line to assess whether a single trend provides a suitable description of the population over the entire period. The currently used annual indices are based on residuals from the individual route trend lines and suffer from two problems: 1) they can be negative, and 2) they sometimes appear to deviate substantially from the observed counts. An alternative method of calculating annual indices, based on a two-way ANOVA-type model, is being investigated.

Acknowledgements

We thank the many hundreds of volunteers who have participated in the BBS in Canada throughout the years and those who have served as provincial or territorial coordinators. We thank Christine Eberl for preparing Figure 1.

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Appendix 1

Summary of trends from the Canadian Breeding Bird Survey. "Trend" is the mean annual percent change in bird populations. "N" is the total number of routes used to calculate the trend. The first data column shows trends for the whole period of coverage, while the other columns show trends for the whole period of coverage, while the other columns show trends for each of the last three decades. For the full period of coverage, the first is 1967 for Canada as a whole and for the Atlantic Northern Forest Bird Conservation Region (BCR), but is 1969 for all other BCRs except the Northwestern Interior Forest. Coverage was insufficient for trend calculation in the latter BCR until 1986, so the Northwestern Interior Forest trends are shown only for the most recent decade (1991–2000) and the full period of coverage (1986–2000).

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Common Loon													
Canada		1.7		323	-0.2		120	-2.4		128	0.3		224
Northern Pacific Rainforest		7.2		19									
Boreal Taiga Plains		-0.5		40							0.9		30
Boreal Softwood Shield		-3.5		36	-0.1		16	-7.1		16			
Northern Rockies		1		31							2.2		24
Boreal Hardwood Transition		-0.8		81	-3.2		31	-2.9		38	0.5		64
Lower Great Lakes/St. Lawrence Plain		0.8		24							2.1		19
Atlantic Northern Forest		4.6		60	1.1		34	-8.5		28	3		43
Pied-billed Grebe													
Canada		-2.1		139	-3.3		47	-1		49	4.6		88
Boreal Taiga Plains		2.1		26							15.9	+	18
Prairie Potholes		-0.9		59	-9		26	16.7		21	-0.6		37
Lower Great Lakes/St. Lawrence Plain		-0.9		20									
Horned Grebe													
Canada		-4.5		81	3.7		35	1.3		35	8.1		49
Boreal Taiga Plains		4.8		22							1.9		16
Prairie Potholes		-4.3		50	0.5		30	3		19	13.3	+	29
Red-necked Grebe													
Canada		-1.5		64	1.8		16	-1.2		22	-2.8		51
Boreal Taiga Plains		-4.2		24							-3.7		19
Prairie Potholes		1.4		19									
Eared Grebe													
Canada		5.2		46	9.3		21	3.5		18	4.1		20
Prairie Potholes		5		35	4.6		20				-4.5		18
American White Pelican													
Canada		2.3		34				12.9		15	1		25
Prairie Potholes		-0.5		19									
Double-crested Cormorant													
Canada		5.1		90	-2.2		23	11.8		34	19.5	*	65
Prairie Potholes		-4.8		27							-2.5		17
Atlantic Northern Forest		3.9		36	-1.2		19	15.1	+	20	24.5	*	24
American Bittern													
Canada		-1.1		275	-9.3	*	112	-3.6		105	7.5	*	164
Boreal Taiga Plains		-2.3		30							12.8	*	18
Boreal Softwood Shield		0.2		24									
Prairie Potholes		-3.7		64	-13.3	*	26	-7.8		15	7.9		38
Boreal Hardwood Transition		2.5		55	-6.6		21	6.9		23	5.2		41
Lower Great Lakes/St. Lawrence Plain		3.1		40	-7.6		16	-4.4		16	4		29
Atlantic Northern Forest		-3		53	-14.5	*	27	10.9		23	-9		27
Great Blue Heron													
Canada		1.4		328	-2.3		119	-1.5		136	-4.6		246
Boreal Taiga Plains		-1.7		32							6.3		21
Prairie Potholes		-6	+	52							-11.8		34
Boreal Hardwood Transition		7.3	+	75	-5.1		23	4.2		36	0.6		60
Lower Great Lakes/St. Lawrence Plain		1.4		64	7.8	*	30	-2.3		28	0.2		57
Atlantic Northern Forest		1		61	1		32	-3		23	-14.9		41

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Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Green Heron													
Canada		-1.9		47	7.7		25	-3.9		21	-2.1		22
Lower Great Lakes/St. Lawrence Plain		-3.7		38	6.4		23	-2.7		18	-5.5		18
Black-crowned Night-Heron													
Canada		-6.3	*	33	7.2		16						
Prairie Potholes		-2.7		17									
Turkey Vulture													
Canada		12.5	*	68				17.9		23	-5.8		60
Boreal Hardwood Transition		16		24							2.5		21
Lower Great Lakes/St. Lawrence Plain		10.8	+	32							-11.1		29
Canada Goose													
Canada		12.4	*	272	12.9	+	33	7.3		79	9.7	*	235
Northern Pacific Rainforest		3.3		15									
Boreal Taiga Plains		16.2	*	39							6.8	+	35
Northern Rockies		-7		23							0.9		19
Prairie Potholes		6.3	+	87	4.6		15	1.8		28	2.7		76
Boreal Hardwood Transition		44.1	+	24							23.7		24
Lower Great Lakes/St. Lawrence Plain		18.5	*	47							17.1	*	45
Wood Duck													
Canada		4		85	11.6		17	10.9		16	-0.5		63
Boreal Hardwood Transition		11.9	*	29							-1.4		25
Lower Great Lakes/St. Lawrence Plain		7.3		28							4.9		19
Gadwall													
Canada		2.6		143	-4.7		40	3.4		43	-1		106
Boreal Taiga Plains		-10.2		26							-20.5		17
Prairie Potholes		3.4	+	109	-4.4		35	9		35	1.5		82
American Wigeon													
Canada		-0.1		153	-5.5		55	19.6		57	10.9	*	107
Boreal Taiga Plains		5.9		28							15.7	*	22
Prairie Potholes		-2.6		96	-5.2		45	3.9		34	4.1		65
American Black Duck													
Canada		4		116	-7.4		42	13.2		37	7.5		63
Boreal Hardwood Transition		-9.6		21									
Lower Great Lakes/St. Lawrence Plain		-3.8		21									
Atlantic Northern Forest		-1		63	-4.3		26	9.3		21	10		43
Mallard													
Canada		0.5		412	0.8		140	-4.4		182	0.9		339
Northern Pacific Rainforest		1.7		16									
Boreal Taiga Plains		-2.4		71	4.3		21	-17		34	6.9		59
Great Basin		8.6		19									
Northern Rockies		3.1		31				-5.7		16	14.3	*	23
Prairie Potholes		1.3	*	130	1.6		52	1.7		61	0.9		105
Boreal Hardwood Transition		-4.2		40				-3.3		18	-12.6		33
Lower Great Lakes/St. Lawrence Plain		-0.2		68	-16.6		28	10.8		32	-1.7		62
Atlantic Northern Forest		2.6		18							1.8		17
Blue-winged Teal													
Canada		-0.4		231	-0.3		85	1.3		97	5.5	*	152
Boreal Taiga Plains		-2.2		45				6		22	-1.7		32
Prairie Potholes		0.6		118	-1.9		46	3.2		44	6	+	92
Lower Great Lakes/St. Lawrence Plain		-0.9		27									
Cinnamon Teal													
Canada		1.6		21							7.4		15

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Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Northern Shoveler													
	Canada	0.5		155	-6.5		50	22.2		53	7.1	*	111
	Boreal Taiga Plains	5.8	*	31							1.5		23
	Prairie Potholes	0.7		110	-7.1	+	43	6.3		37	9.8	*	83
Northern Pintail													
	Canada	-7.4	*	157	-11.8	*	67	1.8		58	2.7		98
	Boreal Taiga Plains	-19.9		28									
	Prairie Potholes	-7.3	*	110	-12.8	*	46	-0.7		42	3.2		77
Green-winged Teal													
	Canada	-1.4		147	10.5	+	42	1.8		46	6.1	+	100
	Boreal Taiga Plains	1.9		35							9.2		25
	Prairie Potholes	2		77	11.4		26	-4.5		20	6.6	*	55
Canvasback													
	Canada	-6.4		75	7.3		31	4.5		22	8.9		43
	Prairie Potholes	-7		60	7		29	11.4	+	20	7.5		35
Redhead													
	Canada	1.3		89	-5		29	12	*	31	-6.4		58
	Prairie Potholes	1.2		68	-8.3		26	16	*	21	-6.4		45
Ring-necked Duck													
	Canada	3.5	*	93	-4		15	3.3		36	3.6		58
	Boreal Taiga Plains	10.4	*	20									
	Prairie Potholes	2.2		16									
	Boreal Hardwood Transition	-0.4		17									
Lesser Scaup													
	Canada	-0.7		154	-1.4		48	0		56	-3.7		114
	Boreal Taiga Plains	-0.9		37				-5.5		17	-12.2	*	26
	Prairie Potholes	0.2		99	3.2		38	2.9		30	-1.9		72
Bufflehead													
	Canada	5.5		67				0.4		22	14.1	*	47
	Boreal Taiga Plains	2.2		29							0.8		21
	Prairie Potholes	1.1		25							10.3		18
Common Goldeneye													
	Canada	3		94	-12.9		24	5.3		32	8.5	+	52
	Boreal Taiga Plains	10.1	*	31							10.8	+	23
	Boreal Softwood Shield	-3.4		17									
Barrow's Goldeneye													
	Canada	9.4	*	33							14		23
	Northern Rockies	5.9		18									
Hooded Merganser													
	Canada	6.5	+	32							3.4		23
Common Merganser													
	Canada	0.8		134	-9.5		35	-4.1		47	2.6		79
	Northern Pacific Rainforest	-4.2		15									
	Northern Rockies	-0.7		18									
	Boreal Hardwood Transition	-4.6		35							-8.4		22
	Atlantic Northern Forest	-1.6		26									
Red-breasted Merganser													
	Canada	-14.4		22									
Ruddy Duck													
	Canada	3	+	97	-1.1		33	4.7		37	2.9		64
	Boreal Taiga Plains	0.8		21									

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
	Prairie Potholes	3.9	+	62	-5.3		25	9.4		20	1.4		40
Osprey	Canada	0.3		105	-4.7		30	-6.9		38	6.8		68
	Northern Rockies	-2.9		23									
	Atlantic Northern Forest	-1.4		40	-4.9		18	-1.6		21	-4.4		26
Bald Eagle	Canada	2.2		68				2.9		16	1.7		54
	Northern Pacific Rainforest	4.8		21							-2.5		16
Northern Harrier	Canada	-4.6	*	282	-0.9		100	-7.1	*	118	-2.9		183
	Boreal Taiga Plains	-10	*	45				-12.3	+	19	-4.2		27
	Prairie Potholes	-3.6	+	116	-1.3		46	-3.3		45	-0.9		86
	Boreal Hardwood Transition	0		23									
	Lower Great Lakes/St. Lawrence Plain	-3.4		50	7.4		24	3.9		18	-14	*	36
	Atlantic Northern Forest	6.8		35				-0.9		18	-0.7		18
Sharp-shinned Hawk	Canada	10.6		48							-2		23
Cooper's Hawk	Canada	-7		31									
Northern Goshawk	Canada	-2.6		15									
Red-shouldered Hawk	Canada	4.6		21									
Broad-winged Hawk	Canada	3.9	*	100	8.7		27	-6.5		33	7.2		42
	Boreal Hardwood Transition	2.3		44	18.8		18	-3.5		16	12	*	21
	Atlantic Northern Forest	3.6		24									
Swainson's Hawk	Canada	-1.2		121	4		39	-0.7		51	-7.1	*	84
	Prairie Potholes	-2.4		107	6.2	+	38	-2.5		47	-6.8	*	78
Red-tailed Hawk	Canada	2.6	+	349	-5.1	+	93	1.4		142	1.5		272
	Boreal Taiga Plains	0.3		74				-3.5		34	3.8		62
	Great Basin	10.7	+	20							3.9		17
	Northern Rockies	5.3		30							6.4		25
	Prairie Potholes	4.2	*	103	-4.5		32	0.1		44	1.3		88
	Boreal Hardwood Transition	0.3		21							2.1		17
	Lower Great Lakes/St. Lawrence Plain	-5.6	*	47	0.2		19	3		21	-13.3	*	34
	Atlantic Northern Forest	5.4		24									
Ferruginous Hawk	Canada	5		25		+					-6		18
	Prairie Potholes	-0.3		25							-0.8		18
American Kestrel	Canada	0.6		383	8.1	+	156	-1		170	0.6		271
	Boreal Taiga Plains	3.9		69	-4.2		21	13	*	28	7	*	55
	Boreal Softwood Shield	-6.2	*	23	-5.3		16						
	Great Basin	6.6		21							-7.9		15
	Northern Rockies	1.9		30	11.1	*	18	-15.5		16	3.8		23
	Prairie Potholes	2.1		66	14.7		19	-1		28	-1.9		47
	Boreal Hardwood Transition	-0.9		55	15.8	*	21	0.7		26	-3.3		38
	Lower Great Lakes/St. Lawrence Plain	2		62	14.8	*	33	-5.6		32	-5		47
	Atlantic Northern Forest	1		54	4		20	-3.8		24	8.1		31

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Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Merlin													
	Canada	2.7		85		+					3.1		57
	Boreal Taiga Plains	-0.3		23							4.7		17
	Prairie Potholes	10.8		30							9.5		20
Gray Partridge													
	Canada	3.8		83	16.3		31	11.1		31	6.2		39
	Prairie Potholes	4.1	*	72	16	+	28	11.7		31	9.1		34
Ring-necked Pheasant													
	Canada	-3.3		130	1.5		49	0.9		56	-1.5		88
	Prairie Potholes	-4.4	*	47	4.6		17	-3.8		21	-6.4	*	32
	Lower Great Lakes/St. Lawrence Plain	-8.8	*	26							-14	*	16
	Atlantic Northern Forest	3.7		30							6.9		27
Ruffed Grouse													
	Canada	0.2		232	-2		79	-6.2		61	4.4		133
	Boreal Taiga Plains	-8.4		30							-6		21
	Boreal Softwood Shield	9.3		15									
	Northern Rockies	2.7		30							12	*	23
	Prairie Potholes	-10.3		18									
	Boreal Hardwood Transition	9.8		48	18.7		17	-11.8		15	20.4		31
	Lower Great Lakes/St. Lawrence Plain	2.6		21									
	Atlantic Northern Forest	-3.6		45	5		21				-4.6		17
Blue Grouse													
	Canada	-2.9		28	-3.3		15						
	Northern Pacific Rainforest	-2.3		18									
Sharp-tailed Grouse													
	Canada	-5.1		56	15.6	+	20	-9.1		18	-5.2		24
	Prairie Potholes	-6.3	*	41							-7.9		18
Virginia Rail													
	Canada	1.5		20		+							
Sora													
	Canada	0.3		247	-5.9	*	72	1.9		103	0.3		182
	Boreal Taiga Plains	-1.8		68	-3.8		17	-1.1		31	-1.9		54
	Northern Rockies	11.4		19							1.1		15
	Prairie Potholes	0.6		109	-6.6	*	37	4.2		42	-0.8		87
American Coot													
	Canada	0.6		164	0		57	5.4		62	12	*	115
	Boreal Taiga Plains	2.5		37							31.5		28
	Prairie Potholes	0.3		101	-2.7		40	7.3		40	7.5	*	71
Sandhill Crane													
	Canada	15.1		65				-12.9		22	41.9		51
	Boreal Taiga Plains	2.3		27							7.3		20
Killdeer													
	Canada	-1.8	*	502	2.1	+	244	-4.5	*	247	-1.6	*	399
	Boreal Taiga Plains	-6.3	*	69	-3		25	-11.1	*	35	-7.3	*	54
	Boreal Softwood Shield	-7.3		24	5.9		19						
	Great Basin	-1.4		21							2.2		17
	Northern Rockies	-0.3		32	8.1		17	-4.9		20	11	+	27
	Prairie Potholes	-1.3	*	129	3.3	*	54	-6.9	*	60	2.6	*	104
	Boreal Hardwood Transition	-3.4	*	58	2.3		28	-2.6		29	-11.3	*	48
	Lower Great Lakes/St. Lawrence Plain	-0.8		76	0.8		39	-0.8		36	-2.3	+	72
	Atlantic Northern Forest	-3.2	*	74	4.2		43	0.3		39	-11.4	*	58

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
American Avocet													
Canada		2.1		60	-4.7		18	10.8		20	3.4		41
Prairie Potholes		-2.3		56	-6.8		19	10.4		20	1.5		37
Greater Yellowlegs													
Canada		5		35							0.5		17
Northern Rockies		2.3		15									
Lesser Yellowlegs													
Canada		-7.2	*	72	-3.4		19	-15.3	*	35	-6.8		45
Northwestern Interior Forest		1.4		18							1.5		17
Boreal Taiga Plains		-4.1		34				-23.4	*	18	4.7		17
Solitary Sandpiper													
Canada		-14.5	+	36							-5.3		21
Boreal Taiga Plains		-5.9		15									
Willet													
Canada		0.5		128	0		53	1.4		53	4.6		94
Prairie Potholes		0		105	-0.5		44	3.5		42	3.9		80
Spotted Sandpiper													
Canada		-4	*	370	4.3	+	149	-1		156	-4	+	216
Northwestern Interior Forest		-1.8		16							1.7		15
Boreal Taiga Plains		-2.9		47				-11.6		19	-4.6		31
Boreal Softwood Shield		-7.1		32				4.8		17			
Great Basin		-3.2		20							0.2		16
Northern Rockies		-2.4		36	10.3	*	16	-3.5		19	-2.4		28
Prairie Potholes		1.3		42							6.9		26
Boreal Hardwood Transition		-3.8		37	7.2		16	-13.4		17	-20.7	+	16
Lower Great Lakes/St. Lawrence Plain		-8	+	57	-7.9	*	34	-6		25	-10.5		41
Atlantic Northern Forest		-1.1		65	5.8		39	1.4		30	-11.2	*	29
Upland Sandpiper													
Canada		0.8		144	2.7		52	-11	*	53	-3.4	+	98
Prairie Potholes		0.8		66	3.1		20	-10.5	*	19	-0.7		46
Lower Great Lakes/St. Lawrence Plain		-2.1		56	4.4	*	24	-7.9		25	-7.4	*	42
Long-billed Curlew													
Canada		-0.3		40					*		2.3		30
Prairie Potholes		0.5		31							2.8		24
Marbled Godwit													
Canada		-1.1		134	-0.1		48	-5.4		55	3		102
Boreal Taiga Plains		2.7		27							-1.2		21
Prairie Potholes		-1.8		104	-1.7		44	-5.4		45	2.7		79
Common Snipe													
Canada		-0.4		532	1.6		228	-2.7		247	2.6	*	410
Northwestern Interior Forest		2.7		19							7.1		19
Boreal Taiga Plains		-0.4		75	1		22	-5.4	+	35	1.2		66
Boreal Softwood Shield		-4.5		45	-2.7		17	6.5		27	-14.6	*	15
Great Basin		-1.6		17									
Northern Rockies		-0.1		42	-9.9		16	10.1	*	20	1.6		38
Prairie Potholes		4.2	*	104	8.7	*	38	5		35	7.9	*	87
Boreal Hardwood Transition		-3.5	*	70	5		27	-10.7	*	33	-3.5		56
Lower Great Lakes/St. Lawrence Plain		0.5		56	-5.6		30	-6.5	*	26	1.3		44
Atlantic Northern Forest		-1.8		86	-0.1		60	-3.8		46	2.1		61
American Woodcock													
Canada		-12.4		39							-13.8		16
Atlantic Northern Forest		-6.4		18									

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Wilson's Phalarope													
Canada		-0.4		72	-2.5		30	5		26	-0.5		43
Prairie Potholes		-0.1		65	0.9		29	3.2		23	-0.6		39
Franklin's Gull													
Canada		4.6		117	-20.3	*	41	7.4		47	16.8	*	90
Boreal Taiga Plains		-0.9		41				-37.8	*	16	-1.8		31
Prairie Potholes		4.9		78	-18.1	*	34	26.4	*	33	12.2		60
Bonaparte's Gull													
Canada		-9.1		29							7.7		16
Mew Gull													
Canada		2.7		24							1.8		19
Ring-billed Gull													
Canada		1.6		295	11.7	+	74	3.4		118	-5	*	234
Boreal Taiga Plains		2.4		45				-4.2		15	-2.1		38
Boreal Softwood Shield		1.7		16									
Prairie Potholes		2.2		92	0.9		31	6.4	*	35	-1.5		68
Boreal Hardwood Transition		4.4	*	46				3.5		19	3.4		35
Lower Great Lakes/St. Lawrence Plain		2		66	12.3		21	1.5		31	-8.3	*	62
Atlantic Northern Forest		2.4		23							-8.5		18
California Gull													
Canada		6.1		51		+		2.7		18	-4.1		34
Prairie Potholes		11.4	*	35							17.2	*	25
Herring Gull													
Canada		-1.9	+	220	-4.4		109	-4.4		120	-11.7		135
Boreal Softwood Shield		0.6		40				-11.1		27			
Boreal Hardwood Transition		-3.2		50	-14.4		26	-9.5		28	-6.7		33
Lower Great Lakes/St. Lawrence Plain		-6.1		34	14.3		17	-4.9		16	-21.4		22
Atlantic Northern Forest		-2.3	+	58	-2		39	-0.3		34	-17.3		42
Great Black-backed Gull													
Canada		-0.5		74	-3.7		36	-9.7	*	45	-4.3		43
Boreal Softwood Shield		5.3		19				-33.9	*	15			
Atlantic Northern Forest		-2.4		54	0.6		35	-0.7		30	-7		37
Common Tern													
Canada		1.8		91	-4.2		36	5.1		33	-12.4		42
Boreal Taiga Plains		4.3		18									
Boreal Softwood Shield		7.1		15									
Prairie Potholes		-0.2		21									
Atlantic Northern Forest		-7.4	+	22									
Black Tern													
Canada		-4.9	*	164	-6.5	*	67	8.4		62	-7.9		107
Boreal Taiga Plains		-5.5		41				9.6		20	-26.5		32
Prairie Potholes		-4.4	+	86	-8.8	*	38	8.2		28	-2		61
Lower Great Lakes/St. Lawrence Plain		-8.2		15									
Rock Dove													
Canada		0.2		376	4	+	150	-0.7		170	0.8		309
Boreal Taiga Plains		0.9		40				-3.8		15	1.7		33
Prairie Potholes		-0.2		117	4.3		45	-2.1		52	-0.1		88
Boreal Hardwood Transition		1.2		34							1		31
Lower Great Lakes/St. Lawrence Plain		0		73	6	+	37	0.3		36	-0.3		68
Atlantic Northern Forest		3.7		71	11.1		32	-3.5		33	9	*	61

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Band-tailed Pigeon													
Canada		-6.7	*	24	1		15						
Northern Pacific Rainforest		-6.3	*	22	3.2		15						
Mourning Dove													
Canada		3.4	*	420	5.2	*	152	-0.8		178	2.6	*	351
Boreal Taiga Plains		-3.2		41	-3.4		16	4.4		24	-7.9	*	33
Great Basin		-0.6		17									
Northern Rockies		-1.7		16									
Prairie Potholes		2	*	123	9.5	*	48	-4.1		57	-1.7		97
Boreal Hardwood Transition		5.1	*	62	8.7		20	5.9		24	5.3		54
Lower Great Lakes/St. Lawrence Plain		4.1	*	76	4.2	+	39	0.7		37	5.1	*	72
Atlantic Northern Forest		16.4	*	74				16.9	*	21	19.6	*	67
Black-billed Cuckoo													
Canada		-1.2		232	2.5		118	7		103	-1.7		132
Boreal Taiga Plains		-0.2		22				4.5		16			
Prairie Potholes		-8.1	*	46	-3		21	2.8		20	-12.2		28
Boreal Hardwood Transition		0.9		55	4.8		27	15.7		26	-3.8		43
Lower Great Lakes/St. Lawrence Plain		-6.1	*	59	-2.1		31	-6.1		23	-11.4	*	42
Atlantic Northern Forest		-10.2	*	40	1.6		24	-11.9		16			
Yellow-billed Cuckoo													
Canada		6	*	32	19.1	*	17						
Lower Great Lakes/St. Lawrence Plain		-2.4		27	19.8	+	16						
Great Horned Owl													
Canada		-5.6	*	133	17.6	*	32	-4.6		59	4.8		64
Boreal Taiga Plains		-18.9	*	31				-30.9	*	17			
Prairie Potholes		4.1	+	68				9.5		30	8.6		39
Lower Great Lakes/St. Lawrence Plain		-7.9		15									
Barred Owl													
Canada		-2.1		24									
Atlantic Northern Forest		-2.1		16									
Short-eared Owl													
Canada		-20.7		35									
Prairie Potholes		-23.1		26									
Common Nighthawk													
Canada		-7.4	*	165	-3		72	-4.2		68	-10.8		73
Boreal Taiga Plains		-24.6	+	24									
Great Basin		1.1		19									
Northern Rockies		-10.7	*	22							-13.1		15
Prairie Potholes		-10	*	17									
Boreal Hardwood Transition		-2.2		20									
Atlantic Northern Forest		2		28	-5.8		17	-1.8		16			
Whip-poor-will													
Canada		-15.1		25	-4.4		16						
Black Swift													
Canada		-10.5	*	25									
Northern Pacific Rainforest		-12.6	*	15									
Chimney Swift													
Canada		-7	*	136	-6.8		84	-4.7		62	-7.5		62
Boreal Hardwood Transition		-11.7	*	32							-7.7		19
Lower Great Lakes/St. Lawrence Plain		-2.8		43	0.5		26	-1.9		22	-10.1	+	26
Atlantic Northern Forest		-8.2	*	58	-14.8	*	42	-15.6	*	27	-5		16
Vaux's Swift													
Canada		1.8		21									

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Ruby-throated Hummingbird													
Canada		2.4		176	-3.3		50	-6.6		50	3.4		121
Boreal Hardwood Transition		5.3	*	53							8.4	*	40
Lower Great Lakes/St. Lawrence Plain		-2.7		39							-1.5		28
Atlantic Northern Forest		-3.1		66	0.7		27	-15.9		21	-4		42
Calliope Hummingbird													
Canada		0.6		26							-2.4		19
Rufous Hummingbird													
Canada		-5.6		83	-0.2		38	-0.3		34	-8.9	*	60
Northern Pacific Rainforest		-2.1		25	2.6		16				-6.2	+	19
Great Basin		-0.5		22							0		17
Northern Rockies		-6.4		34	-4.1		15				-11	+	25
Belted Kingfisher													
Canada		-1.4		320	2.4		143	0.7		141	-0.3		198
Northern Pacific Rainforest		-0.1		21									21
Boreal Softwood Shield		2.7		23									21
Northern Rockies		-1.9		28							-2		21
Boreal Hardwood Transition		-2.3		75	1.1		31	0		36	-6.2	+	54
Lower Great Lakes/St. Lawrence Plain		-4.9	*	53	0.2		28	-6.9		25	-6	*	38
Atlantic Northern Forest		-0.6		73	8.3	*	39	-4.8		31	-0.5		44
Red-headed Woodpecker													
Canada		0.5		34	-11.1	+	15	-3.2		19	-3.4		18
Lower Great Lakes/St. Lawrence Plain		-1.3		20									
Yellow-bellied Sapsucker													
Canada		-2.4		307	-11	*	123	-0.2		126	4.5		226
Boreal Taiga Plains		2.1		58				-3.1		23	0.9		45
Boreal Softwood Shield		-3.3		19									45
Prairie Potholes		-1.5		33							24.6	*	19
Boreal Hardwood Transition		-1.6		80	-9.9		32	0.7		34	0.1		67
Lower Great Lakes/St. Lawrence Plain		10.5	*	36				-2.6		15	18.8	*	30
Atlantic Northern Forest		-3.8	*	76	-10.2	*	45	4.8		35	3.8		51
Red-naped Sapsucker													
Canada		0.5		51	2.8		24	19.4	*	27	-6.7		43
Great Basin		-3.8		22							-9.7	*	19
Northern Rockies		4.4		28				23.6	+	17	-7.3		24
Red-breasted Sapsucker													
Canada		-0.7		35							2.1		24
Northern Pacific Rainforest		-3.4		18									
Downy Woodpecker													
Canada		3.4	*	355	9.8	*	114	0.8		148	4.7	*	266
Northern Pacific Rainforest		4.2		18									
Boreal Taiga Plains		3		33							1.8		24
Boreal Softwood Shield		4.7		21									
Great Basin		1.8		16									
Northern Rockies		-4.4		19									
Prairie Potholes		8.7	+	28							19.5		21
Boreal Hardwood Transition		-1.9		66	10	+	24	-3.2		29	2.1		48
Lower Great Lakes/St. Lawrence Plain		4.8	+	68	-3.6		26	-4.1		31	7.3		56
Atlantic Northern Forest		0.9		83	22.3	*	31	-3.3		36	2.5		67
Hairy Woodpecker													
Canada		1.7		378	3.6		120	-1.1		155	1.8		273
Northern Pacific Rainforest		4.4		20							-2.9		16
Boreal Taiga Plains		1		49				9.4		19	6.1		33

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000				
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	
	Boreal Softwood Shield		5	25										
	Great Basin		-4.3	20										
	Northern Rockies		-0.4	30				-11.8		15	6.1		21	
	Prairie Potholes		1.1	37							1.1		32	
	Boreal Hardwood Transition		1.2	72	11.8		26	-0.2		31	1.9		54	
	Lower Great Lakes/St. Lawrence Plain		-5.3	45				-8.8		18	-6.1		37	
	Atlantic Northern Forest		4.9	+	76	4.3		34	2.3		29	6.7	53	
Three-toed Woodpecker														
	Canada		-10.6	+	25						-4.8		16	
Black-backed Woodpecker														
	Canada		1.4		40				-1.1		18			
	Atlantic Northern Forest		-6.4		17									
Northern Flicker														
	Canada		-1.7		603	-1.4		280	-2.9	+	288	-2.3	*	483
	Northwestern Interior Forest		1.2		17							-4.3		17
	Northern Pacific Rainforest		0.8		26	18.3	*	16	-4.4		15	2.5		18
	Boreal Taiga Plains		-4.3	+	81	-1.5		24	-10.6	+	38	-3.1		67
	Boreal Softwood Shield		-4.2		46	1.6		24	-10.8	*	21	-1.8		21
	Great Basin		1.7		23							2.7		20
	Northern Rockies		-2		47	3.3		24	-1.5		23	-5		40
	Prairie Potholes		-5.8	*	85	-3.9		39	-3.7		38	-1.3		62
	Boreal Hardwood Transition		-0.5		98	-6.5		41	1.4		46	4.1		82
	Lower Great Lakes/St. Lawrence Plain		-1.8		75	-0.3		39	-9.1	*	37	-1.8		71
	Atlantic Northern Forest		-1.5		97	-0.5		59	3.2		51	-4.6		82
Pileated Woodpecker														
	Canada		4.8		247	5.1		58	-2.3		94	3.3		178
	Northern Pacific Rainforest		-5.4		16									
	Boreal Taiga Plains		13.1		34							10.6		26
	Great Basin		3.8		16									
	Northern Rockies		6.5		26							0.5		22
	Boreal Hardwood Transition		0.9		57				-8.1		23	0.6		43
	Lower Great Lakes/St. Lawrence Plain		12	+	32							17.9		23
	Atlantic Northern Forest		0.8		45				1		22	2.4		32
Olive-sided Flycatcher														
	Canada		-3.3	*	317	-3.8		133	-0.1		139	-3.2	+	197
	Northwestern Interior Forest		-9.5		17							-11.5		17
	Northern Pacific Rainforest		-9.2	*	26	3.3		16				-15.2	+	18
	Boreal Taiga Plains		3.3		43				14.1		15	-4.5		32
	Boreal Softwood Shield		-3.7		23									
	Great Basin		-2.2		17									
	Northern Rockies		-2.9		39	-12.4		18	-3.2		17	-2.4		32
	Boreal Hardwood Transition		-6.4	*	62	7.3		24	-5.8		32	-8.3	*	35
	Atlantic Northern Forest		-3.4		72	-11.6		46	-9.1		32	0.8		40
Western Wood-Pewee														
	Canada		-2.7	*	185	-0.7		67	4.4	*	85	-4.2	+	143
	Northwestern Interior Forest		-3		15							-0.2		15
	Northern Pacific Rainforest		-8.4		16									
	Boreal Taiga Plains		-3.4		57	9.8		17	5.3		26	-13.1		39
	Great Basin		1.7		21							5.1		18
	Northern Rockies		-1.7		43	-6.4		21	7.7		21	-5.2		38
	Prairie Potholes		-0.7		27							-1.7		22
Eastern Wood-Pewee														
	Canada		-3.3	+	232	-5		119	-3.8		114	-5.5		175
	Prairie Potholes		7.8		16									
	Boreal Hardwood Transition		-5.5		57	-10.8		21	-10.4	+	27	-7.3		44

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
	Lower Great Lakes/St. Lawrence Plain	-3.6	*	72	-5.9		39	-1		36	-7.2		66
	Atlantic Northern Forest	-1.9		79	-1.4		51	-2		45	-1.3		46
Yellow-bellied Flycatcher													
	Canada	1		151	-8		53	5.3		70	1.3		89
	Boreal Softwood Shield	0.9		34				3.1		23			
	Boreal Hardwood Transition	1.1		34				10.6		15	1.7		24
	Atlantic Northern Forest	1.9		67	-7.5	*	34	9.4		30	0		43
Alder Flycatcher													
	Canada	-0.4		480	0.5		199	2.3	*	211	-1.5	+	380
	Northwestern Interior Forest	2.9		15							3.6		15
	Boreal Taiga Plains	-2.8		82	5.6		22	-1.2		36	-2.5		68
	Boreal Softwood Shield	0.3		40	-3.9		20	10.5		15	-1.2		19
	Northern Rockies	-0.1		31							-2		23
	Prairie Potholes	0.6		51	-2.3		16	1.7		19	1.4		41
	Boreal Hardwood Transition	0.2		93	2.2		39	1.9		46	-4	*	78
	Lower Great Lakes/St. Lawrence Plain	-1.2		59	10.4		28	0.4		25	0.3		48
	Atlantic Northern Forest	-0.4		97	-1		62	2.9	*	53	-3.2	*	81
Willow Flycatcher													
	Canada	0		131	2.4		57	-3.6		59	1.2		104
	Northern Pacific Rainforest	-2.8	*	24	-7.5		16				-4.1		19
	Great Basin	1.9		22							-2.8		19
	Northern Rockies	-0.5		27	7.9	*	15				2.5		22
	Lower Great Lakes/St. Lawrence Plain	2.1		39				-10.2		17	0.5		35
Least Flycatcher													
	Canada	-0.8		533	0.8		236	2.1	*	238	-2.3	*	433
	Boreal Taiga Plains	-1.1		82	5.6		24	3	*	39	-2.5		69
	Boreal Softwood Shield	1.3		34	-1.4		22				-6.5	+	19
	Northern Rockies	-5.2		37	-14.9	*	17				-3.4		29
	Prairie Potholes	1.5		103	6.5	*	34	0.5		48	-1.9		85
	Boreal Hardwood Transition	-1.4	*	96	-1		43	2		46	-0.7		79
	Lower Great Lakes/St. Lawrence Plain	-2.9	+	70	-0.9		34	1.3		32	-5.1	+	63
	Atlantic Northern Forest	-0.9		95	0.7		61	-6.5	*	47	2		74
Hammond's Flycatcher													
	Canada	-1.4		82	-6.2	*	27	4.9		32	-2.5		68
	Northern Pacific Rainforest	10.8	*	17							10	*	15
	Great Basin	-4.5	*	20							-4.7		18
	Northern Rockies	-2.5		36				11.8		15	-4.7		30
Dusky Flycatcher													
	Canada	-2		72	5.6		30	0.5		34	-4.1	+	59
	Great Basin	-2.8		23							-6.6	+	20
	Northern Rockies	-1.7		41	25.4	*	17	2.5		21	-2.2		35
Pacific-slope Flycatcher													
	Canada	1.8		62	7.8		24	-3.2		25	-3		43
	Northern Pacific Rainforest	0.6		25							-1.3		20
	Great Basin	-4.5		19									
	Northern Rockies	-1.8		16									
Eastern Phoebe													
	Canada	0.8		304	-10.1	*	112	5.5		117	-2.3		251
	Boreal Taiga Plains	-1.8		70	-14.8		21	5.4		26	-3.5		59
	Prairie Potholes	-7.4	*	48				-9.5		15	-15.4		37
	Boreal Hardwood Transition	0.7		67	-5.9		24	2.3		29	1.2		61
	Lower Great Lakes/St. Lawrence Plain	-1		70	-8.9	*	33	11.4	*	29	0.9		62
	Atlantic Northern Forest	-0.2		37	-12.7		17				2.8		24

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Say's Phoebe													
Canada		-3.6		24							-6.7		17
Great Crested Flycatcher													
Canada		-0.4		214	-2.4		83	-1		97	-2.6		175
Boreal Taiga Plains		-3.2		20							-9.5	*	16
Prairie Potholes		5.1	+	32				16.3	*	15	5.6		26
Boreal Hardwood Transition		-2.5		64	2.5		23	-7	*	27	-4.6		55
Lower Great Lakes/St. Lawrence Plain		-0.6		73	-3.1		38	2.7		34	-0.1		66
Atlantic Northern Forest		-5.1		23									
Western Kingbird													
Canada		0.7		127	5.6		49	6.4		53	-6.7	+	98
Great Basin		-1.8		17									
Prairie Potholes		1.3		93	6.5		33	6		39	-6.7		70
Eastern Kingbird													
Canada		-1.6		439	3.3	*	203	0.1		205	-4.8	*	323
Boreal Taiga Plains		-6.7	*	51	5.4		17	3.7		26	-9.9	*	34
Great Basin		1.1		16									
Northern Rockies		2.8		18									
Prairie Potholes		-0.6		128	1.8		51	2.9		58	-5.2	*	101
Boreal Hardwood Transition		-5.2	*	66	8.5	*	27	-7	*	32	-12.2	*	51
Lower Great Lakes/St. Lawrence Plain		1.4	*	75	2		39	-2.4		37	0.1		71
Atlantic Northern Forest		-3.2	*	70	4.9		40	0.5		36	-12.3	*	42
Loggerhead Shrike													
Canada		-3.6	+	67	-11.3	*	28				-1.3		38
Prairie Potholes		-3.2		56	-18.9	*	26				-2.2		37
Yellow-throated Vireo													
Canada		5.9		28							-0.8		19
Cassin's Vireo													
Canada		-1.7	+	76	-2.2		28	4.7		34	-5.8	*	64
Northern Pacific Rainforest		-4		16									
Great Basin		-3.9		21							-6.5		19
Northern Rockies		0.4		36				5.3		17	-4.1	*	32
Blue-headed Vireo													
Canada		3.3		235	7		82	8.4	+	81	2.8		182
Boreal Taiga Plains		9.8	+	36							9.6		31
Boreal Softwood Shield		-8.5	*	21									
Boreal Hardwood Transition		0.2		70	13.9		23	18.8	*	26	3.3		50
Atlantic Northern Forest		4.5	*	84	5.7	+	42	4.4		36	3.6		74
Warbling Vireo													
Canada		1.2	*	386	3	+	148	3	*	189	0.9		321
Northern Pacific Rainforest		3.7	+	27				3.5		15	4.8	+	22
Boreal Taiga Plains		-1.5		61	5.4		16	3		26	-3.4	+	47
Great Basin		2.6	*	22							1		20
Northern Rockies		0.6		47	-8.2	*	22	9.3		25	0.9		41
Prairie Potholes		3	*	85	7.4	*	32	-2.6		43	0.6		68
Boreal Hardwood Transition		-2.1		41	14.2	*	16	-3		20	-7.8	*	36
Lower Great Lakes/St. Lawrence Plain		1.3		75	2.1		35	-4.3		35	-0.7		69
Atlantic Northern Forest		1.3		19									
Philadelphia Vireo													
Canada		5.2		134	-6.9		41	11.1		50	10.2	*	88
Boreal Taiga Plains		2.7		24							4.5		18
Boreal Softwood Shield		9.5		26	-3.2		17						
Boreal Hardwood Transition		5.3	*	43				-5.8		20	13.9	+	26
Atlantic Northern Forest		7		30							14.2		26

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Red-eyed Vireo													
Canada	1.3	+	536	1.7		257	1.9	*	259	2.2	*	438	
Northern Pacific Rainforest	0.7		20										
Boreal Taiga Plains	1.5		81	5.4	+	23	0.5		38	2.8	+	69	
Boreal Softwood Shield	-0.9		35	-0.6		23				-0.5		20	
Great Basin	-0.9		19										
Northern Rockies	-2.5		32	4.3	+	20	-3.3	+	17	-1.1		24	
Prairie Potholes	1.7		76	6	*	26	0.6		33	2.5		62	
Boreal Hardwood Transition	1.6	*	97	-0.3		43	3.8	*	46	1.7	+	80	
Lower Great Lakes/St. Lawrence Plain	2.9	+	75	-1.9		38	5.6	*	37	3.8	*	71	
Atlantic Northern Forest	3.4	*	97	2.9		64	0.6		53	4.8	*	84	
Gray Jay													
Canada	-3.4	*	251	-3.5		88	0.2		96	-7.8	*	162	
Northwestern Interior Forest	-3.5		21							-5		21	
Boreal Taiga Plains	-6.2		46				-6.9		15	-8	+	36	
Boreal Softwood Shield	-6	+	30										
Northern Rockies	-0.2		32							0.5		26	
Boreal Hardwood Transition	-4.6	*	43				0.6		18	-6.6		27	
Atlantic Northern Forest	0.9		52	-4.9		32	13.9	*	21	5.4		28	
Steller's Jay													
Canada	-0.9		51	11.1		21	-2.1		22	-1.5		39	
Northern Pacific Rainforest	1.4		24	13.5		15				-1.2		21	
Blue Jay													
Canada	1.8	*	348	-1.8		153	1.2		156	4.5	*	305	
Boreal Taiga Plains	-1.8		41				-6.1		18	2.5		37	
Boreal Softwood Shield	-0.9		19										
Prairie Potholes	10.4	*	30							13.4	+	27	
Boreal Hardwood Transition	0.8		87	-3.9		36	2.1		41	3.4	*	74	
Lower Great Lakes/St. Lawrence Plain	2.9		76	1		39	4.5	*	36	2.8		72	
Atlantic Northern Forest	-0.1		94	-2		58	1.7		47	1		81	
Clark's Nutcracker													
Canada	4.6		27							9.1		18	
Great Basin	3.4		16										
Black-billed Magpie													
Canada	0.5		235	1.3		90	0.7		108	3.2	*	194	
Boreal Taiga Plains	-1.1		66	-0.9		21	-2.2		33	-0.3		57	
Great Basin	0.1		16										
Northern Rockies	-2.5	+	16										
Prairie Potholes	0.9	+	128	1.2		52	3.4	*	58	4.8	*	104	
American Crow													
Canada	0.7	*	593	0.7		279	-0.9		295	3	*	481	
Boreal Taiga Plains	0.5		71	-2.7		24	-4	*	34	2.3		62	
Boreal Softwood Shield	0.5		52	4.9		24	2.7		29	8.5	*	21	
Great Basin	-0.8		22							0.5		19	
Northern Rockies	0.7		43	4.8	+	24	-1		22	3		36	
Prairie Potholes	-0.8	+	130	0.8		54	-4.6	*	61	2.6	*	106	
Boreal Hardwood Transition	1.5	*	93	-3.5		39	2.3		45	1.7		77	
Lower Great Lakes/St. Lawrence Plain	1.9	*	76	-0.3		39	2.5		37	3.4	*	72	
Atlantic Northern Forest	1.5	*	99	3	*	62	2.7	*	54	3	*	84	
Northwestern Crow													
Canada	0.1		26	11.8	*	17				-2.3		21	
Northern Pacific Rainforest	0		25	12.7	*	16				-2.3		21	
Common Raven													
Canada	3.6	*	494	6.2	*	172	1		222	0.5		405	

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
	Northwestern Interior Forest	1.7		17							-1.9		16
	Northern Pacific Rainforest	1		27							-2.1		22
	Boreal Taiga Plains	6.1		77				-5.3		28	3.5		70
	Boreal Softwood Shield	5.9	*	50	8.7	*	18	-4.9		30	-5	*	21
	Great Basin	3.5		23							1.9		20
	Northern Rockies	1.9		48	12.2	+	21	-1.3		23	0.2		44
	Prairie Potholes	18.1		33							21	*	32
	Boreal Hardwood Transition	3.6	+	95	9	*	33	2		45	4.7	+	78
	Lower Great Lakes/St. Lawrence Plain	13.1	*	16							13.7	*	16
	Atlantic Northern Forest	0.1		95	-1.6		59	0.8		50	-6.2	+	83
Horned Lark													
	Canada	-3.3	*	252	1.8		115	-1.2		120	-11.1	*	167
	Boreal Taiga Plains	-15.2	*	25							-15.7	*	16
	Prairie Potholes	-3.6	*	119	1.9		51	-1.5		55	-11.3	*	93
	Lower Great Lakes/St. Lawrence Plain	-0.9		63	-1.2		36	-3.7	+	30	-5		52
	Atlantic Northern Forest	-8.3	+	23									
Purple Martin													
	Canada	0.1		114	-0.7		48	-7	+	47	-0.8		75
	Boreal Taiga Plains	0.1		17									
	Prairie Potholes	12.2		31							1.8		24
	Boreal Hardwood Transition	8.6		15									
	Lower Great Lakes/St. Lawrence Plain	-3.9		43	1.1		24	-13	*	20	-6.3		26
Tree Swallow													
	Canada	0		581	1.2		275	-0.9		281	-0.4		454
	Northern Pacific Rainforest	-1.3		23	9.4		16						
	Boreal Taiga Plains	1.3		70	-0.3		20	-3.1		32	7.6		62
	Boreal Softwood Shield	-2.6		47	2.4		22	7.8		25	-4.1		16
	Great Basin	-2.5		22							1.7		17
	Northern Rockies	1.3		37	9.9		20	-1.5		20	-2.4		33
	Prairie Potholes	2.5		103	-2.9		38	6.7	+	41	2.6		84
	Boreal Hardwood Transition	-5	*	90	1.9		42	-2.5		47	-12.6	*	70
	Lower Great Lakes/St. Lawrence Plain	4.3	*	76	4.2	+	39	-0.6		37	4.8		72
	Atlantic Northern Forest	-2.9	*	96	-2.1		64	-2.2		53	-2.8		80
Violet-green Swallow													
	Canada	0.4		77	-1.2		37	6	+	39	-0.5		60
	Northern Pacific Rainforest	1.4		22							-3.9		18
	Great Basin	5.4		21							3.1		19
	Northern Rockies	-2.3		25							0.8		17
Northern Rough-winged Swallow													
	Canada	-2.4		141	2.7		64	0.7		58	-3.7		88
	Northern Pacific Rainforest	-10.7	*	16									
	Great Basin	-2		22							-0.1		20
	Northern Rockies	-1		26	22.9	+	16	1.6		16	-5.3		19
	Boreal Hardwood Transition	-4.5		21									
	Lower Great Lakes/St. Lawrence Plain	-3.4		45	-10.5		20	7.9		17	-7.1		31
Bank Swallow													
	Canada	-6.3	+	320	3.8		160	-0.7		147	-7.1	*	182
	Boreal Taiga Plains	-8.2		27							-20.6	*	17
	Northern Rockies	-7.5		15									
	Prairie Potholes	-4.6		64	-5.5		25	4.8		19	1.5		39
	Boreal Hardwood Transition	-10.3	*	43	-9.2		24	-11.9		23	-15.1		18
	Lower Great Lakes/St. Lawrence Plain	-0.1		53	12.5	*	35	-1.8		28	-0.6		41
	Atlantic Northern Forest	-10.8	+	77	-4.7		49	-6	*	43	-13.5	*	41
Cliff Swallow													
	Canada	-0.7		374	1.6		177	-0.4		178	-4.1		267

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Boreal Taiga Plains		-3.7		37				-9.8		17	-18.6		26
Boreal Softwood Shield		-5.8		18									
Great Basin		-4.3	*	19							0.1		15
Northern Rockies		-3.7	+	30	9.1		18	2.6		16	-7.7	*	24
Prairie Potholes		1.8		77	1.5		28	3		27	1.4		62
Boreal Hardwood Transition		-0.7		48	4.8		26	-1.9		26	5.6		29
Lower Great Lakes/St. Lawrence Plain		-2.2		56	-4.5		30	-6.9		30	-1.8		44
Atlantic Northern Forest		-1.7		67	4.6		37	-3		34	-4.9		43
Barn Swallow													
Canada		-2.8	*	580	0.9		281	-4.1	*	287	-5.1	*	455
Northern Pacific Rainforest		-3.5	*	22	0.5		16				-6.6	+	18
Boreal Taiga Plains		-4.1	*	79	2.5		21	-0.7		38	-10.9	*	66
Boreal Softwood Shield		-9.3	*	27	-1		19						
Great Basin		-2.1		22							-11.7	*	17
Northern Rockies		-3.5	+	41	8.8		23	-2.1		22	-12.6	+	34
Prairie Potholes		-0.6		130	3.7		54	-2.7		61	-1		105
Boreal Hardwood Transition		-5.5	*	82	-2		36	-3.1		43	-8.1	*	60
Lower Great Lakes/St. Lawrence Plain		-0.3		76	1.8		39	-3.6	*	37	-0.3		72
Atlantic Northern Forest		-5	*	93	0		63	-6.1	*	52	-11.6	*	71
Black-capped Chickadee													
Canada		3	*	528	1		215	4.6	*	239	3.7	*	445
Northwestern Interior Forest		-6.3		15									
Boreal Taiga Plains		4.5	*	74	14.9		20	-5.6		31	7.4	*	61
Boreal Softwood Shield		2.5		42				0.4		18	1.3		22
Great Basin		2		21							-3.3		19
Northern Rockies		0.8		46	-6.6		24	7.9	*	20	3		40
Prairie Potholes		3		54	-2.3		16	8.1		18	6.7		46
Boreal Hardwood Transition		2.3	*	93	8.9	+	37	2.8		44	3.1	*	79
Lower Great Lakes/St. Lawrence Plain		7.3	*	73	17	*	31	5.3		35	6.2	*	69
Atlantic Northern Forest		5.2	*	96	2		55	16.3	*	49	1.3		85
Mountain Chickadee													
Canada		1		56	11.8		23	-1		28	-1.7		46
Great Basin		-1.1		22							0.5		19
Northern Rockies		2.7		33				-1		17	-4.9		28
Chestnut-backed Chickadee													
Canada		-1		40	0.6		18	7.1		19	-7.1		28
Northern Pacific Rainforest		-0.4		29							-7.2		22
Boreal Chickadee													
Canada		-4.8		180	-6.6		55	-1.6		73	3.1		98
Northwestern Interior Forest		-3.6		19							10.4		19
Boreal Taiga Plains		1.4		26							-4.9		19
Boreal Softwood Shield		-6.7		28				-2.1		20			
Boreal Hardwood Transition		-8.2		24									
Atlantic Northern Forest		-5.3	+	66	1.7		37	-3.3		25	6.7		38
Red-breasted Nuthatch													
Canada		0.8	+	383	3.9		135	10.2	*	149	-4.8	*	310
Northern Pacific Rainforest		0.4		18									
Boreal Taiga Plains		1.4		46							0.2		38
Boreal Softwood Shield		1.6		24									
Great Basin		-0.8		22							-3.4		20
Northern Rockies		-0.5		47	7.3		23	13		25	-5.1	*	43
Boreal Hardwood Transition		-0.9		94	-4.8		31	10.1	*	42	-2.9		74
Lower Great Lakes/St. Lawrence Plain		3.8		27							3.6		24
Atlantic Northern Forest		2	+	84	-4		38	28.7	*	35	-14.9	*	72

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
White-breasted Nuthatch													
Canada		0.5		146	-2.3		39	4.7		43	6.6	+	114
Boreal Hardwood Transition		5	*	42							7.5		37
Lower Great Lakes/St. Lawrence Plain		-1.7		56	-6.5		20	15		17	-4.4		45
Brown Creeper													
Canada		-0.2		89	8.6		20	0.9		30	2.9		52
Northern Pacific Rainforest		-1.8		20							-4.3		16
Boreal Hardwood Transition		10.7		26									
Bewick's Wren													
Canada		-1.3		17									
Northern Pacific Rainforest		-1.2		16									
House Wren													
Canada		0.5		342	4.1	*	134	0.7		158	-1.5		273
Boreal Taiga Plains		-0.8		64	5.5		21	0.4		31	-4.3	*	53
Great Basin		1		17									
Prairie Potholes		1		122	4.6	*	47	2		55	-1.4		100
Boreal Hardwood Transition		-3.2		42				-7.4	*	21	4.3		31
Lower Great Lakes/St. Lawrence Plain		2.1		71	3.7		37	1.4		34	2.7		61
Winter Wren													
Canada		0.6		347	-8.6	*	150	6.1	*	137	1.3	+	274
Northern Pacific Rainforest		1.5		29	10.9	*	17	0.5		15	1.9		24
Boreal Softwood Shield		-3.3		35	-8.6	+	20				-5.8		19
Great Basin		-3.1		16									
Northern Rockies		6.2	+	26							1.9		22
Boreal Hardwood Transition		1		96	-12.6	*	35	11.4	*	42	1.9		79
Lower Great Lakes/St. Lawrence Plain		-2		33							-1.4		25
Atlantic Northern Forest		0.8		94	-9.9	*	51	9.8	*	41	4.7	*	76
Sedge Wren													
Canada		8.2	*	82	-9.5	*	19	-7.4		30	12.1	*	65
Boreal Taiga Plains		6.9		24							12.5	*	18
Prairie Potholes		9.1	*	33							9.4		28
Marsh Wren													
Canada		5.7	*	93	18.7	+	20	-7.2	+	34	3.8		69
Boreal Taiga Plains		16.9		17									
Northern Rockies		13.9	*	15									
Prairie Potholes		4.7		39				-7.7		15	-0.1		31
Golden-crowned Kinglet													
Canada		1.2		252	-2.7		74	9.2	*	89	-1.8		199
Northern Pacific Rainforest		-2.5		29	-8.5	+	16				-0.8		23
Boreal Softwood Shield		17.4		25							12.4		15
Great Basin		-0.6		18							-2.1		17
Northern Rockies		0.1		41				13.5	*	18	-3.8		35
Boreal Hardwood Transition		1.2		47				4.8		17	0.1		35
Atlantic Northern Forest		6.7		68	13.9	+	19	24.5	*	22	-2.5		59
Ruby-crowned Kinglet													
Canada		0.2		395	-3.7	*	180	4.3	*	177	0.5		288
Northwestern Interior Forest		20.8	*	20							20.8	*	20
Boreal Taiga Plains		-1.3		57				6.9		18	-1.7		48
Boreal Softwood Shield		1.6		52	-4.6		21	11.3	*	27	5.2		23
Great Basin		-4.3	*	17									
Northern Rockies		-0.8		44	1.4		22	-0.8		21	-1		39
Boreal Hardwood Transition		-2.2		76	-6.9		37	5	+	37	-0.9		51
Atlantic Northern Forest		-0.7		93	-4.9	*	61	7		48	0.3		74

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Eastern Bluebird													
Canada		6		104	-12.6		17	20.9	*	24	1		88
Boreal Hardwood Transition		4.3		34							-7.3		28
Lower Great Lakes/St. Lawrence Plain		4.5	+	48							2		40
Mountain Bluebird													
Canada		1.8		113	-5.5		36	4.8		45	2.7		89
Boreal Taiga Plains		-7		16									
Great Basin		0.9		18									
Northern Rockies		2		21							19.6	*	15
Prairie Potholes		2.4		51				16.9	*	18	-1		45
Townsend's Solitaire													
Canada		-1		55	7.4		20	-2.3		23	1.6		43
Great Basin		-3.5		20							-1.6		17
Northern Rockies		2.3		25				-9.7		15	6.2		18
Veery													
Canada		-1.5	*	364	-0.4		175	-1.1	+	170	-2.1	*	279
Boreal Taiga Plains		-3.8		25							12.5	*	15
Boreal Softwood Shield		5.5	+	28							3.5		17
Great Basin		1.1		18							-3.9		15
Northern Rockies		-1		19									
Prairie Potholes		-3.1		24							-4.6		18
Boreal Hardwood Transition		-2.2	*	94	-1.6		38	-1.6	+	45	-1		78
Lower Great Lakes/St. Lawrence Plain		-2.5		65	3.1		29	4.7	*	28	-3.6		55
Atlantic Northern Forest		-1.9		87	3.8		51	-4.2	+	47	-5.3	*	67
Gray-cheeked Thrush													
Canada		-8.8	*	31					+			*	
Boreal Softwood Shield		-10.6	*	16									
Swainson's Thrush													
Canada		-0.5	+	441	2.3	+	204	-1.3		210	-1.2	*	327
Northwestern Interior Forest		-0.1		22							2.9		22
Northern Pacific Rainforest		-0.1		29	4.4		17	-1		15	-0.7		23
Boreal Taiga Plains		0.9		64				-0.8		30	5.1		47
Boreal Softwood Shield		1.5		50	11.3	*	25	2		24	-4.7		22
Great Basin		-1.9	+	22							-4.8	*	20
Northern Rockies		-0.8		50	1.2		25	-0.8		26	-1.3	+	44
Boreal Hardwood Transition		-1.2		83	-1.6		37	-5	+	39	1.3		59
Atlantic Northern Forest		-1.2		93	-2.7		61	-2.2		49	-4.6	*	74
Hermit Thrush													
Canada		1.4		424	0.3		169	5.4	*	192	0.6		326
Northwestern Interior Forest		5.6		16							4.9		15
Boreal Taiga Plains		2.7		56				0.4		23	3.3		44
Boreal Softwood Shield		0.3		49	-0.3		22	14.8	*	26	6.1		21
Northern Rockies		3.5		41	0		17	15.2		15	-1.3		30
Boreal Hardwood Transition		0.6		95	-1.7		39	2.9		45	0.3		80
Lower Great Lakes/St. Lawrence Plain		1.9		33							-0.8		29
Atlantic Northern Forest		0.1		92	-2.8		57	0.1		47	1.2		81
Wood Thrush													
Canada		0		152	-1.8		77	-0.2		72	2.8		113
Boreal Hardwood Transition		-1.4		49	-5.3	*	20	3		21	0.3		39
Lower Great Lakes/St. Lawrence Plain		1.1		67	-0.1		36	-3.9	+	32	6.5	*	58
Atlantic Northern Forest		-1.7		35	7.6		20	-3.7		20	-3.8		15
American Robin													
Canada		0.9	*	675	0.5		303	1.3	*	331	0.8	*	554
Northwestern Interior Forest		0.3		20							-3.7		20

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Northern Pacific Rainforest		-0.2		29	6.2	*	17	-0.6		15	-1.9	*	24
Boreal Taiga Plains		1.3		85	-1.8		26	-0.3		40	0		73
Boreal Softwood Shield		3.1	*	56	9	*	25	5	+	30	-2.5		23
Great Basin		-0.3		23							1.9		20
Northern Rockies		1.2	*	51	0		25	0.6		26	2.5		45
Prairie Potholes		3.1	*	122	5	*	46	0.5		58	2.6		102
Boreal Hardwood Transition		0.6		100	-0.2		43	0.5		49	1		83
Lower Great Lakes/St. Lawrence Plain		1.6		76	-1.6		39	0.8		37	1.6		72
Atlantic Northern Forest		-0.4		99	-0.2		64	2.2	*	54	1.1	+	85
Varied Thrush													
Canada		0.2		111	13.3	*	34	0.7		36	-0.7		87
Northwestern Interior Forest		7.2		21							6.9		19
Northern Pacific Rainforest		-2.4	+	25							-2.6		18
Northern Rockies		2	+	40	25.8	*	15				0.3		34
Gray Catbird													
Canada		-0.3		330	-1.9		168	-1.7		159	0.1		263
Boreal Taiga Plains		1.4		26				-1.2		15	-1.4		21
Prairie Potholes		-0.7		72	-4.9		32	-2		30	0.7		53
Boreal Hardwood Transition		-4.2	*	54	-5.1		26	-10.4	*	26	-7.3	*	46
Lower Great Lakes/St. Lawrence Plain		0.2		70	-0.9		38	-2.8		36	1.8		66
Atlantic Northern Forest		-0.6		78	3		50	4.2		40	-3.2		56
Northern Mockingbird													
Canada		12.4	*	23									
Lower Great Lakes/St. Lawrence Plain		10.8	*	16									
Brown Thrasher													
Canada		-1.2		229	-1.9		104	-2.5		102	-3		172
Prairie Potholes		0.8		83	-0.6		34	-0.3		33	-2.6		57
Boreal Hardwood Transition		-4.2	+	55	-6.2		25	-2.2		24	-2.2		41
Lower Great Lakes/St. Lawrence Plain		-1.6		65	0		38	-5.8		33	-2.9		56
European Starling													
Canada		-2.1	*	538	-1.9		276	-2.3		266	-0.9		433
Northern Pacific Rainforest		-4.6	*	26	-1		16				-2.5		21
Boreal Taiga Plains		-2.1		59	0.4		22	-0.6		31	-3.2		46
Boreal Softwood Shield		-4.9	*	35	-1.4		20	0.4		16			
Great Basin		-2.7	+	22							-0.9		18
Northern Rockies		-5.7	*	33	-0.4		21	-1.7		21	-2.3		27
Prairie Potholes		-0.5		122	-2.3		52	1		57	2.5		97
Boreal Hardwood Transition		-1		71	-6.6		33	0.8		33	1.6		60
Lower Great Lakes/St. Lawrence Plain		-1.9	*	76	-1.5		39	0.4		37	-2.1	+	72
Atlantic Northern Forest		-1.6	+	92	-0.7		63	1.4		50	2.2		79
Sprague's Pipit													
Canada		-3.5	*	82	-0.1		33	-5.9		38	-1.3		51
Prairie Potholes		-3.7	*	69	-2.6		31	-5.4		30	2.6		47
Bohemian Waxwing													
Canada		-6.3		27							-11.8		16
Northwestern Interior Forest		-9		16							-10.7		15
Cedar Waxwing													
Canada		1.5		511	3.7		207	1		238	-0.4		421
Northern Pacific Rainforest		-2.7		23	-2.5		15				-5.3	*	18
Boreal Taiga Plains		2.5		66				11.7	*	25	2.9		55
Boreal Softwood Shield		-1.7		30	4.9		19				10.8	*	16
Great Basin		0.8		23							0.9		20
Northern Rockies		0.6		37	-0.4		16	4		17	-5.9		33
Prairie Potholes		1.7	+	69	-3.6		20	0.2		28	3.5		54

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
	Boreal Hardwood Transition	-1		96	1		37	-1.8		47	0.3		80
	Lower Great Lakes/St. Lawrence Plain	1.3		73	9.5	*	36	1.8		36	-1.7		68
	Atlantic Northern Forest	5.2	*	94	10.5	+	43	-0.4		49	0.5		81
Golden-winged Warbler													
	Canada	-0.5		27							-9.8	+	23
	Boreal Hardwood Transition	-5.7		17							-12.4		16
Tennessee Warbler													
	Canada	0.5		306	6.5	*	121	-6	+	128	2.6		194
	Boreal Taiga Plains	6.4	*	62				-4		24	12.3	*	50
	Boreal Softwood Shield	2.9		47	16.2		20	-8.8		21	7		21
	Northern Rockies	-6.4		24									
	Boreal Hardwood Transition	-0.2		53	11.9		17	-10.4	*	24	0.6		33
	Atlantic Northern Forest	1		85	4		53	-4.1		45	-12.2	*	60
Orange-crowned Warbler													
	Canada	-2		187	-3.2		57	7	*	75	-4.9	*	146
	Northwestern Interior Forest	20.9		18							21.5	+	17
	Northern Pacific Rainforest	-5.2	*	29	-10.2		16	3.2		15	-8	*	23
	Boreal Taiga Plains	2.9		44				-10		16	-0.9		36
	Great Basin	-3		21							-8.9	*	17
	Northern Rockies	-2.9	+	46	-0.1		18	12.9		20	-8.6	*	40
Nashville Warbler													
	Canada	1.2	*	312	-1.3		148	-0.7		141	1		242
	Boreal Softwood Shield	1.7		33	0.4		21				3.2		18
	Great Basin	0.1		19							-5.2		18
	Boreal Hardwood Transition	1.3	*	97	-2.2		41	-0.2		47	2.3	*	80
	Lower Great Lakes/St. Lawrence Plain	-3.2		40	-10.4		17	-9.3		16	-7.4	+	33
	Atlantic Northern Forest	-0.4		96	-7.8	*	55	-2		47	3		72
Northern Parula													
	Canada	0.2		124	-0.1		63	-3.2		56	1.4		89
	Boreal Hardwood Transition	1.8		30									
	Atlantic Northern Forest	1		85	1.3		51	-5.5	*	41	0.2		70
Yellow Warbler													
	Canada	0.3		605	2		271	0.5		292	1.4		481
	Northern Pacific Rainforest	-2.3		22	-4.8		15				-2.5		18
	Boreal Taiga Plains	2.6		80	8.8	*	25	2.4	+	36	1.9		67
	Boreal Softwood Shield	-2.3		50	-2.5		18	-2.1		28	4		19
	Great Basin	-3.1	*	23							-5		20
	Northern Rockies	-2.7		42	-8.3	*	21	-3		21	1.5		35
	Prairie Potholes	1.9	*	115	-0.1		46	0.9		52	2.8	*	91
	Boreal Hardwood Transition	-2.2	*	79	3		33	-4.3		36	-4.2		63
	Lower Great Lakes/St. Lawrence Plain	1.1		75	2.4		39	1.5		37	-0.9		70
	Atlantic Northern Forest	0.5		94	3.5		61	3.6	+	51	-1.9		78
Chestnut-sided Warbler													
	Canada	-1.6	*	286	-1.6		138	-1.1		135	-3.2	*	219
	Boreal Taiga Plains	-0.2		15									
	Boreal Softwood Shield	-4.8		31	0.1		19				-10.9		18
	Boreal Hardwood Transition	-1.7	*	94	-0.6		41	-1.2		46	-2.8	*	78
	Lower Great Lakes/St. Lawrence Plain	0.7		52	-5.7		19	9	*	20	-1.8		43
	Atlantic Northern Forest	-0.3		89	-3.1		54	-5.3	+	50	-2.4		65
Magnolia Warbler													
	Canada	1.6	*	312	1		125	1.3		141	2.7	*	229
	Boreal Taiga Plains	6		26							5.7		20
	Boreal Softwood Shield	2	+	50	7.3		23	6.6	*	25	1.6		21
	Boreal Hardwood Transition	2.4		93	-0.6		35	0.1		43	0.5		74

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
	Lower Great Lakes/St. Lawrence Plain	-6.9		24							6.9		20
	Atlantic Northern Forest	1.2	*	95	1		55	0.8		48	2.9	+	77
Cape May Warbler	Canada	2.8	+	129	-9.5		48	0.4		59	8.4	+	73
	Boreal Softwood Shield	6.3		15									
	Boreal Hardwood Transition	3.2		40				2		16	9.9		25
	Atlantic Northern Forest	-0.5		61	-4.9		30	-2		33	6.2		30
Black-throated Blue Warbler	Canada	0.1		148	-5.2		48	-3		49	3.4		104
	Boreal Hardwood Transition	-1.2		63	-10.3	*	19	-1		23	-0.4		48
	Lower Great Lakes/St. Lawrence Plain	-7.5		20									
	Atlantic Northern Forest	3.1	+	58	-1.8		23	-2.6		21	13.5	*	38
Yellow-rumped Warbler	Canada	1.2	*	486	5.6	*	195	-0.3		218	0.5		386
	Northwestern Interior Forest	4.1		22							5.4		22
	Northern Pacific Rainforest	-0.3		25							-3.7		19
	Boreal Taiga Plains	2.8		66				11.2	+	21	5.3	+	55
	Boreal Softwood Shield	-1.8		53	8.3		20	-4.3		29	-5.4		23
	Great Basin	-0.4		23							0.4		20
	Northern Rockies	0.3		51	14.7	*	25	-2.3		26	-2.5	+	45
	Boreal Hardwood Transition	0.7		98	4		40	0.1		47	1.1		80
	Lower Great Lakes/St. Lawrence Plain	-0.7		26							-3.8		23
	Atlantic Northern Forest	4	*	96	3.8		59	2.5		47	2.4		80
Black-throated Gray Warbler	Canada	-5.4	+	20							-14.6	*	17
	Northern Pacific Rainforest	-4.9		16									
Black-throated Green Warbler	Canada	-0.7		249	-4.3	*	91	-1.5		109	0.5		195
	Boreal Softwood Shield	-3.7	+	33							-6.5		15
	Boreal Hardwood Transition	0.4		83	-19.9	*	26	5.1		39	2.2		69
	Lower Great Lakes/St. Lawrence Plain	3.9		29							7		24
	Atlantic Northern Forest	0.8		95	-0.2		47	-0.3		47	3.1		78
Townsend's Warbler	Canada	-1.1		68	2		21	-2.6		30	-0.9		53
	Northern Pacific Rainforest	1.4		25							0.9		20
	Great Basin	-3.6	*	15									
	Northern Rockies	3.3		23							5.3		19
Blackburnian Warbler	Canada	2.8	*	209	4.8		76	2		84	0.2		151
	Boreal Softwood Shield	7.4	*	17									
	Boreal Hardwood Transition	3.2	*	85	9.4		29	6.7	*	35	4.9	*	66
	Lower Great Lakes/St. Lawrence Plain	-3.4		17									
	Atlantic Northern Forest	0.3		81	1.6		35	-0.2		34	-6.6		55
Pine Warbler	Canada	5.7	+	49				5.6		19	4.7		39
	Boreal Hardwood Transition	4.6		32							4.3		24
	Lower Great Lakes/St. Lawrence Plain	14.9	*	16									
Palm Warbler	Canada	2.1		65				3		29	-0.9		42
	Boreal Taiga Plains	10.6		15									
	Atlantic Northern Forest	2.4		28							4.1		20

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Bay-breasted Warbler													
Canada		0.4		138	1.9		61	-7.5	+	60	-1.6		73
Boreal Softwood Shield		14.1		17									
Boreal Hardwood Transition		-8.5	+	40	-0.3		15				8.8		21
Atlantic Northern Forest		0.5		76	4.5		41	-8.7		36	-11.7		42
Blackpoll Warbler													
Canada		-3.7	*	120	6.5		35	-2.5		44	0.5		68
Boreal Taiga Plains		-11.2		15									
Boreal Softwood Shield		-4.5	*	26				2.8		20			
Atlantic Northern Forest		-4.7	+	35	-4.8		17				1.3		19
Black-and-white Warbler													
Canada		2.5	*	318	0.8		126	4.5	*	151	-0.1		250
Boreal Taiga Plains		-0.1		35							0.5		29
Boreal Softwood Shield		3.9		46				8.3	*	27	1.4		22
Boreal Hardwood Transition		1.5	*	91	-4.3		33	6.5	*	44	3.4	*	76
Lower Great Lakes/St. Lawrence Plain		7.2	*	50	3.6		19	13	*	19	2.4		45
Atlantic Northern Forest		0		92	3		54	-2.4		49	0.3		74
American Redstart													
Canada		0.2		413	2.4		183	-1.7		184	-0.1		312
Boreal Taiga Plains		7.8	+	51				-5.1		20	11.5	+	40
Boreal Softwood Shield		2.8		47	9.3		21	3.5		21	-5.5		20
Northern Rockies		-0.3		38	-0.4		17				-1.5		29
Boreal Hardwood Transition		0.9		95	1		41	-0.6		43	2.3		76
Lower Great Lakes/St. Lawrence Plain		3.4	*	54	-1.5		27	-3.8		21	11	*	46
Atlantic Northern Forest		0.2		98	1.1		63	-5.1	*	54	-5.3	*	83
Ovenbird													
Canada		0.4		388	2.2		174	-1.1	+	186	-0.6		303
Boreal Taiga Plains		3.2	*	67	-4.2		18	-2.2		30	5.8	*	51
Boreal Softwood Shield		2.1		45	5.9		23	3.2		21	-6.4		19
Prairie Potholes		0.8		19							5.4		16
Boreal Hardwood Transition		0.1		95	1.3		41	-1.7		46	-0.8		78
Lower Great Lakes/St. Lawrence Plain		-0.5		66	-1		27	5.3	*	30	-2.7	+	60
Atlantic Northern Forest		-0.9		93	4.4	*	60	-2.8	+	52	-2.8	+	77
Northern Waterthrush													
Canada		0		355	3.6		131	1.5		165	1.5		242
Northwestern Interior Forest		10.4		16							21.6	*	15
Boreal Taiga Plains		5.8		35							-1.5		24
Boreal Softwood Shield		-2		49	-2.5		15	1.7		28	1		16
Northern Rockies		2.5	*	38	8.4		17	4.9		23	3.4	*	32
Boreal Hardwood Transition		-3.4		77	3.3		31	-1.7		35	-4.3		54
Lower Great Lakes/St. Lawrence Plain		2.4		38				8.3		16	2.1		29
Atlantic Northern Forest		3	+	76	6.3		42	2.5		34	-0.4		56
Connecticut Warbler													
Canada		-8.9	*	73	2.2		23	-7.9	+	30	-6.7		44
Boreal Taiga Plains		-2.9		44				-8		17	-5.7		30
Boreal Hardwood Transition		-17.9		16									
Mourning Warbler													
Canada		-0.2		326	5	*	140	-1.2		159	-4.4	*	230
Boreal Taiga Plains		-6.5		49				4.4		22	-7.1	*	35
Boreal Softwood Shield		-2		51	8.6	+	23	2.5		29	2		18
Boreal Hardwood Transition		-2.7	+	94	3	+	41	-3		47	-4.3	*	77
Lower Great Lakes/St. Lawrence Plain		3.8		47	27.7	*	20	-0.1		20	2.4		40
Atlantic Northern Forest		0.4		78	6.3	*	42	-6.9	*	37	-0.3		56

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
MacGillivray's Warbler													
Canada		0.5		90	6.1		36	1.4		43	-2.1		73
Northern Pacific Rainforest		-0.7		25							-2.6		19
Great Basin		-4.4	*	22							-6.3	+	20
Northern Rockies		3.1		38				5.6		20	0		32
Common Yellowthroat													
Canada		-0.6		589	-0.9		260	-2.1	*	284	0.6		468
Northern Pacific Rainforest		0.9		21							-5.8		17
Boreal Taiga Plains		-2	+	77	0.4		23	-6.7		38	-1.9		63
Boreal Softwood Shield		0.3		50	4.8		24	2.3		26	0.6		19
Great Basin		4.6		15									
Northern Rockies		2.1		40	2.4		17	-2.7		21	2.3		35
Prairie Potholes		1		96	2.6		35	5.3		35	2.3		72
Boreal Hardwood Transition		-2.1	*	99	-2.6		42	-2.5	*	49	-1.8		82
Lower Great Lakes/St. Lawrence Plain		0.5		75	-1.6		38	0.6		37	2.2		71
Atlantic Northern Forest		0.3		98	-1.3		63	-3.2	*	53	1.8	+	84
Wilson's Warbler													
Canada		-1.3		246	-9.2	*	92	0.5		112	1.5		144
Northwestern Interior Forest		10		22							17.1	+	22
Northern Pacific Rainforest		-3.6		24	-16.4		16				-2.8		15
Boreal Softwood Shield		-0.6		42				2.1		26			
Great Basin		-3.5		19							0.2		15
Northern Rockies		-1.4		43	-13.9		18	8.5		19	-1.8		33
Boreal Hardwood Transition		2.1		24									
Atlantic Northern Forest		3.4	+	47	5.5		24	-13.8		24	-2.7		22
Canada Warbler													
Canada		-6.2	+	189	-0.8		90	-3.8		87	-2.4		116
Boreal Softwood Shield		-0.3		18									
Boreal Hardwood Transition		-2.4		71	-7.6		30	-2.9		30	0.6		47
Lower Great Lakes/St. Lawrence Plain		-7.8	+	18									
Atlantic Northern Forest		-5.4	*	71	-3		42	-2.9		40	-7.9		44
Scarlet Tanager													
Canada		-0.1		144	-2.5		62	-7.5	*	59	0		84
Boreal Hardwood Transition		-1		61	-0.3		21	-4.4		24	-4.2		41
Lower Great Lakes/St. Lawrence Plain		-3.7		51	-0.4		28	-7.9	+	22	-1.7		31
Atlantic Northern Forest		3.2		27									
Western Tanager													
Canada		1.6	+	120	-3.3		41	5		47	2.3		99
Northern Pacific Rainforest		2.4		24							1.2		20
Boreal Taiga Plains		6.5		28							7.9		22
Great Basin		0.5		22							-0.1		20
Northern Rockies		3.2		42				0.2		17	4.2		37
Spotted Towhee													
Canada		0.9		63	6.6		30	3.2		27	-1		52
Northern Pacific Rainforest		1.6		22							0		18
Great Basin		-0.6		19							-4.3	+	18
Eastern Towhee													
Canada		-2.6		63	-10.8	+	26	0.3		21	-0.2		39
Boreal Hardwood Transition		-6.5		16									
Lower Great Lakes/St. Lawrence Plain		-0.7		35	-6.1		17				8.4		20
American Tree Sparrow													
Canada		-12.2		16									

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Chipping Sparrow													
Canada		-1	*	581	-0.5		261	-0.6		270	-0.4		472
Northwestern Interior Forest		2.7		19							0.9		19
Northern Pacific Rainforest		-1.9		17									
Boreal Taiga Plains		-4	*	83	-6.2	*	22	-10.9	*	37	0.4		72
Boreal Softwood Shield		2.2	*	33	14.1	*	22				3		18
Great Basin		0.8		23							-1.4		20
Northern Rockies		-2.5		51	-1.1		25	5.3		26	-3.4		45
Prairie Potholes		1		83	-0.8		23	6.9		31	2.1		67
Boreal Hardwood Transition		-1.3		97	-0.1		42	-0.8		48	-1		78
Lower Great Lakes/St. Lawrence Plain		1.6		76	-4		39	2.7	+	37	1.7	+	72
Atlantic Northern Forest		-1		92	-2		59	-3.3	*	51	-0.3		71
Clay-colored Sparrow													
Canada		-0.1		267	1.4		92	-0.6		117	0.7		217
Boreal Taiga Plains		-0.5		83	1		24	-1.2		37	-1.5		70
Northern Rockies		0.6		23							-4.6		22
Prairie Potholes		-0.4		129	2.3		53	-1.7		62	1.3		106
Boreal Hardwood Transition		-1.5		15									
Field Sparrow													
Canada		-5.1	*	81	-3.9		40	-1.8		32	-8.8	*	61
Boreal Hardwood Transition		-16	*	24							-24.4	*	15
Lower Great Lakes/St. Lawrence Plain		-3.8	+	52	-1		26	-0.5		23	-6.5	*	45
Vesper Sparrow													
Canada		-0.6		363	1		163	-0.1		168	-2.1	*	265
Boreal Taiga Plains		-3.3	*	60	-10.5		20	1.8		25	-2.2		49
Great Basin		0.6		18							-0.5		16
Northern Rockies		3.1		25							1.6		17
Prairie Potholes		0.8		127	2.6		52	-0.1		60	-1.4		104
Boreal Hardwood Transition		-8.7		39	-6.6		17	-7.2	*	18	-10.7		24
Lower Great Lakes/St. Lawrence Plain		-3.4		62	-3.6		36	-3.8		34	-9.7	+	50
Atlantic Northern Forest		-6.8	+	26	-0.4		17						
Lark Sparrow													
Canada		5.1		18									
Prairie Potholes		4.6		18									
Lark Bunting													
Canada		-15.8	*	35							-17.9		22
Prairie Potholes		-13	*	36							-18.6	+	22
Savannah Sparrow													
Canada		-0.3		554	-0.2		253	-1.6	*	262	0.1		444
Boreal Taiga Plains		1.3	*	72	0.4		22	0.5		35	0		60
Boreal Softwood Shield		-5.7		35	-1.1		16	-2.9		17			
Great Basin		-0.7		17									
Northern Rockies		-1.3		38	8.6		16	-6.6		17	-4		33
Prairie Potholes		2.2	*	130	0.5		54	2.2	+	62	2.6	*	106
Boreal Hardwood Transition		-1.7	*	61	-2.8		29	-6.3	+	31	-4.3		52
Lower Great Lakes/St. Lawrence Plain		-1.1	*	75	1.1		39	-4	*	37	0.7		71
Atlantic Northern Forest		-1.3	+	88	-1.1		58	-3.8	+	46	0.7		72
Grasshopper Sparrow													
Canada		-1.4		83	1.8		32	-8.6		30	-13.3		42
Prairie Potholes		-3.6		36	13.3		15						
Lower Great Lakes/St. Lawrence Plain		2.9		38							-0.8		25
Baird's Sparrow													
Canada		-4.2	*	70	-4.4		28	2.9		27	-9.2	*	44
Prairie Potholes		-3.8	*	70	-3.9		29	3.6		30	-9.7	*	44

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Le Conte's Sparrow													
Canada		2.3		150	-5		37	3.9		50	2.2		120
Boreal Taiga Plains		2.6		64	-10		16	4.9		25	0.2		51
Prairie Potholes		-1.3		74	0.9		20	-2.5		20	-0.3		61
Nelson's Sharp-tailed Sparrow													
Canada		7.5		48							14.3	*	36
Prairie Potholes		6.2		26							9.2		21
Fox Sparrow													
Canada		0.2		118	19	*	18	4.7		55	6.9	*	75
Boreal Taiga Plains		8.6		15									
Boreal Softwood Shield		-0.1		23				2.7		19			
Northern Rockies		13.9		18									
Atlantic Northern Forest		2.7		25							-1.4		15
Song Sparrow													
Canada		-0.9	*	566	-2.8	*	275	0.3		268	-0.6		466
Northern Pacific Rainforest		-0.3		29	3.9		17	-1.6		15	-0.6		24
Boreal Taiga Plains		-2.3	*	71	-2.9		22	-1.9		33	0.1		62
Boreal Softwood Shield		-3.3	+	36	-2.3		23				-10.4	*	18
Great Basin		-1.3		22							5.2	*	19
Northern Rockies		-0.2		40	-0.5		22	3.1		20	2.1		33
Prairie Potholes		-1.4	*	99	-5.1	*	37	0.4		45	1.8		78
Boreal Hardwood Transition		-2.7	*	92	-7.3	*	38	-0.1		43	-3.2	*	77
Lower Great Lakes/St. Lawrence Plain		-0.2		76	-1.2		39	1.8		37	-1.5		72
Atlantic Northern Forest		-0.7		97	-2.2	*	64	-0.5		53	1.6		82
Lincoln's Sparrow													
Canada		0.8		306	11	*	103	-0.9		132	-4.2	*	217
Northwestern Interior Forest		-2.7		16							0.9		15
Boreal Taiga Plains		2.3		65				-8.9		28	-2.7		52
Boreal Softwood Shield		-1.2		41	5.2		18	0.9		23	-11.3	+	15
Northern Rockies		6.3		36				13.6		15	0.5		33
Prairie Potholes		-1.6		16									
Boreal Hardwood Transition		0.8		34				-0.4		19	-0.8		21
Atlantic Northern Forest		1.4		66	14.4	*	39	2.1		34	1.5		46
Swamp Sparrow													
Canada		2.1		326	-4	*	117	2.9		141	2.6		234
Boreal Taiga Plains		6.8	+	53				3		19	-0.1		42
Boreal Softwood Shield		1.1		45				3.1		25	-2.4		17
Boreal Hardwood Transition		0.9		89	-5		33	3.4		38	5.7	*	70
Lower Great Lakes/St. Lawrence Plain		1.4		54	-4.7		22	8.3	+	22	-0.3		45
Atlantic Northern Forest		1.9	+	73	-3		41	4.7		33	10.9	*	51
White-throated Sparrow													
Canada		-0.9		439	-1.9	*	192	-1.1	*	210	0.5		347
Boreal Taiga Plains		-1.1		84	-0.9		24	0.4		37	-2.8	*	70
Boreal Softwood Shield		-0.8		56	0		25	3.4		30	-0.2		23
Prairie Potholes		-1.7		22							-0.2		19
Boreal Hardwood Transition		-0.2		101	-3.3	+	43	-0.5		49	1.5		84
Lower Great Lakes/St. Lawrence Plain		0.2		62	0		25	-2.3		26	-3		54
Atlantic Northern Forest		-2.6	*	99	-3.1	*	64	-3.8	*	54	0.7		85
White-crowned Sparrow													
Canada		-1.7		112	-0.2		35	1.2		40	-4		85
Northwestern Interior Forest		-3.4		21							-3.1		21
Northern Pacific Rainforest		2.6		23	-13.1	*	15				4.9	*	19
Northern Rockies		3.8	*	34							-0.6		26

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Dark-eyed Junco													
Canada	-0.8		415	-0.3		185	0.2		193	-2.6	*	300	
Northwestern Interior Forest	0		22							-1.3		22	
Northern Pacific Rainforest	-3.8	*	26							-1.2		20	
Boreal Taiga Plains	0.7		56				-6.5		20	-4.8	+	47	
Boreal Softwood Shield	2.3		46	-11.6		19	6.2		23	-9.3		18	
Great Basin	-4.3	*	23							-6.8	*	20	
Northern Rockies	0		51	4.9		25	-1.8		26	-1		45	
Boreal Hardwood Transition	-4.2		68	-7.7	+	32	-2.2		34	-1.2		42	
Atlantic Northern Forest	-1.5		92	-1.2		60	1.1		50	-0.5		72	
McCown's Longspur													
Canada	-11.6	+	23							-8.1		15	
Prairie Potholes	-13.5	*	24							-5.7		15	
Chestnut-collared Longspur													
Canada	-2	*	47	3.5		19	-5.6		18	-8.8	*	29	
Prairie Potholes	-2	*	46	3.2		21	-5.2		20	-9.1	*	29	
Northern Cardinal													
Canada	4.8		60	-1		17	1.9		17	6	+	57	
Lower Great Lakes/St. Lawrence Plain	4.7		52	-0.7		17	2.3		17	6	+	49	
Rose-breasted Grosbeak													
Canada	-1		351	4.2		165	-5.2	*	175	-4.4	+	273	
Boreal Taiga Plains	1.9		61	-11.9	*	20	7.6		29	4		48	
Prairie Potholes	-0.6		34				-10.5		15	-5.8		30	
Boreal Hardwood Transition	-4.4	*	89	0.7		38	-8.6	*	43	-6	*	70	
Lower Great Lakes/St. Lawrence Plain	-1.1		72	10.2	*	39	-5.5	+	36	-1.4		65	
Atlantic Northern Forest	-1.7		80	12.8	*	53	-6	*	47	-4.4		54	
Black-headed Grosbeak													
Canada	2.3		39				4.3		18	5.8		34	
Northern Pacific Rainforest	0.5		18							3.2		15	
Lazuli Bunting													
Canada	5.2	+	33	-9.4		17	14.2	*	18	-0.9		28	
Great Basin	-0.2		17							-3.7		15	
Indigo Bunting													
Canada	2		124	1.5		50	-0.6		54	2		104	
Boreal Hardwood Transition	1.6		52	1.4		20	2.2		22	6.2	*	45	
Lower Great Lakes/St. Lawrence Plain	3.8	*	61	2.3		29	-1.4		30	0.2		52	
Bobolink													
Canada	-2.8	*	316	2.5	*	174	-7.4	*	154	-4.3	*	238	
Boreal Taiga Plains	-0.2		15										
Boreal Softwood Shield	-17.7		15										
Prairie Potholes	-2.5		61	-2.7		28	1.5		25	-4.5	+	43	
Boreal Hardwood Transition	-3.4	*	53	5.4	+	23	-6	*	24	-8.1	*	47	
Lower Great Lakes/St. Lawrence Plain	-2.6	*	76	1.3		39	-7.9	*	37	-3		72	
Atlantic Northern Forest	-2.9	*	84	4.4	*	58	-8.6	*	47	-11.2	*	58	
Red-winged Blackbird													
Canada	-1	*	588	1.9	+	283	-3	*	289	-1.2		472	
Northern Pacific Rainforest	1.2		17										
Boreal Taiga Plains	-2.2		82	2.7		26	2.8		39	-7.8	*	69	
Boreal Softwood Shield	-0.5		29	-1.6		19							
Great Basin	3.3		20							-15.5		17	
Northern Rockies	0.3		34	-2.6		20	-5	*	19	-2.8		29	
Prairie Potholes	-1	+	131	0.5		54	-3.5		62	1.2		107	
Boreal Hardwood Transition	-2.4	*	93	-1		41	-6.5	*	47	-1.4		75	
Lower Great Lakes/St. Lawrence Plain	-0.6		76	1.3		39	-2.6	*	37	-0.2		72	

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Atlantic Northern Forest		-2.2	*	93	5.7	*	63	-5.2	*	52	0.6		72
Eastern Meadowlark													
Canada		-2.3	*	133	-2.1		70	-4.5	*	62	-1.7		114
Boreal Hardwood Transition		-0.6		40	4.7		19	0.3		17	-3.2		34
Lower Great Lakes/St. Lawrence Plain		-2.5	*	74	-2.6	+	39	-4.8	+	37	-1.2		70
Atlantic Northern Forest		-0.6		19									
Western Meadowlark													
Canada		-1.5	*	229	-1.7		104	-0.9		108	-1.9	+	166
Boreal Taiga Plains		-5.5	*	41	-6.6		16	1		21	-5.5		29
Great Basin		-4.3	*	20							-7.8	*	17
Northern Rockies		2.4	+	21							-0.2		15
Prairie Potholes		-1.8	*	125	-3.3	*	52	-2.2		58	-1.4		100
Yellow-headed Blackbird													
Canada		-0.2		174	2.9		64	6.6	+	78	-10.7	*	131
Boreal Taiga Plains		-5.8	+	35				10.5		20	-13.4	*	25
Prairie Potholes		0.6		116	1.6		45	7.2	+	52	-8.3	*	90
Rusty Blackbird													
Canada		-14.7	*	106	-16.2	+	47	-11.7		31	-21.6		31
Boreal Softwood Shield		-15.4	*	21									
Atlantic Northern Forest		3.9		40	-1.2		26						
Brewer's Blackbird													
Canada		-0.9		277	0.8		118	-0.3		134	-0.1		216
Northern Pacific Rainforest		-4.4		15									
Boreal Taiga Plains		-2.8	*	67	0.7		21	-0.2		33	-6.1	*	54
Great Basin		0		21							-5.3		17
Northern Rockies		-2.6		25	-9.6	+	16				2.2		17
Prairie Potholes		0.1		129	2.5		54	-0.7		62	3.2		105
Common Grackle													
Canada		-1.8	*	408	-4.6	*	216	-3.1	+	189	-0.8		315
Boreal Taiga Plains		-6.1		31				10.1		15	-0.9		19
Boreal Softwood Shield		0.2		30	4.5		21						
Prairie Potholes		-1.7		85	8.4	+	43	-8.4		36	-6.9		58
Boreal Hardwood Transition		-2.4	+	90	-11.6	+	40	-6.6	+	44	-2.1		73
Lower Great Lakes/St. Lawrence Plain		-2.1	+	76	-5.3	*	39	-5.5		36	-1		72
Atlantic Northern Forest		-1.6		96	-2.6		64	0.8		52	2.2		80
Brown-headed Cowbird													
Canada		-2.2	*	523	-0.3		268	-3.8	*	249	-4.3	*	399
Northern Pacific Rainforest		-3.7	+	19							-4.8		15
Boreal Taiga Plains		-1.3		68	-4.2		25	-1.7		32	-6.5	*	52
Boreal Softwood Shield		-15	*	18	3.8		16						
Great Basin		-3.6	*	22							-8.4	*	19
Northern Rockies		0.7		39	8.1		22	-1.3		22	-1.4		32
Prairie Potholes		-0.3		129	4.3	*	52	0		60	-4.3	*	105
Boreal Hardwood Transition		-6.5	*	71	-8.9	+	31	-5.2		31	-9	*	57
Lower Great Lakes/St. Lawrence Plain		-2.2	*	76	-1.5		39	-2.3		37	-2.1		72
Atlantic Northern Forest		-6.7	*	79	-5		59	-11.3	*	45	-12.4	*	44
Orchard Oriole													
Canada		10.9	*	19									
Bullock's Oriole													
Canada		0.5		28							-2.5		22
Great Basin		1		17							-1.7		15

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Baltimore Oriole													
Canada	-0.5		313	3.2	*	135	-1.7		154	-2		237	
Boreal Taiga Plains	-2.2		55	5.2		16	5.1		31	-4		43	
Prairie Potholes	0.9		110	6.6	*	47	-2.3		51	-0.6		82	
Boreal Hardwood Transition	-7	*	43	-4.9		21	-14.8	+	20	-3.1		30	
Lower Great Lakes/St. Lawrence Plain	-0.1		73	0.6		38	-5.7	+	36	0.8		68	
Atlantic Northern Forest	2.3		30				-8.8		15				
Pine Grosbeak													
Canada	-8.5	*	86	2.9		21	-10		33	-14.3	+	39	
Boreal Softwood Shield	0.1		19										
Atlantic Northern Forest	-17.2	*	27										
Purple Finch													
Canada	-4.2	*	349	-2.1		166	-2.9		160	-6.1	*	246	
Northern Pacific Rainforest	0		21							-12.4		15	
Boreal Taiga Plains	-13.4	*	29							-22.7	*	16	
Boreal Softwood Shield	-1.5		39	18.6	*	21	-3		18	-8.6		17	
Northern Rockies	-8.8		23										
Boreal Hardwood Transition	-4	+	86	-5.2		37	-4		42	-8.1	*	65	
Lower Great Lakes/St. Lawrence Plain	9		39	-6.7		15				12	*	33	
Atlantic Northern Forest	-4.5	*	97	-6	*	63	-1.4		53	-4.5	*	77	
Cassin's Finch													
Canada	-2.9		30				-1.1		15	-3.1		19	
Great Basin	-0.8		19							-2.1		16	
House Finch													
Canada	5.7	*	104				12.4	*	24	0.8		98	
Northern Pacific Rainforest	5.9	*	17							4.4	+	15	
Lower Great Lakes/St. Lawrence Plain	7.5		58							-6.6	*	57	
Red Crossbill													
Canada	-1.4		114	-1.7		23	-6.5		50	-1.3		78	
Northern Pacific Rainforest	-5.1		22							-2		17	
Great Basin	-0.4		20							-4		18	
Northern Rockies	1.5		30				3		17	3.4		23	
Atlantic Northern Forest	9.9		17										
White-winged Crossbill													
Canada	0.2		149	-19.9	+	20	12.7		31	2.8		105	
Northwestern Interior Forest	5.4		18							14		18	
Boreal Taiga Plains	8.9		26							-6.4		20	
Boreal Hardwood Transition	6.7		22							29.9		17	
Atlantic Northern Forest	16.5	*	48							-11.3		34	
Common Redpoll													
Canada	-13.9	*	28		+								
Pine Siskin													
Canada	-2.6	*	366	-3.5		125	-1.2		155	-4.9	*	262	
Northern Pacific Rainforest	-7	*	21							-10.7	*	18	
Boreal Taiga Plains	0.6		63				9.1		24	-1.4		52	
Boreal Softwood Shield	-3.6		34	-12.8		16							
Great Basin	-1.8		23							-3.9		20	
Northern Rockies	-3.1	*	49	-10.7	+	25	-2.9		24	-4.9	*	43	
Prairie Potholes	-11.2		22										
Boreal Hardwood Transition	-1.6		47				-2.9		20	0		27	
Atlantic Northern Forest	-2.5		77	8.7		31	-2.9		35	-22	*	51	
American Goldfinch													
Canada	0.3		492	-2	*	235	2	+	231	1.8	*	409	
Northern Pacific Rainforest	-5.1	*	18										

Continued on next page

Appendix 1 (cont'd)

Species	First year – 2000			1971–1980			1981–1990			1991–2000			
	Area	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N	Trend	P ^a	N
Boreal Taiga Plains		-2		52	0		17	-5.1		26	0.4		46
Boreal Softwood Shield		-0.5		28							10.6		20
Great Basin		-8	*	18							-10.7	*	16
Prairie Potholes		2	+	115	0.8		44	0.6		52	-0.7		92
Boreal Hardwood Transition		-0.1		81	-6.9	*	34	0.5		35	3.1		68
Lower Great Lakes/St. Lawrence Plain		2.4	*	76	-1.8		39	4.2	*	37	5.6	*	72
Atlantic Northern Forest		-0.8		94	-1		63	3.9	*	50	-0.3		80
Evening Grosbeak													
Canada		-4		293	-16.7	+	119	-9.8	+	123	-10.6	*	214
Boreal Softwood Shield		0.1		27	39.7	*	19						
Great Basin		1.8		20							-21.7	*	17
Northern Rockies		-9.5		30							-8.3		23
Boreal Hardwood Transition		-2.2		85	-5.6		31	-13.1		36	2.8		65
Atlantic Northern Forest		-4.8		91	-26.1	*	43	-14.8		40	-13.8	+	74
House Sparrow													
Canada		-2	*	436	0.2		217	-2.1		221	0.9		331
Northern Pacific Rainforest		-1.7		16									
Boreal Taiga Plains		-4.3		54	-4.8	+	22	-2.8		29	-9.3	*	43
Boreal Softwood Shield		-13	*	19									
Prairie Potholes		-0.7		127	2.6		54	-2		62	2.3		101
Boreal Hardwood Transition		-6.8	*	42	-0.5		24	-2.9		20	-7.7	*	28
Lower Great Lakes/St. Lawrence Plain		-1.7	*	75	-1.5		39	-2.6	+	36	-1.6	+	70
Atlantic Northern Forest		-5.1	*	82	-0.9		55	-3.8	*	47	-0.9		58

^a Statistical significance: * indicates $P < 0.05$; + indicates $0.10 = P > 0.05$.

Appendix 2

List of species grouped by migratory and habitat use patterns. Species were assigned to categories based on habitat use and migration pattern according to Peterjohn and Sauer (1993). A few additional species not covered by that paper were classified by the authors. In some cases, species could not be assigned to one of these categories and thus are not included in this list, although they may have been recorded on BBS routes. Not all species that are included in this list had sample sizes sufficient for trend analyses and for inclusion in the list of individual species trends (Appendix 1). However, all species recorded in any number on BBS routes and that can be classified by habitat use or migration pattern are included in the analysis of species groups (Tables 1, 2, and 3).

Grassland

Upland Sandpiper, Long-billed Curlew, Mountain Plover, Greater Prairie-Chicken, Sharp-tailed Grouse, Ring-necked Pheasant, Northern Harrier, Ferruginous Hawk, Barn Owl, Short-eared Owl, Burrowing Owl, Horned Lark, Bobolink, Eastern Meadowlark, Western Meadowlark, Chestnut-collared Longspur, McCown's Longspur, Vesper Sparrow, Savannah Sparrow, Baird's Sparrow, Grasshopper Sparrow, Henslow's Sparrow, Le Conte's Sparrow, Dickcissel, Lark Bunting, Sprague's Pipit, Sedge Wren

Woodland

Blue Grouse, Spruce Grouse, Ruffed Grouse, Wild Turkey, Band-tailed Pigeon, Sharp-shinned Hawk, Cooper's Hawk, Northern Goshawk, Red-shouldered Hawk, Broad-winged Hawk, Merlin, Long-eared Owl, Barred Owl, Spotted Owl, Northern Saw-whet Owl, Eastern Screech-Owl, Western Screech-Owl, Flammulated Owl, Northern Pygmy-Owl, Yellow-billed Cuckoo, Black-billed Cuckoo, Hairy Woodpecker, Downy Woodpecker, White-headed Woodpecker, Black-backed Woodpecker, Three-toed Woodpecker, Yellow-bellied Sapsucker, Red-naped Sapsucker, Red-breasted Sapsucker, Williamson's Sapsucker, Pileated Woodpecker, Red-bellied Woodpecker, Chuck-will's-widow, Whip-poor-will, Vaux's Swift, Ruby-throated Hummingbird, Black-chinned Hummingbird, Rufous Hummingbird, Calliope Hummingbird, Great Crested Flycatcher, Olive-sided Flycatcher, Eastern Wood-Pewee, Western Wood-Pewee, Yellow-bellied Flycatcher, Cordilleran Flycatcher, Pacific-slope Flycatcher, Acadian Flycatcher, Least Flycatcher, Hammond's Flycatcher, Dusky Flycatcher, Steller's Jay, Gray Jay, Clark's Nutcracker, Evening Grosbeak, Pine Grosbeak, Purple Finch, Cassin's Finch, Red Crossbill, White-winged Crossbill, Pine Siskin, Dark-eyed Junco, Rose-breasted Grosbeak, Black-headed Grosbeak, Western Tanager, Scarlet Tanager, Bohemian Waxwing, Red-eyed Vireo, Philadelphia Vireo, Warbling Vireo, Yellow-throated Vireo, Blue-headed Vireo, Cassin's Vireo, Hutton's Vireo, Black-and-white Warbler, Prothonotary Warbler, Tennessee Warbler, Northern Parula, Cape May Warbler, Black-throated Blue Warbler, Yellow-rumped Warbler, Magnolia Warbler, Cerulean Warbler, Bay-breasted Warbler, Blackpoll Warbler, Blackburnian Warbler, Black-throated Green Warbler, Townsend's Warbler, Pine Warbler, Ovenbird, Northern Waterthrush, Louisiana Waterthrush, Hooded Warbler, Canada Warbler, American Redstart, Winter Wren, Brown Creeper, White-breasted Nuthatch, Red-breasted Nuthatch, Pygmy Nuthatch, Tufted Titmouse, Black-capped Chickadee, Mountain Chickadee, Boreal Chickadee, Chestnut-backed Chickadee, Golden-crowned Kinglet, Ruby-crowned Kinglet, Blue-gray Gnatcatcher, Townsend's Solitaire, Wood Thrush, Veery, Gray-cheeked Thrush, Bicknell's Thrush, Swainson's Thrush, Hermit Thrush, Varied Thrush, Western Bluebird

Scrub/Successional

American Woodcock, Northern Bobwhite, Mountain Quail, California Quail, Sage Grouse, Common Poorwill, Alder Flycatcher, Willow Flycatcher, Gray Flycatcher, American Goldfinch, Lark Sparrow, White-crowned Sparrow, Golden-crowned Sparrow, White-throated Sparrow, Clay-colored Sparrow, Brewer's Sparrow, Field Sparrow, Song Sparrow, Lincoln's Sparrow, Fox Sparrow, Eastern Towhee, Spotted Towhee, Northern Cardinal, Indigo Bunting, Lazuli Bunting, White-eyed Vireo, Blue-winged Warbler, Golden-winged Warbler, Nashville Warbler, Orange-crowned Warbler, Yellow Warbler, Chestnut-sided Warbler, Black-throated Gray Warbler, Kirtland's Warbler, Palm Warbler, Prairie Warbler, Connecticut Warbler, Mourning Warbler, MacGillivray's Warbler, Common Yellowthroat, Yellow-breasted Chat, Wilson's Warbler, Sage Thrasher, Gray Catbird, Brown Thrasher, Carolina Wren, Bewick's Wren, House Wren, Bushtit

Urban

Rock Dove, Mourning Dove, Chimney Swift, Blue Jay, European Starling, Common Grackle, House Finch, Chipping Sparrow, Purple Martin, House Sparrow, Northern Mockingbird, American Robin

Wetland

Western Grebe, Clark's Grebe, Red-necked Grebe, Horned Grebe, Eared Grebe, Pied-billed Grebe, Common Loon, Herring Gull, California Gull, Ring-billed Gull, Franklin's Gull, Little Gull, Caspian Tern, Forster's Tern, Common Tern, Black Tern, Double-crested Cormorant, American White Pelican, Common Merganser, Hooded Merganser, Mallard, American Black Duck, Gadwall, American Wigeon, Green-winged Teal, Blue-winged Teal, Cinnamon Teal, Northern Shoveler, Northern Pintail, Wood Duck, Redhead, Canvasback, Lesser Scaup, Ring-necked Duck, Common Goldeneye, Barrow's Goldeneye, Bufflehead, Harlequin Duck, White-winged Scoter, Ruddy Duck, Canada Goose, Mute Swan, Trumpeter Swan, American Bittern, Least Bittern, Great Blue Heron, Great Egret, Snowy Egret, Little Blue Heron, Cattle Egret, Green Heron, Black-crowned Night-Heron, Sandhill Crane, King Rail, Virginia Rail, Sora, Yellow Rail, Common Moorhen, American Coot, Wilson's Phalarope, American Avocet, Black-necked Stilt, Common Snipe, Marbled Godwit, Willet, Spotted Sandpiper, Bald Eagle, Osprey, Belted Kingfisher, Yellow-headed Blackbird, Red-winged Blackbird, Rusty Blackbird, Saltmarsh Sharp-tailed Sparrow, Nelson Sharp-tailed Sparrow, Swamp Sparrow, American Dipper, Marsh Wren

Neotropical Migrant

Upland Sandpiper, Long-billed Curlew, Mountain Plover, Band-tailed Pigeon, Swainson's Hawk, Broad-winged Hawk, Peregrine Falcon, Merlin, Flammulated Owl, Burrowing Owl, Yellow-billed Cuckoo, Black-billed Cuckoo, Chuck-will's-widow, Whip-poor-will, Common Nighthawk, Black Swift, Chimney Swift, Vaux's Swift, White-throated Swift, Ruby-throated Hummingbird, Black-chinned Hummingbird, Rufous Hummingbird, Calliope Hummingbird, Eastern Kingbird, Western Kingbird, Great Crested Flycatcher, Olive-sided Flycatcher, Eastern Wood-Pewee, Western Wood-Pewee, Yellow-bellied Flycatcher, Cordilleran Flycatcher, Pacific-slope Flycatcher, Acadian Flycatcher, Alder Flycatcher, Willow Flycatcher, Least Flycatcher, Hammond's Flycatcher, Dusky Flycatcher, Gray Flycatcher, Bobolink, Yellow-headed Blackbird, Orchard Oriole, Baltimore Oriole, Bullock's Oriole, Baird's Sparrow, Grasshopper Sparrow, Lark Sparrow, Chipping Sparrow, Clay-colored Sparrow, Brewer's Sparrow, Lincoln's Sparrow, Rose-breasted Grosbeak, Black-headed Grosbeak, Indigo Bunting, Lazuli Bunting, Dickcissel, Lark Bunting, Western Tanager, Scarlet Tanager, Purple Martin, Cliff Swallow, Barn Swallow,

Violet-green Swallow, Bank Swallow, Northern Rough-winged Swallow, Red-eyed Vireo, Philadelphia Vireo, Warbling Vireo, Yellow-throated Vireo, Blue-headed Vireo, Cassin's Vireo, White-eyed Vireo, Black-and-white Warbler, Prothonotary Warbler, Blue-winged Warbler, Golden-winged Warbler, Nashville Warbler, Orange-crowned Warbler, Tennessee Warbler, Northern Parula, Cape May Warbler, Yellow Warbler, Black-throated Blue Warbler, Magnolia Warbler, Cerulean Warbler, Chestnut-sided Warbler, Bay-breasted Warbler, Blackpoll Warbler, Blackburnian Warbler, Black-throated Gray Warbler, Black-throated Green Warbler, Townsend's Warbler, Kirtland's Warbler, Palm Warbler, Prairie Warbler, Ovenbird, Northern Waterthrush, Louisiana Waterthrush, Connecticut Warbler, Mourning Warbler, MacGillivray's Warbler, Common Yellowthroat, Yellow-breasted Chat, Hooded Warbler, Wilson's Warbler, Canada Warbler, American Redstart, Gray Catbird, House Wren, Blue-gray Gnatcatcher, Wood Thrush, Veery, Gray-cheeked Thrush, Bicknell's Thrush, Swainson's Thrush

Temperate Migrant

American Woodcock, Killdeer, Mourning Dove, Turkey Vulture, Northern Harrier, Sharp-shinned Hawk, Cooper's Hawk, Red-tailed Hawk, Red-shouldered Hawk, Ferruginous Hawk, Golden Eagle, Bald Eagle, Prairie Falcon, American Kestrel, Osprey, Barn Owl, Long-eared Owl, Short-eared Owl, Northern Saw-whet Owl, Yellow-bellied Sapsucker, Red-naped Sapsucker, Red-breasted Sapsucker, Williamson's Sapsucker, Red-headed Woodpecker, Lewis's Woodpecker, Northern Flicker, Common Poorwill, Eastern Phoebe, Say's Phoebe, Horned Lark, Blue Jay, American Crow, European Starling, Brown-headed Cowbird, Red-winged Blackbird, Eastern Meadowlark, Western Meadowlark, Rusty Blackbird, Brewer's Blackbird, Common Grackle, Evening Grosbeak, Pine Grosbeak, Purple Finch, Cassin's Finch, House Finch, Red Crossbill, White-winged Crossbill, Gray-crowned Rosy-Finch, American Goldfinch, Pine Siskin, Chestnut-collared Longspur, McCown's Longspur, Vesper Sparrow, Savannah Sparrow, Henslow's Sparrow, Le Conte's Sparrow, Nelson Sharp-tailed Sparrow, Saltmarsh Sharp-tailed Sparrow, White-crowned Sparrow, Golden-crowned Sparrow, White-throated Sparrow, Field Sparrow, Dark-eyed Junco, Song Sparrow, Swamp Sparrow, Fox Sparrow, Eastern Towhee, Spotted Towhee, Tree Swallow, Bohemian Waxwing, Cedar Waxwing, Loggerhead Shrike, Yellow-rumped Warbler, Pine Warbler, American Pipit, Sprague's Pipit, Sage Thrasher, Brown Thrasher, Rock Wren, Bewick's Wren, Winter Wren, Sedge Wren, Marsh Wren, Brown Creeper, Red-breasted Nuthatch, Golden-crowned Kinglet, Ruby-crowned Kinglet, Townsend's Solitaire, Hermit Thrush, American Robin, Varied Thrush, Eastern Bluebird, Western Bluebird, Mountain Bluebird

Resident

Gray Partridge, Chukar, Northern Bobwhite, Mountain Quail, California Quail, Blue Grouse, Spruce Grouse, Ruffed Grouse, Greater Prairie-Chicken, Sharp-tailed Grouse, Sage Grouse, Ring-necked Pheasant, Wild Turkey, Rock Dove, Northern Goshawk, Barred Owl, Spotted Owl, Eastern Screech-Owl, Western Screech-Owl, Great Horned Owl, Northern Pygmy-Owl, Hairy Woodpecker, Downy Woodpecker, White-headed Woodpecker, Black-backed Woodpecker, Three-toed Woodpecker, Pileated Woodpecker, Red-bellied Woodpecker, Gilded Flicker, Anna's Hummingbird, Black-billed Magpie, Steller's Jay, Gray Jay, Common Raven, Northwestern Crow, Clark's Nutcracker, Northern Cardinal, Hutton's Vireo, House Sparrow, American Dipper, Northern Mockingbird, Canyon Wren, Carolina Wren, White-breasted Nuthatch, Pygmy Nuthatch, Tufted Titmouse, Black-capped Chickadee, Mountain Chickadee, Boreal Chickadee, Chestnut-backed Chickadee, Bushtit

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