Population estimates of North American shorebirds, 2012

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Andres, B.A., Smith, P.A., Morrison, R.I.G., Gratto-Trevor, C.L., Brown, S.C. & Friis, C.A. 2012. Population estimates of North American shorebirds, 2012. *Wader Study Group Bull*. 119(3): 178–194.

Keywords: North America, population size, shorebirds, trends

We re-assessed the population size and trend of 52 species and 75 taxa of shorebirds that occur in North America by reviewing published papers, soliciting unpublished data, and seeking the opinions of experts. New information resulted in changing population estimates for 35 of the 71 taxa that could be compared directly to the estimates published in 2006; from this comparison, 28 estimates increased and seven decreased. Almost all of the increases (88%) were the result of more comprehensive surveys being conducted or re-analyses of existing data rather than actual increases in numbers. Retaining the previous estimate was almost always due to a lack of new information. Recent trend analysis indicates that many shorebird populations have stabilized in recent years after large declines during the early 1980s and mid-1990s. Although many shorebird populations listed as threatened or endangered by the U.S. and Canadian governments have increasing population trends, none have reached recovery targets. Information on population trends remains virtually unknown for 25% of the shorebirds occurring in North America, and surveys are needed to determine the state of these populations.

INTRODUCTION

Estimates of population size serve a number of important purposes for species' conservation. For shorebirds, criteria based on proportions of a given population are used to identify key habitats such as wetland staging sites, increase awareness of the relative importance of a site, and ultimately increase conservation actions through programs such as the Ramsar Convention for Wetlands of International Importance, the Important Bird Areas program of BirdLife International (in North America: the National Audubon Society, Bird Studies Canada, and Nature Canada) and, most specifically for shorebirds, the Western Hemisphere Shorebird Reserve Network. For example, these programs all consider a wetland to be of international importance if it supports ≥1% of a biogeographical population of a shorebird (or other waterbird) species.

Knowledge of past population size can serve as the foundation for strategic conservation by establishing a biological target that reflects a desired population state. Current population state relative to this target provides a way to evaluate the effectiveness of conservation actions. Information on regional population size and trends can also be used to evaluate progress toward the biological target and can be used to evaluate the importance of regional habitat loss or other anthropogenic threats. For endangered species, estimates of population size are critical for assessing a species' status and are also used to set recovery targets or judge the success of recovery programs. Even for species that are not formally listed as at risk, information on population size can be used to communicate the need to invest in conservation actions for small populations that might be vulnerable to environmental perturbations.

A compilation of information on population sizes of all shorebirds in North America was first published in 2000 (Morrison *et al.* 2000, 2001) and was motivated by the development of national shorebird conservation plans in Canada (Donaldson *et al.* 2000) and the United States (Brown *et al.* 2001). In addition, assessments of shorebird abundance in North America were provided to Wetlands International for their periodic summaries of global waterbird abundance (e.g., Rose & Scott 1994, Wetlands International 2006).

The last update of population sizes and trends of North American shorebirds was published in 2006 (Morrison et al. 2006). Because shorebird and other waterbird populations are constantly changing, survey and analytical methods continue to improve, and new data are acquired, a regular revision of population estimates is needed to keep information current and relevant. Our current assessment builds on the information reported by Morrison et al. (2006) and provides up-to-date estimates of population size for all species and populations of shorebirds occurring regularly in North America. Because shorebirds visit many countries in the course of their annual migrations, it is important to have an internationally agreed upon set of population numbers, so that, for example, the importance of key habitats may be judged in a consistent manner throughout a species' range. The information presented here will contribute to the fifth edition of Waterbird Population Estimates (WPE5) to be produced in 2012, and we hope to coordinate subsequent revisions of the North American shorebird population estimates with the production of subsequent editions of this international reference.

METHODS

The species accounts and previous estimates of shorebird population size in Morrison *et al.* (2006) serve as the starting point for adding new information in this report. New information has come from a variety of sources: published papers; focal species action plans; unpublished reports; and expert opinion based on unpublished data, which was solicited widely among the North American shorebird community. Because data come from a variety of sources throughout shorebirds' annual cycle, population estimates may occasionally include counts of both breeding adults and first-year birds. For the sake of a general discussion of population size, however, we assume that the estimates presented here refer to the breeding population size.

Included in these new information sources is a major analysis of abundance and distribution of arctic-breeding shorebird surveys conducted as part of the Program for Regional and International Shorebird Monitoring Arctic Breeding Surveys (hereafter Arctic PRISM; Bart & Johnston 2012). This analysis provides estimates of shorebird abundance across nearly 270,000 km² of the Arctic that has been surveyed over the last decade. For many arctic species, the surveyed area represents only a portion of the known or suspected breeding range, which may also extend into areas outside the Arctic.

We generally considered information from Arctic PRISM a useful addition if the coefficient of variation for the population estimate was ≤30%, and we did not attempt to extrapolate densities or abundances to un-surveyed regions. For all population estimates presented herein, we provide a confidence interval based on expert opinion or statistical measures of precision where available, typically the 95% confidence interval.

Information on population trends has been added to the species accounts and tables and is based on published and unpublished material. We used an analysis of post-breeding migration data from the International Shorebird Survey, Atlantic Canada Shorebird Survey, and the Ontario Shorebird Survey (Ross et al. 2012; PAS et al., unpubl. data) to assess population trends over the last decade and a longer timeperiod (mid-1970s to 2009), which updates the previous work by Bart et al. (2007). Data for this analysis was provided by Manomet Center for Conservation Sciences and the Canadian Wildlife Service. Migration counts come mainly from sites east of the Great Plains and generally reflect dynamics of eastern North American populations. The Breeding Bird Survey (Sauer et al. 2011) provided short-term (2000–2010) and long-term (1966–2010) information on trends for a limited number of, mainly temperate-breeding, shorebird species. Butcher & Niven (2007) provided information on 40-year trends from the Christmas Bird Count. Lastly, R.I.G. Morrison, R.K. Ross, and D.S. Mizrahi (cited as RIGM et al., unpubl. data) flew surveys of the northern South American coastline in the 2010s, which replicated surveys conducted by Morrison and Ross and the mid-1980s. Survey coverage was expanded after the initial year to ensure shorebirds were not shifting their use of the shoreline, and details on the methods will be published elsewhere. Where possible, we provide information on long- and short-term population trends.

In each species account, an assessment of short-term population trend (the last decade) is provided in accordance with the categories developed for the U.S. Shorebird Conservation Plan (Brown *et al.* 2001): 1) significant increase, 2) apparent increase, 3) apparently stable or trend unknown (U), 4) apparent decline, and 5) significant decline. The categories

of significant versus apparent reflect certainty rather than magnitude of trends. For populations listed under the U.S. Endangered Species Act, an increasing population trend is listed here as apparently increasing if recovery goals have not yet been met. We also compare the current assessment of population trend with that reported in the most recent assessment made by U.S. Shorebird Conservation Plan (2004).

Nomenclature and systematics are based principally on the American Ornithologists' Union's (1998) *Checklist of North American Birds* and subsequent supplements; further division of species into subspecific or biogeographic populations follows Brown *et al.* (2000).

RESULTS

Results are presented in the form of species accounts, which indicate new sources of information upon which population estimates have been based. Current population estimates, estimated ranges or confidence intervals, comparisons with previous estimates, and current and past trends are presented in the Appendix.

Black-bellied Plover Pluvialis squatarola

Two subspecies breed in North America: *P. s. squatarola* in Alaska and *P. s. cynosurae* in the Canadian Arctic.

New information from Arctic PRISM surveys indicates a much larger population breeding in northern Alaska than previously thought, particularly within the National Petroleum Reserve–Alaska (Bart *et al.* 2012b). The overall estimate for *P. s. squatarola* was 262,733 (95% range = 133,994–391,472) and is likely conservative, because extensive areas of western Alaska were not yet surveyed (Bart & Smith 2012). Andres *et al.* (2012) estimated a population of 26,623 (95% range = 16,500–36,746) breeding just in the vicinity of Teshekpuk Lake, northern Alaska. The PRISM estimate of 262,700 of *P. s. squatarola* greatly increases the previous estimate of 50,000 (Morrison *et al.* 2006).

Because Arctic PRISM surveys in Canada sampled only a small portion of the breeding range of *P. s. cynosurae* (Bart & Smith 2012), the population is likely well above the PRISM estimate of 51,600, although precision of this estimate was low (CV = 0.48). Because of previously reported declines (see below) and relatively low counts recorded during migration surveys (Morrison *et al.* 2001; PAS *et al.*, unpubl. data), we suggest revising the previous estimate for *P. s. cynosurae* of 150,000 (Morrison *et al.* 2006) downward to 100,000. Combined population size for both subspecies is then 362,700.

Substantial declines between the 1980s and 2010s have occurred on the wintering grounds in northern South America (RIGM *et al.*, unpubl. data). Counts from migration stopovers, largely influenced by sites on the Atlantic coast, demonstrated a rapid decline from the mid-1970s to the 1990s (3.3% per year, 1974–1998, p < 0.001) and stable or increasing counts since then (PAS *et al.*, unpubl. data). Abundance of *P. s. cynosurae* at migration stopovers is now stable to possibly increasing (trend = 3) but remain at levels below those of the 1970s. Counts from migration surveys are too variable to assess population trend in *P. s. squatarola* (trend = 3U).

American Golden-Plover Pluvialis dominica

New information from Arctic PRISM surveys indicates a much larger population than previously thought. Bart & Smith (2012) estimated the population in Alaska as 282,249 (95% range = 116,287–448,211) and in Canada as 208,570 (95%

range = 102,283-314,857); population size for both areas was 490,819 (95% range = 288,798-692,840). We suggest a population estimate of 500,000 (95% range = 294,200-705,800), which is more than double the previous estimate of 200,000 (Morrison *et al.* 2006). Even this may be conservative, as $\geq 40\%$ of the breeding range occurs within alpine areas in sub-Arctic and boreal biomes not covered by Arctic PRISM surveys (Bart & Smith 2012).

Population trends are variable across datasets and regions (Clay *et al.* 2010). Counts during fall migration had a long-term decline on the Atlantic Coast (3.9% per year, 1974–2009, p = 0.06), but trends were variable for other regions and there was no significant trend in migration survey counts across all sites in the dataset (PAS *et al.*, unpubl. data). Although some segments of the population apparently declined over the long-term, variability among regions and uncertainty about the fractions of the population using different migration routes mean that the current population trend is unknown (trend = 3U).

Pacific Golden-Plover Pluvialis fulva

New information from Arctic PRISM surveys in western Alaska produced an imprecise (CV = 0.69) breeding population estimate of 46,000 based on surveys covering only a small portion of the range (McCaffery *et al.* 2012). The substantial uncertainty associated with the estimate leads us to retain the previous estimate of 42,500 (estimated range = 35,000-50,000) plovers breeding in Alaska (Alaska Shorebird Group 2008, Morrison *et al.* 2006).

Broad-scale information is lacking on trends in the Alaskabreeding population (trend = 3U), which generally winters in the Hawaiian Archipelago and on other South Pacific islands (Johnson & Connors 2010).

Snowy Plover Charadrius nivosus

The Western Hemisphere Snowy Plover (*C. nivosus*) and the Old-world Kentish Plover (*C. alexandrinus*) were recently split into two distinct species (Chesser *et al.* 2011, Küpper *et al.* 2009). Genetic analysis of the C. nivosus indicates that all Snowy Plovers occurring in North America are part of *C. n. nivosus*; *C. n. tenuirostris* is restricted mainly to Puerto Rico and Cuba, with smaller numbers on other Caribbean Islands (likely <200 total individuals; Funk *et al.* 2007). A third subspecies (*C. n. occidentalis*) occurs along the Pacific coast of South America (Page & Stenzel 2009) and will not be discussed here.

C. n. nivosus (Pacific Coast)

The Pacific coast population of the Snowy Plover is listed as threatened in the U.S. and Mexico and is defined as those plovers breeding within 81 km of the Pacific Ocean coastline. Between 2006 and 2010, counts on the Pacific coast of the U.S. resulted in an adjusted average total of 2,155 (counts are multiplied by a factor of 1.3 to account for imperfect detection; U.S. Fish and Wildlife Service 2010). Counts in 2007 and 2010 were as much as 20% lower than counts made between 2005 and 2006 (U.S. Fish and Wildlife Service 2010).

Surveys conducted in Baja California in 2007 and 2008 produced an average count of 713, which was adjusted as above to obtain an estimate of 927 (Thomas *et al.* 2012). As in the United States, counts have declined in recent years; by as much as 40% between 1991/1992 and 2007/2008 (Palacios

et al. 1994, Thomas et al. 2012). Combining the most recent Baja and U.S. estimates results in a total population estimate of 2,900 for the Pacific coast (Thomas et al. 2012). The threatened population in Mexico and the U.S. does not appear to be recovering and, indeed, continues to decline (trend = 5).

C. n. nivosus (Interior)

New information from a comprehensive survey of interiorbreeding Snowy Plovers (Thomas et al. 2012) indicates a total population of 22,900 (95% range = 16,700-29,200). The current point estimate exceeds the previous estimate of 13,800 (using the current subspecies designations) by about 66% (Morrison et al. 2006). Because spatial coverage was limited in past assessments and imperfect detection was not accounted for in most areas, previously published estimates were likely underestimates, and the current estimate does not reflect an increase in population size. The areas where new information had the greatest influence on this new population estimate included the mainland Pacific coast and interior of Mexico (largely un-surveyed in the past), the shortgrass and mixed-grass prairies of the U.S., and the southern Texas coast (Thomas et al. 2012). Although long-term datasets are generally lacking across most of the range, the abundance of Florida-breeding Snowy Plovers appeared to be stable between 2002 and 2006 (Himes et al. 2006). For most of the range, information on population trend is lacking (trend = 3U).

For both populations of C. n. nivosus, we therefore propose a population estimate of 25,900 (approximate 95% range = 18,900–32,200) and a trend of apparently declining (trend = 4).

Wilson's Plover Charadrius wilsonia wilsonia

New information summarized by Zdravkovic (2012) indicates a U.S. population of 8,600, which increases the previous estimate of 6,000 by 43% (Morrison *et al.* 2006). An additional 6,000 plovers likely breed in the Caribbean and along the coast of eastern Mexico (Zdravkovic 2012). The range has been contracting southward over the last several decades (Zdravkovic 2012). The CBC indicates a long- and short-term declining population trend, but the reliability is considered low for this species (Butcher & Niven 2007; trend = 4).

Common Ringed Plover Charadrius hiaticula

Three subspecies are generally recognized: the nominate *C. h. hiaticula*, breeding in northern Europe and wintering in Europe and north-west Africa; *C. h. psammodroma*, the subspecies breeding in north-eastern Canada, Greenland, Iceland, the Faeroes and Jan Mayen and wintering in western and southern Africa; and *C. h. tundrae*, breeding from northern Europe eastwards across northern Russia to the Bering Strait and wintering in Asia and eastern and southern Africa (Delaney *et al.* 2009).

The previous population estimate of 190,000 for *C. h. psammodroma*, which includes the Canadian population, was based on counts of wintering birds (Stroud *et al.* 2004) and may be problematical because of mixing with other populations. More recent estimates of both wintering and breeding populations suggest a higher population, totaling 240,000–330,000 (Delaney *et al.* 2009). Meltofte *et al.*'s (2001) estimate of 500–1,000 pairs (up to 2,000 individuals) in Canada suggests the North American population is probably in the thousands (Morrison *et al.* 2001) and is

considerably less than the 10,000 reported by Morrison *et al.* (2006). We therefore suggest a North American population estimate of 2,000, with a total population estimate of 285,000 (240,000–330,000) (Delaney *et al.* 2009). Counts on the wintering grounds (Delaney *et al.* 2009) indicate that the population is possibly declining (trend = 4).

Semipalmated Plover Charadrius semipalmatus

Based on numbers seen on the wintering grounds in the United States, Central America, and northern South America (all with numbers of 5,000–10,000) and considering all potential sites that are not surveyed where at least small numbers are reported (coasts of some Caribbean Islands, Ecuador, Costa Rica, Mexico; E. Nol, pers. comm.), we revise Morrison *et al.*'s (2006) estimate of 150,000 upwards to 200,000, which is in the range of 26,400–240,000 reported by Nol & Blanken (1999).

Results from surveys on the breeding grounds in Ontario, based on occupancy of 100-km blocks along the James Bay coast, indicate stability between the periods of 1981–1985 and 2001–2005 (Cadman *et al.* 2007). Some retraction of breeding population at the southern edge of the range is occurring on Akimiski Island, Nunavut (E. Nol, pers. comm.), but numbers within a well-studied population at Churchill, Manitoba, were stable between 1988 and 2011 (E. Nol, pers. comm.). Counts during migration surveys have increased significantly (p = 0.01) at a rate of 1.7% per year over the long-term (1974–2009; PAS *et al.*, unpubl. data) but have leveled off in the last decade (trend = 3).

Piping Plover Charadrius melodus

Two subspecies and three populations are recognized (Miller et al. 2010): 1) C. m. melodus breeding along the Atlantic Coast, 2) C. m. circumcinctus breeding in the Great Lakes, and 3) C. m. circumcinctus breeding in the prairie states and provinces.

Numbers of breeding *C. m. melodus* during 2006–2010 averaged 3,648 plovers (calculated as pair count multiplied by two). The population has steadily increased from a low of 1,580 in 1986, with most of the recent increases occurring in New England and some recent declines in eastern Canada (U.S. Fish and Wildlife Service 2011a).

Currently, about 108 plovers (*C. m. circumcinctus*) breed in the Great Lakes region of the U.S. and Canada. As a result of intensive management, the population has steadily increased from a low of 12 pairs in 1981 (http://www.fws.gov/midwest/endangered/pipingplover/index.html). The population was at a recent maximum of 71 pairs in 2009, and declined to 54 pairs in 2011 (F. Cuthbert, pers. comm.), with seven of these pairs nesting in the Canadian Great Lakes (J. Robinson, pers. comm.).

The 2006 international census produced a total of 4,662 plovers (*C. m. circumcinctus*) breeding within the Prairie Canada/U.S. Northern Great Plains region (Elliot-Smith *et al.* 2009). Because populations on the Great Plains fluctuate with wet-dry cycles, trends can be difficult to determine, particularly because not as many sites are surveyed annually as on the Atlantic coast and in the Great Lakes. For example, only about half as many birds were counted in the 2011 international census compared to the 2006 census (C. Aron & CLG-T, pers. comm.), but 2011 was a year of extreme flooding throughout most of the region. Undoubtedly, many birds were missed in cropland and other non-surveyed, typically inappropriate habitat. However, some decline in population

might also have been expected, because flooding occurred at several sites normally containing hundreds of birds annually between 2006 and 2011 (CLG-T, pers. obs.). Acknowledging these cycles, the population appears to be stable (Elliot-Smith *et al.* 2009, Haig *et al.* 2005).

In summary, the population sizes and trends are: *C. m. melodus* – 3,600 and an apparent increase (trend = 2); *C. m. circumcinctus* (Great Lakes) – 108 and an overall increase but recent decline (trend = 3); *C. m. circumcinctus* (Great Plains) – maximum 4,700 and most likely stable (trend = 3). Despite the increases in some populations, recovery goals have not been achieved.

Killdeer Charadrius vociferus vociferus

Following the suggestion of Morrison *et al.* (2001), we revise the previous estimate of 1 million (Morrison *et al.* 2006) upward to 2 million, realizing that this estimate may still be conservative (Morrison *et al.* 2001).

The BBS indicates a significant, short-term decline of 3.8% per year in Canada and a stable population in the U.S. Trends over the long-term were significantly negative in Canada and the U.S. (Sauer *et al.* 2011), and many Great Plains and western U.S. states show significant declines over the short-term (trend = 4).

Mountain Plover Charadrius montanus

Andres & Stone (2009) suggested a minimum range-wide population of 18,000, which was mainly based on new information from a systematic survey of eastern Colorado (Tipton *et al.* 2009). Including newer information on numbers in Nebraska (1,600; Post van der Burg *et al.* 2010) and New Mexico (\approx 1,000; Hawks Aloft 2010) indicates a population of about 20,000, which increases the previous estimate by about 60% (midpoint = 12,500, Morrison *et al.* 2006).

Little information is available on range-wide trends. The BBS indicates a long-term decline but lacks the precision to reliably assess population trend (Sauer *et al.* 2011). Local information suggests declines in some parts of the breeding and wintering range (Andres & Stone 2009), indicating an apparent long- and short-term decline (trend = 4).

American Oystercatcher *Haematopus palliatus* palliatus

No new information is available to revise the previous estimate of 11,000 (95% range = 10,700–11,300). The CBC indicates a stable population trend, but its reliability is considered low for this species (Butcher & Niven 2007), and few other data are available to describe population trend. The population has been expanding northward along the Atlantic coast in the last three to four decades (Davis *et al.* 2001), and now up to four pairs nest consistently in Nova Scotia, Canada (Mawhinney *et al.* 1999; CLG-T, pers. comm.). The population is therefore considered at least stable (trend = 3).

Black Oystercatcher Haematopus bachmani

Tessler *et al.* (2010) reviewed information on abundance at specific breeding sites, Lyons *et al.* (2012) conducted a recent systematic survey of the coasts of Washington and Oregon, and Palacios *et al.* (2009) conducted surveys along the coast of Baja California, but their results did not suggest the need for revision of the previous estimate of 10,000 (Morrison *et al.* 2006). Although broad-scale information describing

population trend is lacking, the limited information available from the CBC (Butcher & Niven 2007) indicates a stable to increasing population (trend = 3).

Black-necked Stilt *Himantopus mexicanus mexicanus*

No new information is available to revise the previous estimate of 150,000–200,000, with a midpoint of 175,000 (Morrison *et al.* 2006). This species has expanded its breeding range into Canada, and small numbers now nest consistently in Alberta and Saskatchewan (Gratto-Trevor 2002). BBS trends in the U.S. are significantly positive over the longand short-term, with good credibility (Sauer *et al.* 2011; trend = 1). However, given the uncertainty in the population size estimate and the incomplete coverage of surveys, these increasing trends provide little basis for revising the population estimate upwards.

Hawaiian Stilt Himantopus mexicanus knudseni

Counts made in 2008 (Oahu, Maui, Molokai, Lanai, and Hawaii) indicate a current population of 2,100 (U.S. Fish and Wildlife Service 2011b). The 2008 count exceeds all previously published estimates and appears to be the result of a real population increase. Stilts increased substantially in abundance over the last two decades on the three main Hawaiian breeding islands analyzed by Reed *et al.* (2011), although recovery targets have not yet been reached (trend = 2).

American Avocet Recurvirostra americana

No new information is available to revise the previous estimate of 450,000 (Morrison *et al.* 2006). The BBS indicates no long-term trend, and survey results have been highly variable over the short-term (Sauer *et al.* 2011; trend = 3).

Spotted Sandpiper Actitis macularius

The Morrison *et al.* (2006) estimate of 150,000 seems conservative, considering that the estimated population for the province of Ontario, Canada, is in the 100s of thousands (Ross *et al.* 2003). Spotted Sandpipers are nearly ubiquitous as a breeding bird in that province and many other Canadian provinces and U.S. states. Morrison *et al.* (2001) pointed out that extrapolation of BBS data using PIF physiographic strata indicated that the population might be 656,000. These considerations indicate the population is much higher than the current estimate, and we therefore suggest a new population estimate of 660,000, pending further information.

Counts during migration surveys are variable in both the long- and short-term (PAS *et al.*, unpubl. data). The BBS indicates a population decline in the last decade, but abundance has been highly variable over the long-term with no significant increase or decrease (Sauer *et al.* 2010). Combined, these data sources indicate a stable population (trend = 3).

Solitary Sandpiper Tringa solitaria

Two subspecies are generally recognized (Moskoff 2011), *T. s. solitaria* and *T. s. cinnamomea*, which occupy mostly eastern and western parts of the breeding range, respectively, but have been found together on wintering grounds. Morrison *et al.* (2006) argued that while there was little basis for assigning separate population estimates for the two subspecies, their relative distributions suggested an approximate

ratio of 2:1 for *T. s. solitaria: T. s. cinnamomea*. We refer to the BBS analysis presented in Morrison *et al.* (2001) to adjust the previous estimate of 150,000 upward to 189,000 for both subspecies. All sources of information on population trend are highly variable among years (trend = 3U).

Wandering Tattler Heteroscelus incanus

No new information is available to update the previous estimate of 10,000–25,000 (midpoint = 17,500), of which >90% of the population occurs in North America (Alaska Shorebird Working Group 2008, Morrison *et al.* 2006). Although the CBC indicates a significant decline (Butcher & Niven 2007), only a small fraction of the winter range is covered by this survey (trend = 3U).

Greater Yellowlegs Tringa melanoleuca

We refer to the BBS analysis presented in Morrison *et al.* (2001) to adjust the previous estimate of 100,000 upward to 137,000. Migration counts indicate a generally increasing but variable population from 1974 to 2003, and then a decline between 2004 and 2009 (PAS et al., unpubl. data). Counts remain above 1970s levels, and the trend across all years (1974-2009) was an increase of 1.1% per year (p = 0.10). The extent of breeding distribution has increased by 78% in Ontario between 1981–1985 and 2001–2005 (Cadman et al. 2007). Counts in Suriname remained similar between the 1970s/1980s and more recent years (Ottema & Ramcharan 2009). The CBC indicates a long-term, substantial increase (Butcher & Niven 2007), but monitors only a small fraction of the species' population. Although there is considerable variability among datasets, the population is most likely stable or increasing slightly (trend = 3).

Willet Tringa semipalmatus

In the absence of new information, the previous estimate of 90,000 for *T. s. semipalmatus* (Atlantic coast-breeding) and 160,000 for interior-breeding *T. s. inornatus* is retained (Morrison *et al.* 2006). Trends are variable among datasets, with increases in migration counts (PAS *et al.*, unpubl. data) and reliable, apparent increases in the CBC (Butcher & Niven 2007). Substantial declines were recorded on aerial surveys in northern South American between the 1980s and 2010s (RIGM *et al.*, unpubl. data). In the BBS, populations appear to be stable over the long- and short-term (Sauer *et al.* 2011), although a long-term decline was evident on BBS routes in the Prairie Potholes. Thus, populations of both *T. s. semipalmatus* and *T. s. inornatus* currently appear to be stable (trend = 3).

Lesser Yellowlegs Tringa flavipes

We refer to the BBS analysis presented in Morrison *et al.* (2001) to adjust the previous estimate of 400,000 upward to 660,000, which includes a 20% decline noted by Morrison *et al.* (2006). Signals of a substantial long- and short-term decline are evident in a variety of datasets (Clay *et al.* 2012), including migration counts (PAS *et al.*, unpubl. data), ground and aerial surveys on the wintering grounds in Suriname (Ottema & Ramcharan 2009; RIGM *et al.*, unpubl. data), ground counts on the wintering grounds in Argentina (Nores 2011), and the BBS (Sauer *et al.* 2011). These data sources indicate a significant decline (trend = 5).

Upland Sandpiper Bartramia longicauda

Upland Sandpipers are likely more abundant than the previous population estimate of 350,000 (Morrison *et al.* 2006). Houston *et al.* (2011) used BBS densities to suggest a population of 1.1 million birds, and the BBS analysis presented in Morrison *et al.* (2001) indicated a population of about 400,000. Thus, we suggest that the current population estimate of 350,000 be increased to the midpoint of these two BBS analyses (750,000). Survey-wide trends in the BBS have been positive over the long- and short-term (Sauer *et al.* 2011). Trends vary geographically, with eastern segments of the population declining significantly, such as in southern Ontario where distribution decreased by 37% over a 20-year period (Cadman *et al.* 2007), and central North American birds increasing. Overall, the population is apparently increasing (trend = 2).

Eskimo Curlew Numenius borealis

No new information is available to revise the current population estimate of <50 (Morrison *et al.* 2006). Due to the lack of recent, verified sightings, the species may possibly be extinct (trend = Extinct?).

Whimbrel Numenius phaeopus

Two subspecies breed in North America; N. p. hudsonicus breeds west and south of Hudson Bay, whereas N. p. rufiventris breeds from northern to south-western Alaska and east to the Melville Hills, Nunavut (Engelmoer & Roselaar 1998, Morrison et al. 2001, Skeel & Mallory 1996). Genetic analyses suggest little mixing between the two populations (Skeel & Mallory 1996). Recent satellite-tracking results generally confirm the separation between eastern and western subspecies, but two individuals marked on the Atlantic coast in Virginia bred as far west as the Mackenzie Delta and northern Alaska (Watts et al. 2008). Here, we consider Whimbrels to be divided into two populations – those that breed in Alaska and the western Canadian sub-Arctic and spend the boreal winter along the Pacific coast and those breed in the eastern/ central Canadian sub-Arctic and winter along the Atlantic coast (including the Gulf of Mexico).

Following the discussion presented in Morrison *et al.* (2006), the estimate of 40,000 for the Atlantic coast wintering population is retained. Andres *et al.* (2009) used new information from southern Chile and summarized boreal winter counts to suggest a population of 33,000 wintering along the entire Pacific coast. This estimate was augmented with new information from Colombia (Wilke & Johnston-González 2010) and Peru (N. Senner, unpubl. data) to bring the Pacific coast total to 40,000. Ground counts made along the coast of Peru in 2010 (3,620) exceeded previous aerial counts and covered only a small fraction of the available wintering habitat; numbers along the coast of Peru are likely much higher.

Combining these estimates yields a total population estimate of 80,000, which increases the previous estimate of 66,000 by 21% (Morrison *et al.* 2006). Arctic PRISM surveys covered only a small portion of the total range but produced an estimated population of both subspecies of 90,781 (95% range = 30,285–151,277; Bart & Smith 2012). Until Arctic PRISM surveys are completed, breeding distribution within and outside of the Arctic is better understood, and precision of estimates from Peru are improved, we suggest using the wintering grounds estimate of 80,000.

Because Whimbrels are often dispersed during migration, information on population trend from migration surveys was highly variable (PAS *et al.*, unpubl. data). However, peak numbers of migrants along the Virginia coast declined 50% between the 1990s and 2000s (Watts & Truitt 2011), and numbers have decreased significantly along the northern coast of South America between the 1980s and 2010s (RIGM *et al.*, unpubl. data). The CBC indicated a significant long-term decline, but reliability was low (Butcher & Niven 2007). No broad-scale information on trend exists specifically for the Pacific coast population. Thus, the Atlantic coast population is apparently declining (trend = 4), and trend in the Pacific coast population is unknown (trend = 3U).

Bristle-thighed Curlew Numenius tahitiensis

No new information is available to update the previous estimate of 10,000 (Morrison *et al.* 2006), which includes 6,400 breeding adults and 3,600 subadults/nonbreeding adults (L. Tibbitts & R. Gill, pers. comm.). No current information exists on population trend (trend = 3U).

Long-billed Curlew Numenius americanus

The previous population estimate provided by Morrison et al. (2006) was generated by taking the value 1 SE below the mean abundance estimated on a U.S. breeding ground survey by Stanley & Skagen (2007) and adding past estimates from Canadian provinces. Since then, Jones et al. (2008) used similar analytical techniques to include new survey information from Canada to generate an estimate for the complete curlew range. Estimates in their study were far more precise in the U.S. in 2005 than in 2004, and we suggest using the values generated in 2005 (U.S. population = 97,049; 90% range = 56,809–141,385). Systematic surveys in Canada had only been conducted previously in Alberta (Saunders 2001), and numbers there in 2001 (19,000) were similar to the estimate generated in 2005 (19,714). An additional 23,000 were estimated to occur in British Columbia and Saskatchewan (Jones et al. 2008). Thus, we suggest a total population of about $140,000 \approx 90\%$ range = 98,000–198,000), with an estimated Canadian population of about 43,000. Because the previous estimate of 100,000 used the value of the mean – 1SE (Morrison et al. 2006), our current estimate is 40% greater but does not reflect any actual change in abundance.

The BBS indicates a stable population in Canada over both the long- and short-term. Patterns are similar in the U.S., with a slight increase in abundance in recent years (Sauer *et al.* 2011). The CBC indicates stability, although reliability is low (Butcher & Niven 2007). Although the population clearly declined prior to the 1970s, the population appears to be stable in recent decades (trend = 3).

Hudsonian Godwit Limosa haemastica

Hudsonian Godwits breed in three disjunct populations: western Alaska, the western Canadian Arctic, and along the western coast of Hudson Bay. No new information is available to update the previous estimate of 56,000 for the Hudson Bay population (Morrison *et al.* 2006), which winters primarily on the Atlantic coast of South America. A recent survey of estuaries along the Pacific Coast in the vicinity of Chiloe Island, Chile (Andres *et al.* 2009), suggests a larger population wintering there (21,000) than previously determined from aerial surveys (14,000; Morrison *et al.* 2006). Relatively few godwits spend the boreal winter north of Chiloe Island

(Morrison & Ross 1989, Senner & Coddington 2011). The total population estimate obtained by adding these numbers (77,000) is similar to the population estimated to migrate through the U.S. Prairie Pothole region in spring, assuming a residency period of seven days (70,100; 95% range = 10,545–129,665; Skagen *et al.* 2008). Recent geolocator tracking results indicate that nearly all godwits pass through the mid-continent during spring migration (N. Senner, unpubl. data). Small numbers of godwits banded in Manitoba, Canada, and at Rio Grande, Argentina, have been seen on Chiloe Island, and small numbers of Alaska-banded godwits have been observed in Tierra del Fuego (J. Johnson, unpubl. data; N. Senner, unpubl. data). Thus, there may be some population mixing taking place on the wintering grounds.

Aerial and ground counts of some estuaries on Chiloe Island indicate no change in the size of the Pacific coast population since the mid-1980s/early 1990s (Andres *et al.* 2009). Aerial surveys in Tierra del Fuego indicate a variable but stable population there since the 1980s (RIGM, unpubl. data). Counts in migration surveys along the eastern coast of North America declined steadily from 1974 to 2009 (PAS *et al.*, unpubl. data), but godwits were present at only a small number of sites along the Atlantic coast and are capable of overflying the areas where most survey occur during southward migration. If these declines are real, they may be tied to reproductive failures in the eastern Canadian Arctic (N. Senner, pers. comm.). Therefore, the population on the Pacific coast is assumed stable (trend = 3), whereas the Atlantic coast population may be declining (trend = 4).

Bar-tailed Godwit Limosa Iapponica baueri

With no new information describing population size or status, the previous estimate of 90,000 (estimated range = 80,000–120,000) is retained (Alaska Shorebird Working Group 2008, Morrison *et al.* 2006), as is the trend of apparently declining (Morrison *et al.* 2006; trend = 4).

Marbled Godwit Limosa fedoa

Three populations occur in North America: 1) *L. f. fedoa* which breeds on the Great Plains, 2) *L. f. fedoa* which breeds in the vicinity of James and Hudson Bays, and 3) *L. f. beringiae* which breeds on the Alaska Peninsula. Recent colorbanding and satellite-tracking studies (Gratto-Trevor 2011, Olson 2011) suggest that *L. f. fedoa* populations breeding in the prairies winter along the coasts of north-western Mexico and also in the south-eastern U.S., whereas James/Hudson Bay-breeding birds migrate through and stage in the midcontinent before wintering along the coast of Sonora, Mexico. A small sample of satellite-tagged *L. f. beringiae* wintered in California (R. Gill *et al.*, unpubl. data), a connection that had been described previously based on morphometric data (Gibson & Kessel 1989).

No new information exists to revise the previous *L. f. fedoa* Great Plains population estimate of 170,000. Up to 1,200 *L. f. fedoa* James/Hudson Bay Marbled Godwits were observed on the west coast of James Bay in late July 2012, with departures noted in a south-west direction, and the total staging population was suggested as 2,000 individuals (CAF *et al.*, unpubl. data). We therefore increase the previous estimate of 1,500 (Morrison *et al.* 2006) to 2,000.

Although Arctic PRISM surveys were conducted within the range of *L. f. beringiae*, godwits were only recorded on two plots yielding no usable estimate of population size (McCaffery *et al.* 2012). The previous estimate of 2,000

(estimated range = 2,000-3,000) is therefore retained (Morrison *et al.* 2006).

The BBS indicates a stable population in recent years in Canada and the U.S., although the Canadian population has declined over the long-term (Sauer *et al.* 2011). The CBC indicates a reliable, increasing long-term trend (Butcher & Niven 2007) for those wintering in surveyed areas. Thus, a stable trend is assumed for all populations (trend = 3).

Ruddy Turnstone Arenaria interpres

No new information is available, so the previous estimates for the three North American populations (Morrison *et al.* 2006) are retained: 180,000 for A. i. morinella, which breeds in the low and mid-Arctic regions of Canada; 20,000 for Alaskabreeding A. i. interpres; and 45,000 for A. i. interpres breeding in the north-eastern Canadian Arctic. No new, specific information is available on population trends of A. i. interpres. so the apparent decline (trend = 4) previously reported for the Canadian population (Wetlands International 2006) and the unknown trend for the Alaska population (trend = 3U) is retained. Migration counts along the Atlantic coast declined steadily by 1.7% per year (p = 0.03) between 1974 and 2009 (PAS et al., unpubl. data), and peak counts of A. i. morinella in Delaware Bay (Niles et al. 2009) also had a steady, long-term decline (trend = 5). Counts on the coast of North America declined substantially between the 1980s and 2011 (RIGM et al., unpubl. data). Therefore, the population size could be lower than the previous estimate.

Black Turnstone Arenaria melanocephala

The previous estimate of 95,000 (95% range = 76,000–114,000) is retained (Morrison *et al.* 2006). The CBC (Butcher & Niven 2007) indicates a reliable, stable to slightly increasing long-term trend (trend = 3).

Surfbird Aphriza virgata

No new information is available to update the previous estimate of 70,000 (Morrison *et al.* 2006). Although only one-third of the winter range is included, the CBC (Butcher & Niven 2007) indicates a reliable, stable to slightly increasing long-term trend, with a slight decline in counts in the last decade (trend = 4).

Red Knot Calidris canutus

The Red Knot breeds throughout the circumpolar Arctic. Subspecies breeding in North America include: *C. c. islandica*, which breeds in the north-eastern Canadian High Arctic (and Greenland); *C. c. rufa*, which breeds in the central Canadian Arctic; and *C. c. roselaari*, which breeds in north-western Alaska (and Wrangel Island, Russia). Since the discussion provided in Morrison *et al.* (2006), new information is available on the distributions, sizes, and trends of *C. c. rufa* and *C. c. roselaari*.

C. c. islandica

No new information is available from the breeding grounds in North America, so the estimate of birds breeding in Canada is left at 80,000 (Delaney *et al.* 2009, Morrison *et al.* 2006, Thorup 2006). Surveys on the European wintering grounds suggest that the population may be declining (trend = 4; Delaney *et al.* 2009, van Gils *et al.* 2006, Wetlands International 2006).

C. c. rufa

New information from knots tagged with color-flags and geolocators, coupled with previous stable isotope work (Atkinson *et al.* 2005), indicates that knots wintering along the Atlantic coasts of North and South America, passing through the Caribbean Islands, and wintering along the Florida Gulf of Mexico all breed in the central Canadian Arctic and are likely *C. c. rufa* (Niles *et al.* 2008, 2010; L. Niles, unpubl. data).

Recent work in the north-west Gulf of Mexico (Texas and Tamaulipas) indicates that birds wintering there use the central flyway stopping over in the Northern Great Plains and James Bay en route to the Canadian Arctic (D. Newstead, unpubl. data). There also appears to be some interchange between Texas/Tamaulipas and Delaware Bay and south-eastern Atlantic coast sites (D. Newstead, unpubl. data).

On the Pacific coast, knots banded in Argentina have been reported in Panama Bay (Niles et al. 2008), and Delaware Bay-flagged knots have been observed on Chiloe Island, Chile (J. Johnson, unpubl. data). One of only two knots banded on Chiloe Island was resighted in Georgia (J. Johnson, unpubl. data), further suggesting some interchange between the Pacific and Atlantic coasts. South of Mexico, the proportional composition of C. c. rufa and C. c. roselaari (see below) wintering along the Pacific coast remains vague; 300–500 have been reported in the Gulf of Nicoya, Costa Rica (Bird-Life International 2012), and only small numbers of knots spend the boreal winter on the Pacific coast from Panama to southern Chile (Morrison & Ross 1989, Ruiz-Guerra 2012). Several hundred winter on Chiloe Island, Chile (J. Valenzuela, unpubl. data). Principal wintering areas of C. c. rufa are now thought to include: 1) the west coast of Florida and southeastern United States, 2) the north-west Gulf of Mexico, 3) Maranhão/north-central Brazil, and 4) Tierra del Fuego/ Patagonia in southern South America (Niles et al. 2008). This new information contributes to some of the changes from previous estimates.

A comprehensive survey undertaken on the Atlantic coast between 23 and 25 May 2012 produced a total of 40,429 Red Knots: 25,548 knots in Delaware Bay; 1,500 in New Jersey salt marshes (around Stone Harbor); 8,621 in Maryland and Virginia; and 4,850 in North Carolina and south to Florida (A. Dey, pers. comm.). Recent work in the north-west Gulf of Mexico indicates a wintering population of about 2,000 individuals (D. Newstead, unpubl. data), and rufa population in 2012 was likely about 42,000.

The declines in the C. c. rufa population wintering in southern South America reported in Morrison et al. (2006) have continued. In 2011, counts from aerial surveys reached the lowest number ever recorded (9,850) and continued decreases were also observed at Rio Grande, Argentina (Dey et al. 2011). Counts in January 2012 indicated the population had increased somewhat to around 13,000 birds; ground observations indicated the presence of many juveniles, suggesting the increase may have reflected a successful breeding season in 2011 (RIGM, unpubl. data). Surveys on the coast of Patagonia in January 2012 indicated that the declines in Tierra del Fuego were not due to redistribution of the wintering population (RIGM & P. Petracci, unpubl. data). Declines in wintering numbers were also reported for a small section of the Brazilian coastline between 2004/2005 and 2010/2011 (Dey et al. 2011). Peak migration counts in Delaware Bay and winter counts in Florida have been more stable in recent years, and counts of northward migrants in spring of 2012 were the highest recorded in recent years (A. Dey, pers. comm.). Despite the recent variability, numbers remain much lower than the 1980s and 1990s (Dey *et al.* 2011). Clearly, trends in *C. c. rufa* demonstrate an overall significant decline in the last decade in all three wintering populations (trend = 5).

C. c. roselaari

Color-flagging and attaching geolocators to knots have established clear links between wintering grounds in northwestern Mexico, stopovers in Washington, USA, and breeding grounds in north-western Alaska, USA, and Wrangel Island, Russia (Buchanan et al. 2010, 2011; R. Carmona, unpubl. data; J. Johnson, unpubl. data). The most important sites in Mexico have been identified as the Guerrero Negro region of Baja California (Carmona et al. 2008) and the Golfo de Santa Clara in the Gulf of California (Soto-Montova et al. 2009). Knots are also known to winter on the mainland of Sonora (Engilis et al. 1998) and are recorded in small numbers elsewhere (<1,000 total) on CBCs in California. There appears to be some exchange between the Pacific coast and the north-west Gulf of Mexico; knots flagged in Washington and Baja California were observed in Texas, and three knots banded in the spring in Texas were observed in the winter along the Pacific coast in Oaxaca (D. Newstead, unpubl. data).

As discussed in Morrison et al. (2006), assessment of the population size of C. c. roselaari has been difficult. Using the large number of birds flagged by R. Carmona and his colleagues in Guerrero Negro, a mark-recapture approach was used to estimate the population of C. c. roselaari passing through Grays Harbor and Willapa Bay, Washington, which resulted in an estimate of 17,050 (95\% range = 13,730-20,200; J. Lyons, unpubl. data). Although this exceeds the sum of counts from known wintering areas (≈ the 10,000 reported in Niles et al. 2008), knowledge of distribution and abundance of knots along the Pacific coast south of Sonora is incomplete, and we suggest a population of 17,000 (95%) range = 14,000-20,000). Current work on the breeding grounds in Alaska will provide additional information on population size (J. Johnson, pers. comm.). Although there are uncertainties in earlier estimates, some information suggests a possible decline (Morrison et al. 2006; trend = 4).

Sanderling Calidris alba

No new information on population size is available, so the previous estimate of 300,000 is retained (Morrison *et al.* 2006). Counts along the coast of Peru suggest that the population may be larger than the previous estimate (N. Senner, unpubl. data). Counts from migration surveys and the CBC are highly variable among years and show no increasing or decreasing trend since the 1970s (Butcher & Niven 2007; PAS *et al.*, unpubl. data). Information from Delaware Bay indicates a long-term decline (Niles *et al.* 2009), so we suggest a precautionary population trend of an apparent decline (trend = 4).

Semipalmated Sandpiper Calidris pusilla

A series of papers published in *Waterbirds* 35(1), and summarized by Andres *et al.* (2012), reviewed the status of the Semipalmated Sandpiper. Although it is not known if populations are differentiated genetically across the species' broad breeding range, Gratto-Trevor *et al.* (2012a) verified the previously reported cline in bill length, with the smallest-

billed birds breeding in the west and the largest-billed birds breeding in the east. These differences in bill lengths tended to segregate Semipalmated Sandpipers into three breeding populations: western (Alaska), central (western Canadian Arctic), and eastern (eastern Canadian Arctic). The different morphological populations also segregate, to some degree, on the wintering grounds, although there is considerable mixing of populations along the northern coast of South America (Gratto-Trevor *et al.* 2012a). Birds wintering in northern South America, where the species is found in greatest abundance in the non-breeding season, appear to be primarily a combination of central- and eastern-breeding individuals.

Despite covering only a portion of the range, Arctic PRISM surveys (Bart & Smith 2012) generated an estimate of 1,447,560 for Alaska (95% range = 1,021,977–1,873,143) and 809,697 for Canada (95% range = 476,426–1,142,968), for a total of 2,257,257 (95% range = 1,726,350–2,788,164). Following the discussion above, we suggest an estimate of 1.45 million for the Alaska-breeding population and 810,000 for the combined central/eastern-breeding population is appropriate, which combined (2.26 million) is 13% higher than the previous estimate of 2.0 million (Morrison *et al.* 2006). For now, an estimate of 405,000 each in the central and eastern populations is assumed. Most of the range in Canada has not yet been surveyed, so this estimate could increase with additional Arctic PRISM coverage.

The eastern breeding population has most likely declined since the 1970s, but this decline may have reversed in recent years. Counts made at migration stopovers in the Atlantic provinces of Canada and northern Atlantic states indicated that there were relatively high abundances in the late 1970s and 1980s, declines through the 1990s, and some increases or no change during the 2000s (Gratto-Trevor et al. 2012b). Checklist submissions from Quebec hinted at a similar pattern, where large flocks were less common in the 1990s than in the 1970s/1980s. The pattern in Ontario migration counts, however, suggested a steady decline since the early 1980s (Ross et al. 2012). In the Bay of Fundy, there was a significant decrease in average bill lengths between the periods of 1981–1989 and 1997–2006, indicating a loss of individuals from the easternmost portion of the range (Hicklin & Chardine 2012). Semipalmated Sandpipers in Delaware Bay during their spring stopover had lower size-adjusted body masses in the 2000s than in mid-1990s (Mizrahi et al. 2012). This reduced body condition could have survival consequences or could reflect changes in migration strategy.

Migration counts in the mid-continent appeared to have declined between 1974 and 2009 but were highly variable among years (Gratto-Trevor et al. 2012b). Smith et al. (2012) found that abundances of breeding sandpipers were consistently stable to increasing at long-term research sites in Alaska. Morrison et al. (2012) reported that small calidridine sandpipers, primarily Semipalmated Sandpipers, recorded on aerial surveys in Suriname, French Guiana, and Guyana (mainly eastern and central populations) decreased by 79% between 1982 and 2008–2011. Therefore, populations: 1) have been to stable to increasing in Alaska over the last 40 years (trend = 3), 2) may now be stable to increasing in the central portion of their range (trend = 3), and 3) had pronounced decreases in the eastern Canadian Arctic, where declines may be reversing somewhat (trend = 4). The enormous declines on the principal wintering areas along the north-central coast of South America suggest previous population sizes were considerably larger than the current estimates.

Western Sandpiper Calidris mauri

Arctic PRISM surveys in western Alaska were too incomplete to provide reliable information, and the population in northern Alaska, where coverage was more complete, is a small fraction of the total population (estimate = 322,000; Bart & Smith 2012). Thus, the previous population estimate of 3.5 million is retained (Morrison *et al.* 2006). Information from migration counts indicates an apparent decline (PAS *et al.*, unpubl. data), and the CBC (Butcher & Niven 2007) also indicates a decline, although the reliability of both surveys is low for this species due to incomplete coverage (trend = 4).

Least Sandpiper Calidris minutilla

No new information is available to revise the previous estimate of 700,000 (Morrison *et al.* 2006). Counts during migration surveys indicate a stable population (trend = 3; PAS *et al.*, unpubl. data).

White-rumped Sandpiper Calidris fuscicollis

Recent Arctic PRISM surveys generated an estimate of 633,236 (95% range = 285,176–980,756) for the portion (<50%) of the range surveyed to date (Bart & Smith 2012). Nearly 555,000 sandpipers were estimated to be breeding on Prince Charles, Air Force, and Southampton Islands (Bart & Smith 2012), and Morrison (1997) had previously estimated a breeding population of some 252,000 on Prince Charles Island. Skagen *et al.* (2008) estimated a population of 1,693,976 million (95% range = 560,092–2,827,860) passing through the U.S. Prairie Potholes during northward migration. Like the Long-billed Curlew, the previous estimate of 1.12 million was 1 SE below the mean value reported above (Morrison *et al.* 2006), so we suggest revising the estimate upward to 1.694 million.

Fall migration surveys indicate a significant increase (3% per year, p = 0.02) in the counts between 1974 and 2009, although trends in the last decade have been (non-significantly) negative (PAS *et al.* unpubl. data). Population estimates for Prince Charles Island decreased 61% between 1989 and 1996/1997 (Johnston & Pepper 2009, Morrison 1997, Morrison *et al.* 2006), though declines were less clear elsewhere in the Arctic (see Morrison *et al.* 2006). Pending further information, we assume the population is stable (trend = 3).

Baird's Sandpiper Calidris bairdii

No new information is available on population size to revise the previous estimate of 300,000 (Morrison *et al.* 2006). Low numbers are recorded during migration surveys (PAS *et al.*, unpubl. data), so the population trend is unknown (trend = 3U).

Pectoral Sandpiper Calidris melanotos

Arctic PRISM surveys (Bart & Smith 2012) generated estimates of 1,146,956 (95% range = 742,310–1,551,602) for Alaska, 432,767 (95% range = 186,782–678,752) for Canada, and 1,597,723 (95% range = 1,127,992–2,067,454) for the combined regions surveyed to date. In the U.S. Prairie Potholes, Skagen *et al.* (2008) estimated a southward migration population of 713,424 (95% range = 327,772–1,099,075). Given the results of surveys to date, and given that Pectoral Sandpipers migrate across a wide front (Holmes & Pitelka 1998), have a

wide breeding distribution in the Arctic (Holmes & Pitelka 1998), and occur in densities similar to Semipalmated Sandpipers in northern Alaska (Bart *et al.* 2012b), we feel that the previous estimate of 500,000 (Morrison *et al.* 2006) should be revised upward. We suggest an estimate of 1.60 million (95% range = 1.13–2.07 million), with further upwards revisions possible once Arctic PRISM surveys are complete.

In many migration surveys, Pectoral Sandpipers occur in vegetated habitats where they are difficult to detect. Low and highly variable numbers are often recorded during migration surveys (PAS *et al.*, unpubl. data). However, counts were highest in the early 1980s (PAS *et al.*, unpubl. data), and declines continued into the last decade (trend = 5). Thus, the population might have been larger in the past.

Sharp-tailed Sandpiper Calidris acuminata

After breeding, adults move directly from Russian breeding grounds to wintering grounds in Australia, whereas most juveniles detour through western Alaska (Handel & Gill 2010). Based on the previous estimate for the global population of 160,000 (Wetlands International 2006) and an annual recruitment rate of 11%, between 16,000 and 32,000 (midpoint = 22,000) juveniles migrate through western Alaska each fall (Handel & Gill 2010). Considerably fewer (\leq 1,000) are likely to reach the Canadian coastline south of Alaska (Morrison *et al.* 2001). The current estimate for the number of first-year birds occurring in North America (22,000) is less than the previous estimate of 30,000 (Morrison *et al.* 2006). Gosbell & Clemens (2006) reported an apparent decline in populations wintering in Australia (trend = 4).

Purple Sandpiper Calidris maritima

Two subspecies are found in North America: C. m. belcheri, which breeds on the Belcher Islands and around Hudson Bay; and C. m. maritima, which breeds elsewhere in the north-eastern Canadian Arctic. Migration patterns are complicated and may involve trans-Atlantic migrations for some populations breeding in the Canadian Arctic (Morrison 1984). Recent surveys along the entire Maine coast indicate a wintering population of at least 15,000 (L. Tudor, unpubl. data). Combined numbers on CBCs from states south of Maine ranged from 800-2,000 sandpipers during 2006-2010, and substantial numbers may winter in the Maritime Provinces (J. Paquet, pers. comm.). Morphological measurements made during a telemetry study (L. Tudor, unpubl. data) indicate that Maine-wintering birds are a mix of C. m. belcheri and C. m. maritima. Because the CBC captures only a portion of the wintering population, the combined estimate for both subspecies wintering in North America is likely closer to (or even exceeds) 20,000 than the previously reported 15,000 (Morrison et al. 2006). Some individuals of C. m. maritima breeding in the high Arctic may winter in Europe, and there is no new information on their abundance or population trend. Therefore, the previous estimate of 25,000 for the North American breeding population of both subspecies is retained (Morrison et al. 2006). The CBC indicates a reliable long-term decline of 1.8% per year (Butcher & Niven 2007), although a substantial portion of the population winters on nearshore islands outside of CBC count circles (trend = 4).

Rock Sandpiper Calidris ptilocnemis

Three subspecies breed in North America: 1) C. p. ptilocnemis on the Bering Sea islands of Alaska, 2) C. p. tschuktschorum

on the Alaska mainland from northern Bristol Bay to the Seward Peninsula and on St Lawrence and Nunivak Islands (and also in eastern Siberia), and 3) *C. p. cousei* on the Alaska Peninsula, Aleutian Islands, and Kodiak Island. No new information is available to revise the previous estimates (Morrison *et al.* 2006) for *C. p. tschuktschorum* (50,000) or *C. p. cousei* (75,000). Distance sampling methods used on St Paul, St George, and St Matthew Islands, Alaska, yielded an estimate for the breeding population of 19,832 (95% range = 17,853–21,930; Ruthrauff *et al.* 2012), suggesting a slight downward revision of the population estimate. Trends in all populations are considered unknown (trend = 3U).

Dunlin Calidris alpina

North America supports three breeding subspecies (Warnock & Gill 1996): 1) *C. a. arcticola*, breeding primarily in northern Alaska and wintering in Asia, 2) *C. a. pacifica* breeding in western Alaska, and 3) *C. a. hudsonia* breeding in central and eastern Canada.

C. a. arcticola

Arctic PRISM surveys (Bart *et al.* 2012b) produced a northern Alaska population estimate of 500,000 (95% range = 304,000–696,000). Fernández *et al.* (2010) provided further evidence, from both breeding and wintering grounds, that numbers were lower than the previous estimate of 750,000 (Morrison *et al.* 2006), so the estimate is revised downward to 500,000. Although information on trend is fragmentary (Fernández *et al.* 2010), the population appears to have declined substantially in recent decades (trend = 5).

C. a. pacifica

Coverage of Arctic PRISM surveys in western Alaska (McCaffery *et al.* 2012) was too incomplete on the Yukon-Kuskowkim Delta and too sparse on the Alaska Peninsula to yield reliable results to adjust the previous estimate of 550,000 (Morrison *et al.* 2006). However, in the areas of Alaska surveyed to date, the estimate for *C. a. arcticola* and *C. a. pacifica* combined is already nearly 1.7 million birds (Bart & Smith 2012), so that population estimates for Dunlin will likely be increased once PRISM sampling in the Yukon-Kuskokwim Delta and on the Alaska Peninsula is more complete. The CBC indicates that the abundance of Dunlin wintering on the Pacific coast is stable over the long and short-term (trend = 3).

C. a. hudsonia

Although only a portion of the range was sampled, Arctic PRISM surveys (Bart & Smith 2012) generated a population estimate of 448,720 (95% range = 220,052–677,388), which exceeds the previous estimate of 225,000 (Morrison *et al.* 2006). The population estimate is therefore increased to 450,000, with further increases possible once PRISM sampling is complete. Long- and short-term trends from counts in migration surveys (PAS *et al.*, unpubl. data) and the CBC (Butcher & Niven 2007) indicate a stable population (trend = 3).

Stilt Sandpiper Calidris himantopus

Information from Arctic PRISM surveys is incomplete (Bart & Smith 2012). Skagen *et al.* (2008) estimated that 1,243,703 (95% range = 418,761–2,068,645) passed through the Prairie

Potholes during northward migration. Like the Long-billed Curlew, the previous estimate of 820,000 was 1 SE below the mean value reported above (Morrison *et al.* 2006), so we suggest revising the estimate upward to 1.244 million.

Counts during migration surveys were higher, but variable, in the 1980s and lower, but more stable, in the last decade (PAS *et al.*, unpubl. data). Moreover, significant declines of more than 6% per year along the Atlantic coast were matched by increases of 7% per year at more inland survey sites in the eastern United States, but the fraction of the population using each region is unknown. Therefore, we assume a stable population (trend = 3).

Buff-breasted Sandpiper Tryngites subruficollis

Lanctot *et al.* (2010) recommended revising the population estimate upward from the previous estimate of 30,000 (Morrison *et al.* 2006) to 56,000 (estimated range = 35,000–78,000). They based their recommendation on recent migration count data from the Rainwater Basins, Nebraska (Jorgensen *et al.* 2008), and unpublished transmitter data that demonstrated rapid turnover there (<2 days) during spring migration. The higher value is closer to estimates generated from migration counts on the Gulf of Mexico coast (see Morrison *et al.* 2006). Arctic PRISM surveys from Alaska produced an estimate of 42,588 (95% range = 5,856–79,260; Bart & Smith 2012), but too few birds were found in Canada to produce an estimate there. Following the recommendation of Lanctot *et al.* (2010), the population estimate is increased to 56,000 (estimated range = 35,000–78,000).

Few long-term datasets exist to assess population trend. Lanctot *et al.* (2010) summarized information from a variety of sources that indicated declines from the 1970s to early 2000s, but little information is available since 2000. One study at one site in southern Brazil indicated a relatively high adult apparent survival rate (Almeida 2009), but the range-wide population trend remains unknown (trend = 3U).

Short-billed Dowitcher Limnodromus griseus

Three subspecies breed in North America (Jehl *et al.* 2001): 1) *L. g. caurinus*, which breeds in south-central Alaska south to the Queen Charlotte Islands, British Columbia; 2) *L. g. hendersoni*, which breeds from northern Manitoba to western Alberta; and 3) *L. g. griseus*, which breeds from south-central Quebec and central Labrador to James and southern Hudson Bays.

No new information is available, so the previous estimates of 75,000 for *L. g. caurinus* and 78,000 for combined *L. g. griseus/hendersoni* are retained (Morrison *et al.* 2006). Although counts from recent migration surveys are similar to those of the 1980s, numbers were depressed from the mid-1990s to early 2000s (PAS *et al.*, unpubl. data). Counts in Ontario have exhibited pronounced declines since the 1970s (Ross *et al.* 2012), but the fraction of the population using this migration route is unknown. Trends are considered stable (trend = 3) in *L. g. griseus/hendersoni* and unknown (trend = 3U) in *L. caurinus*.

Long-billed Dowitcher Limnodromus scolopaceus

In Arctic PRISM surveys in northern Alaska, the Long-billed Dowitcher was the only species that had a detection rate >1.0 (detection ratio = 2.16), although this estimate was based on a very small sample size (Bart *et al.* 2012). In generating the population estimate of 704,387 for Alaska (where most of the population resides), applying the universal detection ratio of

0.81 may have over-estimated population size (Bart & Smith 2012). However, Skagen *et al.* (2008) estimated that 889,582 dowitchers (both species) passed through the U.S. Prairie Potholes during southward migration, which was based on a seven-day turnover rate. However, the estimate was imprecise (CV = 0.64), and actual turnover rate is unknown. This evidence indicates that Long-billed Dowitchers are likely more numerous than currently thought, so we suggest increasing the previous estimate of 400,000 (Morrison *et al.* 2006) back to the 2001 estimate of 500,000 (Morrison *et al.* 2001) until more reliable estimates are available. Because counts during migration surveys were highly variable among years (PAS *et al.*, unpubl. data), the population trend is unknown (trend = 3U).

Wilson's Snipe Gallinago delicata

No new information is available to adjust the previous estimate of 2 million (Morrison *et al.* 2006). Harvest declined over the past few decades but has remained relatively stable from 2006 to 2010 at about 105,000 snipe taken annually in the U.S. and Canada combined (Canadian Wildlife Service, unpubl. data, U.S. Fish and Wildlife Service, unpubl. data). In the BBS, the long-term trend was stable and the short-term trend was increasing (Sauer *et al.* 2011), whereas the long-term trend in the CBC was negative (Butcher & Niven 2007) and considered reliable. Therefore, we consider that the current population is stable (trend = 3).

American Woodcock Scolopax minor

No new information is available on population size, so the previous estimate of 3.5 million, with a range of 3–4 million, is retained (Morrison *et al.* 2006). Annual harvest in Canada and the U.S. averaged 314,634 between 2006 and 2010 (Cooper & Parker 2011, Canadian Wildlife Service, unpubl. data, U.S. Fish and Wildlife Service, unpubl. data). Although declining over the long-term, regional populations have stabilized in the last 10 years as measured in the Singingground Survey (Cooper & Parker 2011) and, less reliably, in the BBS (Sauer *et al.* 2011). Therefore, we consider that the current population is stable (trend = 3).

Wilson's Phalarope Phalaropus tricolor

No new information is provided by Lesterhuis *et al.* (2010) to revise the previous estimate of 1.5 million (Morrison *et al.* 2006). Confidence intervals are relatively wide in the BBS, but there is some evidence of an apparent decline in the long-term and more stability over the short-term (Sauer *et al.* 2011); no other information on trend is available (trend = 3U).

Red-necked Phalarope Phalaropus lobatus

Because of the Red-necked Phalarope's wide breeding range, coverage of Arctic PRISM surveys (Bart & Smith 2012) was too incomplete to provide additional information for revising the previous estimate of 2.5 million (Morrison *et al.* 2006). Beyond the large declines in numbers observed in the Bay of Fundy in the 1990s (Morrison *et al.* 2006), no reliable information on recent population trend is available (trend = 3U).

Red Phalarope Phalaropus fulicarius

Arctic PRISM surveys (Bart & Smith 2012) produced an estimate of 1,617,000 (95% range = 1,141,602–2,092,398) Red Phalaropes for the fraction of the range surveyed to date.

Table 1. Proportion of North American shorebird populations among trend categories for assessments conducted in 2006 (Morrison *et al.* 2006) and 2012 (this study). Assessments conducted in 2012 included long-term (last 30+ years) and short-term (last 10 years) information on population trend. Populations with unknown population trends are not considered, yielding about 50 populations for inclusion in the proportions below.

Population trend	2006 (n = 51)	2012 long-term (n = 50)	2012 short-term (n = 50)
Increasing	0.04	0.11	0.08
Stable	0.18	0.28	0.50
Decreasing	0.78	0.61	0.42

Morrison *et al.* (2006) suggested that the population might be close to 1.5 million and settled on a conservative estimate of 1.25 million. We propose that the estimate be increased upward to the Arctic PRISM estimate of 1.62 million (95% range = 1.14–2.10 million), and even this will likely increase further upon completion of Arctic PRISM surveys. No information on long-term trend exists, although changes at individual Arctic study sites indicate an apparent decline (trend = 4).

DISCUSSION

A number of new surveys and analyses have provided additional information on the status of shorebird populations in North America since the review by Morrison *et al.* (2006). A variety of species-specific studies contributed valuable new information, and results of the Arctic PRISM surveys were a significant new source of information for many Arctic-breeding populations (Bart & Smith 2012). This new information resulted in revisions, in some cases substantially, to many population estimates, and these revisions were most often increases rather than decreases.

In this assessment, we present information from 75 shorebird subspecies or populations and provide estimates for 83 population units. Changes in our understanding of taxonomy mean that some estimates were not directly comparable between Morrison et al. (2006) and this assessment, but we are able to directly compare estimates of size and trend for 71 populations. Of these, estimates of population size remained unchanged for 36 populations, were revised downward in 2012 for seven populations, and were revised upward in 2012 for 28 populations. Nearly all population estimates that remained unchanged were simply lacking new information, with the exception of the Great Lakes population of Piping Plover that appears to have stopped growing in the last few years. In most of the cases where population estimates were revised upwards in 2012 (25 or 89%), more comprehensive survey information indicated that populations were larger than previously believed. For example, better survey coverage increased the estimates by >50% for Black-bellied Plover (P. s. squatarola), American Golden-Plover, Snowy Plover (Interior population), Wilson's Plover, Mountain Plover, Whimbrel (*N. p. rufiventris*), Long-billed Curlew, Hudsonian Godwit, (Alaska-breeding), Red Knot (C. c. rufa), Pectoral Sandpiper, Purple Sandpiper (North American-wintering), Dunlin (C. a. hudsonia), and Buff-breasted Sandpiper. Information from the BBS and expert opinion significantly increased the population estimates for Killdeer, Spotted Sandpiper, and Lesser Yellowlegs.

Some populations may also have legitimately increased in size. Population sizes in 2012 were greater than in 2006 for the Atlantic and Great Plains populations of Piping Plover, Hawaiian Stilt, and Upland Sandpiper. However, the first three populations are listed under the U.S. Endangered Species Act, are intensively managed, and have not yet reached recovery objectives.

More extensive coverage of the east coast of the USA during spring migration in May 2012 has provided the most complete estimate to date for the overall population of rufa Red Knots. This count included populations from all the major wintering areas, as well as birds from areas not previously surveyed during the winter, such as the Caribbean Islands, and areas that receive infrequent or no coverage on the northern coast of South America. Counts in Delaware Bay in 2012 were almost double the average number observed in the previous five years. It is clear, however, that populations in areas that have been regularly counted remain at levels well below those recorded 10 to 20 years ago. The most complete information exists for the southern population of *rufa* wintering in Tierra del Fuego – here the severe declines documented since the year 2000 have led to this population being listed as Endangered under Canada's Species at Risk Act, and this wintering population has not yet made a significant recovery (RIGM unpubl. data). The south-east USA and Maranhão wintering populations are also thought to have declined over the past decade (Dey et al. 2011).

Of the eight populations where estimates were revised downwards between 2006 and 2012, reliable survey information indicated likely decreases in abundance for seven. These included the *cynosurae* sub-species of Black-bellied Plover, Snowy Plover (Pacific Coast population), Common Ringed Plover, Red Knot (*C. c. roselaari*), Sharp-tailed Sandpiper, Rock Sandpiper (*C. p. ptilocnemis*), and Dunlin (*C. a. arcticola*). For only the Rock Sandpiper was the population size estimate reduced because improved monitoring information yielded a lower number than available previously.

Recent analysis of migration count data (PAS et al., unpubl. data) provided updated trend information for a number of species, particularly for migrants passing through the eastern U.S. and Canada. Species-specific studies, analysis of Christmas Bird Counts, and the Breeding Bird Survey provided additional new trend information. The proportion of species exhibiting increasing, decreasing, and stable shorebird population trends over the long-term (30-year) did not differ significantly (Table 1, Fisher's Exact test, p = 0.1232) between 2006 and 2012. However, short-term trends (last 10 years) included fewer declines and more stable populations than the long-term assessment, yielding a distribution of trends across species that differed significantly from the 2006 assessment (Table 1; Fisher's Exact test, p = 0.0005). For many migrants in eastern North America, a general pattern of counts emerged where numbers declined dramatically between the 1980s and mid-1990s, followed by stable or increasing numbers since that time.

Still, the conservation status of North American shorebirds warrants concern. Consistent declines, across all survey methods and time periods, are evident in populations of the Snowy Plover (Pacific Coast), Killdeer, Mountain Plover, Lesser Yellowlegs, Whimbrel (*N. p. hudsonicus*), Ruddy Turnstone (*A. i. morinella*), Red Knot (all populations), Sanderling, Semipalmated Sandpiper (mainly Eastern population),

Western Sandpiper, Pectoral Sandpiper, Purple Sandpiper, and Dunlin (*C. a. arcticola*). In contrast, strong evidence of population increase is available only for three species: Piping Plover, Hawaiian Stilt, and Upland Sandpiper. Poor monitoring information for many species means that trends are uncertain, but a review of the Appendix clearly indicates that probable declines far outnumber probable increases.

A lack of monitoring information is a pervasive issue for these wide-ranging species. Although increasingly rigorous surveys are providing new, reliable information for some populations, we still have virtually no indication of the population trend for 25% of the shorebird taxa breeding in North America. Shorebirds rely on a restricted set of habitats that for some species span the Hemisphere. These habitats are subject to a wide variety of pressures, from coastal disturbance and development to deleterious effect of climate change, for example from sea level rise. Because of ongoing population decline, and continued rapid habitat change, monitoring systems should be put in place to better understand how landscape change will affect shorebird populations.

The estimates of population size provided here can be used to determine the importance of wetlands and other habitats to shorebird populations, and contribute to the development of *Waterbird Population Estimates* for meeting obligations of the Ramsar convention. Our updated estimates are also useful for nominating sites for inclusion in the Western Hemisphere Shorebird Reserve Network and the Important Bird Areas program, for setting shorebird population and habitat targets within conservation planning activities of the bird conservation Joint Ventures in Canada and the U.S., for determining the need to increase legislative protection for species or populations, and for evaluating the success of conservation and management interventions.

ACKNOWLEDGEMENTS

Besides the cited references, a number of colleagues contributed unpublished data and review of species accounts, including Yves Aubrey, Stephen Dinsmore, Robert Gill, Oscar Johnson, Stephanie Jones, Richard Lanctot, Erica Nol, Cynthia Pekarik, Daniel Ruthrauff, Nathan Senner, and Lee Tibbitts. Brian Harrington, Stephanie Schmidt, and the Manomet Center for Conservation Science assisted with International Shorebird Survey data. Julie Paquet, Canadian Wildlife Service, provided data from the Atlantic Coast Shorebird Survey. We are grateful to Jon Bart for his comments on a draft of our paper. These surveys, along with the Ontario Shorebird Survey and many other monitoring efforts, are only possible with the dedicated contributions of volunteer citizen shorebirdologists. Without them, our knowledge of shorebird numbers and distribution would be impoverished.

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data (SD) or by expert opinion (EX). Trend categories are: significant decline (DEC), apparent decline (dec), possibly extinct (EXT?), apparent increase (inc), significant increase (INC), stable (STA), or unknown (UNK). Long-term refers to trends over the last 30+ years, short-term over the last decade. Trends reported for 2004 reference the assessment conducted by the U.S. Shorebird Conservation Plan. as: 1) low - educated guess, perhaps in the same order of magnitude, wide variation among data sources; 2) moderate - restricted populations or behavior that allows somewhat reliable surveys, estimate Appendix. Estimated population sizes of North American shorebirds, 2012. Estimates are also compared to those of Morrison et al. (2006) and those reported in Waterbird Population Estimates, 4th edition (WPE4; Wetlands International 2006). Ranges of current estimates are reported as probability intervals or as expert opinion (estimated). If ranges are not available, a measure of certainty is provided comes from several reliable survey types with different methods or incomplete coverage; 3) high - dedicated survey or census of a population. Method denotes that estimates were generated from survey

Common name	Species/subspecies		Popula	Population estimates	ø	Method		Tre	Trends	
	(population)	2006	WPE4	2012	Certainty/range		2004	2006	20	2012
									Long-term	ong-term Short-term
Black-bellied Plover	Pluvialis squatarola squatarola	50,000	50,000	262,700	95% = 134,000-391,500	SD	STA	DEC	UNK	UNK
American Golden-Plover	Pluvialis dominica	200,000	200,000	500,000	95% = 294,200-705,800	SD	DEC	DEC	dec	UNK
Pacific Golden-Plover	Pluvialis fulva	42,500	35,000–50,000	42,500	estimated 35,000-50,000	EX	STA	DEC	UNK	UNK
Snowy Plover	Charadrius nivosus (Pacific Coast)	4,300	2,500	2,900	high	$^{\mathrm{SD}}$	DEC	DEC	DEC	DEC
Snowy Plover	Charadrius nivosus (Interior)	12,400	13,200	22,900	95% = 16,700-29,200	SD	DEC	DEC	UNK	UNK
Snowy Plover	Charadrius nivosus (North America)	18,200	18,200	25,800	95% = 18,900 - 32,200	SD	DEC	DEC	dec	dec
Wilson's Plover	Charadrius wilsonia	6,000	6,000	8,600	moderate	EX	STA	STA	dec	dec
Common Ringed Plover	Charadrius hiaticula psammodroma	10,000	10,000	2,000	low	EX	STA	STA?	UNK	dec
Semipalmated Plover	Charadrius semipalmatus	150,000	150,000	200,000	low	EX	STA	STA?	INC	STA
Piping Plover	Charadrius melodus melodus (Atlantic)	2,920	3,350	3,600	high	SD	DEC	INC	inc	inc
Piping Plover	C. m. circumcinctus (Great Lakes)	110	110	108	high	SD	DEC	INC	INC	STA
Piping Plover	C. m. circumcinctus (Great Plains)	2,953	2,953	4,700	moderate	SD	DEC	DEC	STA	STA
Piping Plover	Charadrius melodus (all populations)	5,945	6,413	8,400	moderate	$^{\mathrm{SD}}$	DEC	STA	inc	STA
Killdeer	Charadrius vociferus vociferus	1,000,000	>1,000,000	2,000,000	low	EX	dec	DEC	DEC	dec
Mountain Plover	Charadrius montanus	12,500	11,000	20,000	moderate	SD	DEC	DEC	dec	dec
American Oystercatcher	Haematopus palliatus palliatus	11,000	11,000	11,000	95% = 10,700 - 11,300	SD	STA	STA	STA	STA
Black Oystercatcher	Haematopus bachmani	10,000	8,900-11,000	10,000	moderate	EX	STA	STA	STA	STA
Black-necked Stilt	Himantopus mexicanus mexicanus	175,000	175,000	175,000	low	EX	STA	STA?	INC	INC
Hawaiian Stilt	H. m. knudseni	1,400	1,200-1,600	2,100	high	$^{\mathrm{SD}}$	STA	STA	inc	inc
American Avocet	Recurvirostra americana	450,000	450,000	450,000	low	EX	STA	STA	STA	STA
Spotted Sandpiper	Actitis macularius	150,000	150,000	000,099	low	EX	STA	STA?	STA	STA
Solitary Sandpiper	Tringa solitaria solitara	100,000	100,000	126,000	low	EX	dec	DEC	UNK	UNK
Solitary Sandpiper	T. s. cinnamomea	50,000	50,000	63,000	low	EX	dec	DEC?	UNK	UNK
Solitary Sandpiper	Tringa solitara (both subspecies)	150,000	150,000	189,000	low	EX	dec	DEC	UNK	UNK
Wandering Tattler	Heteroscelus incanus	15,750	10,000	17,500	estimated 10,000-25,000	EX	STA	STA	UNK	UNK
Greater Yellowlegs	Tringa melanoleuca	100,000	100,000	137,000	low	EX	STA	STA?	STA	STA
Willet	Tringa semipalmatus semipalmatus	000'06	000'06	000,06	wol	EX	STA	STA?	dec	STA
Willet	T. s. inornatus	160,000	160,000	160,000	low	EX	SIA	STA?	dec	STA
Lesser Yellowlegs	Tringa flavipes	400,000	400,000	000,099	low	EX	DEC	DEC	DEC	DEC
Upland Sandpiper	Bartramia longicauda	350,000	350,000	750,000	moderate	EX	DEC	DEC	INC	inc
Eskimo Curlew	Numenius borealis	<50	<20	<50	low	EX	EXT?	EXT?	EXT?	EXT?
Whimbrel	Numenius phaeopus hudsonicus	40,000	18,000	40,000	low	SD	dec	DEC?	dec	dec
Whimbrel	N. p. ruftventris	26,000	39,000	40,000	moderate	SD	dec	STA	UNK	UNK
Whimbrel	Numenius phaeopus (both subspecies)	000'99	57,000	80,000	moderate	$^{\mathrm{SD}}$	dec	DEC	dec	dec
Bristle-thighed Curlew	Numenius tahitiensis	10,000	10,000	10,000	high	$^{\mathrm{SD}}$	STA	STA?	UNK	UNK
Long-billed Curlew	Numenius americanus	89,250	50,000	140,000	90% = 98,000 - 198,000	$^{\mathrm{SD}}$	DEC	DEC	dec	STA
Hudsonian Godwit	Limosa haemastica (Alaska)	14,000	14,000	21,000	high	SD	STA	STA	STA	STA
Hudsonian Godwit	Limosa haemastica (Hudson Bay)	56,000	26,000	26,000	moderate	SD	STA	STA	dec	dec
Hudsonian Godwit	Limosa haemastica (both populations)	70,000	70,000	77,000	moderate	SD	STA	STA	STA	STA

2006 WPE4 2007 WPE4 90,000 1,55,000 1,70,000 1,55,000 1,500 1,500 2,000 1,500 1,500 1,500 1,500 1,500 2,000 1,500 1,500 1,500 2,000 1,000 20,000 30,000 3,500,000 30,000 3,500,000 30,000 30,000 30,000 1,120,000 30,000 1,120,000 30,000 30,000 30,000 10,000? 1,120,000 10,000? 1,120,000 10,000? 1,120,000 30,000 30,000 10,000? 15,000 25,000 25,000 25,000 25,000 25,000 15,000 25,000 15,000 25,000 15,000 25,000 25,000 25,000 245,000 1,5	Appendix continued										
Limosa lapponica baueri 90,000 Lisco Limosa lapponica baueri 90,000 155,000 Limosa ledoa (edoa (Plains)) 170,000 168,000 L. f. letringua 1,500 1,500 A. i. mrerpeza (Alaska) 2,000 2,000 A. i. mrerpeza (Alaska) 1,500 1,500 Arenaria miterpres interpres (Canada) 1,500 1,500 Arenaria miterpres interpres (Canada) 20,000 31,000 Arenaria miterpres interpres (Canada) 45,000 18,000 C. c. islandica 80,000 80,000 C. c. islandica 80,000 30,000 C. c. islandica 80,000 30,000 C. c. islandica 20,000 30,000 C. c. islandica 300,000 30,000 C. c. islandica 300,000 30,000 Calidris pusilla (Western) 2,000 2,500 Calidris pusilla (Western) 3,000 3,000 Calidris minimila 1,120,000 2,000 Calidris pusilla (Western) 3,000 2,000 <t< th=""><th>non name</th><th>Species/subspecies</th><th></th><th>Popul</th><th>ation estimat</th><th>es</th><th>Method</th><th></th><th>Tre</th><th>Trends</th><th></th></t<>	non name	Species/subspecies		Popul	ation estimat	es	Method		Tre	Trends	
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Limosa (appointed bauteri 190,000 Limosa (appointed bauteri 190,000 Lifedoa fedoa (Plains) 17,000 Lifedoa fedoa (Plains) 17,000 Lifedoa fedoa (Plains) 17,000 Lifedoa (Hudson Bay) 2,000 Lifedoa (Hudson Bay) 2,000 Lifedoa (Hudson Bay) 2,000 Lifedoa (Hudson Bay) 1,500 Lifedoa (Hudson Bay) 2,000 Lifedoa (Lifedoa Hudson Bay) 2,000 Lifedoa (Lifedoa (Hudson Bay) 2,000 Limodromus griseus griseus (Hudson Bay) 2,000 Limodromus griseus (Hudson Bay) 2,000 Lighia hidan Bay) 2,000 Lighia bay) 2,0			4	1 1 1	4		į		i	Long-term	Snort-term
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L. f. fedoa (Hudson Bay) 1,500 1,500 L. f. beringiae 2,000 4,000 A: interpres (Alaska) 1,500 1,500 A: interpres (Alaska) 20,000 31,000 Arenaria interpres interpres (Canada) 45,000 100,000 Arenaria virgata 20,000 31,000 Arenaria virgata 20,000 70,000 C. c. isdandica 80,000 20,000 C. c. isdandica 80,000 20,000 C. c. isdandica 80,000 20,000 C. c. c. isdandica 80,000 30,000 C. c. isdandica 300,000 300,000 C. c. isdaria pusulla (Seatern) 2,000,000 3,000 Calidris pusulla (Western) 2,000,000 3,500,000 Calidris pusulla (III) populations) 2,000,000 3,500,000 Calidris pusulla (III) populations) 1,120,000 2,500,000 Calidris pusulla (III) accivality 1,120,000 1,120,000 Calidris pusulla (III) accivality 3,500,000 2,500,000 Calidris pusulla (III) accivality		Limosa fedoa fedoa (Plains)	170,000	168,000	170,000	moderate	EX	qec	DEC	dec	STA
L. i. beringiae 2,000 2,000 A. i. morinella 180,000 4. inceprella A. i. interpres (Alaska) 20,000 180,000 Arenaria interpres interpres (Canada) 45,000 100,000 Arenaria miterpres interpres (Canada) 45,000 100,000 Arenaria miterpres interpres (Canada) 20,000 50,000 Arenaria miterpres and train and train and and and and and and and and and an	,	L. f. fedoa (Hudson Bay)	1,500	1,500	2,000	moderate	EX	dec	DEC	UNK	STA
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A. i. interpres (Alaska) 20,000 31,000 Arenaria interpres (Alaska) 20,000 100,000 Arenaria interpres (Interpres (Canada) 45,000 100,000 Arenaria interpres interpres (Canada) 95,000 95,000 Aphriza virgata 20,000 20,000 20,000 C. c. islandica 20,000 30,000 30,000 C. c. roselaria 300,000 30,000 30,000 Calidris pusilla (Bestern) 20,000 30,000 30,000 Calidris pusilla (Western) 2,000,000 2,000,000 2,500,000 Calidris pusilla (Western) 3,500,000 2,500,000 2,500,000 Calidris pusilla (Basternilla 700,000 2,000,000 2,500,000 2,500,000 Calidris pusilla (Basternilla 700,000 1,120,000 1,120,000 1,120,000 1,120,000 2,500,000 2,500,000 1,500,000 2,500,000 2,500,000 2,500,000 2,500,000 2,500,000 2,500,000 2,500,000 2,500,000 2,500,000 2,500,000 2,500,000 2,500,000 2,		4. i. morinella	180,000	180,000	180,000	moderate	EX	dec	DEC	DEC	DEC
Arenaria interpres interpres (Canada) 45,000 100,000-200,000 Arenaria melanocephala 70,000 95,000 Aphriza virgata 70,000 70,000 C. c. islandiaca 80,000 20,000 C. c. islandiaca 80,000 300,000 C. c. roxelaari 20,000 300,000 C. c. croselaari 300,000 300,000 C. c. croselaari 300,000 300,000 C. c. c. croselaari 300,000 300,000 C.		4. i. interpres (Alaska)	20,000	31,000	20,000	moderate	EX	dec	UNK	UNK	UNK
Arenaria melanocephala 95,000 95,000 Ahrizav virgata 80,000 70,000 C. c. Islandica 80,000 80,000 C. c. roxelaari 20,000 20,000 C. c. roxelaari 20,000 35,000 C. c. roxelaari 20,000 35,000 Calidris pusilla (Eastern) 2,000,000 20,000 Calidris pusilla (Western) 2,000,000 2,500,000 Calidris pusilla (III populations) 2,000,000 2,500,000 Calidris pusilla (III populations) 3,500,000 2,500,000 Calidris minutilla 700,000 2,500,000 Calidris maritima 1,120,000 1,120,000 Calidris maritima maritima 1,120,000 300,000 Calidris maritima maritima 1,500 1,500 Calidris maritima doth subspecies) 15,000 25,000 Calidris maritima doth subspecies) 15,000 4,00,000 C. m. betcheri 75,000 25,000 C. m. betcheri 75,000 25,000 C. a. coxici 75,000 25,0		4renaria interpres interpres (Canada)	45,000	100,000-200,000	45,000	moderate	EX	dec	UNK	dec	dec
Aphriza virgata 70,000 70,000 C. c. isdandica 80,000 20,000 C. c. roselacit 20,000 20,000-25,000 Calidris pusilla (Eastem) 20,000 35,000-50,000 Calidris pusilla (Western) 20,000 35,000-50,000 Calidris pusilla (Western) 2,000,000 2,500,000 Calidris pusilla (Western) 2,000,000 2,500,000 Calidris mauri 3,500,000 2,500,000 Calidris minutilla 700,000 2,500,000 Calidris minutilla 700,000 3,500,000 Calidris maritima maritima 1,120,000 400,000 Calidris maritima maritima 10,000 25,000 Calidris maritima maritima 15,000 25,000 Calidris pitlocnemis pitlocnemis 50,000 25,000 C. m. maritima (both subspecies) 15,000 25,000 C. a.		4renaria melanocephala	95,000	95,000	95,000	approx. $95\% = 76,000-114,000$	SD	STA	STA?	STA	STA
C. c. islandica 80,000 80,000 Calidras canutus rufa 20,000 20,000 Calidris ablant 20,000 35,000-25,000 Calidris pusilla (Eastern) 300,000 300,000 Calidris pusilla (Central) 2,000,000 2,500,000 Calidris pusilla (all populations) 2,000,000 2,500,000 Calidris minutilla 700,000 2,500,000 Calidris minutilla 700,000 700,000 Calidris bairdii 300,000 35,000 Calidris parcificalis melanotos 300,000 400,000 Calidris melanotos 300,000 30,000 Calidris parcifica 11,120,000 1,120,000 Calidris maritima 10,000? 1,120,000 Calidris maritima 15,000 25,000 Calidris pulocnemis pitlocnemis 25,000 25,000 Calidris pitlocnemis pitlocnemis 25,000 25,000 C. p. schuktschorum 50,000 25,000 C. p. schuktschorum 50,000 25,000 C. p. schuktschorum 50,000 <td< td=""><td></td><td>4phriza virgata</td><td>70,000</td><td>70,000</td><td>70,000</td><td>moderate</td><td>EX</td><td>dec</td><td>DEC</td><td>STA</td><td>dec</td></td<>		4phriza virgata	70,000	70,000	70,000	moderate	EX	dec	DEC	STA	dec
Calidris canutus rufa 20,000 20,000-25,000 C. c. roselaari 20,000 35,000-50,000 Calidris pustlla (Eastern) 300,000 300,000 Calidris pustlla (Central) 2,000,000 2,500,000 Calidris pustlla (Western) 2,000,000 2,500,000 Calidris pustlla (In populations) 2,000,000 2,500,000 Calidris mauri 3,500,000 2,500,000 Calidris mauri 1,120,000 1,120,000 Calidris melanotos 300,000 300,000 Calidris maritima 1,120,000 1,120,000 Calidris maritima maritima 1,120,000 1,120,000 Calidris maritima maritima 10,000? 1,5000 Calidris pitionemis pitionemis 25,000 25,000 C. m. belcheri 75,000 15,000 C. m. martina (both subspecies) 15,000 15,000 C. m. belcheri 75,000 75,000 C. p. tschuktschorum 50,000 60,000 C. p. tschuktschorum 75,000 10,000 C. a. arcticola 75,000 </td <td></td> <td>C. c. islandica</td> <td>80,000</td> <td>80,000</td> <td>80,000</td> <td>moderate</td> <td>EX</td> <td>STA</td> <td>DEC</td> <td>dec</td> <td>dec</td>		C. c. islandica	80,000	80,000	80,000	moderate	EX	STA	DEC	dec	dec
C. c. roselaari 20,000 35,000–50,000 Calidris alba 300,000 300,000 Calidris pusilla (Eastern) 2,000,000 300,000 Calidris pusilla (Western) 2,000,000 2,500,000 Calidris pusilla (III populations) 2,000,000 2,500,000 Calidris pusilla (III populations) 3,500,000 2,500,000 Calidris pusilla (III populations) 3,500,000 3,500,000 Calidris pusilla (III populations) 30,000 30,000 Calidris pusiculis 1,120,000 1,120,000 Calidris pusiculis 30,000 30,000 Calidris pusiculis 11,000 1,500 Calidris puliocenemis 25,000 50,000 C. m. belcheri 15,000 15,000 C. m. belcheri 15,000 15,000 C. m. belcheri 15,000 25,000 C. p. cousei 15,000 25,000 C. p. cousei 15,000 25,000 C. a. arcticola 21,000 225,000 C. a. arcticola 21,000 225,000 <td></td> <td>Calidris canutus rufa</td> <td>20,000</td> <td>20,000–25,000</td> <td>42,000</td> <td>high</td> <td>$^{\mathrm{SD}}$</td> <td>DEC</td> <td>DEC</td> <td>DEC</td> <td>DEC</td>		Calidris canutus rufa	20,000	20,000–25,000	42,000	high	$^{\mathrm{SD}}$	DEC	DEC	DEC	DEC
Calidris alba 300,000 300,000 Calidris puslla (Eastern) 300,000 300,000 Calidris puslla (Central) 2,000,000 2,500,000 Calidris puslla (Western) 3,500,000 2,500,000 Calidris minutilla 700,000 700,000 Calidris minutilla 700,000 700,000 Calidris manutilla 700,000 700,000 Calidris maritima acuminata 300,000 400,000 Calidris maritima (both subspecies) 15,000 25,000 Calidris pilocnemis pilocnemis 25,000 25,000 C. m. martima (both subspecies) 15,000 25,000 Calidris pilocnemis pilocnemis 25,000 25,000 C. a. to cousei 75,000 25,000 C. a. to cousei 75,000 25,000 C. a. hudsonia 75,000 550,000 C. a. hudsonia 225,000 550,000 C. a. hudsonia 75,000 110,000 L. g. readrises subruficollis 75,000 15,000 L. g. reauximus 73,000 245,000		C. c. roselaari	20,000	35,000-50,000	17,000	13,700–20,200	SD	STA	DEC	dec	dec
Calidris pusilla (Eastern) Calidris pusilla (Eastern) Calidris pusilla (Central) 2,000,000 2,000,000 Calidris pusilla (all populations) 3,500,000 2,500,000 Calidris mauri 3,500,000 3,500,000 Calidris maurilla 700,000 700,000 Calidris pasiriti 300,000 300,000 Calidris paritima 1,120,000 1,120,000 Calidris maritima 1,000 1,120,000 Calidris maritima 10,000 25,000 Calidris maritima (both subspecies) 15,000 15,000 C. m. belcheri 15,000 15,000 C. p. schuktschorum 75,000 25,000 C. p. schuktschorum 75,000 75,000 C. p. schuktschorum 75,000 225,000 C. p. schuktschorum 750,000 255,000 C. p. cousei 75,000 550,000 C. p. cousei 750,000 255,000 C. a. hudsonia 820,000 550,000 C. a. hudsonia 10,000 110,000 L. g. schar		Calidris alba	300,000	300,000	300,000	low	EX	DEC	DEC	dec	dec
Calidris pusilla (Central) 2,000,000 2,000,000 Calidris pusilla (Western) 2,000,000 2,000,000 Calidris musuila (all populations) 3,500,000 3,500,000 Calidris mauritila 700,000 1,120,000 Calidris bairdii 300,000 300,000 Calidris bairdii 300,000 300,000 Calidris bairdii 500,000 300,000 Calidris maritima maritima 10,0007 — C. m. belcheri 15,000 15,000 C. m. martima (both subspecies) 15,000 25,000 C. m. martima (both subspecies) 15,000 25,000 C. m. martima (both subspecies) 15,000 25,000 C. m. arcticola 75,000 25,000 C. p. cousei 75,000 25,000 C. p. cousei 75,000 225,000 C. p. cousei 750,000 225,000 C. a. arcticola 750,000 225,000 C. a. arcticola 750,000 225,000 C. a. uudsonia 820,000 225,000		Calidris pusilla (Eastern)			405,000	moderate	$^{\mathrm{SD}}$			DEC	dec
Calidris pusilla (Western) 2,000,000 2,000,000 Calidris pusilla (all populations) 3,500,000 2,500,000 Calidris mauri 700,000 3,500,000 Calidris preciollis 700,000 700,000 Calidris paridi 300,000 300,000 Calidris paridi 300,000 300,000 Calidris maritima 10,0007 — C. m. belcheri 15,000 1,120,000 C. m. martima (both subspecies) 15,000 15,000 C. m. martima (both subspecies) 15,000 25,000 C. m. arcticola 75,000 25,000 C. p. couxei 75,000 225,000 C. p. couxei 750,000 225,000 C. a. arcticola 75,000 225,000 C. a. arcticola 75,000 225,000 C. a. didriris himantopus 820,000 225,000 <td></td> <td>Calidris pusilla (Central)</td> <td></td> <td></td> <td>405,000</td> <td>moderate</td> <td>SD</td> <td></td> <td></td> <td>DEC</td> <td>STA</td>		Calidris pusilla (Central)			405,000	moderate	SD			DEC	STA
er Calidris pusilla (all populations) 2,000,000 2,000,000 calidris mauri 3,500,000 2,500,000 calidris minutilla 700,000 3,500,000 calidris minutilla 1,120,000 1,120,000 calidris minutilla 300,000 300,000 Calidris melanotos 300,000 400,000 Calidris melanotos 300,000 400,000 Calidris melanotos 30,000 400,000 Calidris melanotos 30,000 400,000 Calidris mertima debth subspecies) 15,000 15,000 C. m. belcheri 15,000 15,000 C. m. martima (both subspecies) 15,000 15,000 C. m. arcticola 75,000 15,000 C. p. tschuktschorum 75,000 50,000 C. p. tschuktschorum 75,000 550,000 C. p. tschuktschorum 750,000 225,000 C. p. tschuktschorum 550,000 550,000 C. a. hudsomis griseus griseus 750,000 110,000 L. g. hendersoni 75,000		Calidris pusilla (Western)			1,450,000	95% = 1,023,700 - 1,876,300	SD			STA	STA
Calidris mauri 3,500,000 3,500,000 Calidris minutilla 700,000 700,000 Calidris bairdii 300,000 300,000 Calidris bairdii 300,000 300,000 Calidris acuminata 10,000? - Calidris acuminata 10,000? - C. m. belcheri 15,000 400,000 C. m. belcheri 15,000 15,000 C. m. belcheri 25,000 25,000 C. m. belcheri 75,000 150,000 C. a. thelkersorium 75,000 75,000 C. a. arcticola 550,000 550,000 C. a. hudsonia 225,000 225,000 C. a. hudsonia 820,000 550,000 C. a. hudsonia 1. hudsonia 170,000 170,000 Limnodromus griseus griseus griseus griseus griseus griseus griseus griseus g		Calidris pusilla (all populations)	2,000,000	2,000,000— 2,500,000	2,260,000	95% = 1,728,400–2,791,600	SD	DEC	DEC	qec	dec
calidris minutilla 700,000 700,000 calidris piaccicallis 1,120,000 1,120,000 Calidris bairdii 300,000 300,000 Calidris maritima maritima 10,0007 — C. m. belcheri 15,000 15,000 C. m. maritima (both subspecies) 15,000 15,000 C. m. maritima (both subspecies) 15,000 15,000 C. m. tachering 15,000 25,000 C. a. arcticola 50,000 75,000 C. a. arcticola 75,000 75,000 C. a. hudsonia 550,000 550,000 C. a. hudsonia 75,000 170,000 Limnodromus griseus griseus 15,000 170,000 L. g. caurinus 7 15,000 245,000 L. g. caurinus 1,500,000 2,500,000 2,500,000		Calidris mauri	3.500.000	3,500,000	3.500.000	moderate	EX	DEC	DEC?	dec	dec
cr Calidris fuscicollis 1,120,000 1,120,000 Calidris bairdii 300,000 300,000 Calidris maritima maritima 30,000 30,000 Calidris maritima maritima 10,000? — C. m. belcheri 15,000 15,000 C. m. maritima (both subspecies) 15,000 15,000 C. m. maritima (both subspecies) 15,000 15,000 C. m. tacticola 25,000 25,000 C. p. tschuktschorum 50,000 75,000 C. p. tschuktschorum 75,000 75,000 C. a. arcticola 750,000 750,000 C. a. arcticola 750,000 750,000 C. a. hudsonia 520,000 520,000 C. a. hudsonia 820,000 820,000 C. a. hudsonia 78,000 170,000 Limnodromus griseus griseus 178,000 175,000 Limnodromus griseus (all populations) 153,000 245,000 Limnodromus scolopaceus 2,500,000 2,500,000 Limnodromus scolopaceus 1,500,000 2,		Calidris minutilla	700,000	700,000	700,000	moderate	EX	DEC	DEC	STA	STA
Calidris bairdii 300,000 300,000 Calidris maritima 500,000 400,000 Calidris maritima maritima 10,000? — C. m. belcheri 15,000 — C. m. maritima (both subspecies) 15,000 15,000 C. m. maritima (both subspecies) 15,000 15,000 C. m. tachidris pitlocnemis pitlocnemis 25,000 25,000 C. p. tschuktschorum 50,000 75,000 C. a. arcticola 75,000 750,000 C. a. arcticola 750,000 750,000 C. a. hudsonia 550,000 550,000 C. a. hudsonia 820,000 820,000 C. a. hudsonia 820,000 150,000 C. a. hudsonia 78,000 170,000 Limnodromus griseus griseus 78,000 170,000 L. g. caurinus 78,000 245,000 Limnodromus scolopaceus 75,000 245,000 Limnodromus scolopaceus 153,000 2,500,000 Ci. g. caurinus 1,500,000 2,500,000 Ci. g.		Calidris fuscicollis	1,120,000	1,120,000	1,694,000	95% = 560,100-3,827,900	SD	STA	DEC	STA	STA
Calidris melanotos 500,000 400,000 Calidris acuminata 30,000 30,000 Calidris maritima maritima 10,000? — C. m. belcheri 15,000 15,000 C. m. martima (both subspecies) 15,000 15,000 C. p. cousei 25,000 25,000 C. p. cousei 75,000 75,000 C. a criticola 75,000 750,000 C. a racticola 750,000 750,000 C. a rundsonia 820,000 820,000 C. a hudsonia 75,000 170,000 Limnodromus griseus griseus 78,000 175,000 Limnodromus griseus griseus 75,000 75,000 L. g. caurinus 1,500,000 2,500,000 Limnodromus scolopaceus 2,500,000 2,500,000 Limnodromus scolopaceus 2,500,000		Calidris bairdii	300,000	300,000	300,000	low	EX	STA	STA?	UNK	UNK
Calidris acuminata 30,000 Calidris maritima maritima 10,000? C. m. belcheri 15,000 C. m. belcheri 15,000 C. m. martima (both subspecies) 15,000 C. m. martima (both subspecies) 15,000 C. m. martima (both subspecies) 25,000 C. m. martima (both subspecies) 25,000 C. p. consei 75,000 C. p. consei 75,000 C. a. arcticola 750,000 C. a. arcticola 750,000 C. a. hudsonia 820,000 C. a. hudsonia 820,000 Calidris himantopus 820,000 C. a. hudsonia 820,000 C. a. hudsonia 110,000 Limnodromus griseus griseus 820,000 L. g. reaurinus 78,000 L. g. caurinus 75,000		Calidris melanotos	500,000	400,000	1,600,000	95% = 1,129,600-2,070,400	SD	STA	DEC	DEC	DEC
Calidris maritima maritima 10,000? – C. m. belcheri 15,000 – C. m. belcheri 15,000 15,000 C. m. martima (both subspecies) 15,000 25,000 C. p. tschuktschorum 25,000 52,000 C. p. cousei 75,000 75,000 C. a. arcticola 750,000 75,000 C. a. hudsonia 820,000 820,000 C. a. hudsonia 820,000 820,000 C. a. hudsonia 820,000 110,000 C. a. hudsonia 820,000 15,000–25,000 Limnodromus griseus griseus 30,000 15,000–25,000 L. g. reaurinus 75,000 75,000 L. g. caurinus 75,000 75,000 L. g. caurinus 75,000 245,000 L. g. caurinus 75,000 2,000,000 B. g. caurinus 75,000 2,500,000 L. g. caurinus 75,000 2,500,000 L. g. caurinus 75,000 2,500,000 L. g. caurinus 75,000 2,500,000 <td></td> <td>Salidris acuminata</td> <td>30,000</td> <td>30,000</td> <td>22,000</td> <td>estimated 16,000-32,000</td> <td>SD</td> <td>STA</td> <td>STA?</td> <td>dec</td> <td>dec</td>		Salidris acuminata	30,000	30,000	22,000	estimated 16,000-32,000	SD	STA	STA?	dec	dec
C. m. belcheri 15,000 - C. m. martima (both subspecies) 15,000 15,000 C. m. martima (both subspecies) 25,000 25,000 C. p. tschuktschorum 50,000 75,000 C. p. cousei 75,000 75,000 C. a. arcticola 750,000 75,000 C. a. hudsonia 50,000 225,000 C. a. hudsonia 820,000 820,000 C. a. hudsonia 820,000 225,000 C. a. hudsonia 820,000 110,000 Limnodromus griseus griseus 30,000 15,000-25,000 L. g. teaurinus 75,000 75,000 L. g. caurinus 75,000 245,000 L. g. caurinus 75,000 240,000 L. g. caurinus 75,000 2,000,000 L. g. caurinus 75,000 2,500,000 L. g. caurinus 75,000 2,500,		Calidris maritima maritima	10,000?	ı	10,000	moderate	EX	STA	STA?	dec	dec
C. m. martima (both subspecies) 15,000 15,000 Calidris ptilocnemis 25,000 25,000 C. p. tschuktschorum 50,000 60,000-70,000 C. p. cousei 75,000 75,000 C. a. arcticola 750,000 75,000 C. a. hudsonia 225,000 225,000 C. a. hudsonia 820,000 820,000 Calidris himantopus 820,000 820,000 Limnodromus griseus griseus 30,000 15,000-25,000 L. g. teaurinus 78,000 170,000 L. g. caurinus 75,000 245,000 L. g. caurinus scolopaceus 75,000 245,000 L. g. caurinus scolopaceus 2,000,000 2,000,000 Callinago delicata 2,000,000 2,000,000 Phalaropus tricolor 1,500,000 2,500,000 Phalaropus lobatus 2,500,000 1,500,000 Phalaropus fulicarius 1,250,000 1,000,000		C. m. belcheri	15,000	ı	15,000	moderate	EX	STA	STA?	dec	dec
Calidris ptilocnemis 25,000 25,000 C. p. tschuktschorum 50,000 60,000-70,000 C. p. cousei 75,000 75,000 C. a. arcticola 750,000 75,000 C. a. arcticola 550,000 225,000 C. a. hudsonia 820,000 820,000 C. a. hudsonia 820,000 820,000 Calidris himantopus 820,000 15,000-25,000 Limnodromus griseus griseus - 60,000 L. g. prieus/hendersoni 75,000 75,000 L. g. caurinus 75,000 75,000 L. g. caurinus 75,000 245,000 L. g. caurinus 75,000 245,000 L. g. caurinus 75,000 2,000,000 Scolopaceus 2,000,000 2,000,000 Phalaropus tricolor 1,500,000 2,500,000 Phalaropus tricolor 1,500,000 2,500,000 Phalaropus fulicarius 1,250,000 1,000,000		C. m. martima (both subspecies)	15,000	15,000	25,000	moderate	SD	dec		dec	dec
C. p. tschuktschorum 50,000 60,000-70,000 C. p. cousei 75,000 75,000 C. a. arcticola 750,000 75,000 Calidris alpina pacifica 550,000 255,000 C. a. hudsonia 820,000 225,000 Calidris himantopus 820,000 820,000 Calidris himantopus 30,000 15,000-25,000 Limnodromus griseus griseus - 60,000 L. g. ariseus/hendersoni 75,000 75,000 L. g. caurinus 75,000 75,000 Limnodromus griseus (all populations) 153,000 245,000 Limnodromus scolopaceus 2,000,000 4,000,000 Gallinago delicata 2,000,000 4,000,000 Phalaropus tricolor 1,500,000 2,500,000 Phalaropus lobatus 2,500,000 1,500,000 Phalaropus fulicarius 1,250,000 1,000,000		Calidris ptilocnemis ptilocnemis	25,000	25,000	19,800	95% = 17,900-21,900	SD	dec	DEC	UNK	UNK
C. p. cousei 75,000 75,000 C. a. arcticola 750,000 75,000 C. a. arcticola 550,000 550,000 C. a. hudsonia 225,000 225,000 Calidris himantopus 820,000 820,000 I. Tryngites subryficollis 30,000 15,000-25,000 Limnodromus griseus griseus — 60,000 L. g. griseus/hendersoni 78,000 170,000 L. g. caurinus 75,000 75,000 L. g. caurinus 75,000 245,000 Limnodromus scolopaceus 2,000,000 400,000 Gallinago delicata 2,000,000 4,000,000 Phalaropus tricolor 1,500,000 2,500,000 Phalaropus fulicarius 1,250,000 1,500,000 Phalaropus fulicarius 1,250,000 1,000,000		C. p. tschuktschorum	50,000	60,000-70,000	50,000	low	EX	dec	STA?	UNK	UNK
C. a. arcticola 750,000 750,000 Calidris alpina pacifica 550,000 550,000 C. a. hudsonia 225,000 225,000 Calidris himantopus 820,000 820,000 Tryngites subruficollis 30,000 15,000-25,000 Limnodromus griseus griseus - 60,000 L. g. griseus/hendersoni 75,000 75,000 L. g. caurinus 75,000 245,000 Limnodromus griseus (all populations) 153,000 400,000 Gallinago delicata 2,000,000 4,000,000 Scolopax minor 1,500,000 4,000,000 Phalaropus tricolor 1,500,000 2,500,000 Phalaropus lobatus 2,500,000 1,500,000 Phalaropus fulicarius 1,250,000 1,000,000		C. p. cousei	75,000	75,000	75,000	low	EX	dec	STA?	UNK	UNK
Calidris alpina pacifica 550,000 550,000 Calidris alpina pacifica 225,000 225,000 Calidris himantopus 820,000 820,000 820,000 Calidris himantopus 820,000 15,000—25,000 Limnodromus griseus 75,000 170,000 L. g. griseus/hendersoni 75,000 170,000 L. g. caurinus Griseus (all populations) 153,000 400,000 Callinago delicata 2,000,000 2,000,000 Gallinago delicata 2,000,000 1,500,000 Phalaropus tricolor 1,500,000 1,500,000 Phalaropus lobatus 2,500,000 1,000,000 Phalaropus fulicarius 1,250,000 1,000,000 Phalaropus fulicarius 1,250,000 1,000,000		C. a. arcticola	750,000	750,000	500,000	95% = 304,000 - 696,000	SD	dec	DEC	DEC	DEC
C: a. hudsonia 225,000 225,000 Caldris himantopus 820,000 820,000 820,000 Caldris himantopus 820,000 820,000 Solomorpus griseus griseus (30,000 15,000—25,000 Callinago delicata 25,000 Callinago delicata 25,000,000 Callinago Ca		Calidris alpina pacifica	550,000	550,000	550,000	wol	EX	dec	DEC	STA	STA
Tryngites subruficallis 320,000 320,000		a. hudsonia	225,000	225,000	450,000	95% = 220, 100-6/9, 300	S S	gec	DEC	SIA	SIA
1.000 1.00		aliaris nimaniopus	30,000	000,028	1,245,700	93% = 418,800-2,088,600	S S	SIA	SIA	aec	SIA
L. g. freedersoni L. g. freedersoni L. g. griseus/hendersoni L. g. caurinus L. g. caurinus L. g. caurinus L. g. caurinus Limnodromus griseus (all populations) Limnodromus scolopaceus Callinago delicata Scolopax minor Phalaropus tricolor Phalaropus tobatus L. g. caurinus L. g. cou Lin,000 Lin	÷.	lryngites subruficollis Imnodromus ariseus ariseus	30,000	15,000–25,000	000,96	estimated 35,000–78,000	SD FX	DEC	DEC	DEC	ANO N
L. g. griseus/hendersoni 78,000 70,000 L. g. caurinus 75,000 75,000 L. g. caurinus 75,000 245,000 Limnodromus griseus (all populations) 153,000 245,000 Limnodromus scolopaceus 2,000,000 400,000 Gallinago delicata 2,000,000 4,000,000 Scolopax minor 1,500,000 1,500,000 Phalaropus tricolor 2,500,000 2,500,000 Phalaropus fobatus 1,250,000 1,000,000		similar omins griseus griseus	ı	000,011	ı		EV	DEC	DEC		
L. g. caurinus 75,000 75,000 L. g. caurinus 75,000 75,000 Limnodromus griseus (all populations) 153,000 245,000 Limnodromus scolopaceus 2,000,000 400,000 Gallinago delicata 3,500,000 4,000,000 Scolopax minor 1,500,000 1,500,000 Phalaropus tricolor 2,500,000 2,500,000 Phalaropus fobatus 1,250,000 1,000,000		s. g. nenuersont r. g. grisons/hondorsoni	78 000	00,000	78 000	low	LY HX	DEC	DEC	STA	STA
Limodromus griseus (all populations) 153,000 245,000 Limnodromus scolopaceus 400,000 400,000 Gallinago delicata 2,000,000 2,000,000 Scolopax minor 3,500,000 4,000,000 Phalaropus tricolor 1,500,000 2,500,000 Phalaropus lobatus 2,500,000 1,000,000		Se Stricture som	75 000	75,000	75 000	wo!		DEC	INK	INK	INK
Limnodromus scolpaceus 400,000 400,000 Gallinago delicata 2,000,000 2,000,000 Scolopax minor 3,500,000 4,000,000 Phalaropus tricolor 1,500,000 2,500,000 Phalaropus lobatus 2,500,000 1,250,000 Phalaropus fulicarius 1,250,000 1,000,000		Limnodromus griseus (all populations)	153.000	245.000	153,000	wol	EX	DEC	DEC	STA	STA
Gallinago delicata 2,000,000 2,000,000 Scolopax minor 3,500,000 4,000,000 Phalaropus tricolor 1,500,000 1,500,000 Phalaropus lobatus 2,500,000 2,500,000 Phalaropus fulicarius 1,250,000 1,000,000		S. Cimnodromus scolonaceus	400,000	400,000	500,000	moderate	EX	inc	STA?	INK	INK
Acock Scolopax minor 3,500,000 4,000,000 ope Phalaropus tricolor 1,500,000 1,500,000 alarope Phalaropus lobatus 2,500,000 2,500,000 Phalaropus fulicarius 1,250,000 1,000,000		Gallinago delicata	2,000,000	2,000,000	2,000,000	wol	EX	DEC	DEC	STA	STA
Phalaropus tricolor 1,500,000 1,500,000 Phalaropus lobatus 2,500,000 2,500,000 Phalaropus fulicarius 1,250,000 1,000,000		Scolopax minor	3,500,000	4,000,000	3,500,000	estimated 3-4 million	EX	DEC	DEC	DEC	STA
Phalaropus lobatus 2,500,000 2,500,000 Phalaropus fulicarius 1,250,000 1,000,000		Phalaropus tricolor	1,500,000	1,500,000	1,500,000	low	EX	DEC	DEC	dec	UNK
Phalaropus fulicarius 1,250,000 1,000,000		Phalaropus lobatus	2,500,000	2,500,000	2,500,000	low	EX	dec	DEC	DEC	UNK
		ohalaropus fulicarius	1,250,000	1,000,000	1,620,000	95% = 1,143,700-2,096,300	SD	DEC	DEC	dec	UNK