

THE 1999-2003 SUMMARY OF THE NORTH AMERICAN BREEDING BIRD SURVEY¹

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Abstract. Data from the North American Breeding Bird Survey were used to estimate continental and regional changes in bird populations for the 5-yr period 1999-2003 and the 2-yr period 2002-2003. These short-term changes were placed in the context of population trends estimated over the 1966-2003 interval. During 1999-2003, 41% of all species exhibited positive trends over the entire survey area, while 64% of all species exhibited positive change between 2002-2003. The continental and regional percentages of species with positive trends were also analyzed for 12 species groups having shared life-history traits. Survey-wide for the entire survey period, grassland birds exhibited the lowest percentage of increasing species (14%), with their sharpest declines occurring in the West during 1999-2003 (10% increasing). During 1999-2003, short-distance migrants experienced significant declines in all regions, where numbers of species with increasing trends ranged from 22% - 34%. Most species fared well during the 2002-2003 period, with 64% ($P < 0.05$) increasing survey-wide. This was primarily a result of increases in the Central and Western BBS regions where 21 of 24 species groups exhibited significant increases in the number of species with positive trends.

Key Words: North American Breeding Bird Survey, population trends, roadside surveys, species group analysis.

RESUMEN DEL CONTEO DE AVES REPRODUCTIVAS (BBS) DE NORTEAMÉRICA DESDE 1999 Y 2003

Resumen. Utilizamos datos del Cuento de Aves Reproductivas (BBS) de Norteamérica para estimar cambios en las poblaciones de aves durante los 5 años entre 1999 y 2003 y los 2 años entre 2002 y 2003. Estos cambios a corto plazo fueron situados en el contexto de las tendencias poblacionales estimadas en el intervalo 1966-2003. Durante 1999-2003, el 41% de las especies mostró tendencias positivas en todo el área del conteo, mientras que 64% de las especies mostró tendencias positivas en el periodo 2002-2003. Los porcentajes de especies con tendencias positivas a nivel regional y continental fueron analizados para 12 grupos de especies que comparten características de historia de vida. Utilizando el periodo total de conteo, las aves de pradera mostraron el porcentaje más bajo de especies con tendencias positivas (14%), con los declives más fuertes detectados en el occidente entre 1999-2003 (10%). Durante 1999-2003, las migratorias de corta distancia sufrieron declives significativos en todas las regiones, donde los números de especies con tendencias positivas oscilaron entre 22% y 34%. A la mayoría de las especies les fue bien entre 2002 y 2003, con un 64% ($P < 0.05$) mostrando tendencias positivas en todo el conteo. Esto se debe principalmente a los aumentos en las regiones Central y Oeste del BBS, donde 21 de los 24 grupos de especies mostraron aumentos significativos en el número de especies con tendencias positivas.

Palabras clave: Cuento de Aves Reproductoras de Norteamérica, tendencias poblacionales, conteos en carreteras, análisis por grupos de especies.

¹ Received: 24 January 2008. Accepted 27 January 2008

INTRODUCTION

Initiated in 1966, the North American Breeding Bird Survey (BBS) is the primary source of standardized population data for breeding birds in the U.S. and Canada. For most avian breeding species in North America, it is the only available source of long-term estimates of population trends and relative abundance at large geographic scales. Implemented by the U.S. Fish and Wildlife Service and Canadian Wildlife Service, the BBS is currently coordinated by the U.S. Geological Survey and Canadian Wildlife Service. This summary presents estimates of population trends continent-wide for 421 bird species [plus four species groups: Western/Clark's grebes (*Aechmophorus clarkii*/*A. occidentalis*), Willow/Alder flycatchers (*Empidonax traillii*/*E. alnorum*), and Pacific-slope/Cordilleran flycatchers (*Empidonax difficilis*/*E. alnorum*), Yellow-bellied/Red-naped/Red-breasted sapsuckers (*Sphyrapicus varius*/*S. nuchalis*/*S. ruber*)] over the period 1966-2003. Although these four groups currently consist of taxonomically distinct species, their taxonomic status changed after the BBS was initiated and we were unable to adequately discriminate observations made in areas of sympatry within the BBS database to conduct range-wide species-level analyses. The 5-yr trends, 1999-2003, and 2-yr changes, 2002-2003, are discussed within the context of the long-term patterns. Detailed analyses and discussion of population changes for individual species within specific regions, states, provinces, territories, and physiographic strata are beyond the scope of this summary. Also included in this summary are the continental and regional trends for 12 groups of birds sharing similar life-history traits. Analyses of group trends can provide insight into the broad temporal and geographic patterns of population trends, especially when viewed in the context of previous BBS summaries (Pardieck and Sauer 2000, Peterjohn and Sauer 1993, Peterjohn et al. 1994, Peterjohn et al. 1996).

METHODS

The BBS consists of >4400 active survey routes randomly located across the continental United States and Canada [See the North American Breeding Bird Survey web site (www.pwrc.usgs.gov/bbs/) for maps depicting the approximate

locations of these routes]. Since 1996 the number of routes surveyed has remained relatively constant around 3000 routes. A total of 2971 routes were sampled in 1999, 2980 in 2000, 2997 in 2001, 2883 in 2002 and 2968 in 2003.

The BBS methodology is described briefly here; see Robbins et al. (1986) for a detailed description. The BBS is a roadside survey program consisting of 39.4-km (24.5 mi) routes, with stops placed at 0.8-km (0.5 mi) intervals for a total of 50 stops. Routes are randomly established on suitable roads and surveyed once per year during the height of the breeding season (June for most of the U.S. and Canada). At each stop, a skilled amateur or professional ornithologist records all birds seen within a 0.4-km (0.25 mi) radius and every bird heard, during a 3-min point count. For each species, the total number of individuals counted at all stops along a route is used as an index of relative abundance.

ESTIMATION OF POPULATION TREND

Population change was estimated using the route-regression procedure (Geissler and Sauer 1990), modified to use estimating equations instead of linear regression analyses (Link and Sauer 1994). These analyses produce a single composite estimate of population change, or trend, presented as mean percent change per year. These trends are weighted means of linear trends for individual routes. Trends were estimated for the entire survey area and for the Eastern, Central, and Western BBS regions (Bystrak 1981). Alaska, northern Canada (territories and northern portion of most provinces), Newfoundland, and northern Mexico were excluded from the analyses because of insufficient data to estimate long-term trends in these areas.

To assist in the trend-estimate evaluation process, we have incorporated a Trend Quality (TQ) score to identify trends that contain certain deficiencies. TQ is a ranked score ranging from 1 - 3, where a one indicates relatively reliable trend. A TQ-value of 3 indicates trend estimates that contain one or more of the following important deficiencies: (a) very low abundance — regional abundance <0.1 birds/route; or (b) sample is based on <5 routes for the long-term analysis or <3 routes for either subinterval (1966-1979 and 1980-1999) [results of these two subintervals are not provided here but are available on the

North American Breeding Bird Survey Results and Analysis web site – <http://www.mbr-pwrc.usgs.gov/bbs/bbs.html>]; or c) very imprecise results — a 5%/year change would not be detected over the long term (1966-1999). A TQ-value of 2 identifies trend estimates that contain one of the following deficiencies: (a) low abundance — regional abundance is <1.0 bird/route; (b) fewer than 14 routes included in the long-term analysis; c) imprecise results — results are so imprecise that a 3%/yr change would not be detected over the long term (1966-1999), or d) sub-interval trends (1966-1979 and 1980-1999) are significantly different from each other ($P < 0.05$, based on a z-test), suggesting inconsistency in trend over time. A TQ-value of 1 reflects data with at least 14 samples in the long term, of moderate precision, and of moderate abundance on routes. See the BBS Analysis and Summary Website (<http://www.mbr-pwrc.usgs.gov/bbs.html>) for additional discussion and rationales for these criteria.

SUMMARIES FOR GROUPS OF SPECIES

We estimate the median percentage of species having increasing populations for each region and time period using the hierarchical models described by Sauer and Link (2002). This procedure provides a group estimate of the proportion of species exhibiting positive trends, incorporating the sampling variation of the component estimates. The summaries are conducted for all species and for groups of species with similar life-history traits. Composition of the species groups are described in Peterjohn and Sauer (1993), but have been revised as per the seventh edition of AOU checklist (AOU 1998).

We note several constraints among the comparisons presented. Data from the intervals

are not independent, as the subintervals are contained within the longer interval. Consequently, we did not formally test for differences among intervals, and merely note differences among point estimates. All tests address the null hypothesis that the percentage of increasing species does not differ from 50% within an interval. We consider the result to be significant if the 95% Credible Interval (Bayesian Confidence Interval) does not include 50%. Sample sizes and precision of estimates differ among regions and time periods. Readers are cautioned that the underlying species groups in each guild can differ among regions. For more detailed analyses of species-group results for time periods and regions, see Sauer et al. (2004).

RESULTS

Among the 200 species with significant ($P < 0.05$) trends over the entire survey period, 96 were positive and 104 were negative (Table 1, Appendix 1). Among these significant trends, 79 species had TQ = 1, while 111 species had TQ = 2, and 10 species had TQ = 3.

During 1966-2003, 48% of all species exhibited increasing population trends, while regional percentages scarcely differed (Fig. 1A). During 1999-2003, 41% of all species exhibited positive trends ($P < 0.05$) over the entire survey area. Similar significant results occurred in the Western and Eastern BBS regions for all species during this same time period. In contrast, 64% of all species had increasing trends ($P < 0.05$) during 2002-2003 over the entire survey area, while 66% ($P < 0.05$) and 77% ($P < 0.05$) of all species exhibited increases in the Western and Central regions, respectively.

Grassland birds fared comparatively well during 2002-2003 with increasing trends ranging

TABLE 1. Summary of Trend Quality (TQ) values for 1966-2003. Total number of species trends (N) in each category as well as their significance ($P < 0.05$) and direction are presented. The TQ-values are defined as follows: 1 = reliable, 2 = view with caution, 3 = not reliable.

Trend Quality	N	Number of Significant Trends	Number of Significant Increases	Number of Significant Decreases
1	141	79	34	45
2	241	111	53	58
3	43	10	9	1
Total	425	200	96	104

from 47% in the Eastern region to 92% ($P < 0.05$) survey-wide; percentages in the two longer time periods ranged from 10% ($P < 0.05$) in the Western region to 39% in the central region (Fig. 1B). Although grassland birds did poorly during the 1999-2003 and 1966-2003 intervals, the 5-year percentages were greater than the long-term percentages in all regions except the Western (10% vs. 16%). Moreover during 1999-2003, the number of species with increasing trends was indistinguishable from 50% in the Central region.

Survey-wide, more wetland species have increased over the long-term than not (66%, $P < 0.05$), a result that appears to be driven by increases in the Western (66%, $P < 0.05$) and Central (79%, $P < 0.05$) regions (Fig. 1C). Significantly fewer wetland species exhibited increasing trends during 1999-2003 survey-wide (34%), and only 20% ($P < 0.05$) increased in the Central region. Similar to the long-term, wetland birds appear to have fared well during 2002-2003 with all regional percentages $>50\%$, significantly so in the Western region (79%) and survey-wide (68%).

Scrub/successional species continue to fare poorly over the long-term, with significantly $<50\%$ of species exhibiting increasing trends in all regions (Fig. 1D). Survey-wide the 1999-2003 result of 35% ($P < 0.05$) is similar to the long-term percentage, and appears to be driven by declines in the Western region (32%, $P < 0.05$) since percentages in the Eastern and Central BBS regions are indistinguishable from 50%. The 2-year time period appeared more favorable for scrub/successional species in the Western and Central regions where 62% ($P < 0.05$) and 82% ($P < 0.05$) exhibited positive trends, respectively. However, in the Eastern region only 34% ($P < 0.05$) of bird species increased during 2002-2003.

During 1966-2003, woodland bird trends were indistinguishable from 50% in all regions except the Eastern region where 57% were positive ($P < 0.05$; Fig. 1E). Significantly more bird species trends increased in the Western and Central regions during 2002-2003, most likely driving the survey-wide increases that were exhibited; only in the Central region were increasing trends distinguishable from 50% during 1999-2003 (74%, $P < 0.05$).

For the two longer time periods, percentages for urban species were $<50\%$ in all regions, but

only significantly so for 1966-2003 survey-wide (33%; Fig. 1F). During 2002-2003, results were varied for urban birds. In the Western and Central regions 91% ($P < 0.05$) and 100% ($P < 0.05$) of urban species increased, respectively, while during the same 2-year time period only 21% increased in the Eastern region.

Cavity-nesting birds fared relatively well with no significant decreases observed in any time period or region (Fig. 1G). This species group did particularly well in the Western region, where significant increases of 65% and 69% were exhibited during 1966-2003 and 2002-2003, respectively. However, the Central region had the greatest number of increasing species during 2002-2003 (83%, $P < 0.05$).

Significantly more open-cup nesting species exhibited population declines than increases in the Eastern BBS region over the long-term (40%, $P < 0.05$; Fig. 1H). This declining pattern continued into the more recent 5-yr period (39%, $P < 0.05$), but is not evident in 2002-2003 (47%). Percentages in the Western region are similar to those in the Eastern region except for a significant increase in positive trends during the 2-yr time period (70%). However, the greatest increases were evident in the Central region during 2002-2003 (82%, $P < 0.05$).

Short-distance migrants fared poorly over the long-term with only 40% ($P < 0.05$) of species exhibiting positive trends survey-wide, a result that appears to be driven by the Western region where only 36% ($P < 0.05$) of species increased (Fig. 1I). Significantly $<50\%$ of species exhibited increasing population trends in all regions during 1999-2003, when percentages ranged from 22% to 35% (all $P < 0.05$); species increased during 2002-2003 in the Western (80%, $P < 0.05$) and Central (78%, $P < 0.05$) regions.

During 1966-2003, increases in permanent residents did not differ significantly from 50% in any region (Fig. 1J). Similar results were exhibited during the 5-yr period except in the Central region where 67% ($P < 0.05$) of species showed positive trends. The Central region increases among permanent residents are even more apparent during 2002-2003, when 89% ($P < 0.05$) exhibited increasing trends, a pattern that appears to be driving the significant survey-wide 2-yr trend.

No significant deviations from 50% were detected among Eastern neotropical migrants

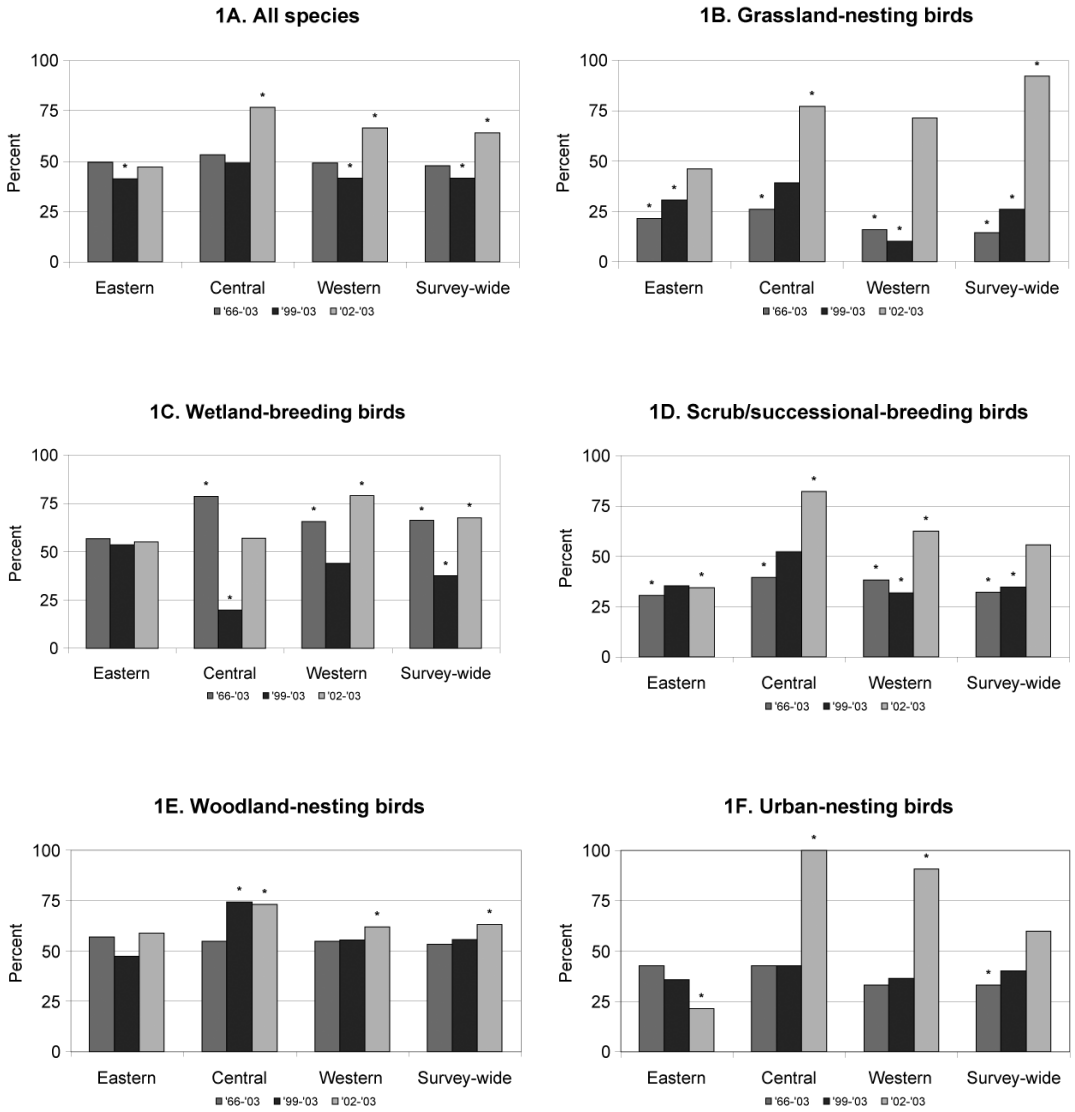


FIGURE 1 (A-M). The percentages of species with increasing populations during 1966-2003, 1999-2003, and 2002-2003, shown by species group. Statistical significance that percentages differ from 50% at the $P < 0.05$ level indicated by *.

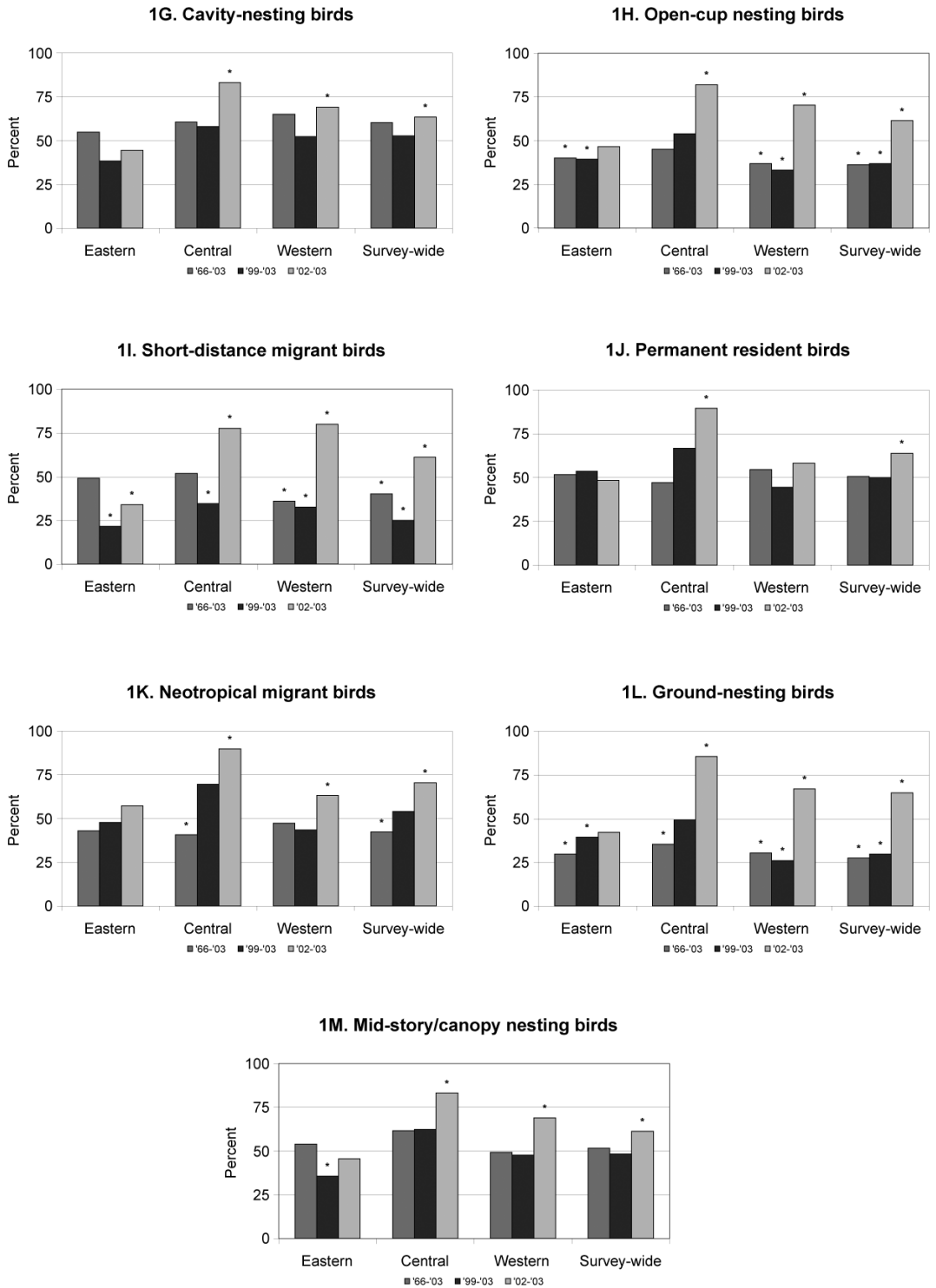


FIGURE 1 (A-M). Continued.

(Fig. 1K) although, survey-wide, more neotropical migrant species had decreasing trends than increasing trends (42%, $P < 0.05$) during 1966-2003, a result seemingly driven by the significant long-term declines in the Central region (41%, $P < 0.05$). Contrary to the long-term results, the 2- and 5-yr percentages are more positive with 70% and 90% (both $P < 0.05$) of species increasing, respectively, in the Central region. Increases are also evident in the Western region during 2002-2003 (63%, $P < 0.05$).

Survey-wide, more ground-nesting species exhibited population declines than increases over the long-term (28%, $P < 0.05$), owing to significant declines in all BBS regions (Fig. 1L). In the East and West, this declining pattern continued into the more recent 5-yr time period, 39% and 26%, respectively (both $P < 0.05$), while in the Central BBS region recent years were more favorable. During 2002-2003, ground-nesting species increased in the Central (86%, $P < 0.05$) and Western (67%, $P < 0.05$) regions, while in the Eastern region the percent increasing was indistinguishable from 50%.

Mid-story and canopy-nesting birds fared relatively well in all regions and time periods, except the Eastern BBS region during 1999-2003 when only 36% ($P < 0.05$) of species were increasing (Fig. 1M). Species in the Central BBS region fared best with significant increases during all time periods ranging from 62% to 83%. In addition, 69% ($P < 0.05$) of species in the Western region experienced increases during 2002-2003, while the longer-term percentages were indistinguishable from 50%.

DISCUSSION

The BBS is not designed to determine causal factors of population changes. Therefore, we were unable to identify specific factors responsible for the various temporal and regional patterns evident in this analysis. Nevertheless, it can be instructive to examine the overall patterns within the context of previous analyses and the long-term trends to determine if general trends are apparent that may provide insight for future research and conservation efforts.

Most species did relatively well during the 2002-2003 period with 64% ($P < 0.05$) increasing survey-wide (Fig. 1A). This was primarily

because of increases in the Central and Western BBS regions, where 21 of 24 species groups exhibited significant increases in the number of species with positive trends, while the remaining three groups' percentages did not differ from 50%. These results suggest that conditions favored species in the Central and Western portions of the continent but less so in the Eastern portion during 2002-2003.

The 2002-2003 results are similar to the 1991-1992 Western BBS regional results (Peterjohn et al. 1994) when 9 of 12 species groups exhibited significant increases. As suggested by Peterjohn et al. (1994), El Niño Southern Oscillation (ENSO) may, in part, have driven these results in the West. During ENSO above normal surface water temperatures characterize the eastern Pacific Ocean (Rasmussen and Carpenter 1982, Ropelewski and Halpert 1986), often leading to extreme weather patterns that have been correlated to land bird population changes (Jaksic and Lazo 1999, Sillett et al. 2000, Nott et al. 2002). ENSO began in 2002 (McPhaden 2004) possibly producing favorable conditions that led to increased numbers of birds detected in the West by 2003. However, other atmospheric phenomena, such as the North Atlantic Oscillation (Nott et al. 2002) and more localized events, are likely influencing bird population changes in North America as well.

As an example of these localized events, the emergence of West Nile virus (WNV) in New York City in 1999 (Nash et al. 2001) and its subsequent spread across North America has been shown to cause avian mortality (Komar et al. 2005; see Kilpatrick et al. 2007 for overview). Moreover, BBS data have been used to correlate observed declines of numerous species with the spread of WNV (LaDeau et al. 2007). Thus, the 2002-2003 declines exhibited in the Eastern BBS region by scrub/successional, short-distance migrant, and urban nesting groups may be related to the presence of WNV in the East. The disease did not become prevalent throughout the West until after 2003 (http://diseasemaps.usgs.gov/2003/us_bird.html). Further research is warranted on the effects of WNV on bird populations at the species level. It is interesting to note that the urban nesting group includes several species, such as Blue Jay (*Cyanocitta cristata*) and House Sparrow (*Passer domesticus*), both of which have high to moderate mortality

rates when exposed to WNV (Komar et al. 2005).

Compared to the previous 5-yr period, 1999-2003 was generally less favorable for most bird species. Survey-wide during 1999-2003, only 41% of all species exhibited increasing trends ($P < 0.05$) as compared to 44% ($P > 0.10$) during 1995-1999. The 1999-2003 declines are driven primarily by losses in the East and West (Fig. 1A), although marked declines are also evident for wetland species in the Central BBS region (Fig. 1C).

Among the migration status groups, neotropical migrants and permanent residents fared well during 1999-2003 with no significant declines reported in any region. Moreover, both groups exhibited significant increases during this 5-yr period in the Central BBS region. Short-distance migrants, however, exhibited significantly fewer species with increasing trends (range 22% to 35%) in all BBS regions during 1999-2003. This indicates that conditions for short-distance migrants were considerably poorer during this 5-yr interval in the Eastern and Central regions than in the previous five years. In addition, 1999-2003 percentages are lower than the long-term percentages in all regions.

Despite gains in number of species with increasing trends in every BBS region during 2002-2003, grassland birds continued to fare poorly survey-wide with only 14% ($P < 0.05$) increasing during 1966-2003, and only doing slightly better (26%, $P < 0.05$) in 1999-2003 (Fig. 1B). Thus the declining trend for these species first observed in 1991 (18%; Peterjohn and Sauer 1993) continues a decade later. Moreover, the increases observed in the West during 1995-1999 (49%; Pardieck and Sauer 2000) were overwhelmingly reversed during the next five years when only 10% ($P < 0.05$) of species increased. Grassland birds held their own, statistically speaking, between 1999-2003 (39%, $P > 0.05$) as well as during the previous 5-yr interval (36%, $P > 0.05$) in the Central region. In the East there was a rebound during 1999-2003, with 31% ($P < 0.05$) of species increasing as opposed to 6% in the previous five years.

The sharp decline (26% increasing) observed during 1995-1999 (Pardieck and Sauer 2000) for eastern scrub/successional species is less evident in 1999-2003 (35% increasing), suggesting a more favorable time period for these species in the East. Declines in the 2-yr results suggest this may

be a temporary respite. More intriguing is that for the first time since species group's results have been reported, scrub/successional species declined in the West over the long-term as well as during 1999-2005. Hints of this impending decline are apparent in the 1998-1999 results (Pardieck and Sauer 2000).

Eastern neotropical migrants fared relatively well during 1999-2003, when 43% ($P > 0.05$) had increasing trends, offsetting significant declines reported during 1995-1999 (Pardieck and Sauer 2000). Moreover, the 2002-2003 result of 57% ($P > 0.05$) brings this group back in line with a series of relatively positive 2-yr intervals beginning in 1987 (Droege and Sauer 1990, Peterjohn and Sauer 1993, Peterjohn et al. 1994, Peterjohn et al. 1996). Although long-term declines are evident for neotropical migrants in the Central BBS region, both the 5-yr and 2-yr results indicate significant increases in numbers of species with increasing trends. Whether these short-term increases are indicative of a long-term recovery is unclear.

Detailed analyses of regional patterns of population trends within individual species are beyond the scope of this paper. Species-specific trend and relative abundance data, as well as additional information regarding the survey, are available at the USGS Patuxent Wildlife Research Center web page (www.pwrc.usgs.gov).

ACKNOWLEDGMENTS

We thank the thousands of volunteers who have participated in the BBS program during 1999-2003, as well as those who participated in earlier years. We are also grateful for the careful review and thoughtful comments provided by B. Peterjohn and C. Robbins on earlier drafts of this report.

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APPENDIX 1. Long-term (1966-2003) trends, 5-yr (1999-2003) trends, and 2-yr changes for all species detected on BBS routes, 1966-2003. For the three intervals, we present trends as average % change/yr, statistical significance (P) of the changes or trend ($P < 0.05$ is considered significant), and sample size (n of routes). For the long-term trends, TQ-values, 95% confidence intervals, and relative abundance (mean number of individuals per BBS route) are also provided. A dash indicates insufficient data to calculate trends. Species names based on AOU (1998).

Species	1966 - 2003							1999 - 2003			2002 - 2003		
	TQ	Trend	P	n	(95 % CI)		RA	Trend	P	n	Trend	P	n
Common Loon	2	2.3	0.00	452	1.5	3.2	0.91	-1.3	0.59	219	10.8	0.47	174
Pied-billed Grebe	2	1.2	0.22	479	-0.7	3.0	0.28	-15.4	0.00	160	19.2	0.15	145
Horned Grebe	2	-3.2	0.03	83	-6.0	-0.4	0.35	-15.8	0.09	22	-0.7	0.97	25
Red-necked Grebe	2	0.8	0.33	75	-0.8	2.3	0.42	7.7	0.26	39	-13.3	0.40	35
Eared Grebe	2	6.8	0.01	130	2.1	11.5	1.04	30.1	0.00	47	95.1	0.14	47
Western/Clark's Grebe	2	1.1	0.02	121	0.2	2.1	0.85	7.9	0.03	53	-7.1	0.84	44
American White Pelican	2	2.9	0.01	172	0.7	5.2	1.93	15.7	0.01	94	6.0	0.66	69
Brown Pelican	1	4.4	0.00	43	2.2	6.6	1.39	-11.3	0.01	24	53.0	0.19	21
Double-crested Cormorant	2	8.8	0.00	467	3.9	13.8	0.72	4.7	0.10	215	27.5	0.18	204
Pelagic Cormorant	3	1.2	0.73	15	-5.6	8.1	0.78	14.1	0.63	3	866.4	0.45	5
Anhinga	2	1.1	0.57	107	-2.7	5.0	0.33	15.6	0.01	42	14.5	0.71	45
American Bittern	2	-1.8	0.02	601	-3.3	-0.3	0.48	-10.1	0.00	191	2.2	0.86	147
Least Bittern	3	-1.7	0.39	39	-5.5	2.1	0.09	9.0	0.58	11	-44.2	0.02	18
Great Blue Heron	2	2.0	0.00	2371	1.4	2.7	0.82	0.7	0.62	1305	-5.9	0.30	1037
Great Egret	1	1.9	0.01	567	0.4	3.4	1.64	2.7	0.36	317	58.1	0.03	269
Snowy Egret	2	4.9	0.00	253	2.4	7.4	0.93	13.7	0.03	101	46.6	0.22	92
Little Blue Heron	1	-2.5	0.03	413	-4.7	-0.2	1.85	-4.8	0.06	181	21.4	0.28	153
Tricolored Heron	1	0.5	0.60	95	-1.5	2.6	1.07	5.7	0.36	40	-3.4	0.92	39
Cattle Egret	2	0.3	0.56	533	-0.7	1.4	13.38	-4.7	0.16	280	13.4	0.36	211
Green Heron	2	-0.9	0.00	1654	-1.4	-0.4	0.71	-3.6	0.05	675	-5.4	0.54	556
Black-crowned Night-Heron	2	4.4	0.03	307	0.5	8.3	0.23	-8.2	0.05	93	73.5	0.00	85
Yellow-crowned Night-Heron	2	-1.4	0.43	175	-4.8	2.0	0.31	-4.2	0.60	33	-5.1	0.80	40
White Ibis	2	4.1	0.02	178	0.6	7.5	5.87	25.2	0.15	97	182.3	0.02	71
Glossy Ibis	3	0.9	0.84	46	-7.3	9.0	0.93	12.8	0.66	14	329.5	0.03	17
White-faced Ibis	3	12.2	0.01	67	3.0	21.4	15.27	10.2	0.60	30	-23.2	0.00	19
Roseate Spoonbill	2	11.0	0.00	29	6.1	15.9	0.79	32.7	0.15	17	689.4	0.02	14
Wood Stork	3	-2.8	0.37	73	-8.8	3.2	1.06	-5.6	0.65	31	288.6	0.22	27
Black Vulture	1	3.0	0.00	620	1.2	4.8	1.82	0.1	0.96	345	29.5	0.06	275
Turkey Vulture	1	1.6	0.00	2132	0.9	2.3	2.49	1.7	0.16	1335	2.7	0.56	1064
Black-bellied Whistling-Duck	2	5.4	0.05	51	0.0	10.8	2.27	-11.6	0.02	30	-25.4	0.03	26
Fulvous Whistling-Duck	3	1.7	0.75	30	-8.5	11.9	1.81	-14.2	0.17	17	100.3	0.45	10
Canada Goose	2	9.6	0.00	1512	6.8	12.4	4.08	5.6	0.14	956	41.6	0.00	734
Mute Swan	3	9.9	0.09	34	-1.0	20.8	0.39	7.8	0.59	15	-8.8	0.41	20
Wood Duck	2	4.6	0.00	1180	3.2	6.0	0.30	0.3	0.92	386	10.5	0.40	390
Gadwall	1	4.7	0.00	434	3.3	6.1	1.89	-4.5	0.16	233	-14.7	0.08	181
American Wigeon	3	17.5	0.25	301	-12.1	47.0	0.85	-7.0	0.03	122	30.9	0.05	101
American Black Duck	2	-0.8	0.51	268	-3.0	1.5	0.27	10.0	0.44	49	144.6	0.22	53
Mallard	2	1.3	0.00	2255	0.5	2.1	5.12	-6.3	0.00	1262	-11.4	0.04	923
Mottled Duck	2	-5.2	0.04	69	-10.1	-0.3	2.31	-1.5	0.77	35	36.6	0.61	30
Blue-winged Teal	1	-0.6	0.29	637	-1.8	0.5	1.74	-2.2	0.45	235	-30.9	0.05	194
Cinnamon Teal	2	-0.8	0.23	242	-2.2	0.5	0.55	-3.8	0.52	75	125.3	0.01	61
Northern Shoveler	1	1.7	0.01	334	0.4	3.1	1.17	-8.9	0.01	147	-6.5	0.74	126
Northern Pintail	1	-2.8	0.00	404	-4.6	-1.1	1.80	-2.9	0.52	121	68.5	0.00	101
Green-winged Teal	3	32.0	0.00	327	23.9	40.1	0.32	-15.2	0.00	98	111.4	0.00	113

APPENDIX 1. Continued.

Species	1966 - 2003						1999 - 2003			2002 - 2003			
	TQ	Trend	P	n	(95 % CI)		RA	Trend	P	n	Trend	P	n
Canvasback	2	-0.9	0.43	131	-3.2	1.3	0.66	9.1	0.08	42	108.9	0.01	44
Redhead	1	2.1	0.04	228	0.1	4.1	1.00	-9.0	0.00	89	-6.4	0.72	63
Ring-necked Duck	2	3.5	0.02	166	0.5	6.5	0.21	-2.1	0.75	62	53.7	0.05	63
Lesser Scaup	1	-0.9	0.29	237	-2.5	0.7	1.85	-12.9	0.00	106	36.4	0.10	79
Bufflehead	2	2.9	0.17	90	-1.3	7.1	0.27	9.2	0.40	38	-7.7	0.77	40
Common Goldeneye	2	1.2	0.56	91	-2.7	5.1	0.18	-6.6	0.33	27	162.6	0.35	28
Barrow's Goldeneye	2	4.4	0.02	49	0.8	8.0	0.31	-8.4	0.53	18	84.7	0.14	21
Hooded Merganser	3	7.2	0.05	108	0.0	14.4	0.03	15.2	0.18	35	105.9	0.14	58
Common Merganser	2	2.0	0.00	369	0.7	3.4	0.24	-0.4	0.92	135	43.6	0.10	142
Red-breasted Merganser	3	-5.8	0.14	19	-12.7	1.2	0.03	--	--	--	--	--	--
Ruddy Duck	2	1.3	0.27	224	-1.0	3.7	0.84	1.1	0.73	103	4.3	0.87	84
Osprey	2	6.5	0.00	425	5.0	7.9	0.18	5.4	0.02	215	15.8	0.20	205
Swallow-tailed Kite	2	3.4	0.01	47	1.1	5.6	0.20	3.7	0.56	27	30.9	0.48	35
White-tailed Kite	2	1.8	0.29	61	-1.5	5.1	0.17	-3.3	0.68	19	-22.5	0.44	14
Mississippi Kite	2	0.0	0.99	183	-2.2	2.2	0.69	1.9	0.66	84	76.8	0.03	84
Bald Eagle	2	6.1	0.00	211	2.2	10.1	0.14	5.7	0.18	103	2.3	0.85	142
Northern Harrier	2	-1.0	0.02	1024	-1.9	-0.1	0.45	-5.4	0.00	382	7.6	0.36	338
Sharp-shinned Hawk	3	4.5	0.06	308	-0.1	9.0	0.02	2.5	0.50	53	21.2	0.19	120
Cooper's Hawk	3	6.7	0.00	528	3.9	9.5	0.04	6.5	0.09	127	-23.5	0.00	253
Northern Goshawk	3	-0.3	0.88	71	-4.1	3.5	0.02	-2.1	0.67	12	46.4	0.22	35
Harris's Hawk	2	-5.6	0.00	43	-8.9	-2.2	0.78	-7.6	0.38	11	113.9	0.10	12
Red-shouldered Hawk	2	2.6	0.00	896	1.5	3.7	0.51	5.2	0.00	461	8.9	0.22	419
Broad-winged Hawk	2	1.8	0.02	744	0.3	3.2	0.13	3.2	0.34	174	5.5	0.75	214
Swainson's Hawk	2	-0.4	0.48	697	-1.5	0.7	0.90	2.8	0.20	334	15.3	0.06	255
Red-tailed Hawk	2	2.6	0.00	2960	2.2	3.0	1.05	-1.0	0.23	1696	1.8	0.63	1316
Ferruginous Hawk	2	2.9	0.01	240	0.8	4.9	0.25	-4.7	0.08	104	22.8	0.21	95
Golden Eagle	2	1.1	0.53	324	-2.2	4.4	0.20	2.5	0.65	99	10.6	0.51	118
Crested Caracara	2	5.4	0.00	58	2.7	8.1	0.99	-3.2	0.65	32	-21.4	0.53	29
American Kestrel	2	-0.5	0.09	2463	-1.0	0.1	0.87	-8.2	0.00	1116	-6.3	0.20	874
Merlin	3	10.6	0.00	128	6.5	14.7	0.05	1.6	0.84	43	-22.5	0.13	56
Peregrine Falcon	3	8.6	0.03	20	3.3	13.9	0.02	--	--	--	53.2	0.20	8
Prairie Falcon	3	1.0	0.56	182	-2.3	4.4	0.09	-5.5	0.44	44	-19.7	0.22	65
Chukar	3	-1.1	0.85	74	-12.6	10.3	0.49	10.8	0.08	34	14.5	0.02	24
Gray Partridge	2	-0.1	0.94	259	-1.8	1.7	0.45	-6.0	0.23	70	33.8	0.17	70
Ring-necked Pheasant	1	-1.0	0.00	1334	-1.5	-0.4	7.14	2.5	0.02	703	20.4	0.00	535
Ruffed Grouse	2	-2.2	0.03	559	-4.3	-0.2	0.33	2.0	0.61	144	-12.5	0.23	157
Sage Grouse	2	0.1	0.97	72	-3.8	4.0	0.77	11.0	0.42	20	246.3	0.20	14
Blue Grouse	2	-2.3	0.00	95	-3.8	-0.8	0.37	13.1	0.25	37	0.7	0.98	44
Sharp-tailed Grouse	2	-1.6	0.17	159	-3.8	0.7	0.56	13.4	0.01	59	12.6	0.68	58
Greater Prairie-Chicken	2	-4.1	0.05	43	-8.0	-0.2	0.73	-2.4	0.80	17	221.2	0.08	15
Wild Turkey	2	13.8	0.00	950	11.3	16.3	0.31	9.4	0.00	576	36.3	0.00	608
Mountain Quail	2	0.9	0.27	142	-0.7	2.4	2.72	10.6	0.00	87	48.0	0.09	67
Scaled Quail	1	-1.5	0.12	153	-3.3	0.4	4.81	-3.1	0.26	79	37.3	0.01	56
California Quail	1	1.0	0.23	328	-0.6	2.7	3.83	8.1	0.00	196	13.8	0.15	145
Gambel's Quail	2	-0.4	0.59	107	-1.8	1.0	6.67	-1.3	0.47	59	28.8	0.02	38
Northern Bobwhite	2	-3.0	0.00	1575	-3.3	-2.7	18.09	-1.8	0.01	945	4.7	0.13	689
Clapper Rail	2	1.0	0.44	47	-1.5	3.6	0.24	4.4	0.28	19	-10.1	0.42	18
King Rail	2	-7.7	0.01	39	-12.6	-2.8	0.22	16.8	0.29	7	-59.3	0.02	10

APPENDIX 1. Continued.

Species	1966 - 2003							1999 - 2003			2002 - 2003		
	TQ	Trend	<i>P</i>	<i>n</i>	(95 % CI)		RA	Trend	<i>P</i>	<i>n</i>	Trend	<i>P</i>	<i>n</i>
Virginia Rail	3	2.2	0.02	99	0.4	4.1	0.03	-23.4	0.00	26	32.7	0.08	43
Sora	2	-0.4	0.51	490	-1.5	0.7	0.85	-21.3	0.00	204	35.6	0.07	172
Purple Gallinule	3	-4.0	0.59	24	-18.1	10.1	0.10	--	--	--	--	--	--
Common Moorhen	2	0.3	0.86	120	-3.1	3.7	0.51	-13.2	0.02	35	91.9	0.25	42
American Coot	1	-0.1	0.90	581	-1.8	1.6	2.15	-15.6	0.00	251	-17.8	0.34	175
Sandhill Crane	1	7.1	0.00	347	4.4	9.8	1.16	4.8	0.11	232	47.4	0.08	192
Killdeer	2	-0.5	0.00	3383	-0.9	-0.2	5.39	-3.9	0.00	2103	1.3	0.63	1530
Mountain Plover	2	-1.9	0.27	43	-5.3	1.4	0.28	-18.8	0.02	15	71.8	0.29	10
Black-necked Stilt	2	0.1	0.96	123	-5.1	5.4	1.82	-3.1	0.81	51	26.8	0.50	53
American Avocet	2	0.7	0.67	230	-2.4	3.8	1.52	-2.5	0.81	80	19.8	0.05	72
Greater Yellowlegs	3	11.7	0.06	20	0.5	22.8	0.28	38.4	0.11	11	211.8	0.29	10
Lesser Yellowlegs	2	-9.3	0.00	32	-13.4	-5.2	0.19	7.9	0.58	5	186.0	0.37	10
Solitary Sandpiper	3	-3.5	0.38	19	-10.8	3.9	0.04	36.1	0.26	8	-1.2	0.98	13
Willet	2	-0.6	0.16	317	-1.5	0.2	1.44	-2.5	0.23	174	-11.6	0.12	124
Spotted Sandpiper	2	-0.6	0.27	985	-1.8	0.5	0.43	1.2	0.51	321	5.4	0.50	304
Upland Sandpiper	2	0.8	0.01	633	0.2	1.5	2.33	0.9	0.60	279	-4.9	0.48	217
Long-billed Curlew	2	-1.8	0.06	250	-3.6	0.1	1.38	4.0	0.14	141	18.0	0.10	108
Marbled Godwit	2	-0.8	0.19	220	-2.1	0.4	2.40	-4.1	0.09	120	2.8	0.80	81
Common Snipe	2	-0.1	0.71	1176	-0.7	0.5	2.34	-4.7	0.00	653	3.4	0.56	444
American Woodcock	3	0.8	0.68	158	-3.0	4.6	0.03	-8.1	0.09	20	-19.2	0.42	35
Wilson's Phalarope	2	0.4	0.63	291	-1.3	2.1	0.95	-2.6	0.54	111	-21.3	0.20	84
Laughing Gull	1	4.0	0.02	129	0.6	7.5	24.51	1.8	0.69	75	26.8	0.43	61
Franklin's Gull	3	8.3	0.19	196	-4.0	20.5	12.17	0.9	0.94	75	106.8	0.17	56
Ring-billed Gull	1	1.8	0.07	690	-0.2	3.8	4.66	7.1	0.18	311	-23.4	0.19	232
California Gull	2	-0.7	0.74	199	-5.0	3.6	3.61	-19.7	0.02	71	-13.5	0.62	54
Herring Gull	1	-3.2	0.00	353	-5.2	-1.3	4.05	10.4	0.22	119	-1.8	0.94	77
Western Gull	2	-0.5	0.85	21	-6.0	4.9	4.33	-7.4	0.13	9	217.7	0.23	8
Glaucous-winged Gull	2	0.2	0.93	40	-4.6	5.1	11.35	-7.4	0.27	15	-41.8	0.03	11
Great Black-backed Gull	1	-2.2	0.05	94	-4.4	0.0	2.35	25.5	0.17	37	-45.8	0.02	24
Gull-billed Tern	3	6.6	0.48	19	-11.1	24.2	0.44	46.5	0.37	10	589.0	0.11	9
Caspian Tern	2	4.4	0.00	89	1.7	7.1	0.16	-2.7	0.18	28	12.3	0.48	34
Royal Tern	2	0.9	0.74	31	-4.5	6.3	0.72	-8.9	0.37	16	24.1	0.35	13
Common Tern	2	-6.2	0.03	114	-11.6	-0.8	0.25	-2.5	0.77	26	-16.5	0.61	22
Forster's Tern	2	0.8	0.31	126	-0.7	2.2	0.33	12.9	0.06	50	10.7	0.52	54
Least Tern	2	-0.8	0.75	63	-5.6	4.1	0.77	-7.9	0.38	22	8.9	0.84	26
Black Tern	2	-1.5	0.30	328	-4.3	1.3	1.81	-4.2	0.39	117	57.7	0.20	94
Black Skimmer	2	-2.3	0.32	33	-6.8	2.2	0.31	-17.5	0.00	11	--	--	--
Rock Dove	2	0.0	0.95	2492	-0.5	0.5	4.86	-1.3	0.35	1373	13.6	0.01	985
Band-tailed Pigeon	1	-2.2	0.01	217	-3.7	-0.6	1.70	-5.4	0.26	112	41.9	0.26	89
Eurasian Collared-Dove	3	37.9	0.00	141	20.9	54.9	0.44	15.0	0.00	134	33.3	0.01	165
White-winged Dove	1	1.1	0.39	128	-1.4	3.5	9.24	3.5	0.35	80	10.5	0.18	70
Mourning Dove	2	-0.2	0.13	3643	-0.4	0.0	27.24	0.7	0.09	2611	7.3	0.00	1848
Inca Dove	2	3.3	0.03	112	0.3	6.3	0.88	-7.6	0.03	72	5.2	0.67	61
Common Ground-Dove	2	-1.2	0.18	220	-3.0	0.5	1.85	1.8	0.42	128	-8.0	0.47	109
Black-billed Cuckoo	2	-1.6	0.00	1181	-2.4	-0.7	0.54	14.6	0.02	295	23.6	0.27	283
Yellow-billed Cuckoo	2	-1.8	0.00	1826	-2.1	-1.5	3.95	1.8	0.04	1014	6.3	0.13	792
Greater Roadrunner	2	0.8	0.41	272	-1.1	2.7	0.54	-7.6	0.16	108	39.9	0.05	104
Groove-billed Ani	3	-3.4	0.66	16	-18.6	11.8	1.10	58.8	0.71	2	353.2	0.29	2

APPENDIX 1. Continued.

Species	1966 - 2003						1999 - 2003			2002 - 2003			
	TQ	Trend	P	n	(95 % CI)		RA	Trend	P	n	Trend	P	n
Barn Owl	3	-2.3	0.48	33	-8.5	3.9	0.03	--	--	--	231.0	0.09	11
Western Screech-Owl	3	-7.2	0.17	18	-16.2	1.8	0.01	--	--	--	-30.4	0.20	7
Eastern Screech-Owl	3	1.9	0.65	121	-6.1	9.9	0.02	--	--	--	21.8	0.54	43
Great Horned Owl	2	-0.1	0.89	1257	-1.1	1.0	0.19	-2.6	0.32	303	28.5	0.03	348
Northern Pygmy-Owl	3	1.6	0.20	61	-0.8	4.0	0.04	45.5	0.02	9	15.7	0.73	25
Burrowing Owl	2	-1.2	0.62	310	-6.0	3.6	0.51	10.9	0.09	85	35.0	0.14	81
Barred Owl	2	2.4	0.00	648	1.0	3.8	0.13	5.6	0.12	192	2.2	0.83	239
Short-eared Owl	2	-4.3	0.01	154	-7.6	-1.1	0.18	-21.7	0.00	24	60.5	0.28	22
Lesser Nighthawk	2	2.4	0.06	132	0.0	4.8	1.86	-0.5	0.90	59	32.7	0.15	47
Common Nighthawk	2	-1.7	0.00	1616	-2.4	-1.1	1.97	0.4	0.71	703	11.9	0.13	573
Common Poorwill	2	1.7	0.42	154	-2.5	6.0	0.13	3.5	0.65	50	76.2	0.03	45
Chuck-will's-widow	1	-1.7	0.00	574	-2.4	-1.0	1.42	-3.2	0.05	285	0.0	1.00	232
Whip-poor-will	2	-2.3	0.00	479	-3.4	-1.2	0.28	-7.9	0.00	126	0.4	0.97	114
Black Swift	3	-7.3	0.11	50	-16.0	1.4	1.31	-18.9	0.09	7	863.9	0.48	9
Chimney Swift	1	-1.5	0.00	2114	-1.9	-1.2	6.15	-0.7	0.39	1310	-4.6	0.29	951
Vaux's Swift	3	3.9	0.38	145	-4.8	12.6	0.47	11.3	0.13	61	167.9	0.35	46
White-throated Swift	2	-1.4	0.39	191	-4.6	1.8	0.89	4.3	0.58	79	6.3	0.64	59
Ruby-throated Hummingbird	2	2.4	0.00	1522	1.7	3.0	0.39	2.6	0.11	779	22.3	0.00	660
Black-chinned Hummingbird	2	1.5	0.05	197	0.0	3.0	0.24	2.5	0.40	92	2.1	0.87	85
Anna's Hummingbird	2	1.7	0.09	143	-0.3	3.7	0.66	2.6	0.63	66	-18.0	0.07	56
Costa's Hummingbird	2	0.4	0.89	52	-4.5	5.2	0.60	-18.0	0.10	12	50.7	0.11	7
Calliope Hummingbird	2	0.2	0.86	107	-2.4	2.9	0.28	6.0	0.34	47	21.0	0.41	44
Broad-tailed Hummingbird	1	-0.4	0.38	187	-1.5	0.6	1.99	-2.2	0.18	126	-18.9	0.00	97
Rufous Hummingbird	1	-2.6	0.00	217	-4.2	-1.0	1.36	-0.6	0.82	105	20.6	0.22	91
Allen's Hummingbird	2	-2.4	0.27	36	-6.5	1.8	0.70	-4.1	0.36	13	-20.6	0.19	12
Belted Kingfisher	2	-1.6	0.00	1985	-2.1	-1.1	0.31	-2.8	0.16	632	-2.4	0.74	621
Lewis's Woodpecker	2	-1.4	0.43	83	-4.8	2.0	0.15	-10.2	0.00	33	2.1	0.86	25
Red-headed Woodpecker	2	-2.6	0.00	1281	-3.3	-2.0	1.63	0.4	0.81	592	13.2	0.04	526
Acorn Woodpecker	1	0.9	0.01	151	0.3	1.6	6.01	2.1	0.51	82	-8.0	0.15	66
Gila Woodpecker	1	-1.4	0.32	34	-4.2	1.4	6.09	-0.3	0.95	22	-25.6	0.02	17
Golden-fronted Woodpecker	1	-1.1	0.26	80	-3.1	0.8	4.32	5.2	0.07	46	29.6	0.01	34
Red-bellied Woodpecker	1	0.7	0.00	1598	0.4	1.1	5.93	3.4	0.00	1180	7.9	0.00	905
Williamson's Sapsucker	2	0.8	0.55	89	-1.8	3.4	0.24	-5.4	0.25	51	53.3	0.06	41
Sapsucker (3 species)	2	0.2	0.58	1098	-0.6	1.1	1.64	0.8	0.62	647	21.4	0.01	508
Yellow-bellied Sapsucker	2	0.1	0.79	678	-0.9	1.2	1.79	-0.5	0.80	402	31.8	0.00	294
Red-naped Sapsucker	2	0.7	0.54	260	-1.5	2.9	0.91	5.1	0.12	158	28.9	0.06	137
Red-breasted Sapsucker	2	-2.0	0.10	176	-4.4	0.4	1.08	-0.5	0.91	81	-6.5	0.80	78
Ladder-backed Woodpecker	2	-1.4	0.04	216	-2.7	-0.1	0.98	3.2	0.16	115	13.4	0.13	98
Nuttall's Woodpecker	1	0.4	0.71	88	-1.6	2.3	1.32	1.8	0.55	38	-21.4	0.01	31
Downy Woodpecker	1	0.0	0.86	2581	-0.3	0.4	1.16	-1.3	0.09	1567	-11.5	0.00	1208
Hairy Woodpecker	2	1.8	0.00	2171	1.0	2.5	0.49	0.9	0.51	965	8.2	0.19	824
Red-cockaded Woodpecker	2	-2.2	0.17	24	-5.3	0.8	0.12	-13.9	0.25	9	426.1	0.47	6
White-headed Woodpecker	2	1.9	0.06	69	0.0	3.7	0.45	4.3	0.47	36	-30.0	0.06	31
Three-toed Woodpecker	3	8.9	0.22	33	-5.0	22.8	0.03	28.5	0.01	15	65.5	0.22	22
Black-backed Woodpecker	3	-0.4	0.82	76	-3.8	3.0	0.07	-11.4	0.00	14	50.3	0.14	18
Northern Flicker	2	-2.1	0.00	3303	-2.4	-1.8	2.75	-3.8	0.00	2103	2.4	0.47	1523
Gilded Flicker	1	-0.9	0.54	28	-3.6	1.9	2.82	-8.9	0.32	14	47.3	0.15	10
Pileated Woodpecker	2	1.9	0.00	1793	1.4	2.4	0.88	1.8	0.11	1050	7.7	0.11	855

APPENDIX 1. Continued.

Species	1966 - 2003							1999 - 2003			2002 - 2003		
	TQ	Trend	<i>P</i>	<i>n</i>	(95 % CI)		RA	Trend	<i>P</i>	<i>n</i>	Trend	<i>P</i>	<i>n</i>
Olive-sided Flycatcher	1	-3.5	0.00	776	-4.3	-2.8	1.22	0.6	0.71	328	5.7	0.47	247
Western Wood-Pewee	1	-1.3	0.00	856	-1.9	-0.7	3.08	1.4	0.27	522	3.9	0.40	396
Eastern Wood-Pewee	1	-1.8	0.00	2061	-2.1	-1.5	3.05	-2.9	0.00	1366	-0.6	0.83	1012
Yellow-bellied Flycatcher	2	2.2	0.01	211	0.6	3.9	1.11	0.2	0.95	101	55.3	0.00	68
Acadian Flycatcher	2	-0.1	0.81	909	-0.5	0.4	1.62	2.1	0.01	547	3.5	0.36	432
Alder Flycatcher	1	0.3	0.29	875	-0.2	0.7	5.51	5.5	0.00	526	-3.8	0.38	364
Willow Flycatcher	1	-0.9	0.04	1193	-1.7	-0.1	1.26	3.5	0.00	637	17.1	0.00	533
Willow /Alder Flycatcher	1	-0.1	0.56	1763	-0.5	0.3	3.82	4.7	0.00	1064	2.8	0.39	791
Least Flycatcher	1	-1.1	0.00	1259	-1.6	-0.7	4.06	-4.2	0.00	726	-7.0	0.03	522
Hammond's Flycatcher	1	1.1	0.18	328	-0.5	2.8	3.51	2.3	0.14	224	6.1	0.27	167
Gray Flycatcher	2	4.8	0.02	131	1.0	8.7	1.38	4.7	0.17	81	3.2	0.81	77
Dusky Flycatcher	2	-1.3	0.03	399	-2.5	-0.1	2.58	0.6	0.76	270	0.0	1.00	210
Pacific-slope/ Cordilleran Flycatcher	1	-0.5	0.34	429	-1.6	0.6	2.94	-2.9	0.00	232	4.5	0.29	197
Black Phoebe	2	2.1	0.00	157	0.7	3.5	0.47	3.2	0.22	77	7.9	0.41	67
Eastern Phoebe	2	1.0	0.00	1940	0.6	1.4	1.90	-6.5	0.00	1314	-29.6	0.00	980
Say's Phoebe	2	1.5	0.05	620	0.0	3.0	0.92	4.7	0.06	308	9.9	0.25	257
Vermilion Flycatcher	2	-2.7	0.24	61	-7.2	1.8	0.74	-0.1	0.97	38	11.7	0.46	30
Ash-throated Flycatcher	2	1.0	0.02	498	0.2	1.8	5.14	1.8	0.09	303	4.6	0.30	229
Great Crested Flycatcher	1	0.0	0.76	2170	-0.3	0.4	3.46	1.7	0.02	1428	13.2	0.00	1084
Brown-crested Flycatcher	1	4.5	0.00	61	3.0	6.1	2.67	6.5	0.10	32	28.8	0.06	27
Couch's Kingbird	3	13.7	0.06	21	0.0	27.4	2.48	4.9	0.28	12	-33.1	0.03	9
Cassin's Kingbird	1	-0.8	0.44	166	-2.8	1.2	1.77	1.7	0.50	77	12.1	0.48	65
Western Kingbird	1	0.4	0.03	1167	0.0	0.9	6.23	6.1	0.00	689	6.2	0.07	515
Eastern Kingbird	1	-1.0	0.00	2704	-1.3	-0.7	4.08	2.1	0.00	1716	5.8	0.03	1272
Scissor-tailed Flycatcher	2	-0.2	0.60	330	-1.0	0.6	11.41	1.6	0.12	217	8.6	0.03	160
Loggerhead Shrike	1	-3.9	0.00	1477	-4.6	-3.2	1.67	-2.4	0.05	615	19.3	0.01	506
White-eyed Vireo	1	0.3	0.14	1090	-0.1	0.7	4.96	-0.1	0.89	698	-5.5	0.04	559
Bell's Vireo	1	-2.9	0.00	280	-4.7	-1.1	1.22	-1.3	0.40	120	-8.5	0.13	103
Gray Vireo	2	1.9	0.31	39	-1.7	5.6	0.40	-4.5	0.12	20	37.6	0.03	16
Yellow-throated Vireo	2	1.1	0.00	1246	0.5	1.8	0.79	2.0	0.09	631	14.9	0.01	513
Plumbeous Vireo	1	0.1	0.92	169	-1.6	1.8	1.07	1.7	0.55	100	10.4	0.28	85
Cassin's Vireo	1	1.0	0.02	343	0.2	1.9	2.14	1.4	0.45	211	5.2	0.61	157
Blue-headed Vireo	2	5.2	0.00	662	3.7	6.7	1.07	-0.1	0.97	384	12.9	0.09	289
Hutton's Vireo	2	0.9	0.24	158	-0.6	2.5	0.89	-3.4	0.31	91	0.2	0.98	78
Warbling Vireo	1	1.2	0.00	2055	0.8	1.7	3.49	0.8	0.29	1303	-3.1	0.24	1002
Philadelphia Vireo	1	3.2	0.01	175	0.8	5.6	1.43	2.0	0.81	68	25.9	0.44	50
Red-eyed Vireo	2	1.3	0.00	2423	0.9	1.7	10.70	1.2	0.02	1592	2.5	0.08	1177
Gray Jay	2	1.0	0.40	390	-1.3	3.2	0.94	1.2	0.71	186	34.6	0.01	142
Steller's Jay	1	0.3	0.36	479	-0.3	0.9	3.23	-0.4	0.71	328	-16.2	0.00	251
Blue Jay	1	-1.1	0.00	2491	-1.4	-0.8	8.53	-1.3	0.01	1779	-6.5	0.00	1270
Green Jay	3	1.4	0.86	15	-14.1	16.9	0.63	41.6	0.34	6	465.4	0.48	6
Western Scrub-Jay	1	0.6	0.03	360	0.1	1.2	3.06	-1.5	0.21	232	-10.5	0.01	176
Pinyon Jay	1	-4.6	0.00	181	-7.0	-2.2	4.75	-5.6	0.31	106	36.8	0.05	80
Clark's Nutcracker	1	2.6	0.00	258	1.1	4.2	1.11	-6.7	0.07	156	32.8	0.15	117
Black-billed Magpie	2	-0.4	0.18	798	-1.0	0.2	6.52	0.6	0.57	516	16.7	0.02	353
Yellow-billed Magpie	1	0.0	0.97	41	-1.4	1.5	10.78	-1.1	0.73	24	25.5	0.18	19
American Crow	1	1.0	0.00	3268	0.7	1.3	20.55	-0.9	0.01	2334	-2.6	0.08	1631

APPENDIX 1. Continued.

Species	1966 - 2003							1999 - 2003			2002 - 2003		
	TQ	Trend	<i>P</i>	<i>n</i>	(95 % CI)		RA	Trend	<i>P</i>	<i>n</i>	Trend	<i>P</i>	<i>n</i>
Northwestern Crow	2	0.9	0.14	37	-0.3	2.1	12.80	0.8	0.90	19	-5.2	0.66	13
Fish Crow	2	1.1	0.07	543	-0.1	2.2	3.28	-5.2	0.00	350	-2.5	0.74	286
Chihuahuan Raven	2	-1.0	0.42	113	-3.3	1.4	3.53	12.1	0.05	55	-20.6	0.25	43
Common Raven	1	2.6	0.00	1675	1.8	3.4	5.38	-0.9	0.38	1135	19.0	0.00	797
Horned Lark	2	-2.2	0.00	2005	-2.6	-1.8	24.44	1.4	0.11	1101	11.8	0.00	826
Purple Martin	2	-0.1	0.74	1688	-0.6	0.4	4.75	-1.9	0.10	848	-1.7	0.78	645
Tree Swallow	2	0.1	0.80	2071	-0.6	0.7	4.48	-4.0	0.00	1338	6.0	0.15	978
Violet-green Swallow	1	0.7	0.33	640	-0.7	2.1	4.24	-3.3	0.17	379	27.6	0.07	293
Northern Rough-winged Swallow	2	-1.0	0.36	2170	-3.1	1.1	1.55	-5.6	0.00	962	20.0	0.18	748
Bank Swallow	1	-0.6	0.52	1116	-2.2	1.1	2.76	1.5	0.57	339	32.9	0.08	288
Cliff Swallow	2	0.7	0.04	1985	0.0	1.4	17.19	-1.2	0.52	1043	-5.3	0.34	777
Cave Swallow	3	17.2	0.08	41	-1.7	36.1	6.60	-12.7	0.02	27	42.5	0.32	26
Barn Swallow	2	-0.9	0.00	3426	-1.2	-0.7	12.54	-4.1	0.00	2356	9.4	0.00	1652
Carolina Chickadee	1	-0.6	0.00	1087	-1.0	-0.2	6.33	0.8	0.36	781	-4.1	0.21	571
Black-capped Chickadee	1	1.4	0.00	1741	1.0	1.8	3.41	1.6	0.07	1165	6.2	0.10	826
Mountain Chickadee	1	-0.7	0.02	450	-1.4	-0.1	3.89	1.6	0.24	313	10.4	0.09	217
Chestnut-backed Chickadee	1	-0.8	0.26	187	-2.1	0.6	4.28	1.7	0.48	111	-8.9	0.39	83
Boreal Chickadee	2	-2.5	0.07	168	-5.2	0.2	0.36	-13.2	0.04	62	-27.4	0.11	42
Oak Titmouse	1	-1.4	0.05	108	-2.9	0.0	4.65	0.7	0.82	51	-20.4	0.00	43
Juniper Titmouse	2	0.1	0.96	100	-4.6	4.9	0.63	0.7	0.88	56	70.5	0.01	52
Tufted Titmouse	2	1.0	0.00	1643	0.7	1.4	8.46	2.9	0.00	1206	8.2	0.00	902
Verdin	2	-5.1	0.02	135	-9.3	-0.8	3.99	-5.8	0.01	67	-17.4	0.08	48
Bushtit	1	-2.0	0.10	288	-4.3	0.4	1.44	0.9	0.78	128	14.5	0.32	108
Red-breasted Nuthatch	1	1.6	0.00	1095	0.9	2.2	2.29	7.3	0.00	677	13.0	0.00	495
White-breasted Nuthatch	2	1.9	0.00	1857	1.3	2.4	0.94	-3.4	0.01	1143	-0.5	0.92	887
Pygmy Nuthatch	1	0.3	0.70	139	-1.4	2.0	1.05	-4.8	0.31	74	19.7	0.39	55
Brown-headed Nuthatch	1	-1.6	0.07	337	-3.4	0.1	1.53	1.2	0.64	175	1.7	0.88	157
Brown Creeper	2	0.4	0.66	578	-1.2	2.0	0.37	1.9	0.42	257	-0.6	0.95	234
Cactus Wren	1	-2.5	0.00	179	-4.0	-0.9	6.34	-11.5	0.00	96	-5.0	0.47	68
Rock Wren	2	-2.3	0.00	621	-3.0	-1.5	1.86	0.9	0.60	294	19.7	0.02	247
Canyon Wren	2	-3.2	0.07	186	-6.7	0.3	0.22	-13.4	0.00	71	10.1	0.60	74
Carolina Wren	2	0.8	0.00	1369	0.5	1.2	9.35	-0.4	0.50	958	1.3	0.55	738
Bewick's Wren	2	0.0	0.94	660	-1.0	0.9	2.51	-1.0	0.46	308	9.0	0.17	241
House Wren	2	0.7	0.00	2322	0.4	1.0	4.94	-3.0	0.00	1528	-0.3	0.89	1110
Winter Wren	2	0.8	0.71	786	-3.4	5.0	7.34	-5.5	0.00	478	-7.8	0.10	331
Sedge Wren	2	2.1	0.00	376	1.1	3.1	1.31	-13.2	0.00	197	-2.7	0.73	154
Marsh Wren	2	2.9	0.00	396	1.4	4.4	0.73	-4.1	0.10	178	25.2	0.08	143
American Dipper	2	-0.3	0.84	103	-3.4	2.7	0.11	0.5	0.94	32	13.8	0.53	37
Golden-crowned Kinglet	2	-0.8	0.27	664	-2.1	0.6	2.39	-6.7	0.00	398	-22.2	0.00	266
Ruby-crowned Kinglet	2	-0.9	0.03	722	-1.6	-0.1	6.48	3.4	0.06	361	-7.8	0.03	267
Blue-gray Gnatcatcher	1	0.7	0.02	1485	0.1	1.3	2.18	3.0	0.00	944	13.9	0.02	763
Black-tailed Gnatcatcher	2	-2.4	0.20	68	-6.1	1.3	1.58	-5.2	0.20	36	-0.7	0.97	24
Eastern Bluebird	2	2.4	0.00	1965	2.0	2.8	3.55	-0.2	0.79	1355	-14.5	0.00	1023
Western Bluebird	1	-1.1	0.16	277	-2.6	0.4	1.28	-1.8	0.50	139	-5.1	0.63	107
Mountain Bluebird	1	1.5	0.01	580	0.3	2.6	2.16	1.2	0.48	332	6.6	0.49	244
Townsend's Solitaire	2	-0.8	0.11	320	-1.7	0.2	0.66	-1.6	0.60	190	-4.7	0.60	160
Veery	2	-1.4	0.00	1055	-1.9	-0.9	4.28	-4.6	0.00	639	5.9	0.31	437
Swainson's Thrush	2	-0.5	0.07	789	-1.0	0.0	15.15	0.2	0.87	460	4.5	0.26	330

APPENDIX 1. Continued.

Species	1966 - 2003							1999 - 2003			2002 - 2003		
	TQ	Trend	<i>P</i>	<i>n</i>	(95 % CI)		RA	Trend	<i>P</i>	<i>n</i>	Trend	<i>P</i>	<i>n</i>
Hermit Thrush	1	1.3	0.00	1093	0.6	2.1	5.04	-1.4	0.20	695	5.7	0.20	490
Wood Thrush	2	-1.8	0.00	1756	-2.2	-1.4	4.88	-4.8	0.00	1126	-3.0	0.33	839
American Robin	1	0.7	0.00	3408	0.5	0.8	26.95	-1.0	0.00	2454	-2.1	0.09	1717
Varied Thrush	2	-0.2	0.59	197	-1.0	0.6	6.11	-5.0	0.02	109	-2.7	0.63	79
Wrentit	1	-1.1	0.23	139	-3.0	0.7	6.04	-1.0	0.54	80	-4.6	0.34	61
Gray Catbird	2	-0.1	0.40	2220	-0.4	0.2	2.63	0.8	0.14	1449	10.9	0.00	1072
Northern Mockingbird	2	-0.6	0.00	2054	-0.8	-0.4	17.25	1.8	0.00	1312	0.0	0.99	1009
Sage Thrasher	1	-0.8	0.07	319	-1.6	0.1	8.55	-5.3	0.00	175	7.3	0.21	122
Brown Thrasher	1	-1.2	0.00	2262	-1.5	-0.9	3.03	-1.1	0.12	1387	9.0	0.01	1039
Long-billed Thrasher	3	12.9	0.00	25	6.6	19.1	0.50	13.8	0.31	13	55.4	0.45	11
Bendire's Thrasher	2	-5.2	0.03	43	-9.8	-0.6	0.37	-5.4	0.63	13	8.3	0.70	11
Curve-billed Thrasher	2	-1.5	0.20	143	-3.7	0.8	1.54	0.6	0.80	76	17.8	0.37	56
California Thrasher	1	-2.7	0.06	76	-5.5	0.1	1.56	-1.5	0.74	28	-11.9	0.41	22
Crissal Thrasher	2	1.6	0.58	47	-3.9	7.0	0.26	-3.9	0.51	22	-46.3	0.04	14
Le Conte's Thrasher	2	-0.2	0.92	38	-4.4	4.0	0.71	-10.3	0.01	9	12.4	0.75	6
European Starling	1	-0.9	0.00	3460	-1.2	-0.7	30.29	-1.3	0.07	2306	9.3	0.02	1615
Sprague's Pipit	1	-4.8	0.00	144	-6.5	-3.0	1.78	-3.3	0.37	60	21.2	0.28	57
Cedar Waxwing	1	1.1	0.00	1974	0.6	1.6	3.83	-0.4	0.66	1331	-13.3	0.00	928
Phainopepla	1	0.1	0.91	120	-2.0	2.3	1.63	-13.0	0.07	47	27.4	0.38	39
Blue-winged Warbler	2	-0.6	0.23	467	-1.6	0.4	0.47	0.3	0.91	186	17.0	0.18	168
Golden-winged Warbler	2	-2.4	0.00	269	-3.9	-0.9	0.39	11.2	0.04	63	-22.5	0.08	63
Tennessee Warbler	2	0.1	0.96	312	-4.6	4.8	5.00	-0.5	0.91	106	-30.9	0.00	62
Orange-crowned Warbler	1	-1.2	0.00	464	-2.0	-0.4	2.64	1.7	0.27	277	-1.0	0.88	229
Nashville Warbler	1	1.6	0.13	789	-0.5	3.7	6.90	1.2	0.31	435	-2.5	0.50	312
Virginia's Warbler	1	-1.0	0.28	90	-2.7	0.8	1.42	-3.3	0.26	68	9.8	0.38	53
Lucy's Warbler	1	-0.5	0.59	41	-2.2	1.3	5.14	5.4	0.17	21	17.6	0.49	17
Northern Parula	1	0.9	0.01	1092	0.2	1.5	1.39	-2.0	0.06	676	7.2	0.06	524
Yellow Warbler	1	0.4	0.00	2536	0.1	0.7	4.33	1.0	0.08	1522	-0.8	0.71	1119
Chestnut-sided Warbler	2	-0.6	0.08	871	-1.2	0.1	6.53	1.6	0.20	511	0.2	0.97	385
Magnolia Warbler	1	1.5	0.00	574	0.6	2.5	5.90	1.9	0.24	330	13.2	0.17	235
Cape May Warbler	2	0.6	0.61	194	-1.6	2.8	0.86	-11.4	0.04	54	-26.8	0.06	52
Black-throated Blue Warbler	2	0.8	0.40	438	-1.1	2.6	1.02	1.0	0.74	229	2.6	0.75	163
Yellow-rumped Warbler	1	0.4	0.14	1182	-0.1	1.0	6.11	0.0	0.96	774	-5.1	0.10	550
Black-throated Gray Warbler	1	0.3	0.77	249	-1.5	2.0	1.44	0.1	0.93	154	-4.4	0.48	126
Black-throated Green Warbler	1	-0.2	0.88	687	-2.2	1.9	2.82	-0.3	0.83	428	-6.4	0.15	305
Townsend's Warbler	2	0.6	0.35	199	-0.7	1.9	5.79	1.4	0.61	119	-4.9	0.53	89
Hermit Warbler	1	0.1	0.96	120	-2.3	2.4	5.73	1.7	0.23	84	3.0	0.67	69
Blackburnian Warbler	1	1.0	0.03	529	0.1	1.8	1.31	1.7	0.33	268	5.0	0.51	185
Yellow-throated Warbler	2	0.8	0.10	478	-0.1	1.8	0.66	3.3	0.04	228	18.6	0.01	213
Grace's Warbler	2	-2.4	0.14	39	-5.5	0.7	1.56	2.9	0.48	27	21.0	0.26	20
Pine Warbler	1	1.0	0.00	921	0.4	1.5	3.38	-5.2	0.00	607	-9.4	0.00	480
Prairie Warbler	2	-2.0	0.00	825	-2.8	-1.3	1.87	-2.7	0.04	426	4.8	0.32	326
Palm Warbler	2	3.9	0.00	68	1.5	6.2	0.11	-9.1	0.01	36	-45.7	0.00	25
Bay-breasted Warbler	2	-2.4	0.15	197	-5.7	0.8	1.80	5.2	0.42	72	19.7	0.32	39
Blackpoll Warbler	3	-2.6	0.60	76	-12.1	6.9	3.06	12.4	0.23	25	-5.2	0.80	14
Cerulean Warbler	2	-4.2	0.00	236	-5.6	-2.9	0.31	9.8	0.01	72	42.9	0.06	70
Black-and-white Warbler	1	-0.3	0.39	1178	-0.9	0.4	1.68	-3.0	0.05	654	3.2	0.48	487
American Redstart	1	-0.5	0.27	1331	-1.5	0.4	3.05	-2.8	0.01	754	-1.5	0.76	552

APPENDIX 1. Continued.

Species	1966 - 2003							1999 - 2003			2002 - 2003		
	TQ	Trend	<i>P</i>	<i>n</i>	(95 % CI)		RA	Trend	<i>P</i>	<i>n</i>	Trend	<i>P</i>	<i>n</i>
Prothonotary Warbler	2	-1.5	0.03	454	-2.7	-0.2	0.95	1.7	0.37	211	-0.3	0.97	180
Worm-eating Warbler	2	0.5	0.45	375	-0.7	1.7	0.34	3.2	0.33	174	-6.2	0.58	152
Swainson's Warbler	3	9.3	0.03	124	0.9	17.7	0.13	8.0	0.14	50	1.9	0.91	43
Ovenbird	2	0.5	0.00	1438	0.2	0.9	6.89	1.8	0.00	931	1.4	0.49	679
Northern Waterthrush	1	-0.1	0.90	602	-1.0	0.9	1.56	0.3	0.87	268	9.7	0.17	212
Louisiana Waterthrush	2	0.8	0.04	559	0.0	1.6	0.24	4.0	0.18	213	4.1	0.68	198
Kentucky Warbler	1	-1.0	0.00	728	-1.7	-0.3	1.33	-0.4	0.80	362	1.6	0.83	293
Connecticut Warbler	2	-1.2	0.24	96	-3.1	0.8	0.42	6.1	0.11	34	79.4	0.09	23
Mourning Warbler	2	-1.1	0.00	566	-1.8	-0.4	4.22	0.8	0.66	281	-10.1	0.04	219
MacGillivray's Warbler	1	-0.5	0.32	456	-1.4	0.5	4.03	-2.6	0.08	305	-9.5	0.02	232
Common Yellowthroat	2	-0.3	0.04	2912	-0.6	0.0	7.36	-2.1	0.00	1998	1.0	0.52	1437
Hooded Warbler	1	0.8	0.37	655	-0.9	2.4	1.72	3.4	0.01	386	9.2	0.09	323
Wilson's Warbler	1	-1.4	0.00	528	-2.4	-0.4	1.55	-6.1	0.01	232	-1.1	0.86	190
Canada Warbler	2	-2.0	0.03	495	-3.8	-0.2	0.89	-3.0	0.41	169	12.5	0.25	126
Yellow-breasted Chat	2	0.0	0.98	1376	-0.5	0.5	3.27	0.8	0.21	793	9.9	0.00	603
Hepatic Tanager	2	4.3	0.14	32	-1.2	9.8	0.66	-7.3	0.15	24	57.9	0.35	19
Summer Tanager	1	0.4	0.28	898	-0.3	1.1	2.75	1.7	0.08	565	-3.0	0.43	457
Scarlet Tanager	2	-0.2	0.41	1313	-0.6	0.2	1.37	-0.9	0.38	746	-1.9	0.62	579
Western Tanager	2	0.9	0.04	669	0.0	1.7	4.31	2.3	0.02	456	3.6	0.30	350
Olive Sparrow	2	2.0	0.06	27	0.1	4.0	1.72	0.6	0.91	18	-14.4	0.25	14
Green-tailed Towhee	1	-0.4	0.43	312	-1.3	0.6	3.19	-2.2	0.11	210	-0.4	0.95	153
Spotted Towhee	1	0.3	0.30	698	-0.3	1.0	4.14	-2.2	0.01	447	-6.2	0.05	347
Eastern Towhee	2	-1.8	0.00	1659	-2.1	-1.4	7.28	-1.1	0.08	1042	-3.3	0.10	784
Canyon Towhee	1	-1.5	0.04	108	-3.0	-0.1	1.61	-7.1	0.01	61	-9.9	0.39	51
California Towhee	1	-0.2	0.67	123	-1.4	0.9	6.64	-2.5	0.15	62	9.8	0.25	48
Abert's Towhee	2	-1.1	0.42	25	-3.7	1.5	0.99	-4.1	0.59	14	50.9	0.49	13
Cassin's Sparrow	1	-2.2	0.00	240	-3.0	-1.4	14.51	-6.0	0.00	141	18.1	0.09	100
Bachman's Sparrow	2	-2.3	0.12	159	-5.2	0.6	0.59	-9.2	0.00	53	-17.9	0.11	50
Rufous-crowned Sparrow	2	-0.7	0.54	116	-3.0	1.6	0.91	-3.0	0.42	57	23.6	0.14	45
Chipping Sparrow	2	-0.2	0.27	2901	-0.4	0.1	7.87	-0.6	0.18	2010	1.1	0.54	1445
Clay-colored Sparrow	2	-1.2	0.00	502	-1.7	-0.6	7.58	-1.1	0.24	310	3.8	0.37	228
Brewer's Sparrow	1	-2.8	0.00	481	-3.9	-1.6	7.91	-4.0	0.00	298	16.9	0.02	211
Field Sparrow	2	-3.1	0.00	1757	-3.4	-2.8	4.82	-3.6	0.00	1093	-3.3	0.18	820
Black-chinned Sparrow	2	-5.1	0.01	56	-8.6	-1.6	0.77	-22.8	0.00	21	-0.4	0.99	13
Vesper Sparrow	1	-1.1	0.00	1658	-1.6	-0.6	8.04	-0.9	0.23	865	3.7	0.18	630
Lark Sparrow	2	-2.9	0.00	1098	-3.8	-1.9	3.97	3.8	0.00	597	4.6	0.34	460
Black-throated Sparrow	1	-4.2	0.00	311	-6.6	-1.9	11.50	-8.3	0.00	166	-11.0	0.09	118
Sage Sparrow	2	0.1	0.97	227	-3.2	3.3	5.45	-7.0	0.01	107	5.9	0.53	87
Lark Bunting	1	-1.3	0.01	367	-2.2	-0.3	33.64	-1.4	0.63	186	72.8	0.00	120
Savannah Sparrow	2	-0.8	0.00	1672	-1.2	-0.4	8.23	-4.1	0.00	1032	-0.1	0.95	740
Grasshopper Sparrow	1	-3.9	0.00	1574	-4.8	-2.9	3.94	-5.7	0.00	740	10.4	0.11	576
Baird's Sparrow	1	-3.5	0.00	135	-5.8	-1.2	1.74	-12.8	0.02	52	7.3	0.56	40
Henslow's Sparrow	2	-8.6	0.00	170	-12.6	-4.6	0.14	-8.5	0.00	39	26.8	0.31	47
Le Conte's Sparrow	2	-0.1	0.95	195	-1.7	1.6	0.67	-17.2	0.00	108	45.1	0.06	71
Nelson's Sharp-tailed Sparrow	2	2.7	0.25	80	-1.9	7.3	0.15	-7.4	0.13	39	2.0	0.94	34
Seaside Sparrow	2	-0.1	0.89	29	-1.4	1.2	0.38	-4.2	0.33	12	-2.7	0.78	13
Fox Sparrow	1	0.8	0.42	229	-1.2	2.9	2.14	-3.3	0.11	137	-6.6	0.44	107

APPENDIX 1. Continued.

Species	1966 - 2003							1999 - 2003			2002 - 2003		
	TQ	Trend	<i>P</i>	<i>n</i>	95 % CI		RA	Trend	<i>P</i>	<i>n</i>	Trend	<i>P</i>	<i>n</i>
Song Sparrow	2	-0.6	0.00	2618	-0.8	-0.4	11.05	-1.4	0.00	1822	-1.8	0.17	1274
Lincoln's Sparrow	2	1.8	0.05	479	0.0	3.6	2.44	-1.9	0.24	249	7.8	0.31	173
Swamp Sparrow	1	1.5	0.00	810	0.6	2.3	1.44	0.5	0.71	432	10.6	0.12	312
White-throated Sparrow	1	-0.7	0.00	724	-1.1	-0.3	31.59	-1.7	0.11	428	5.5	0.04	272
White-crowned Sparrow	1	-1.3	0.06	315	-2.7	0.1	2.05	0.2	0.93	191	10.0	0.22	139
Dark-eyed Junco	1	-1.5	0.00	1131	-2.0	-0.9	7.50	-4.4	0.00	704	0.1	0.98	498
McCown's Longspur	2	-2.6	0.23	69	-6.9	1.6	3.76	-10.1	0.00	29	-20.7	0.20	26
Chestnut-collared Longspur	2	-2.6	0.00	154	-3.9	-1.3	9.20	-9.6	0.00	69	19.1	0.07	53
Northern Cardinal	2	0.1	0.23	2030	-0.1	0.3	22.29	1.9	0.00	1508	-2.4	0.04	1105
Pyrrhuloxia	1	-2.0	0.06	97	-4.0	0.0	6.09	-3.5	0.28	60	-13.4	0.15	40
Rose-breasted Grosbeak	2	-0.7	0.02	1288	-1.3	-0.1	2.27	0.5	0.64	763	9.4	0.07	593
Black-headed Grosbeak	2	0.7	0.20	669	-0.4	1.9	2.17	-0.4	0.68	431	7.8	0.07	331
Blue Grosbeak	2	1.0	0.00	1232	0.4	1.6	2.68	1.8	0.02	781	-0.9	0.81	599
Lazuli Bunting	2	0.6	0.35	484	-0.7	1.8	1.16	-1.0	0.58	282	2.0	0.73	221
Indigo Bunting	2	-0.6	0.00	2030	-0.8	-0.4	11.76	-0.5	0.18	1411	0.8	0.57	1038
Painted Bunting	1	-2.0	0.00	346	-3.1	-0.9	5.72	6.6	0.00	211	10.9	0.03	165
Dickcissel	2	-1.2	0.00	922	-1.8	-0.6	15.69	2.5	0.03	575	12.2	0.02	420
Bobolink	2	-1.7	0.00	1232	-2.2	-1.1	5.01	-0.3	0.74	712	1.7	0.65	538
Red-winged Blackbird	2	-1.0	0.00	3581	-1.3	-0.7	52.75	-0.7	0.13	2493	0.4	0.88	1753
Tricolored Blackbird	2	0.4	0.89	50	-5.4	6.2	28.69	9.3	0.37	13	-24.4	0.93	11
Eastern Meadowlark	2	-2.9	0.00	2110	-3.3	-2.5	18.49	-2.2	0.00	1362	0.1	0.96	1004
Western Meadowlark	1	-0.9	0.00	1634	-1.3	-0.5	43.37	-3.0	0.00	963	9.4	0.00	665
Yellow-headed Blackbird	2	1.1	0.09	672	-0.2	2.5	9.55	-7.0	0.00	341	26.2	0.03	256
Rusty Blackbird	3	-9.9	0.02	96	-17.9	-1.9	0.27	31.5	0.01	9	130.0	0.33	6
Brewer's Blackbird	1	-1.3	0.00	1235	-1.9	-0.7	15.77	-1.1	0.28	776	10.1	0.02	529
Common Grackle	1	-1.2	0.00	2765	-1.6	-0.8	31.07	1.5	0.03	1919	0.2	0.94	1351
Boat-tailed Grackle	1	2.3	0.00	118	0.7	3.8	18.29	-3.8	0.26	71	-0.9	0.95	60
Great-tailed Grackle	1	2.7	0.10	283	-0.6	5.9	7.30	-2.5	0.50	157	8.3	0.58	130
Bronzed Cowbird	2	-0.3	0.89	70	-4.2	3.6	1.81	-9.7	0.24	33	0.1	1.00	27
Brown-headed Cowbird	2	-1.2	0.00	3659	-1.4	-0.9	12.74	-1.2	0.05	2469	6.1	0.01	1752
Orchard Oriole	2	-0.8	0.04	1498	-1.6	0.0	2.70	2.3	0.02	872	5.8	0.09	700
Hooded Oriole	2	2.2	0.31	72	-2.0	6.3	0.37	12.9	0.01	26	-25.5	0.01	23
Baltimore Oriole	2	-0.7	0.00	1794	-1.1	-0.4	2.73	0.3	0.77	1097	2.5	0.51	826
Bullock's Oriole	1	-1.0	0.01	724	-1.7	-0.2	1.74	1.5	0.26	397	-5.8	0.25	303
Scott's Oriole	1	1.1	0.26	136	-0.8	3.1	1.49	-3.8	0.10	76	-32.6	0.00	58
Pine Grosbeak	2	-0.3	0.92	94	-5.1	4.6	0.18	-8.1	0.32	28	18.0	0.68	30
Purple Finch	1	-1.6	0.00	960	-2.3	-0.9	2.06	0.7	0.72	484	24.1	0.01	367
Cassin's Finch	1	-2.7	0.00	319	-4.3	-1.0	1.70	-10.1	0.00	165	4.5	0.70	126
House Finch	1	1.5	0.05	2184	0.0	3.0	4.95	-1.7	0.05	1480	-2.3	0.43	1120
Red Crossbill	1	-0.7	0.46	435	-2.4	1.1	1.91	4.5	0.28	217	20.3	0.40	160
White-winged Crossbill	3	4.3	0.44	124	-6.6	15.2	1.98	-5.9	0.78	44	405.4	0.01	27
Pine Siskin	1	-2.1	0.00	846	-3.2	-1.1	5.11	-8.5	0.00	421	28.7	0.12	267
Lesser Goldfinch	1	-0.7	0.38	340	-2.3	0.9	1.84	1.8	0.51	180	1.6	0.84	152
Lawrence's Goldfinch	2	-1.2	0.50	52	-4.6	2.3	0.60	-9.4	0.10	13	7.9	0.85	6
American Goldfinch	2	0.0	0.80	2606	-0.4	0.3	5.67	-0.3	0.64	1774	1.2	0.62	1284
Evening Grosbeak	1	-1.3	0.15	645	-3.0	0.4	3.93	-9.9	0.05	255	25.8	0.06	160
House Sparrow	2	-2.5	0.00	3128	-2.8	-2.2	30.11	1.0	0.33	1960	6.3	0.29	1403