

*Exxon Valdez* Oil Spill  
Restoration Project Final Report

Marine Bird and Sea Otter Population Abundance  
of Prince William Sound, Alaska:  
Trends following the *T/V Exxon Valdez* Oil Spill, 1989-2005

Restoration Projects 040159/ 050751  
Final Report

Aly McKnight<sup>1</sup>, Kelsey M. Sullivan<sup>1</sup>, David B. Irons<sup>1</sup>, Shawn W. Stephensen<sup>1</sup>,  
and Shay Howlin<sup>2</sup>

<sup>1</sup> U.S. Fish and Wildlife Service, Migratory Bird Management, 1011 East Tudor Road,  
Anchorage, Alaska 99503

<sup>2</sup> West Inc., 2003 Central Ave., Cheyenne, Wyoming 82001

March 2006

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**Study History:** The U. S. Fish and Wildlife Service, Migratory Bird Management conducted boat-based surveys in Prince William Sound prior to the *Exxon Valdez* oil spill in 1972-73 (L. Haddock et al., USFWS, unpubl. data) and 1984-85 (Irons et al. 1988a, b). After the spill, Natural Resource Damage Assessment Bird Study Number 2 (Burn 1994, Klosiewski and Laing 1994) documented damage from the spill on the marine bird and sea otter populations of Prince William Sound. Data from these surveys indicated that populations of sea otters (Burn 1994) and several marine bird species (Klosiewski and Laing 1994) declined in the spill area. Thus, Restoration Projects 93045 (Agler et al. 1994), 94159 (Agler et al. 1995), 96159 (Agler and Kendall 1997), 98159 (Lance et al. 1999), 00159 (Stephensen et al. 2001), and 040159 (Sullivan et al. 2005) were initiated to continue monitoring marine bird and sea otter population abundance to assess recovery of injured species.

**Abstract:** We conducted small boat surveys to estimate marine bird and sea otter (*Enhydra lutris*) populations in Prince William Sound, Alaska during March and July 2005, using methods developed in 1989-91 (Klosiewski and Laing 1994). We examined trends of marine birds in the oiled and unoiled areas of PWS from 1989-2005. We considered an increasing population trend evidence that recovery was occurring and no trend or a decreasing trend evidence that populations were not recovering. Our data indicated that most taxa for which injury was previously demonstrated were not recovering. During winter, five taxa (Bald Eagles, “cormorants,” “loons,” Common Loons, and “scoters”) had increasing population trends, while twelve taxa (Black-legged Kittiwakes, Buffleheads, “goldeneyes”, “grebes”, Glaucous-winged Gulls, Harlequin Ducks, “mergansers,” Mew Gulls, Marbled Murrelets, Common Murres, Northwestern Crows, and Pigeon Guillemots) did not exhibit any trend toward recovery. During summer two taxa (“cormorants” and Northwestern Crows) showed trends consistent with a recovering population, and sixteen taxa (Bald Eagles, Black-legged Kittiwakes, Black Oystercatchers, “goldeneyes,” Glaucous-winged Gulls, Harlequin Ducks, “loons,” Common Loons, Kittlitz’s Murrelets, “mergansers,” Mew Gulls, Marbled Murrelets, Common Murres, Pigeon Guillemots, “scoters,” and “terns”) showed no trend toward recovery. Densities of sea otters in March and July surveys showed no trend toward recovery.

**Key Words:** population estimates, marine birds, sea otters, trends, Prince William Sound.

**Project Data:**

Description of data – Data on the at-sea distribution and abundance of seabirds and sea otters were collected in Prince William Sound, Alaska. Data were entered into a computer and will be added to the USGS/USFWS’s North Pacific Pelagic Seabird Database, which resides in Anchorage, Alaska.

Format -- All data are available as Microsoft Access files or comma delimited ASCII files.

Custodian – David B. Irons, Ph. D., Seabird Coordinator, Migratory Bird Management, U.S. Fish and Wildlife Service, 1011 East Tudor Road, Anchorage, Alaska 99503.

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## EXECUTIVE SUMMARY

The waters and shorelines of Prince William Sound provide important feeding, resting, and breeding sites for many marine birds and mammals. In 1989, the *T/V Exxon Valdez* grounded on Bligh Reef in the northeastern corner of Prince William Sound and spilled 40 million liters of crude oil into the surrounding waters. Over 30,000 marine birds and 900 sea otter carcasses were recovered following the spill. Of these, 3,400 birds and approximately 500 sea otters were recovered in Prince William Sound. Direct mortality to marine birds in Prince William Sound and the Gulf of Alaska was estimated at approximately 250,000 birds. Mortality of sea otters was estimated as 350-4,950 otters.

The U. S. Fish and Wildlife Service conducted boat surveys in Prince William Sound in 1972-73, 1984-85, 1989-91, 1993, 1994, 1996, 1998, 2000, 2004, and 2005 to determine the population abundance of marine birds and sea otters. Data from the 1989-91 surveys were used to assess natural resource damage from the *Exxon Valdez* oil spill. The data indicated that populations of sea otters and several marine bird species declined in the oil spill area.

A number of species were suggested for consideration on the injured species list, but not all were included. At present, the designated injured species list includes Common Loons, "cormorants," Harlequin Ducks, Bald Eagles, Black Oystercatchers, Common Murres, Pigeon Guillemots, Marbled Murrelets, Kittlitz's Murrelets, and sea otters.

This study was designed to monitor marine bird and sea otter populations of Prince William Sound following the *T/V Exxon Valdez* oil spill to determine recovery of species affected by the oil spill. To do this, we estimated abundances of marine bird and sea otter populations in Prince William Sound in March and July 2005 and compared these estimates with the 1989-91, 1993, 1994, 1996, 1998, 2000, and 2004 estimates to ascertain trends in marine bird and sea otter population abundance in Prince William Sound.

Two criteria were employed to examine post-spill trends of marine bird and sea otter populations. First, we examined population trends of injured taxa only in the oiled area of Prince William Sound using regression models. Second, we examined population trends of injured taxa in the oiled area relative to the unoiled area using homogeneity of slopes tests. We considered a population recovering if there was a positive trend using either criterion. We considered a population not recovering if there was no trend using both criteria, a negative trend in the oiled area, or a negative trend in the oiled area relative to the unoiled area.

Most taxa that were previously determined as injured were not recovering. During winter, five taxa (Bald Eagles, "cormorants," "loons," Common Loons, and "scoters") had increasing population trends, while twelve taxa (Black-legged Kittiwakes, Buffleheads, "goldeneyes", "grebes", Glaucous-winged Gulls, Harlequin Ducks, "mergansers," Mew Gulls, Marbled Murrelets, Common Murres, Northwestern Crows, and Pigeon Guillemots) did not exhibit any trend toward recovery. During summer two taxa ("cormorants" and Northwestern Crows) showed trends consistent with a recovering population, and sixteen taxa (Bald Eagles, Black-legged Kittiwakes, Black Oystercatchers, "goldeneyes," Glaucous-winged Gulls, Harlequin Ducks, "loons," Common Loons, Kittlitz's Murrelets, "mergansers," Mew Gulls, Marbled

Murrelets, Common Murres, Pigeon Guillemots, “scoters,” and “terns”) showed no trend toward recovery. Densities of sea otters in March and July surveys showed no trend toward recovery.

We show evidence of slow recovery and lack of recovery in many taxa that utilize shoreline and near-shore habitats where oil is likely to persist. These potential lingering spill effects and natural variability appear to be acting in concert in delaying recovery of many Prince William Sound marine bird populations.

## INTRODUCTION

The waters and shores of Prince William Sound (PWS) provide important feeding, resting, and breeding habitat for many marine birds and mammals (Isleib and Kessel 1973, Hogan and Murk 1982). The terminus of the Trans-Alaska oil pipeline is in Valdez in northern PWS, and since 1977 oil tankers have made thousands of trips through PWS en route to refineries in the lower 48 states. Due to concern over the effects of a potential oil spill on marine birds, the U.S. Fish and Wildlife Service conducted marine bird surveys in PWS in 1972-73 (L. Haddock et al., unpubl. data) and again in 1984-85 (Irons et al. 1988a).

On 24 March 1989, the *T/V Exxon Valdez* grounded on Bligh Reef in northeastern PWS, spilling ~ 40 million liters of crude oil into the surrounding waters. In the following weeks, wind and currents moved the oil to the southwest where a large percentage was deposited on shorelines and intertidal areas of western and southwestern PWS. Approximately 25% of the oil drifted out of PWS, traveling ~ 750 km to the southwest, contaminating areas of the Kenai Peninsula, Barren Islands, Alaska Peninsula, and Kodiak Island archipelago (Spies et al. 1996). Immediate effects of oil contamination on marine birds were pronounced. Over 30,000 marine bird carcasses were recovered in the spill area, of which, ~ 3,400 were recovered in PWS (Piatt et al. 1990a). Carcasses comprised mainly diving birds: murre, sea ducks, cormorants, murrelets, pigeon guillemots, loons, and grebes (Piatt et al. 1990a). Direct mortality of marine birds in PWS and the Gulf of Alaska was estimated at about 250,000 birds (Piatt and Ford 1996). At the time, the *Exxon Valdez* oil spill (EVOS) was the largest oil spill in North America with unprecedented toll on marine birds, eliciting much concern about the short and long-term effects on marine bird populations in PWS.

In 1989, surveys were initiated by the U.S. Fish and Wildlife Service to determine the population abundance of marine birds in PWS and to assess natural resource damage in the aftermath of the oil spill. Surveys conducted by the U.S. Fish and Wildlife Service were continued in March (1990, 1991, 1993, 1994, 1996, 1998, 2000, 2004, and 2005) and July (1989, 1990, 1991, 1993, 1996, 1998, 2000, 2004, and 2005) (Klosiewski and Laing 1994, Agler et al. 1994, 1995, Agler and Kendall 1997, Lance et al. 1999, Stephensen et al. 2001, Sullivan et al. 2005). These surveys were designed to monitor marine bird populations of PWS following the *T/V Exxon Valdez* oil spill to determine population trends for those species injured by the oil spill (*Exxon Valdez* Oil Spill Restoration Plan 1996).

Previous studies on the effects of the oil spill (Murphy et al. 1997, Irons et al. 2000) found that summer densities of several species of marine birds were lower than expected (relative to densities in 1984-1985) in the oiled area of PWS after the spill, relative to densities in the unoiled area. Irons et al. (2000) found that diving species were affected more than non-diving species. Klosiewski and Laing (1994) compared population estimates, both winter and summer, and found that numbers of several species of marine birds were lower (relative to numbers in 1972-73) in the oiled area of PWS after the spill compared to populations in the unoiled area. Day et al. (1997) evaluated impacts to and recovery of marine birds by looking at use of oil-affected habitats in PWS, using post-spill data collected throughout the year over a three-year period (1989-1991), also finding oil spill effects on several species of marine birds. Using guild analysis, Wiens et al.

(1996) found that the most consistent impacts of oiling were on species that feed on or close to shore, breed on the beach, or are winter or year-round residents. Thus, it is clear from these studies that the EVOS had significant impacts on marine bird populations in PWS; however, it was not certain to what degree these taxa have recovered at the population level sixteen years after the spill.

Many of the species showing oil spill effects during summer have much larger winter populations in PWS (Aglar and Kendall 1997). During late winter, when the oil spill occurred, most avifauna of PWS consisted of winter residents, principally: sea ducks, gulls, cormorants, grebes, loons, and alcids. Thus, most of the 3,400 bird carcasses retrieved after the oil spill probably belonged to winter populations (Klosiewski and Laing 1994). Further, one might predict that continuing impacts or recovery of those species would be more apparent in winter populations.

We used the results of post-spill studies focused on detecting oil spill effects (Klosiewski and Laing 1994, Wiens et al. 1996, Day et al. 1997, Murphy et al. 1997, Irons et. al. 2000) to determine which marine bird populations in PWS were impacted by the spill. In this study, we evaluate the trends of impacted marine bird populations of PWS to test the following hypothesis regarding recovery at the population level.

Our null hypothesis,  $H_0$ , was that populations in the oiled area did not change, that is, populations were not recovering. Our first alternative hypothesis,  $H_{a1}$ , was that populations were increasing, which we considered as evidence of recovery. Recovery was measured by two methods; a significantly increasing population trend in the oiled area, or a significantly increasing population trend in the oiled area relative to the unoiled area 1989-2005. If either of these criteria were met we considered that as evidence of a recovering population. Our second alternative hypothesis,  $H_{a2}$ , was that populations were decreasing and therefore not recovering. A decreasing population was measured by two methods; a significantly decreasing population trend in the oiled area, or a significantly decreasing population trend in the oiled area relative to the unoiled area 1989-2005.

## OBJECTIVES

The purpose of this study was to obtain estimates of the summer and winter populations of marine birds and sea otters in Prince William Sound to determine whether species whose populations declined after the *T/V Exxon Valdez* oil spill have recovered. Our specific objectives were:

- a. To determine distribution and estimate abundance, with 95% confidence limits, of marine bird and sea otter populations in Prince William Sound during March and July 2004;
- b. To determine if marine bird species whose populations were impacted by the spill have recovered;

- c. To support restoration studies on harlequin duck and other marine birds and sea otters by providing data on population changes, distribution, and habitat use of Prince William Sound populations.

## **METHODS**

### **Study Area**

Prince William Sound is a large estuarine embayment (~ 10,000 km<sup>2</sup>) of the northern Gulf of Alaska (Fig. 1). The coastline of PWS is rugged; surrounded by the Chugach and Kenai Mountains (up to 4km elevation), with numerous tidewater glaciers, deep fjords, and islands. The climate is maritime, with moderate temperatures, high humidity, frequent fog and overcast, and high precipitation (Isleib and Kessel 1973). A low-pressure trough, the Aleutian Low, is located over the area from October through March producing frequent and intense storms with high winds (Isleib and Kessel 1973). Water circulation is dominated by the Alaska Coastal Current (ACC), which mixes with a high volume of fresh water input from precipitation, rivers, and glaciers. Westerly and southwesterly currents predominate with a branch of the ACC entering through Hinchinbrook Entrance, transiting PWS from east to west before exiting through Montague Strait (Niebauer et al. 1994). Strong tidal currents ranging as high as 6 meters cause rapid mixing of waters at the entrances to bays, fjords and inlets. During the winter, ice forms at the heads of protected bays and fjords that receive substantial freshwater runoff (Isleib and Kessel 1973). The study area included all waters within PWS and all land within 100 m of the shore, with the exception of Orca Inlet, near Cordova, Alaska and the southern sides of Montague, Hinchinbrook, and Hawkins Islands (Fig. 1).

### **Survey Methods**

We divided PWS into three strata: shoreline, coastal-pelagic (nearshore), and pelagic (offshore, Fig. 1). The shoreline stratum consisted of all waters within 200 m of land. Based on habitat, the shoreline stratum was divided into 742 transects with a total area of approximately 820.74 km<sup>2</sup> (Irons et al. 1988a). Shoreline transects varied in size, ranging from small islands with <1 km of coastline to sections of the mainland with over 30 km of coastline. Mean transect length was ~6 km. Shoreline transects were located by geographic features, such as points of land, to facilitate orientation in the field and to separate the shoreline by habitat type. Surveys were conducted in late winter (March) and mid-summer (July).

In 1989, 187 (25%) of the total 742 shoreline transects were randomly selected for the surveys. An additional 25 shoreline transects from western PWS were randomly selected and added in July 1990 to increase the precision of estimates from the oiled zone (Fig. 1). The number of shoreline transects was reduced to 99 (13% of the total 742 transects) during March surveys to accommodate potential weather delays. Sample sizes within individual surveys sometimes varied slightly, because a few transects could not always be surveyed due to environmental conditions (e.g., ice).

To sample the coastal-pelagic and pelagic waters of PWS, the study area was divided into 5-min latitude-longitude blocks. Blocks were classified as nearshore if they included >1.8 km of shoreline. Blocks that included  $\leq 1.8$  km of shoreline were classified in the pelagic stratum. If coastal-pelagic or pelagic blocks intersected the 200 m shoreline buffer, they were truncated to avoid overlap with the shoreline stratum. Blocks were randomly chosen and two transects were surveyed within each block. If a block was too small to contain both transects, it was combined with an adjacent block. During the March surveys, 14% (28) of the coastal-pelagic blocks ( $n = 207$ ) and 29% (25) of those within the pelagic stratum ( $n = 86$ ) were sampled. During the July surveys, 21% (44) of the coastal-pelagic blocks ( $n = 207$ ) and 29% (25) of those within the pelagic stratum ( $n = 86$ ) were sampled. We surveyed two north-south transects, each 200 m wide, located 1-min longitude inside the east and west boundaries of each coastal-pelagic and pelagic block. Global Positioning Systems (GPS) and nautical compasses were used to navigate transect lines.

Transects were surveyed in ~ 15-20 working days over a three-week period; winter surveys (~ 1-28 March; 1990-91, 1993, 1994, 1996, 1998, 2000, 2004, and 2005) and summer surveys (~ 2-27 July; 1989-91, 1993, 1996, 1998, 2000, 2004, and 2005). Survey methodology and transects surveyed were identical in all years. Surveys were conducted concurrently by three 8 m fiberglass boats traveling at speeds of 10-20 km/hr. Two observers counted all birds and mammals detected in a sampling window 100 m on either side, 100 m ahead, and 100 m overhead of the vessel. When surveying shoreline transects, observers also recorded birds and mammals sighted on land within 100 m of shore. Observers scanned continuously and used binoculars to aid in species identification. Most transects were surveyed when wave height was <30 cm, and no surveys were conducted when wave height was >60 cm.

To examine population trends over time and to determine if populations injured by the spill were recovering, we post-stratified PWS into oiled and unoiled areas (Fig. 1). Our methodology of post-stratification followed that of Klosiewski and Laing (1994), who considered all strata within the outer boundary of the general oiled area as oiled. The oil spill, however, contaminated some beaches, while some adjacent beaches were left untouched creating a mosaic pattern of oiling. Thus, at this coarse scale unoiled habitat was present within the oiled area. Because birds are mobile, we assumed that birds on unoiled transects surrounded by oil were likely to be affected by oil (but see Irons et al. 2000). Our post-stratification analyses assumed that bird populations in the oiled and unoiled portions of PWS, as well as PWS as a whole, were discrete. While this is likely not the case for marine birds in general (Porter and Coulson 1987), data on the movement of bird populations between the various portions of PWS (Kuletz et al. 1995, Bowman et al. 1997, Rosenberg and Petrula 1998, and Suryan and Irons 2001) are too limited to include in our analyses.

Some bird species were grouped by genus for analyses (Appendix 1). These species were combined to allow analyses to include data on birds that were only identified to genus (e.g., “loons”). In general, species within a taxonomic group were similar in natural history attributes and vulnerability to oil (see King and Sanger 1979). When enough data were available, we also included results for the individual injured species within a genera. In the special case of murrelets, we have grouped unidentified *Brachyramphus* murrelets into the Marbled Murrelet group, because early efforts to identify murrelets to species varied widely over the study years, and more than 95% of the unidentified birds were most likely Marbled Murrelets rather than the rarer Kittlitz’s Murrelets. Similarly, we have grouped unidentified murres with the Common Murres, as Thick-billed Murres were rarely identified during surveys of PWS.

## Data Analysis

### *Population Estimates and Densities*

We estimated population abundances and variances using a ratio of total count to area surveyed within each stratum (Cochran 1977). Shoreline transects were treated as a simple random sample, whereas the coastal-pelagic and pelagic transects were analyzed as two-stage cluster samples of unequal size. To obtain a population estimate for each block, we estimated the density of birds counted on the combined transects for a block and multiplied by the area of the sampled block. We then added the estimates from all blocks surveyed and divided by the sum of the areas of all blocks surveyed. Next, we calculated the population estimate for a stratum by multiplying this estimate by the area of all blocks in the stratum. Total population estimates for PWS were calculated by adding the population estimates from the three strata. We then calculated the 95% confidence intervals for these estimates from the sum of the variances of each stratum. Our population estimates are minimums because some unknown percentage of each species is likely missed due to being underwater or undetected. Density estimates used in regression analyses were calculated from total population estimates.

To determine if impacted populations were showing signs of recovery or not we employed two methods of analyses. We examined the post-spill population trend of the birds in the oiled area. We also examined the post-spill population trend of the birds in the oiled area relative to the unoiled area, since there are several factors other than oil spills that cause bird populations to change.

### *Population Trends in the Oiled Area*

We examined the trend in marine bird densities, for summer and winter in the oiled area to determine if the population levels were changing. An impacted taxon was considered showing evidence of recovery if the logarithms of the densities in the oiled areas of PWS were exhibiting a statistically significant increasing trend (positive slope); otherwise, the taxon was considered showing no evidence of recovery (slope not significantly different than zero or was significantly negative). This test assumed that the oil spill effect was large enough that recovery could be detected using our survey methods. It makes no assumptions regarding unoiled areas.



### *Population Trends in Oiled Area Relative to Unoiled Area*

We compared trends in marine bird densities, for both winter and summer, between oiled and unoiled areas of PWS. To test whether the populations were changing at different rates we examined the homogeneity of the slopes of the logarithms of the densities over time between the oiled and the unoiled areas (Freud and Littell 1981) using linear models. Significantly different slopes indicated that densities of a species or species group in the oiled area were changing at a different rate than in the unoiled area. We calculated the rate of change of density in each area with linear regression analyses.

A taxon was considered recovering if bird densities in the oiled areas of PWS were increasing at a significantly greater rate (slope of the regression line) than bird densities in the unoiled areas of PWS. A taxon was considered as showing no evidence of recovery if trends of bird densities in the oiled areas of PWS were not significantly different from trends in the unoiled areas of PWS (no difference in slopes), or if bird densities in the oiled areas of PWS had trends (slopes) which were significantly smaller (or more negative) than trends in the unoiled area.

We made several assumptions to test for recovery using the homogeneity of slopes test. 1) We assumed that an oil spill effect on a taxon was large enough that recovery could be detected using our survey methods. Murphy et al. (1997) and Irons et al. (2000) demonstrated impacts on several marine bird taxa using similar survey methods, lending support to this assumption. 2) We assumed that in the absence of an oil spill, populations would increase or decrease at approximately the same rate in the oiled and unoiled areas of PWS. 3) We assumed oiled and unoiled bird populations were discrete. 4) We assumed that no natural, density-dependent mechanisms affected bird populations' ability to recover in PWS (e.g., changes in the carrying capacity of the environment between 1989-2005; see Ainley and Nur 1997). If these assumptions were not met, the homogeneity of slopes test may not have detected recovery.

Substantial seasonal differences exist in the distribution and abundance of the various marine bird taxa in PWS (Isleib and Kessel 1973), thus the same suite of taxa were not always analyzed in both winter and summer. Ten years of data were available for March (1990, 1991, 1993, 1994, 1996, 1998, 2000, 2004, and 2005) and July (1989, 1990, 1991, 1993, 1996, 1998, 2000, 2004, and 2005). Our hypothesis focused on whether rates of change in density were the same between oiled and unoiled areas, rather than if absolute densities differed. Consequently, densities were  $\log_{10}$  transformed to yield multiplicative models (e.g., effects and any subsequent changes in density would be proportional to the previous densities in the various portions of PWS) rather than additive models (Stewart-Oaten et al. 1986, 1992); the latter being an assumption of statistical tests on untransformed data (Sokal and Rohlf 1995). To avoid the undefined log of zero, we added a constant of 0.167 to all density estimates prior to analysis (Mosteller and Tukey 1977).

In all analyses we used a test size  $\alpha = 0.10$  to balance Type I and Type II errors. The reasons for this included: 1) variation was often high and sample sizes low ( $n = 10$  survey years); and 2) monitoring studies are inherently different from experiments and the number of tests being run with a multi-species survey are many, therefore, controlling for the number of tests by lowering alpha levels (e.g. Bonferroni adjustment) might obscure trends of biological value. To

make our results comparable with other studies on the effects of the EVOS on marine bird populations that used an alpha level of 0.20 (Wiens and Parker 1995, Wiens et al. 1996, Day et al. 1997, Murphy et al. 1997, Irons et al. 2000), we have included appendices (A-D) displaying the same results using an alpha level of 0.20.

In assessing impacts from environmental perturbations, there has been a trend of using large alpha levels (Wiens and Parker 1995, Wiens et al. 1996, Murphy et al. 1997, and Irons et al. 2000); allowing to error on the conservative side (increased chance of a Type I error, falsely identifying an impact that did not occur) rather than commit a Type II error (failing to identify an impact that did occur). It follows that in looking for recovery of an injured population, the practice of a conservative approach to setting alpha levels may be reversed. That is, the conservation and management consequences of making a Type I error (falsely identifying recovery that did not occur) may be greater than committing a Type II error (failing to identify recovery that did occur). Thus, it is likely that in assessing possible recovery of a species, the size of the alpha level should be smaller than we used in this study. In other words, our acceptance of recovery of a taxon based on an alpha of 0.10 is generous. Further, a consequence of conducting numerous statistical tests is that some results may be indicated as statistically significant by chance alone. Therefore, in this study we look at the patterns and strengths of significant results (see Figures 2 and 3) and interpret those patterns in light of the life history attributes of the affected taxon and results from related studies in PWS.

## **RESULTS**

We report on sixteen years of post-spill marine bird population changes during July and March in the oiled area of PWS using two methods of analyses, absolute trends in the oiled area and trends in the oiled area relative to the unoiled area (Fig. 1). Taxa are categorized by their trend.

### **Taxa with Positive Absolute or Relative Population Trends in the Oiled Area**

During summer, two taxa (“cormorants” and Northwestern Crows) of the 18 that were analyzed demonstrated a positive trend in the oiled area (Fig. 3). During winter, five taxa (Bald Eagles, “cormorants,” “loons,” Common Loons, and “scoters”) of the 17 that were analyzed showed a positive trend in the oiled area (Fig. 2).

### **Taxa with No Trends in the Oiled Area**

Five taxa (“goldeneyes,” Glaucous-winged Gulls, Harlequin Ducks, Mew Gulls, and Common Murres) showed no increase or decrease in densities in the oiled area during summer and winter over the sixteen year study period (Figs. 2, 3). Four taxa (Common Loons, “scoters,” Bald Eagles, and “loons,”) showed no change in densities during summer only (Fig. 3), and four taxa (Marbled Murrelets, Northwestern Crows, Pigeon Guillemots, and “mergansers”) showed no change in densities during winter only (Fig. 2). Buffleheads, considered only in winter analyses, showed no change in densities in either area, and Black Oystercatchers and Kittlitz’s Murrelets, considered only in summer analyses, also showed no increase or decrease in density over the study period (Tables 1, 2, 3 and Fig. 2, 3).

### **Taxa with Negative Absolute or Relative Trends in the Oiled Area**

During summer, five taxa (Black-legged Kittiwakes, Marbled Murrelets, Pigeon Guillemots, and “terns”) declined in the oiled area and one taxon (“mergansers”) declined in the oiled area relative to changes in the unoiled area (Fig. 3). During winter, one taxon (“grebes,”) declined in the oiled area, and one taxon (Black-legged Kittiwakes) increased significantly more in the unoiled area than in the oiled area (Fig. 2).

### **Trends using Regression Analysis**

We also examined population trends from 1989-2005 for PWS as a whole, using regression analyses. We found significant positive trends in March for Bald Eagles, and Black-legged Kittiwakes (Appendix D). “Grebes” were the only taxa exhibiting significant negative trends in overall abundance in March. In July, significant positive trends in overall abundance were found for “cormorants” and “mergansers,,” and significant negative trends were found for “goldeneyes,,” Marbled Murrelets and Pigeon Guillemots (Appendix D).

## **DISCUSSION**

Interpreting our data for evidence of recovering populations required use of information available from the trends in the oiled area, the trends in the oiled area relative to the unoiled area, results from related studies in PWS, as well as taxon-specific ecological attributes. We assumed that any decrease in the population caused by the oil spill was detectable by previous oil spill studies and that if populations were recovering we could measure that recovery by at least one of the two methods that we used. In this study we attempted to assess whether an injured population was recovering with the burden of proof being on the available data, marshaling the collective evidence from our results (see Table 1), other related studies, as well as the ecological attributes of the taxa.

We were fortunate to have data from a nearby unoiled area to use as a control. We felt that the homogeneity of slopes methods, which used the data in the control area, would provide convincing evidence of recovery. To look for additional evidence of recovery we also examined the trends in the oiled area alone.

### **Taxa Trends: Recovery and Lack of Recovery**

*“Loons.”*-- Injury to “loons” from the oil spill was documented for summer populations in PWS (Irons et al. 2000). The homogeneity of slopes test and regression on summer densities of both “all loons” as well as Common Loons in the oiled areas of PWS indicated no trend of recovery for this species group. In contrast, while the homogeneity of slopes test on winter densities indicated showed no trend toward recovery, the densities of both “all loons” and Common Loons in the oiled area did increase significantly, suggesting winter populations may be recovering.

*“Grebes.”*-- Injury to “grebes” from the oil spill was documented for birds that winter in PWS and as of 1991 showed no evidence of recovery (Day et al. 1997). The homogeneity of slopes test and regression on winter densities of grebes in the oiled areas of PWS indicated no trend of recovery for this group. Of equal concern were significant declines in oiled and unoiled areas of PWS indicating PWS-wide declines in this taxon.

*“Cormorants.”*-- Injury to “cormorants” from the oil spill was documented for non-breeding birds that spend the summer in PWS (Klosiewski and Laing 1994, Day et al. 1997, Murphy et al. 1997, Irons et al. 2000). The regressions on both winter and summer densities of cormorants in the oiled areas of PWS indicated a positive trend for this taxon in the oiled region, suggesting that recovery is underway.

*Harlequin Ducks.*-- Injury to Harlequin Ducks from the oil spill was documented for summer populations in PWS (Klosiewski and Laing 1994, Day et al. 1997, Irons et al. 2000), but effects were not detected after 1991 (Day et al. 1997, Irons et al. 2000). In contrast, data from Harlequin Duck specific surveys (July-September; Rosenberg and Petrula 1998) demonstrated that oiled and unoiled populations became more divergent during 1995-1997, suggesting continuing oil spill effects. Our homogeneity of slopes test and regressions on summer and winter densities in oiled areas relative to unoiled areas of PWS did not show any evidence of a recovering population.

Summer and winter populations of Harlequin Ducks in PWS represent different age/sex composition and structure. Summer populations in PWS are composed primarily of non-breeders and failed breeders, whereas winter populations include adult breeders (Rosenberg and Petrula 1998). Given the oil spill occurred in March, and that winter represents the period of maximum stability in Harlequin Duck populations (Rosenberg and Petrula 1998), one might predict that continuing impacts or recovery for Harlequin Ducks would be most evident in the winter population. Some studies have shown evidence of this. Winter survival rates for adult female Harlequin Ducks were lower in oiled areas of PWS than the unoiled areas between 1995-1998 (Esler et al. 2000), consistent with non-recovery. Modeling efforts using this survival data predicted a stable population in the unoiled area and a declining population in the oiled area. Further, Harlequin Ducks exhibit high winter site fidelity. While site fidelity is an adaptive

strategy in predictable environments (Hohman et al. 1992), it may not facilitate the enhancement of injured populations through immigration (D. Esler unpubl. data).

*“Scoters.”* -- Injury to “scoters” from the oil spill was documented for summer populations in PWS (Klosiewski and Laing 1994). The homogeneity of slopes test showed no trend for winter or summer populations of scoters. The regression on summer densities of “scoters” in the oiled areas of PWS also suggested no trend of recovery for this species; however, the regression analysis of winter densities in the oiled area show a positive trend for winter populations of “scoters.”

*Bufflehead.* -- Negative impacts to Bufflehead from the oil spill were documented in PWS for winter populations (Day et al. 1997). Both the homogeneity of slopes test as well as the regression on winter densities of Bufflehead in the oiled areas of PWS indicated no recovery for this species.

*“Goldeneyes.”* -- Negative impacts to “goldeneyes” from the oil spill were documented in PWS for summer (Irons et al. 2000) and fall populations (Day et al. 1997). Both the homogeneity of slopes test as well as the regression on winter and summer densities of “goldeneyes” in the oiled areas of PWS suggest no trend of recovery for this species.

*“Mergansers.”* -- Negative impacts to “mergansers” from the oil spill were documented in PWS for summer populations (Day et al. 1997, Irons et al. 2000). Regressions on the summer densities of “mergansers” in the oiled areas of PWS exhibited a significant decline, suggesting no trend of recovery for this species.

*Bald Eagles.* -- Negative impacts to Bald Eagles from the oil spill were documented in PWS in 1989 (Bernatowicz et al. 1996, Day et al. 1997), however, by 1990 there was evidence of recovery (White et al. 1993, Bernatowicz et al. 1996, Day et al. 1997). In 1989, a decline in nesting success was observed in western PWS (oiled) relative to eastern PWS (unoiled), but this difference disappeared in 1990 (Bernatowicz et al. 1996) and by 1995 the PWS population had returned to pre-spill levels (Bowman et al. 1997). Our regressions on winter data indicated an annual increase in eagle densities for both the oiled and unoiled portions of PWS between 1989 and 2005, consistent with a recovering population. The homogeneity of slopes test showed no difference in relative densities between the oiled and unoiled regions. Bowman et al. (1997) found accurate comparisons of population changes between oiled and unoiled areas difficult to make because of the high mobility of eagles; differences reflecting local shifts in distribution related to food supplies. In the case of Bald Eagles, assumptions of the homogeneity of slopes test may not be valid, lending strength to individual regression analyses. We therefore conclude that Bald Eagles are recovering.

Our regression results on winter densities are consistent with Bald Eagle specific surveys (Bowman et al. 1997), which document increases in PWS populations since 1982, and again since 1991. It is difficult to explain the sustained increase in PWS eagle numbers (similar increasing trends are documented for the Kodiak Archipelago, southeastern Alaska, and the Kodiak National Wildlife Refuge; Bowman et al. 1997) but it is possible that PWS-wide populations are rebounding from an earlier perturbation. Jacobson and Hodges (unpubl. MS) suggested that observed increases in southeast Alaska Bald Eagle populations between 1967 and 1997 were due to recovery from the effects of extensive bounty hunting earlier this century.

*Mew Gull.* -- Injury to Mew gulls from the oil spill was documented for summer populations in PWS (Klosiewski and Laing 1994, Day et al. 1997). The homogeneity of slopes test and regressions on both summer and winter densities of Mew Gulls in oiled areas of PWS indicated no trend of recovery for this species.

*Glaucous-winged Gull.* -- Injury to Glaucous-winged Gulls from the oil spill was documented for both winter and summer populations in PWS, though effects had disappeared by 1990 (Day et al. 1997). The homogeneity of slopes test and regressions on both summer and winter densities of Glaucous-winged Gulls in oiled areas of PWS indicated no trend of recovery for this species.

*Black-legged Kittiwakes.* -- Negative impacts to kittiwakes from the oil spill were documented in PWS for summer populations (Irons et al. 2000), however, these decreases were attributed to local shifts in foraging distributions related to temporally abundant food resources (eg. forage fish schools) rather than declines in populations. Regression on summer densities of kittiwakes in the oiled areas of PWS showed a significant negative trend, suggesting a decline in population for this species. Winter densities in both areas increased over the study period, they increased significantly more in unoiled areas than in oiled areas, according to our homogeneity of slopes test. Kittiwake productivity was lower than expected in the oiled area following the spill in 1989, while productivity in the unoiled area was high. Productivity declined even more in the oiled area and declined in the unoiled area through 1994 (Irons 1996). Poor productivity in oiled areas of PWS may have translated to low recruitment and may partially explain the negative trend in summer densities.

*“Terns.”* -- Negative impacts to “terns” from the oil spill were documented in PWS for summer populations (Klosiewski and Laing 1994). The regression on summer densities of “terns” in the oiled area showed a significant negative trend, suggesting a decline in population. Our data are consistent with recent surveys of tern colonies in PWS (summer 1999 and 2000), which revealed significant declines compared with pre-spill surveys, including the complete disappearance of colonies (USFWS unpubl. data).

*Black Oystercatcher.* -- Injury to Black Oystercatchers was documented for summer populations in 1989 and 1990 (Klosiewski and Laing 1994, Day et al. 1997, Murphy et al. 1997, Irons et al. 2000) but effects had largely dissipated after 1991 (Murphy et al. 1997, Irons et al. 2000). Effects were primarily due to breeding disruption during 1989 and 1990 by disturbance associated with cleanup and bioremediation activities (Sharp et al. 1996, Andres 1997). Studies conducted between 1992-93 (Andres 1999) found that effects from persistent shoreline oil on breeding success of oystercatchers were negligible. More recently, Murphy and Mabee (1998) showed that oystercatchers had fully re-occupied territories and were nesting at oiled sites in PWS, concluding that oiling did not affect breeding biology and success of oystercatchers in 1998.

The homogeneity of slopes test, as well as regression on summer densities of “Black Oystercatchers” in the oiled areas of PWS suggested no trend of recovery for this species. Murphy and Mabee (1998) found significantly lower breeding success in oiled areas of PWS, attributing predation as the driving mechanism. Predation on eggs and young can be high (Murphy and Mabee 1998, Andres 1999) and a dominant force in shaping oystercatcher populations, perhaps swamping out any oil effects on breeding success.

*Common Murres.* -- Injury to Common Murres from the oil spill was documented for non-breeding birds that spend the summer in PWS (Klosiewski and Laing 1994, Day et al. 1997, Irons et al. 2000) as well as winter populations (Day et al. 1997). The homogeneity of slopes test, as well as regressions on both summer and winter densities of Common Murres in the oiled areas, indicated no trend of recovery for this species. Murres are a common winter resident in PWS. However, numbers are highly variable, with peak winter numbers associated with anomalous oceanographic conditions (eg. El Niño) in the Gulf of Alaska (Piatt and Van Pelt 1997).

*Pigeon Guillemots.* -- Injury to Pigeon Guillemots from the oil spill was documented for both winter (Klosiewski and Laing 1994) and summer populations in PWS (Murphy et al. 1997, Irons et al. 2000). Guillemot populations have declined throughout PWS since 1972 and the estimated number of birds in the oiled areas of PWS during March 1990 was 33% less than expected relative to unoiled areas (Klosiewski and Laing 1994). In addition, population counts at Naked Island, PWS showed the population declined in the three years following the spill, and declines at colonies located along oiled shorelines were greater than unoiled sites (Oakley and Kuletz 1996). Homogeneity of slopes test and regressions on both summer and winter densities of Pigeon Guillemots in the oiled areas indicated no trend of recovery for this species. In fact, summer densities of birds in oiled areas showed significant negative trends, suggesting a population decline.

The oil spill did not have any detected effects on the abundance of shallow sub-tidal fishes (eg. gunnells, rockfishes, sculpins, blennies, etc.; Laur and Haldorson 1996), principal prey of guillemots (Golet et al. 2000). Chick growth and reproductive success in guillemots, however, is correlated with the percentage of high-lipid schooling fish (eg. sandlance) in the diet (Golet et al. 2000). The percent of high-lipid schooling fishes in chick diet at Naked Island, PWS was significantly greater pre-spill (1979-81) than post-spill (1989-90 and 1994-98; Golet et al. 1999). Whether this relative shift in diets is the result of the oil spill or the regime shift remains unclear.

*"Murrelets."* -- A minimum of 8,400 "murrelets" (both Marbled and Kittlitz's murrelet) were killed directly by exposure to oil, representing about 7% of the population in the spill zone (Kuletz 1996). Oil spill effects were detected for Marbled Murrelets in 1989, but disappeared by 1990 (Day et al. 1997, Kuletz 1996). There is evidence that cleanup and other spill-related activities disrupted nearshore murrelet distributions (Kuletz 1996), which may partially explain the oil spill effect during the summer following the spill. Our homogeneity of slopes test, as well as regression on winter densities of murrelets in the oiled and unoiled areas of PWS indicated no trend of recovery for either species. In fact, summer densities of Marbled Murrelets exhibited significant declines.

Different trends are noted as winter and summer densities are compared in the oiled and unoiled areas of PWS. While murrelets winter in PWS, numbers are only 20-30% of summer populations. Winter data may track earlier phenology of "murrelet" arrival in PWS between 1990-2005, due to changes in oceanography and associated schooling fish distribution in the Gulf of Alaska (Anderson and Piatt, 1999) and PWS. Spear and Ainley (1999) related annual variation in densities of Sooty Shearwaters (*Puffinus griseus*) to large-scale oceanic warming; resulting in a distributional shift in feeding location during the nonbreeding period. Since March marks the beginning of movement of murrelets into PWS, which peaks in April (Kuletz et al. 1995), a

temporal shift in winter distribution is plausible, particularly in light of four El Niños that have occurred since 1990 (Trenberth 1997). As with other alcids that visit colonies throughout the year (eg. Black Guillemot [*Cephus grylle*], Greenwood 1987; Common Murre, Harris and Wanless 1990), these winter murrelet populations may be comprised primarily of experienced breeding adults (see Naslund 1993) as opposed to a mix of breeders and non-breeders in summer. Thus, it is plausible that summer and winter survey data represent discrete populations, which may explain the different trends observed.

*Northwestern Crows.* -- Injury to Northwestern Crows from the oil spill was documented for both winter (Day et al. 1997) and summer populations in PWS (Klosiewski and Laing 1994). While the homogeneity of slopes test showed no significant difference in trends between oiled and unoiled areas for this species, the regression on summer densities of Northwestern Crows in the oiled area of PWS suggested recovery for this species.

### **Mechanism of Continuing Injury or Lack of Recovery**

Shoreline habitats in the oiled portions of PWS were impacted to various degrees by oiling. Natural weathering and flushing by high wave energy reduced the amount of oil in some areas of PWS. However, as recently as 2002 and 2003 some beaches in protected, low-energy areas still contained substantial amounts of oil in a toxic state in sediments (Jeff Short Unpubl. data). Further, *Exxon Valdez* oil, in a relatively unweathered state in sediments, was the source of the contamination of mussel beds. Contaminated sediments were acting as a reservoir, affecting chronic exposure of nearby mussels and other intertidal organisms (Harris et al. 1996). In addition, cleaning operations killed marine life which survived oiling and damaged intertidal habitats by altering shoreline sediment structure, which could ultimately affect repopulation of shorelines by sediment-dwelling invertebrates (e.g., clams, mussels; Mearns 1996). It follows that organisms, such as marine birds, which utilize these habitats may exhibit slow rates of recovery or continuing and increasing effects. Our trend data are consistent with this idea. Several of the species showing no evidence of recovery in one or both seasons (eg. Harlequin Ducks, “goldeneyes,” “mergansers,” Mew Gulls, Glaucous-winged Gulls, Black-legged Kittiwakes, Pigeon Guillemots, “scoters,” Marbled Murrelets, and Kittlitz’s Murrelets) use nearshore habitats. However, this trend is confounded by other species that also use nearshore habitats, yet did show some evidence of recovery (eg., Bald Eagles and Northwestern Crows). Thus, for both winter and summer populations, our results show taxa that utilize the nearshore environment in each status category. This suggests that for some of the species affected by the EVOS, factors other than use of nearshore habitat are contributing to observed trends.

The Nearshore Vertebrate Predator Project (Ballachey et al. 1999) assessed exposure of marine birds in PWS to oil using expression of cytochrome P4501A, an enzyme induced by exposure to polynuclear aromatic hydrocarbons or halogenated aromatic hydrocarbons. Higher levels of P4501A induction were found in oiled areas than unoiled areas for Harlequin Ducks and Barrow’s Goldeneyes (Ballachey et al. 1999), and Pigeon Guillemots (Golet et al. 2002). These results are consistent with our trends showing increasing effects (winter) for “goldeneyes” and no recovery in Harlequin Ducks and Pigeon Guillemots. The P4501A data are clear evidence of



greater contaminant exposure to organisms in oiled areas of PWS relative to unoiled areas (Ballachey et al. 1999). It is not known, however, what amount of oil is necessary to induce P4501A at the levels detected or the health consequences (e.g., survival, reproduction) of that much oil. In recent years the amount of oil ingested by some birds and mammals has been decreasing, suggesting that the habitat is recovering (Ballachy Unpubl. data).

### **Cumulative Impacts: Regime Shifts, Oil Spills, and Recovery**

Using trend data alone to assess impacts and recovery from a perturbation such as the EVOS is confounded by effects of natural temporal and geographic variation inherent in wildlife populations (Piatt et al. 1990b, Spies 1996, Wiens and Parker 1995). Population dynamics of marine birds may be carried out at large temporal and spatial scales (Wiens et al. 1996, Piatt and Anderson 1996) and against a backdrop of high natural variation in the marine environment (Piatt and Anderson 1996, Hayward 1997, Francis et al. 1998). Movement of birds between and within wintering and breeding grounds (Stowe 1982), juvenile dispersal (Harris 1983), and large pools of non-breeding individuals (Porter and Coulson 1987, Klomp and Furness 1992), may serve to mask local population changes, effectively buffering local effects over a broader region. Some studies of the EVOS (Day et al. 1997, Wiens et al. 1996) suggested that marine bird populations have a good deal of resiliency to severe but short-term perturbations, including the EVOS. This view is supported by the occurrence of large natural die-offs and reproductive failure of marine birds associated with reduced food supply and storms (Harris and Wanless 1984, Piatt and Van Pelt 1997). Interestingly, effects of these large die-offs on local populations are often difficult to detect or are small and transitory at the scale of most monitoring programs (Dunnet 1982, Stowe 1982, Harris and Wanless 1984, Piatt et al. 1990b, Wooller et al. 1992). Further, it is widely believed that marine bird populations are limited by resources with a 5-20% natural annual adult mortality rate (Piatt et al. 1990b). Under stable conditions this mortality would be compensatory (e.g., balanced by recruitment of adults into the breeding population).

This raises the question of the ability of marine birds to respond to long-term, chronic perturbations. In particular, if perturbations act in concert to have an additive effect on populations already stressed by other factors (eg. food shortages, winter storms, introduced predators, gill nets, disease, and long term oceanographic changes). In this study, we assumed that in the absence of an oil spill, marine bird populations in the oiled and unoiled portions of PWS, all things being equal, would exhibit similar trends; and as such, should have been affected to a similar degree by natural perturbations such as those at the scale of the North Pacific regime shift (Hayward 1997, Francis et al. 1998). Agler et al. (1999) compared surveys of marine birds in PWS in July 1972 with post-spill surveys in July 1989-1991, and 1993, and found that populations of several species of marine birds that feed on fish (“loons,” “cormorants,” “mergansers,” Glaucous-winged Gulls, Black-legged Kittiwakes, Arctic Terns, Pigeon Guillemots, and “murrelets”) had declined, while most of those species feeding on benthic invertebrates (“goldeneyes,” Harlequin Ducks, and Black Oystercatchers) did not decline. Similarly, many of the marine bird taxa showing declines in PWS declined on the Kenai Peninsula prior to the oil spill. Agler et al. (1999) suggested declines in

piscivorous marine birds were at least partially due to changes in the relative abundance of certain forage fish species that occurred during the climatic regime shift in the north Pacific Ocean in the mid 1970's (Hayward 1997, Francis et al. 1998, Anderson and Piatt, *in press*). Of the 14 taxa showing declines in PWS between 1972 and 1989-1993 (Agler et al. 1999), eight (“loons,” “cormorants,” “scoters,” “mergansers,” Black-legged Kittiwakes, “terns,” Pigeon Guillemots, and “murrelets”) were shown to have been negatively affected by the oil spill (Klosiewski and Laing 1994, Day et al. 1997, Wiens et al. 1996, Murphy et al. 1997, Irons et al. 2000). Of these eight taxa, only one (“cormorants”) showed evidence of recovery based on our trend data for summer densities and only three (“cormorants,” “loons,” and “scoters”) showed evidence of recovery based on winter densities. Thus, it appears that these taxa may be responding to the cumulative impacts of the regime shift (lowered prey availability and quality) and the oil spill, slowing recovery at the population level.

### **Interpreting and Defining Recovery**

Assessment of recovery from a perturbation is dependent upon the null hypothesis generated, the statistical test used and its associated power, and how recovery is defined. Numerous analytical methods have been used in assessing impacts and recovery of marine birds in PWS following the EVOS (Klosiewski and Laing 1994, Wiens et al. 1996, Day et al. 1997; Murphy et al. 1997, Irons et al. 2000). These methods differ in their approach, at times producing seemingly different results, or more appropriately the interpretation of those results, from similar data. Currently, there is no consensus on which methodology is the most suitable for assessing recovery; a pattern consistent with most studies monitoring long-term population change in birds (Thomas 1996).

Wiens and Parker (1995) defined impact as a statistically significant correlation between injury and exposure; recovery being the disappearance of such a correlation through time. In short, the burden of proof is placed on the data to establish injury and no recovery. This definition has been used by several studies (Wiens et al. 1996, Day et al. 1997, Murphy et al. 1997, and Irons et al. 2000) to assess injury and recovery of marine birds in PWS following EVOS. The latter studies rejection of the null hypothesis (no difference) constituted an effect, and the failure to reject in subsequent years was defined as recovery. In contrast, Agler and Kendall (1997) compared the slopes of regression lines from oiled and unoiled areas, defining recovery as population abundance increasing in the oiled area relative to the unoiled area (homogeneity of slopes test). Here the rejection of the null hypothesis (no difference) is interpreted as recovery if impacted populations have rates above those of the reference area, and not recovering if the rates of change were not significantly different or if impacted populations have rates below those of the reference area. In short, the failure to reject the null constituted non-recovery status. The “burden of proof” of recovery is on the data in this case. The result of these various definitions of recovery (based on different criteria) is that data collected on the same population of birds can produce different conclusions regarding recovery status. Thus, while the proximate definition of recovery is based on objective analytical criteria, the ultimate definition is dependent on the more subjective choice of statistical model and numerical values of criteria employed. In our opinion, rigid application of

these definitions of recovery accounts for much of the divergence in conclusions over the impacts and recovery of marine bird populations in PWS following the EVOS [Wiens et al. (1996), Day et al. (1997), Murphy et al. (1997), Irons et al. (2000), and this study].

## CONCLUSIONS

Few other studies of marine birds have persisted for such a long period of time after a large environmental perturbation, such as the *T/V Exxon Valdez* oil spill. Thus, we had the opportunity to examine the effect of an oil spill on an area over time. Most data on the population trends of marine and coastal birds have been collected on a short-term basis or opportunistically over a large area. Long-term studies traditionally have been on a single species, usually at a colony (Wooller et al. 1992), but this survey covered a large area and collected data on several species.

Based on our assumption that with the absence of the oil spill, populations in the oiled zone would change at the same rate as those in the unoiled zone, we found for the designated injured species or species groups of marine birds and mammals that Harlequin Ducks, Black Oystercatchers, Common Murres, Pigeon Guillemots, Marbled Murrelets, Kittlitz's Murrelets, and sea otters did not show evidence of recovery from the spill.

In summary, our study indicates that most of the designated injured taxa as well as the taxa for which injury was previously demonstrated are not recovering. We show evidence of slow recovery, lack of recovery, and divergent population trends in many taxa that utilize shoreline and nearshore habitats where oil is likely to persist. These potential lingering spill effects and natural variability appear to be acting in concert in delaying recovery of many PWS bird populations.

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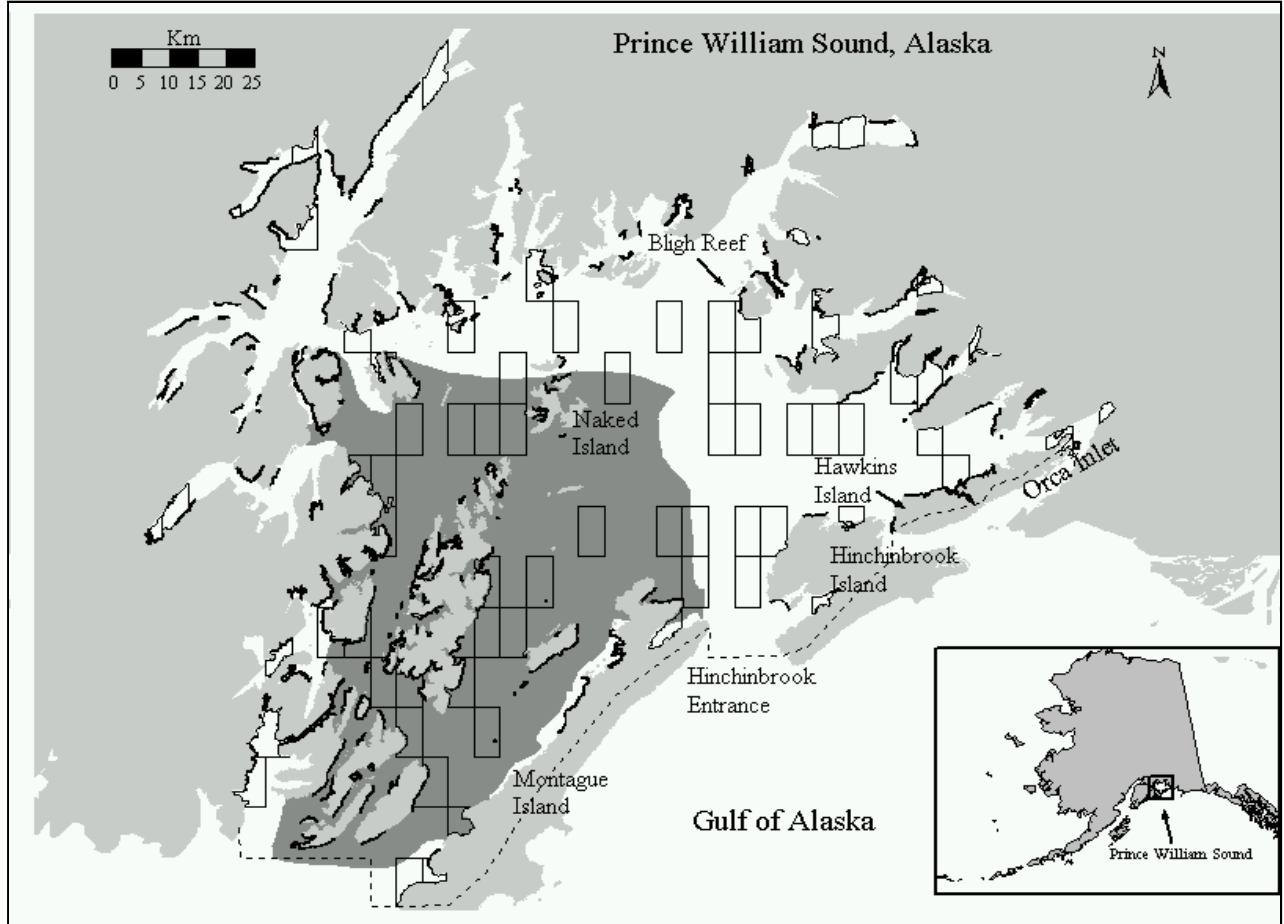
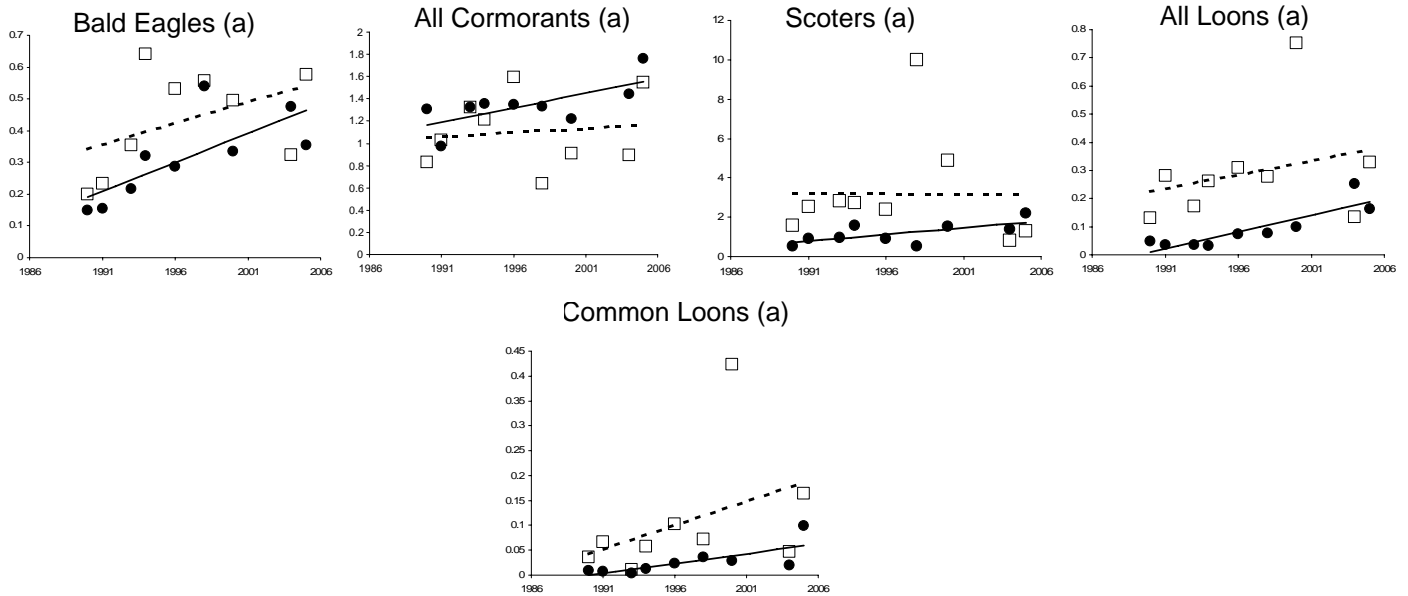


Figure 1. Map of the study area with shoreline transects and pelagic blocks surveyed in Prince William Sound during July 1990-91 (Klosiewski and Laing 1994), 1993 (Agler et al. 1994), 1996 (Agler and Kendall 1997), 1998 (Lance et al. 1999), 2000 (Stephensen et al. 2001), and 2004; and March 1990-91 (Klosiewski and Laing 1994), 1993 (Agler et al. 1994), 1994 (Agler et al. 1995), 1996 (Agler and Kendall 1997), 1998 (Lance et al. 1999), 2000 (Stephensen et al. 2000), and 2004. A subset of these transects were surveyed in July 1989 (Klosiewski and Laing 1994) and during the March surveys. The dark shading indicates the area oiled by the *T/V Exxon Valdez* oil spill in March 1989.

## Significant Positive Trends [Relative (r) or Absolute (a)] in Oiled Area



## Significant Negative Trends [Relative (r) or Absolute (a)] in Oiled Area

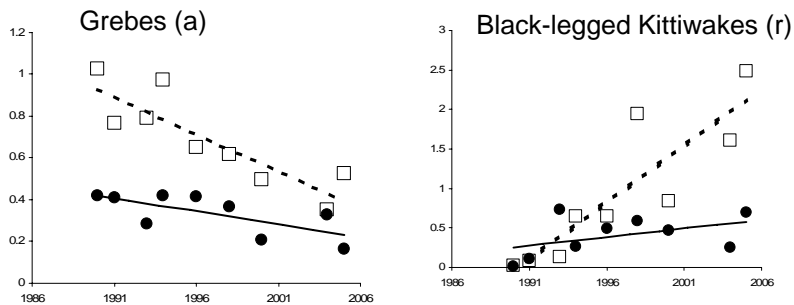
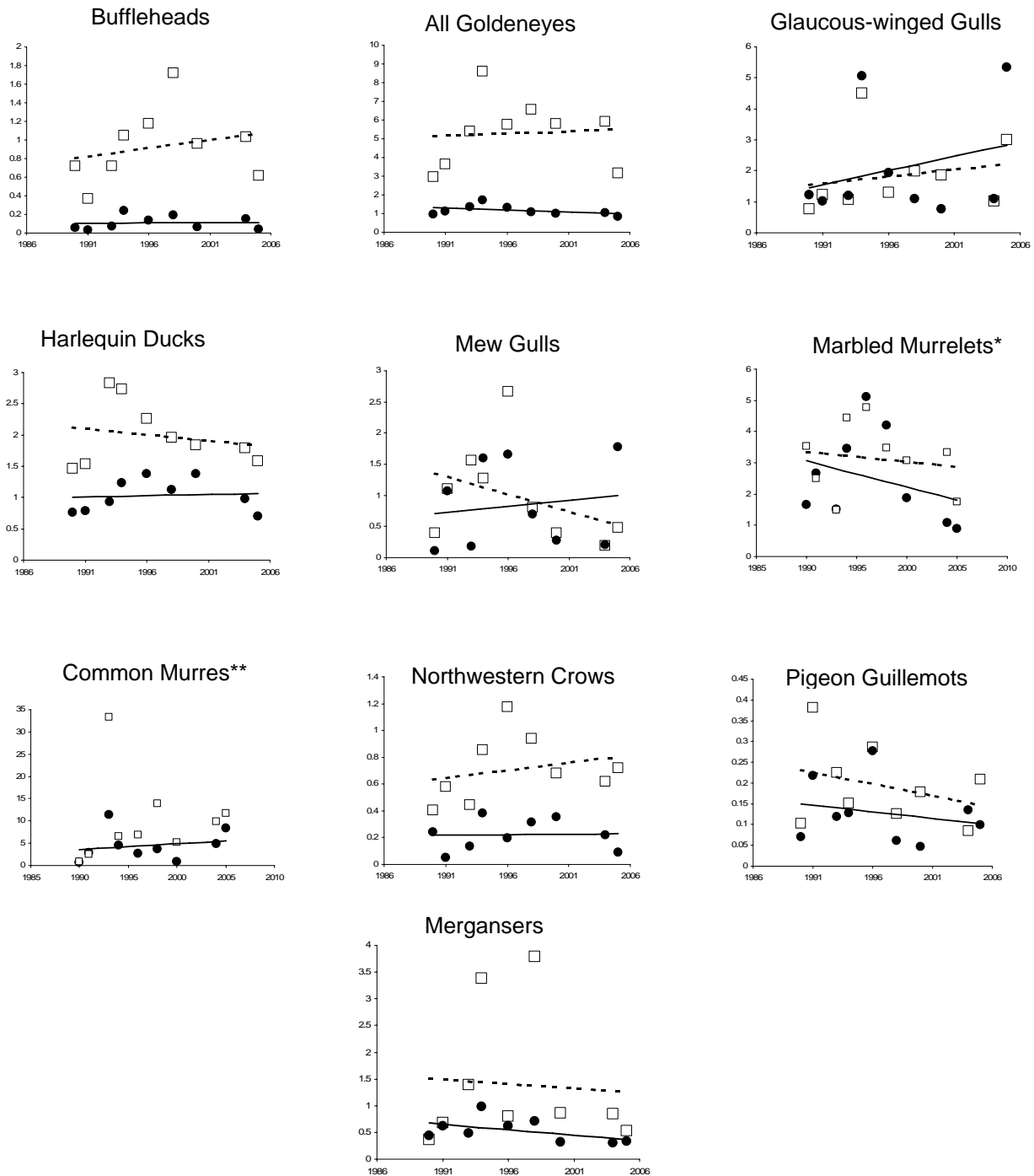


Figure 2. Changes in March densities (birds/km<sup>2</sup>) of taxa, between 1990 and 2005, in unoiled (squares) and oiled (circles) areas of Prince William Sound, Alaska. Absolute trend (a) refers to a statistically significant trend in the oiled area; relative trend (r) refers to a statistically significant trend in the oiled area relative to the unoiled area. X axis = year, Y axis = density.

Figure 2, cont'd

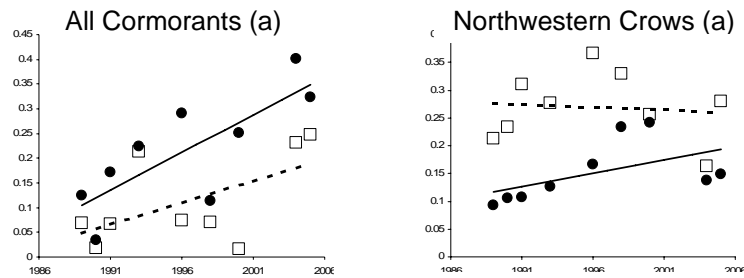
No Trends



\*Includes unidentified *Brachyramphus* murrelets

\*\* Includes unidentified murrelets

### Significant Positive Trends [Relative (r) or Absolute (a)] in Oiled Area



### Significant Negative Trends [Relative (r) or Absolute (a)] in Oiled Area

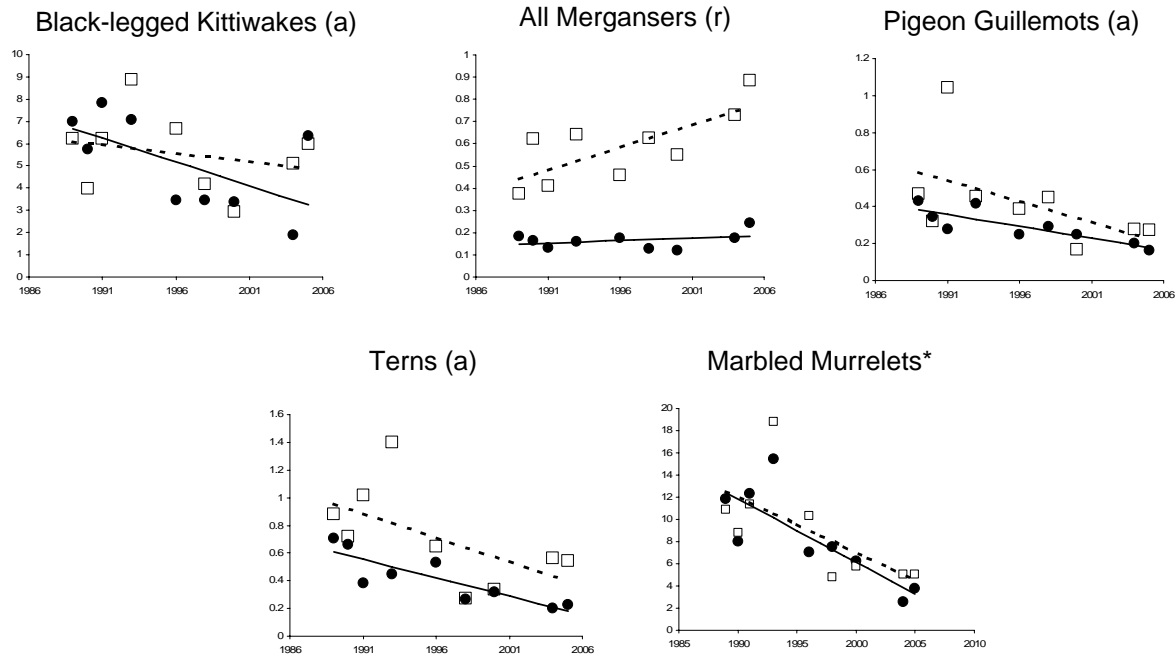
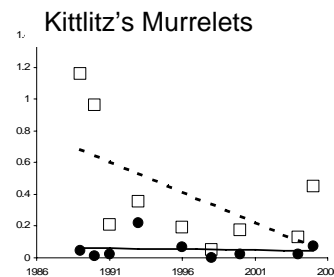
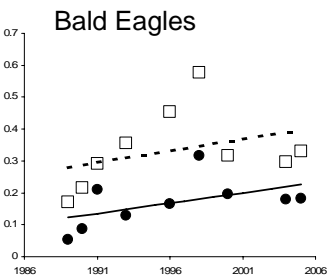
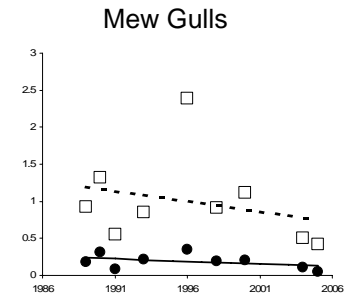
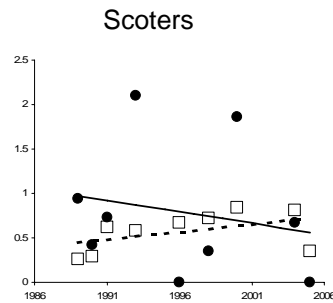
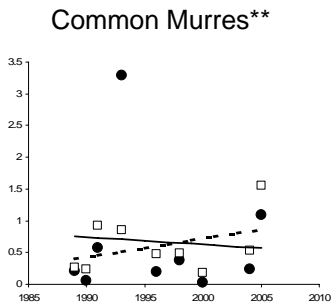
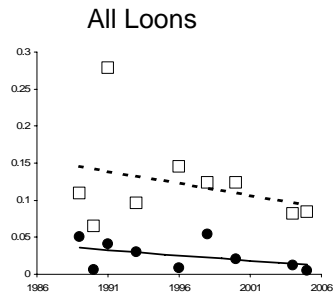
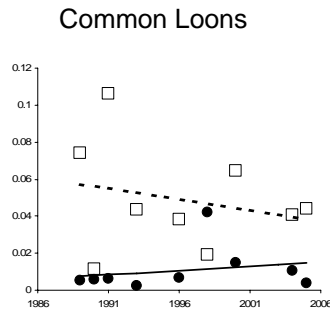
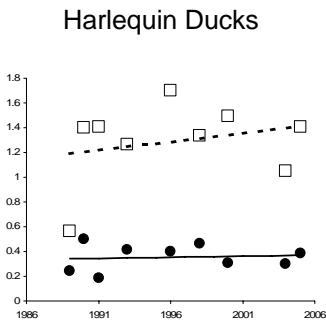
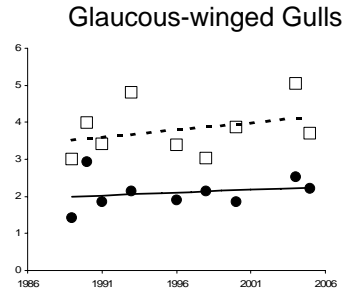
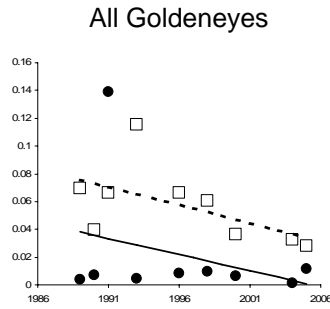
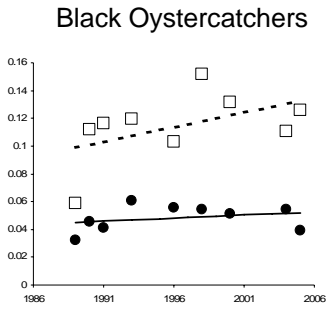


Figure 3. Changes in July densities (birds/km<sup>2</sup>) of taxa, between 1989 and 2005, in unoiled (squares) and oiled (circles) areas of Prince William Sound, Alaska. Absolute trend (a) refers to a statistically significant trend in the oiled area; relative trend (r) refers to a statistically significant trend in the oiled area relative to the unoiled area. X axis = year, Y axis = density.  
Appendix A. Common and scientific names of bird species/species groups mentioned in text.



Figure 3, cont'd

No Trends



\*Includes unidentified *Brachyramphus* murrelets

\*\* Includes unidentified murrelets

Taxa	Oiled area relative to unoiled		Oiled Slope		Unoiled Slope	
	Trend in March	Trend in July	Trend in March	Trend in July	Trend in March	Trend in July
Bald Eagles	0	0	+1***	+1*	+1*	0
Black-legged Kittiwakes	-1****	0	+1*	-1**	+1****	0
Black Oystercatchers	nd <sup>b</sup>	0	nd	0	nd	+1*
Bufflehead	0	nd	0	nd	0	nd
"Cormorants"	0	0	+1***	+1***	0	+1*
"Goldeneyes"	0	0	0	0	0	-1**
"Grebes"	0	nd	-1***	nd	-1****	nd
Glaucous-winged Gulls	0	0	0	0	0	0
Harlequin Ducks	0	0	0	0	0	0
"Loons"	0	0	+1****	-1*	0	0
Common Loon	0	0	+1***	0	0	0
Mew Gulls	0	0	0	0	-1*	0
"Mergansers"	0	-1**	-1*	0	0	+1****
Marbled Murrelets <sup>c</sup>	0	0	0	-1****	0	-1****
Kittlitz's Murrelets	nd	+1*	nd	0	nd	-1*
Common Murre <sup>d</sup>	0	0	0	0	0	0
Northwestern Crows	0	+1*	0	+1**	0	0
Pigeon Guillemots	0	0	0	-1***	0	-1**
"Scoters"	+1*	0	+1**	0	0	0
"Terns"	nd	0	nd	-1****	nd	-1**
Sea Otters	0	0	-1*	0	0	0

<sup>a</sup>Trends for the oiled and unoiled areas were determined by regression analyses and refer to an absolute change in the oiled and unoiled area. Trends in oiled area relative to the unoiled area were determined by homogeneity of slopes test and refer to change in the oiled area relative to the unoiled area (+1 = increasing density, 0 = no change, and -1 = decreasing density). An increasing trend in the oiled area, whether absolute or relative to the unoiled area, suggests recovery is occurring. No absolute or relative change in the oiled area suggests that recovery is not occurring. A negative trend in the oiled area relative to the unoiled area suggests that the impact is increasing with time.

<sup>b</sup>nd = no data, Birds were either not present or too rare to analyze during this season. <sup>c</sup>Includes unidentified murrelets. <sup>d</sup>Includes unidentified murrelets.

\*p#0.20.

\*\*p#0.10.

\*\*\* p#0.05.  
 \*\*\*\* p#0.01.

Appendix B. Results of homogeneity of slopes test ( $P \# 0.20$ ) for injured species/species groups from March (1990-91, 1993, 1994, 1996, 1998, 2000, 2004, and 2005). Winter resident marine bird species/species groups with 7 year population estimate of >500 birds were used. NR = no recovery, NR\* = no recovery and significant negative trend in oiled area, IE = Increasing effects, and R = recovery. Regression results are coded as follows:  $p <= 0.01$  \*\*\*\*,  $p <= 0.05$  \*\*\*,  $p <= 0.10$  \*\*,  $p <= 0.20$  \*. <sup>a</sup>Includes unidentified murrelets. <sup>b</sup>Includes unidentified murrees.

Taxon	Comparison of slopes	Oiled Area Regression			Unoiled Area Regression	
		p value (trend)	Slope	Trend	Direction	Slope
Bald Eagles	0.55 (NR)	0.04****	R	+	0.03*	+
Black-legged Kittiwakes	0.02 (NR)	0.053*	R	+	0.16****	+
Bufflehead	0.60 (NR)	0.003	NR	0	0.02	0
"Cormorants"	0.52 (NR)	0.017****	R	+	0.004	0
"Goldeneyes"	0.41 (NR)	-0.016	NR	0	0.01	0
"Grebes"	0.28 (NR)	-0.027****	NR	-	-0.04****	-
Glaucous-winged Gulls	0.95 (NR)	0.027	NR	0	0.03	0
Harlequin Ducks	0.67 (NR)	0.003	NR	0	-0.01	0
"Loons"	0.36 (NR)	0.041****	R	+	0.02	0
Common Loon	0.65 (NR)	0.019****	R	+	0.03	0
Mew Gulls	0.25 (NR)	0.02	NR	0	-0.06*	-
"Mergansers"	0.60 (NR)	-0.032*	NR	-	0.004	0
Marbled Murrelets <sup>a</sup>	0.40 (NR)	-0.050	NR	0	-0.009	0
Common Murrees <sup>b</sup>	0.68 (NR)	0.050	NR	0	0.080	0
Northwestern Crows	0.65 (NR)	0.004	NR	0	0.02	0
Pigeon Guillemots	0.89 (NR)	-0.009	NR	0	-0.01	0
"Sooters"	0.76 (NR)	-0.05****	NR*	-	-0.04**	-
Sea Otters	0.20 (NR)	-0.098*	NR*	-	0.010	0

Appendix C. Results of homogeneity of slopes test ( $P \# 0.20$ ) for injured species/species groups from July (1989-91, 1993, 1996, 1998, 2000, 2004, and 2005). Breeding marine bird species/species groups with 7 year average population estimates of >500 birds were used. NR = no recovery, NR\* = no recovery and significant negative trend in oiled area, IE = increasing effects, and R = recovery. Regression results are coded as follows:  $p <= 0.01$  \*\*\*\*,  $p <= 0.05$  \*\*\*,  $p <= 0.10$  \*\*,  $p <= 0.20$  \*. <sup>a</sup>Includes unidentified murrelets. <sup>b</sup>Includes unidentified murrees.

Taxon	Comparison of slopes p value (trend)	Oiled Area Regression			Unooled Area Regression	
		Slope	Trend	Direction	Slope	Direction
Bald Eagles	0.81 (NR)	0.02*	R	+	0.02	0
Black-legged Kittiwakes	0.26 (NR)	-0.05**	NR*	-	-0.01	0
Black Oystercatchers	0.28 (NR)	0	NR	0	0.01*	+
"Cormorants"	0.56 (NR)	0.04**	R	+	0.03*	+
"Goldeneyes"	0.85 (NR)	-0.01	NR	0	-0.01**	-
Glaucous-winged Gulls	0.97 (NR)	0.01	NR	0	0.01	0
Harlequin Ducks	0.7 (NR)	0.01	NR	0	0.01	0
"Loons"	0.83 (NR)	-0.01*	NR*	-	-0.01	0
Common Loon	0.62 (NR)	0	NR	0	0	0
Mew Gulls	0.79 (NR)	-0.02	NR	0	-0.03	0
"Mergansers"	0.09 (NR)	0.01	NR	0	0.03***	+
Marbled Murrelets <sup>a</sup>	0.41 (NR)	-0.08****	NR*	-	-0.06***	-
Kittlitz's Murrelets	0.18 (R)	0	NR	0	-0.06*	-
Common Murrees <sup>b</sup>	0.72 (NR)	0.007	NR	0	0.030	0
Northwestern Grows	0.17 (R)	0.02*	R	+	0	0
Pigeon Guillemots	0.73 (NR)	-0.03****	NR*	-	-0.04**	-
"Sooters"	0.22 (NR)	-0.05	NR	0	0.03	0
"Terns"	0.76 (NR)	-0.05****	NR*	-	-0.04**	-
Sea Otters	0.92 (NR)	0.000	NR	0	0.000	0

Appendix D. Results of regression analyses for injured species/species groups and sea otter population density trends from March and July 1989-2005 for entire Prince William Sound.

<sup>a</sup>Includes unidentified murrelets. <sup>b</sup>Includes unidentified murrelets. <sup>a</sup>Includes unidentified murrelets.

<sup>b</sup>Includes unidentified murrelets.

Taxon	March		July	
	slope	p	slope	p
Bald Eagles	0.03	0.06	0.02	0.19
Black-legged Kittiwakes	0.13	0.00	-0.02	0.20
Black Oystercatchers	nd	nd	0.01	0.27
Buffleheads	0.02	0.50	nd	nd
"Cormorants"	0.01	0.43	0.04	0.03
"Goldeneyes"	0.00	0.88	-0.01	0.09
"Grebes"	-0.04	0.00	nd	nd
Glaucous-winged Gulls	0.03	0.42	0.01	0.34
Harlequin Ducks	0.00	0.78	0.01	0.44
"Loons"	0.03	0.11	-0.01	0.39
Common Loon	0.03	0.13	0.00	0.68
Mew Gulls	-0.03	0.52	-0.03	0.30
"Mergansers"	-0.01	0.73	0.02	0.03
Marbled Murrelets <sup>a</sup>	-0.02	0.47	-0.07	0.01
Kittlitz's Murrelets	nd	nd	-0.05	0.12
Common Murres <sup>b</sup>	0.07	0.25	0.02	0.64
Northwestern Crows	0.01	0.44	0.00	0.62
Pigeon Guillemots	-0.01	0.51	-0.03	0.03
"Scoters"	0.00	0.95	0.00	0.87
"Terns"	nd	nd	0.01	0.32
Sea Otters	0.00	0.98	0.00	0.98

Appendix E: Common and scientific names of bird species/species groups mentioned in text

Species/Species Group	Common Name	Scientific Name
“loons”	Red-throated Loon	<i>Gavia stellata</i>
	Pacific Loon	<i>Gavia pacifica</i>
	Common Loon	<i>Gavia immer</i>
	Yellow-billed Loon	<i>Gavia adamsii</i>
“grebes”	Horned Grebe	<i>Podiceps auritus</i>
	Red-necked Grebe	<i>Podiceps grisegena</i>
“cormorants”	Double-crested Cormorant	<i>Phalacrocorax auritus</i>
	Pelagic Cormorant	<i>Phalacrocorax pelagicus</i>
	Red-faced Cormorant	<i>Phalacrocorax urile</i>
Harlequin Duck	Harlequin Duck	<i>Histrionicus histrionicus</i>
Long-tailed Duck	Long-tailed Duck	<i>Clangula hyemalis</i>
“scoters”	Black Scoter	<i>Melanitta nigra</i>
	Surf Scoter	<i>Melanitta perspicillata</i>
	White-wing Scoter	<i>Melanitta fusca</i>
“goldeneyes”	Common Goldeneye	<i>Bucephala clangula</i>
	Barrow’s Goldeneye	<i>Bucephala islandica</i>
Bufflehead	Bufflehead	<i>Bucephala albeola</i>
“mergansers”	Common Merganser	<i>Mergus merganser</i>
	Red-breasted Merganser	<i>Mergus serrator</i>
Bald Eagle	Bald Eagle	<i>Haliaeetus leucocephalus</i>
Black Oystercatcher	Black Oystercatcher	<i>Haematopus bachmani</i>
Mew Gull	Mew Gull	<i>Larus canus</i>
Glaucous-winged Gull	Glaucous-winged Gull	<i>Larus glaucescens</i>

Appendix E (continued).

Species/Species Group	Common Name	Scientific Name
Black-legged Kittiwake	Black-legged Kittiwake	<i>Rissa trydactyla</i>
“terns”	Caspian Tern	<i>Sterna caspia</i>
	Arctic Tern	<i>Sterna paradisaea</i>
	Aleutian Tern	<i>Sterna aleutica</i>
“murre”	Common Murre	<i>Uria aalga</i>
	Thick-billed Murre	<i>Uria lomvia</i>
Pigeon Guillemot	Pigeon Guillemot	<i>Cepphus columba</i>
“murrelets”	Marbled Murrelet	<i>Brachyramphus marmoratus</i>
	Kittlitz’s Murrelet	<i>Brachyramphus brevirostris</i>
Northwestern Crow	Northwestern Crow	<i>Corvus caurinus</i>

Appendix F. Overall population trends for marine birds in Prince William Sound.

*Population Estimates.* -- In March 2005, we estimated that  $273,068 \pm 39,380$  marine birds were in Prince William Sound (Appendix J). We estimated  $90,457 \pm 23,823$  marine birds were in the oiled zone and  $182,610 \pm 31,718$  birds were in the unoiled zone (Appendix K). During July 2005, an estimated  $194,780 \pm 25,053$  marine birds were in Prince William Sound (Appendix J). We estimated  $65,103 \pm 14,521$  marine birds were in the oiled zone and  $129,677 \pm 20,508$  birds were in the unoiled zone (Appendix K). Population estimates for individual species and species groups are listed in Appendix H. In March, densities were  $30.4$  birds/km<sup>2</sup> for the whole Sound,  $25.3$  birds/km<sup>2</sup> in the oiled zone, and  $33.8$  birds/km<sup>2</sup> in the unoiled zone. In July, densities were  $22.5$  birds/km<sup>2</sup> for the whole Sound,  $18.2$  birds/km<sup>2</sup> in the oiled zone, and  $24.0$  birds/km<sup>2</sup> in the unoiled zone.

*Overall Population Trends within Prince William Sound.* -- To examine population trends from 1989-2005 for the entire Sound, we calculated linear regressions of total densities for each species or species group for March and July. We found a significant negative trend in the total density of marine birds in Prince William Sound for both March ( $P = 0.02$ , slope =  $-0.33$ ) and July ( $P = 0.02$ , slope =  $-0.04$ ). In March, we found that PWS-wide densities of Bald Eagles and Black-legged Kittiwakes increased significantly, while “grebes” declined significantly ( $P < 0.10$ ). In July, the overall density of “cormorants” and “mergansers” increased significantly; while the overall densities of “goldeneyes,” Marbled Murrelets, and Pigeon Guillemots in PWS decreased significantly ( $P < 0.10$ ).



Appendix G. Overall population trends for sea otters in Prince William Sound.

*Population Estimates.*-- In 2005, we estimated that  $6,551 \pm 2,202$  sea otters were in Prince William Sound in March, and  $5,260 \pm 2,125$  otters were in Prince William Sound in July. In the oiled zone, the population estimate was  $983 \pm 583$  otters in March and  $1,564 \pm 1,497$  otters in July. In the unoiled zone, the population was estimated as  $5,568 \pm 2,137$  otters in March and  $3,695 \pm 1,519$  otters in July.

*Trends from Homogeneity of Slopes Test.*-- We found no significant trends in sea otter densities in the oiled region in either month.

*Overall Trends within Prince William Sound.*-- Within Prince William Sound as a whole, we found that the sea otter population had no significant trend in either March ( $P = 0.98$ , slope = 0.0004) or July ( $P = 0.98$ , slope = -0.0003).

*Conclusions.*-- Sea otters, a designated injured species, showed results indicative of no recovery in both months; in fact, winter densities exhibited a significant negative trend in the oiled area. Sea otter populations within Prince William Sound were expanding their numbers and distribution prior to the oil spill (Irons et al. 1988a).

Appendix H: Population estimates, confidence intervals, and densities (birds/km2) for birds recorded in PWS surveys, 1989-2005. nd = no data recorded.

Taxon	Year	March									July								
		POPULATION ESTIMATES						DENSITIES			POPULATION ESTIMATES						DENSITIES		
		Oiled Area		Unoiiled Area		Total		Oil	Unoil	Total	Oiled Area		Unoiiled Area		Total		Oil	Unoil	Total
<b>BIRDS</b>																			
<b>Gaviiformes</b>																			
<i>Gaviidae: Loons</i>																			
Red-throated Loon	1989																		
	1990	<0.005 ±	<0.005	7.56 ±	13.82	7.56 ±	13.74	<0.005	0.00	0.00	0.51 ±	0.84	2.67 ±	4.33	3.18 ±	4.40	0.00	0.00	0.00
	1991	<0.005 ±	<0.005	89.76 ±	164.96	89.76 ±	164.10	<0.005	0.02	0.01	<0.005 ±	<0.005	110.07 ±	195.65	110.07 ±	195.28	<0.005	0.02	0.01
	1993	73.86 ±	122.83	15.53 ±	28.81	89.39 ±	124.66	0.02	0.00	0.01	<0.005 ±	<0.005	13.46 ±	16.87	13.46 ±	16.84	<0.005	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	12.27 ±	15.80	<0.005 ±	<0.005	12.27 ±	15.63	0.00	<0.005	0.00	<0.005 ±	<0.005	58.34 ±	76.87	58.34 ±	76.73	<0.005	0.01	0.01
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.50 ±	31.75	51.78 ±	52.74	70.28 ±	61.40	0.01	0.01	0.01
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.59 ±	9.07	3.27 ±	5.36	8.85 ±	10.50	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52 ±	0.86	42.91 ±	43.48	43.43 ±	43.41	0.01	0.00	0.01
	Pacific Loon	1989																	
1990		<0.005 ±	<0.005	64.63 ±	118.01	64.63 ±	117.39	<0.005	0.01	0.01	<0.005 ±	<0.005	80.41 ±	100.11	80.41 ±	99.93	<0.005	0.01	0.01
1991		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.35 ±	61.36	48.97 ±	41.89	86.33 ±	74.00	0.01	0.01	0.01
1993		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80 ±	4.57	87.65 ±	92.01	90.46 ±	91.95	0.00	0.02	0.01
1994		18.41 ±	18.05	187.79 ±	202.71	206.19 ±	202.39	0.01	0.03	0.02									
1996		0.18 ±	0.33	242.05 ±	305.22	242.22 ±	303.63	0.00	0.04	0.03	<0.005 ±	<0.005	322.03 ±	254.17	322.03 ±	253.69	<0.005	0.06	0.04
1998		6.14 ±	11.31	707.28 ±	1039.75	713.41 ±	1034.47	0.00	0.13	0.08	2.89 ±	4.69	47.75 ±	39.48	50.64 ±	39.68	0.00	0.01	0.01
2000		6.14 ±	11.25	194.48 ±	330.44	200.62 ±	328.93	0.00	0.04	0.02	<0.005 ±	<0.005	13.46 ±	17.39	13.46 ±	17.36	<0.005	0.00	0.00
2004		23.40 ±	25.46	172.51 ±	193.11	195.91 ±	193.71	0.01	0.03	0.02	<0.005 ±	<0.005	103.37 ±	80.75	103.37 ±	80.59	<0.005	0.02	0.01
2005		<0.005 ±	<0.005	323.55 ±	267.84	323.55 ±	266.40	<0.005	0.06	0.04	2.86 ±	4.66	115.73 ±	124.17	118.59 ±	124.01	0.02	0.00	0.01
Common Loon		1989																	
	1990	33.05 ±	26.61	194.38 ±	240.35	227.42 ±	240.54	0.01	0.04	0.03	18.87 ±	19.14	400.97 ±	267.22	419.84 ±	267.08	0.01	0.07	0.05
	1991	24.54 ±	25.39	361.75 ±	393.24	386.30 ±	391.99	0.01	0.07	0.04	19.74 ±	13.05	62.73 ±	44.96	82.48 ±	46.71	0.01	0.01	0.01
	1993	11.13 ±	14.09	55.79 ±	45.16	66.93 ±	47.02	0.00	0.01	0.01	8.41 ±	9.98	235.67 ±	163.87	244.08 ±	163.86	0.00	0.04	0.03
	1994	45.41 ±	34.86	307.97 ±	210.05	353.37 ±	211.72	0.01	0.06	0.04									
	1996	81.11 ±	70.44	554.77 ±	413.31	635.88 ±	417.02	0.02	0.10	0.07	23.97 ±	24.69	207.21 ±	140.22	231.18 ±	142.10	0.01	0.04	0.03
	1998	128.66 ±	59.28	385.71 ±	237.60	514.36 ±	243.54	0.04	0.07	0.06	149.79 ±	213.93	103.21 ±	38.81	253.00 ±	216.39	0.04	0.02	0.03
	2000	101.04 ±	102.56	2288.72 ±	3298.38	2389.76 ±	3283.02	0.03	0.42	0.27	53.36 ±	34.50	349.54 ±	311.42	402.90 ±	312.73	0.01	0.06	0.05
	2004	73.92 ±	69.65	256.40 ±	225.92	330.32 ±	235.03	0.02	0.05	0.04	37.34 ±	61.32	220.76 ±	119.00	258.10 ±	133.53	0.01	0.04	0.03
	2005	351.08 ±	264.13	882.88 ±	612.45	1233.96 ±	662.85	0.10	0.16	0.14	14.28 ±	12.19	237.26 ±	140.30	251.54 ±	140.54	0.04	0.00	0.03
	Yellow-billed Loon	1989																	
1990		<0.005 ±	<0.005	22.68 ±	31.41	22.68 ±	31.24	<0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1991		6.14 ±	10.92	40.58 ±	68.08	46.72 ±	68.58	0.00	0.01	0.01	5.38 ±	6.14	0.26 ±	0.44	5.64 ±	6.13	0.00	0.00	0.00
1993		<0.005 ±	<0.005	23.29 ±	24.86	23.29 ±	24.73	<0.005	0.00	0.00	<0.005 ±	<0.005	50.66 ±	77.43	50.66 ±	77.29	<0.005	0.01	0.01
1994		24.54 ±	26.33	115.31 ±	171.64	139.85 ±	172.68	0.01	0.02	0.02									
1996		74.38 ±	123.28	15.35 ±	18.94	89.73 ±	123.37	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1998		93.70 ±	159.62	<0.005 ±	<0.005	93.70 ±	157.86	0.03	<0.005	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2000		<0.005 ±	<0.005	206.29 ±	369.52	206.29 ±	367.62	<0.005	0.04	0.02	<0.005 ±	<0.005	4.49 ±	7.69	4.49 ±	7.68	<0.005	0.00	0.00
2004		12.45 ±	15.97	15.43 ±	19.60	27.88 ±	25.09	0.00	0.00	0.00	<0.005 ±	<0.005	59.55 ±	90.71	59.55 ±	90.53	<0.005	0.01	0.01
2005		13.39 ±	16.05	13.90 ±	18.24	27.29 ±	24.11	0.00	0.00	0.00	<0.005 ±	<0.005	3.28 ±	5.33	3.28 ±	5.32	0.00	<0.005	0.00
Unidentified Loon		1989																	
	1990	134.49 ±	171.33	409.12 ±	266.12	543.62 ±	314.32	0.04	0.08	0.06	153.22 ±	223.43	62.65 ±	86.51	215.87 ±	238.13	0.04	0.01	0.02
	1991	95.73 ±	119.50	1015.10 ±	1118.41	1110.82 ±	1118.83	0.03	0.19	0.12	2.80 ±	4.60	201.20 ±	211.53	204.00 ±	211.18	0.00	0.04	0.02
	1993	41.27 ±	34.35	829.97 ±	638.91	871.24 ±	636.38	0.01	0.15	0.10	81.17 ±	108.75	769.73 ±	840.79	850.90 ±	846.16	0.02	0.14	0.10
	1994	30.68 ±	44.04	795.93 ±	905.55	826.60 ±	901.63	0.01	0.15	0.09	96.69 ±	126.34	131.96 ±	103.08	228.65 ±	162.47	0.03	0.02	0.03
	1996	107.74 ±	169.93	859.83 ±	953.36	967.57 ±	963.16	0.03	0.16	0.11	5.61 ±	9.13	254.94 ±	246.63	260.54 ±	246.34	0.00	0.05	0.03
	1998	36.81 ±	24.85	397.12 ±	386.04	433.93 ±	384.85	0.01	0.07	0.05	42.14 ±	45.06	455.89 ±	321.36	498.03 ±	323.89	0.01	0.08	0.06
	2000	241.67 ±	344.90	1376.84 ±	977.00	1618.51 ±	1030.10	0.07	0.25	0.18	<0.005 ±	<0.005	248.21 ±	376.33	248.21 ±	375.63	<0.005	0.05	0.03
	2004	788.23 ±	1190.61	276.06 ±	278.57	1064.29 ±	1209.79	0.22	0.05	0.12	0.16 ±	0.26	52.15 ±	48.02	52.31 ±	47.92	0.00	0.01	0.01
	2005	212.73 ±	322.09	550.07 ±	475.57	762.80 ±	570.34	0.06	0.10	0.08	1.04 ±	1.71	56.96 ±	56.45	58.00 ±	56.36	0.01	0.00	0.01



**Procellariiformes**

*Procellariidae: Shearwaters and Petrels*

Northern Fulmar	1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.23 ±	37.84	16.54 ±	28.94	38.77 ±	47.46	0.01	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	40.58 ±	67.69	40.58 ±	67.56	<0.005	0.01	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1034.90 ±	875.45	549.27 ±	336.57	1584.17 ±	933.77	0.29	0.10	0.18
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	4.49 ±	7.83	4.49 ±	7.81	<0.005	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	113.09 ±	133.07	<0.005 ±	<0.005	113.09 ±	132.43	0.03	<0.005	0.01
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sooty Shearwater	1989									36.93 ±	45.52	41.36 ±	51.47	78.29 ±	68.39	0.01	0.01	0.01
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1365.59 ±	2464.26	16186.49 ±	27891.08	17552.08 ±	27947.57	0.38	3.00	2.03
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.09 ±	23.01	148.12 ±	257.50	160.22 ±	258.01	0.03	0.00	0.02
Short-tailed Shearwater	1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unidentified Shearwater	1989									186.75 ±	307.11	<0.005 ±	<0.005	186.75 ±	305.08	0.05	<0.005	0.02
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.64 ±	54.92	<0.005 ±	<0.005	33.64 ±	54.66	0.01	<0.005	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2955.87 ±	5197.09	35472.52 ±	61745.29	38428.39 ±	61845.89	0.83	6.56	4.45
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.34 ±	61.33			37.34 ±	61.33	0.01	0.00	<0.005
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.36 ±	111.51	40.49 ±	67.55	101.84 ±	129.85	0.02	0.01	0.01
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unidentified Procellariidae	1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unidentified Petrel	1989										74.68 ± 122.81	752.97 ± 1298.89	827.65 ± 1300.63	0.02	0.14	0.09
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Shearwaters	1989									223.67 ± 307.20	41.36 ± 51.47	265.03 ± 309.46	0.06	0.01	0.03	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.64 ± 54.92	<0.005 ± <0.005	33.64 ± 54.66	0.01	<0.005	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2955.87 ± 5197.09	35472.52 ± 61745.29	38428.39 ± 61845.89	0.83	6.56	4.45	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.34 ± 61.33		37.34 ± 61.33	0.01	0.00	<0.005	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.36 ± 111.51	40.49 ± 67.55	101.84 ± 129.85	0.02	0.01	0.01	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1365.59 ± 2464.26	16186.49 ± 27891.08	17552.08 ± 27947.57	0.38	3.00	2.03	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.09 ± 23.01	148.12 ± 257.50	160.22 ± 258.01	0.03	0.00	0.02	
Total Procellariiformes	1989									223.67 ± 307.20	41.36 ± 51.47	265.03 ± 309.46	0.06	0.01	0.03	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.87 ± 66.69	16.54 ± 28.94	72.41 ± 72.38	0.02	0.00	0.01	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2955.87 ± 5197.09	35472.52 ± 61745.29	38428.39 ± 61845.89	0.83	6.56	4.45	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.34 ± 61.33	40.58 ± 67.69	77.92 ± 91.05	0.01	0.01	0.01	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1096.26 ± 878.98	589.76 ± 343.56	1686.02 ± 939.58	0.31	0.11	0.20	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1365.59 ± 2464.26	16190.98 ± 27891.08	17556.57 ± 27947.57	0.38	3.00	2.03	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	113.09 ± 133.07	<0.005 ± <0.005	113.09 ± 132.43	0.03	<0.005	0.01	
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.09 ± 23.01	148.12 ± 257.50	160.22 ± 258.01	0.03	0.00	0.02	
<i>Hydrobatidae: Storm-petrels</i>																
Fork-tailed Storm-petrel	1989									9413.95 ± 5875.61	26009.87 ± 37233.76	35423.82 ± 37575.17	2.63	4.81	3.94	
	1990	164.47 ± 166.97	430.72 ± 679.88	595.19 ± 696.20	0.05	0.08	0.07		11235.14 ± 4521.79	7190.72 ± 2687.54	18425.85 ± 5238.97	3.14	1.33	2.13		
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13117.89 ± 10834.58	6400.83 ± 2039.69	19518.72 ± 10973.32	3.67	1.18	2.26		
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2165.97 ± 1374.24	11645.43 ± 7913.72	13811.40 ± 8016.37	0.61	2.15	1.60		
	1994	37.34 ± 61.86	<0.005 ± <0.005	37.34 ± 61.19	0.01	<0.005	0.00									
	1996	<0.005 ± <0.005	40.79 ± 68.41	40.79 ± 68.05	<0.005	0.01	0.00		12054.19 ± 11069.77	3768.01 ± 2420.59	15822.21 ± 11278.48	3.37	0.70	1.83		
	1998	1306.07 ± 1855.06	10240.58 ± 12793.31	11546.65 ± 12859.17	0.37	1.89	1.29		4348.88 ± 5697.92	5110.38 ± 3749.78	9459.25 ± 6794.17	1.22	0.95	1.09		
	2000	187.49 ± 250.24	446.47 ± 564.06	633.96 ± 613.31	0.05	0.08	0.07		24184.70 ± 19009.36	10643.22 ± 9846.21	34827.92 ± 21318.61	6.76	1.97	4.03		
	2004	<0.005 ± <0.005	243.54 ± 408.68	243.54 ± 406.47	<0.005	0.05	0.03		6215.86 ± 4235.82	6353.15 ± 4451.45	12569.01 ± 6124.66	1.74	1.18	1.45		
	2005	185.26 ± 301.33	369.51 ± 444.32	554.77 ± 533.08	0.05	0.07	0.06		1820.00 ± 1424.85	1958.69 ± 1097.85	3778.70 ± 1791.82	0.36	0.51	0.44		
Leach's Storm-petrel	1989									0.00	0.00	0.00	0.00	0.00	0.00	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Unidentified Storm-petrel	1989										154.84 ± 254.37	<0.005 ±	<0.005	154.84 ± 252.70	0.04	<0.005	0.02
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.69 ± 25.43	24.82 ±	42.74	39.52 ± 49.60	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.23 ± 65.70	228.78 ±	340.34	281.01 ± 345.94	0.01	0.04	0.03
	2000	<0.005 ±	<0.005	14.97 ±	27.87	14.97 ±	27.72	<0.005	0.00	0.00	37.00 ± 63.50	40.74 ±	70.75	77.74 ± 94.77	0.01	0.01	0.01
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	193.12 ± 182.47	81.48 ±	91.58	274.61 ± 203.32	0.05	0.02	0.03
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.11 ± 63.23	<0.005 ±	<0.005	46.11 ± 62.91	<0.005	0.01	0.01
Total Storm-petrels	1989										9643.46 ± 5872.17	26762.85 ±	37200.19	36406.31 ± 37541.57	2.70	4.95	4.05
	1990	164.47 ± 166.97	430.72 ±	679.88	595.19 ± 696.20	0.05	0.08	0.07	0.00	0.00	11235.14 ± 4521.79	7190.72 ±	2687.54	18425.85 ± 5238.97	3.14	1.33	2.13
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13117.89 ± 10834.58	6400.83 ±	2039.69	19518.72 ± 10973.32	3.67	1.18	2.26
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2180.66 ± 1388.59	11670.25 ±	7916.34	13850.91 ± 8021.40	0.61	2.16	1.60
	1994	37.34 ± 61.86	<0.005 ±	<0.005	37.34 ± 61.19	0.01	<0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	<0.005 ±	<0.005	40.79 ± 68.41	40.79 ± 68.05	<0.005	0.01	0.00	0.00	0.00	12054.19 ± 11069.77	3768.01 ±	2420.59	15822.21 ± 11278.48	3.37	0.70	1.83
	1998	1306.07 ± 1855.06	10240.58 ±	12793.31	11546.65 ± 12859.17	0.37	1.89	1.29	0.00	0.00	4401.11 ± 5691.50	5339.16 ±	3730.23	9740.27 ± 6778.10	1.23	0.99	1.13
	2000	187.49 ± 250.24	461.44 ±	564.75	648.93 ± 613.94	0.05	0.09	0.07	0.00	0.00	24221.70 ± 19003.90	10683.96 ±	9844.46	34905.66 ± 21312.98	6.77	1.98	4.04
	2004	<0.005 ±	<0.005	243.54 ± 408.68	243.54 ± 406.47	<0.005	0.05	0.03	0.00	0.00	6408.98 ± 4251.82	6434.63 ±	4474.02	12843.61 ± 6151.96	1.79	1.19	1.49
	2005	185.26 ± 301.33	369.51 ±	444.32	554.77 ± 533.08	0.05	0.07	0.06	0.00	0.00	1866.11 ± 1420.71	1958.69 ±	1097.85	3824.80 ± 1788.56	0.36	0.52	0.44
Total Tubenoses	1989										9867.13 ± 5857.02	26804.21 ±	37201.50	36671.34 ± 37540.53	2.76	4.96	4.08
	1990	164.47 ± 166.97	430.72 ±	679.88	595.19 ± 696.20	0.05	0.08	0.07	0.00	0.00	11291.01 ± 4519.06	7207.26 ±	2686.83	18498.27 ± 5236.28	3.16	1.33	2.14
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16073.76 ± 11948.72	41873.35 ±	62037.24	57947.10 ± 63052.16	4.49	7.75	6.70
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2218.00 ± 1403.82	11719.81 ±	7902.18	13937.81 ± 8010.11	0.62	2.17	1.61
	1994	37.34 ± 61.86	<0.005 ±	<0.005	37.34 ± 61.19	0.01	<0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	<0.005 ±	<0.005	40.79 ± 68.41	40.79 ± 68.05	<0.005	0.01	0.00	0.00	0.00	13154.31 ± 11913.73	4544.68 ±	2413.00	17698.99 ± 12098.71	3.68	0.84	2.05
	1998	1306.07 ± 1855.06	10240.58 ±	12793.31	11546.65 ± 12859.17	0.37	1.89	1.29	0.00	0.00	5766.69 ± 6255.29	21530.14 ±	29660.88	27296.83 ± 30253.64	1.61	3.98	3.16
	2000	187.49 ± 250.24	461.44 ±	564.75	648.93 ± 613.94	0.05	0.09	0.07	0.00	0.00	24334.80 ± 19132.35	10683.96 ±	9844.46	35018.76 ± 21426.50	6.80	1.98	4.05
	2004	<0.005 ±	<0.005	243.54 ± 408.68	243.54 ± 406.47	<0.005	0.05	0.03	0.00	0.00	6408.98 ± 4251.82	6434.63 ±	4474.02	12843.61 ± 6151.96	1.79	1.19	1.49
	2005	185.26 ± 301.33	369.51 ±	444.32	554.77 ± 533.08	0.05	0.07	0.06	0.00	0.00	1878.20 ± 1419.89	2106.82 ±	1118.11	3985.02 ± 1800.38	0.39	0.52	0.46
<b>Pelecaniformes</b>																	
<i>Phalacrocoracidae: Cormorants</i>																	
Double-crested Cormorant	1989										<0.005 ±	<0.005	89.26 ± 106.69	89.26 ± 106.36	<0.005	0.02	0.01
	1990	177.92 ± 193.66	90.72 ±	128.18	268.64 ± 230.10	0.05	0.02	0.03	0.00	0.00	22.43 ± 28.17	31.41 ±	42.29	53.84 ± 50.68	0.01	0.01	0.01
	1991	93.93 ± 103.59	30.28 ±	33.42	124.20 ± 107.71	0.03	0.01	0.01	0.00	0.00	<0.005 ±	<0.005	49.37 ± 46.88	49.37 ± 46.80	<0.005	0.01	0.01
	1993	585.07 ± 830.53	455.46 ±	652.30	1040.53 ± 1045.87	0.16	0.08	0.12	0.00	0.00	8.41 ± 7.84	245.61 ±	305.47	254.02 ± 305.00	0.00	0.05	0.03
	1994	35.97 ± 44.98	95.18 ±	96.42	131.15 ± 105.71	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	149.84 ± 94.86	216.74 ±	208.17	366.58 ± 227.35	0.04	0.04	0.04	0.00	0.00	8.41 ± 7.80	66.02 ±	108.30	74.43 ± 108.38	0.00	0.01	0.01
	1998	767.02 ± 1043.76	241.63 ±	222.47	1008.64 ± 1055.70	0.21	0.04	0.11	0.00	0.00	14.43 ± 19.53	12.24 ±	16.26	26.68 ± 25.32	0.00	0.00	0.00
	2000	197.66 ± 180.74	278.79 ±	365.25	476.45 ± 404.96	0.06	0.05	0.05	0.00	0.00	2.80 ± 4.52	25.71 ±	23.68	28.51 ± 24.06	0.00	0.00	0.00
	2004	498.21 ± 328.54	303.87 ±	339.58	802.08 ± 468.69	0.14	0.06	0.09	0.00	0.00	25.14 ± 29.88	168.32 ±	121.58	193.45 ± 124.93	0.01	0.03	0.02
	2005	55.22 ± 57.76	99.43 ±	126.98	154.64 ± 138.63	0.02	0.02	0.02	0.00	0.00	65.70 ± 58.66	90.72 ±	101.15	156.42 ± 116.61	0.02	0.02	0.02
Pelagic Cormorant	1989										227.42 ± 210.30	166.39 ±	193.09	393.82 ± 284.08	0.06	0.03	0.04
	1990	4236.34 ± 2250.29	4291.34 ±	1191.41	8527.68 ± 2521.47	1.18	0.79	0.95	0.00	0.00	89.72 ± 73.01	48.15 ±	39.42	137.86 ± 82.63	0.03	0.01	0.02
	1991	1965.50 ± 1185.20	3465.70 ±	1915.48	5431.21 ± 2237.16	0.55	0.64	0.60	0.00	0.00	378.53 ± 318.56	133.18 ±	110.73	511.71 ± 335.75	0.11	0.02	0.06
	1993	2634.17 ± 1413.05	5416.08 ±	2828.28	8050.25 ± 3140.26	0.74	1.00	0.90	0.00	0.00	682.76 ± 458.20	667.75 ±	493.18	1350.51 ± 671.01	0.19	0.12	0.16
	1994	4747.57 ± 1766.84	6211.43 ±	2154.47	10958.99 ± 2765.01	1.33	1.15	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	447.07 ± 536.02	143.06 ±	129.79	590.13 ± 545.63	0.12	0.03	0.07	0.00	0.00	58.88 ± 53.33	204.00 ±	215.51	262.88 ± 221.56	0.02	0.04	0.03
	1998	460.35 ± 527.06	267.79 ±	261.47	728.14 ± 582.54	0.13	0.05	0.08	0.00	0.00	28.87 ± 24.26	15.51 ±	18.97	44.38 ± 30.68	0.01	0.00	0.01
	2000	80.47 ± 77.00	216.70 ±	310.16	297.17 ± 317.82	0.02	0.04	0.03	0.00	0.00	193.45 ± 288.96	39.17 ±	43.85	232.62 ± 290.88	0.05	0.01	0.03
	2004	3593.03 ± 1577.45	3686.72 ±	1171.00	7279.75 ± 1947.03	1.00	0.68	0.81	0.00	0.00	1259.30 ± 883.18	1051.36 ±	518.12	2310.65 ± 1019.86	0.35	0.19	0.27
	2005	4822.22 ± 1518.30	5827.14 ±	2103.10	10649.36 ± 2575.25	1.35	1.08	1.19	0.00	0.00	972.92 ± 607.23	1230.40 ±	710.43	2203.32 ± 931.55	0.23	0.27	0.25







Brant	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51 ±	0.84	2.67 ±	4.33	3.18 ±	4.40	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	311.80 ±	523.00	<0.005 ±	<0.005	311.80 ±	520.49	0.09	<0.005	0.04
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Canada Goose	1989										3.12 ±	5.16	160.49 ±	275.44	163.60 ±	274.64	0.00	0.03	0.02
	1990	<0.005 ±	<0.005	37.80 ±	70.47	37.80 ±	70.10	<0.005	0.01	0.00	<0.005 ±	<0.005	1907.33 ±	3282.53	1907.33 ±	3276.42	<0.005	0.35	0.22
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80 ±	4.58	3097.91 ±	5214.07	3100.71 ±	5204.27	0.00	0.57	0.36
	1993	36.81 ±	67.06	<0.005 ±	<0.005	36.81 ±	66.24	0.01	<0.005	0.00	<0.005 ±	<0.005	3098.69 ±	5252.64	3098.69 ±	5242.77	<0.005	0.57	0.36
	1994	<0.005 ±	<0.005	48.42 ±	90.52	48.42 ±	90.02	<0.005	0.01	0.01									
	1996	<0.005 ±	<0.005	15.35 ±	28.62	15.35 ±	28.47	<0.005	0.00	0.00	<0.005 ±	<0.005	1018.74 ±	1550.45	1018.74 ±	1547.56	<0.005	0.19	0.12
	1998	<0.005 ±	<0.005	366.77 ±	417.36	366.77 ±	415.22	<0.005	0.07	0.04	2.63 ±	4.31	21.12 ±	23.52	23.75 ±	23.87	0.00	0.00	0.00
	2000	24.54 ±	45.81	44.91 ±	59.58	44.91 ±	59.58	69.45 ±	74.61	0.01	0.01	0.01	56.34 ±	58.31	56.34 ±	58.20	<0.005	0.01	0.01
	2004	<0.005 ±	<0.005	313.12 ±	586.18	313.12 ±	583.02	<0.005	0.06	0.03	<0.005 ±	<0.005	660.86 ±	950.82	660.86 ±	948.94	<0.005	0.12	0.08
	2005	<0.005 ±	<0.005	160.61 ±	299.37	160.61 ±	297.76	<0.005	0.03	0.02	<0.005 ±	<0.005	151.66 ±	126.46	151.66 ±	126.21	0.03	<0.005	0.02
<i>Anatini: Dabbling Ducks</i>																			
Green-winged Teal	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80 ±	4.56	61.26 ±	85.23	64.06 ±	85.19	0.00	0.01	0.01
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	78.42 ±	127.89	78.42 ±	127.65	<0.005	0.01	0.01
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	80.39 ±	99.17	80.39 ±	98.98	<0.005	0.01	0.01
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	35.94 ±	58.99	35.94 ±	58.88	<0.005	0.01	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	22.88 ±	37.25	22.88 ±	37.17	<0.005	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	111.43 ±	179.28	111.43 ±	178.92	0.02	<0.005	0.01
Blue-winged Teal	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17 ±	0.27	6.35 ±	10.25	6.51 ±	10.23	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unidentified Teal	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



Unidentified Dabbling Duck	1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	1990	<0.005 ±	<0.005	1043.24 ±	1498.76	1043.24 ±	1490.94	<0.005	0.19	0.12	<0.005 ±	<0.005	46.93 ±	50.35	46.93 ±	50.26	<0.005	0.01	0.01	
	1991	<0.005 ±	<0.005	620.67 ±	715.08	620.67 ±	711.35	<0.005	0.11	0.07	<0.005 ±	<0.005	8.98 ±	15.67	8.98 ±	15.64	<0.005	0.00	0.00	
	1993	<0.005 ±	<0.005	1607.32 ±	2873.68	1607.32 ±	2858.23	<0.005	0.30	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	94.24 ±	165.19	94.24 ±	164.89	<0.005	0.00	0.02	0.01
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
<i>Aythya: Diving Ducks</i>																				
Ring-necked Duck	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Greater Scaup	1989										<0.005 ±	<0.005	439.01 ±	511.68	439.01 ±	510.10	<0.005	0.08	0.05	
	1990	0.53 ±	1.00	1186.23 ±	1466.82	1186.76 ±	1459.17	0.00	0.22	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	147.31 ±	211.17	147.31 ±	210.78	<0.005	0.03	0.02	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	81.61 ±	126.38	81.61 ±	126.14	<0.005	0.02	0.01	
	1994	12.27 ±	22.78	1169.26 ±	1572.55	1181.54 ±	1564.08	0.00	0.22	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.88 ±	1.67	167.78 ±	248.73	168.66 ±	247.43	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1998	0.18 ±	0.33	3248.33 ±	4880.36	3248.51 ±	4855.30	0.00	0.60	0.36	<0.005 ±	<0.005	13.46 ±	23.17	13.46 ±	23.13	<0.005	0.00	0.00	
	2000	<0.005 ±	<0.005	321.86 ±	406.10	321.86 ±	404.02	<0.005	0.06	0.04	<0.005 ±	<0.005	80.86 ±	113.05	80.86 ±	112.84	<0.005	0.01	0.01	
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	15.70 ±	19.40	15.70 ±	19.36	<0.005	0.00	0.00	
	2005	<0.005 ±	<0.005	252.39 ±	429.10	252.39 ±	426.80	<0.005	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Lesser Scaup	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	8.98 ±	15.33	8.98 ±	15.31	<0.005	0.00	0.00	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2004	<0.005 ±	<0.005	78.28 ±	141.60	78.28 ±	140.83	<0.005	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2005	<0.005 ±	<0.005	53.54 ±	62.60	53.54 ±	62.27	<0.005	0.01	0.01	<0.005 ±	<0.005	33.68 ±	59.70	33.68 ±	59.58	0.01	<0.005	0.00	
Unidentified Scaup	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	<0.005 ±	<0.005	431.44 ±	768.99	431.44 ±	764.97	<0.005	0.08	0.05	<0.005 ±	<0.005	194.63 ±	306.71	194.63 ±	306.14	<0.005	0.04	0.02	
	1993	110.43 ±	196.82	217.42 ±	369.13	327.85 ±	415.44	0.03	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1994	<0.005 ±	<0.005	242.08 ±	454.99	242.08 ±	452.49	<0.005	0.04	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	85.89 ±	122.86	353.11 ±	393.24	439.01 ±	409.63	0.02	0.07	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1998	478.55 ±	870.68	232.04 ±	303.99	710.59 ±	912.64	0.13	0.04	0.08	<0.005 ±	<0.005	3.27 ±	5.36	3.27 ±	5.35	<0.005	0.00	0.00	
	2000	<0.005 ±	<0.005	82.34 ±	148.82	82.34 ±	148.05	<0.005	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2004	<0.005 ±	<0.005	485.34 ±	566.09	485.34 ±	563.03	<0.005	0.09	0.05	<0.005 ±	<0.005	6.54 ±	10.66	6.54 ±	10.64	<0.005	0.00	0.00	
	2005	<0.005 ±	<0.005	336.52 ±	429.37	336.52 ±	427.07	<0.005	0.06	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Total Scaup	1989										<0.005 ±	<0.005	439.01 ±	511.68	439.01 ±	510.10	<0.005	0.08	0.05
	1990	0.53 ±	1.00	1784.19 ±	1603.08	1784.72 ±	1594.72	0.00	0.33	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	<0.005 ±	<0.005	431.44 ±	768.99	431.44 ±	764.97	<0.005	0.08	0.05	<0.005 ±	<0.005	341.94 ±	369.76	341.94 ±	369.07	<0.005	0.06	0.04
	1993	110.43 ±	196.82	217.42 ±	369.13	327.85 ±	415.44	0.03	0.04	0.04	<0.005 ±	<0.005	81.61 ±	126.38	81.61 ±	126.14	<0.005	0.02	0.01
	1994	12.27 ±	22.78	1411.34 ±	1637.91	1423.62 ±	1629.07	0.00	0.26	0.16									
	1996	86.77 ±	122.89	520.90 ±	451.17	607.67 ±	464.98	0.02	0.10	0.07	<0.005 ±	<0.005	8.98 ±	15.33	8.98 ±	15.31	<0.005	0.00	0.00
	1998	478.72 ±	870.68	3480.37 ±	4888.25	3959.09 ±	4938.80	0.13	0.64	0.44	<0.005 ±	<0.005	16.73 ±	23.78	16.73 ±	23.74	<0.005	0.00	0.00
	2000	<0.005 ±	<0.005	404.20 ±	426.02	404.20 ±	423.83	<0.005	0.07	0.05	<0.005 ±	<0.005	80.86 ±	113.05	80.86 ±	112.84	<0.005	0.01	0.01
	2004	<0.005 ±	<0.005	563.62 ±	572.09	563.62 ±	569.00	<0.005	0.10	0.06	<0.005 ±	<0.005	22.23 ±	22.07	22.23 ±	22.02	<0.005	0.00	0.00
	2005	<0.005 ±	<0.005	642.44 ±	605.51	642.44 ±	602.27	<0.005	0.12	0.07	<0.005 ±	<0.005	33.68 ±	59.70	33.68 ±	59.58	0.01	<0.005	0.00
<i>Mergini: Sea Ducks</i>																			
Common Eider	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	3.27 ±	5.40	3.27 ±	5.39	<0.005	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
King Eider	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	<0.005 ±	<0.005	29.94 ±	55.70	29.94 ±	55.42	<0.005	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Steller's Eider	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unidentified Eider	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	3.27 ±	5.32	3.27 ±	5.31	<0.005	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Total Eiders	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2000	<0.005 ±	<0.005	29.94 ±	55.70	29.94 ±	55.42	<0.005	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Harlequin Duck	1989										857.81 ±	380.00	3065.13 ±	1245.16	3922.94 ±	1297.45	0.24	0.57	0.44	
	1990	2738.56 ±	972.51	7880.95 ±	2320.20	10619.50 ±	2500.47	0.77	1.46	1.18	1784.16 ±	1502.41	7556.43 ±	3119.94	9340.59 ±	3454.48	0.50	1.40	1.08	
	1991	2831.75 ±	986.99	8326.71 ±	2676.11	11158.46 ±	2835.46	0.79	1.54	1.24	667.06 ±	363.76	7597.06 ±	3053.48	8264.13 ±	3069.17	0.19	1.41	0.96	
	1993	3315.17 ±	1254.39	15303.89 ±	7232.24	18619.06 ±	7299.26	0.93	2.83	2.07	1480.33 ±	1035.74	6841.97 ±	2410.89	8322.30 ±	2617.84	0.41	1.27	0.96	
	1994	4418.94 ±	1456.50	14785.26 ±	4302.94	19204.20 ±	4515.33	1.24	2.74	2.14										
	1996	4954.50 ±	1798.98	12196.62 ±	3589.35	17151.11 ±	3989.35	1.38	2.26	1.91	1428.22 ±	642.18	9191.00 ±	2880.84	10619.22 ±	2945.64	0.40	1.70	1.23	
	1998	4016.23 ±	1274.02	10604.88 ±	3267.12	14621.11 ±	3486.01	1.12	1.96	1.63	1653.63 ±	837.89	7199.21 ±	2281.40	8852.85 ±	2425.06	0.46	1.33	1.02	
	2000	4934.93 ±	1755.57	9940.87 ±	2807.16	14875.79 ±	3288.44	1.38	1.84	1.66	1110.32 ±	452.10	8080.26 ±	2837.69	9190.59 ±	2867.92	0.31	1.50	1.06	
2004	3508.46 ±	1169.07	9665.32 ±	2776.43	13173.79 ±	2993.78	0.98	1.79	1.47	1070.42 ±	440.38	5669.45 ±	2064.00	6739.87 ±	2106.02	0.30	1.05	0.78		
2005	2511.16 ±	676.20	8554.68 ±	3350.77	11065.84 ±	3399.30	0.70	1.58	1.23	1380.49 ±	608.20	7600.24 ±	2307.39	8980.74 ±	2381.02	1.41	0.39	1.04		
Oldsquaw	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.76	0.46											
Black Scoter	1989										1000.37 ±	1729.09	234.92 ±	261.93	1235.29 ±	1737.44	0.28	0.04	0.14	
	1990	377.71 ±	436.63	2383.10 ±	1431.49	2760.80 ±	1488.05	0.11	0.44	0.31	<0.005 ±	<0.005	42.04 ±	49.95	42.04 ±	49.86	<0.005	0.01	0.00	
	1991	347.44 ±	537.37	1039.78 ±	621.11	1387.22 ±	815.00	0.10	0.19	0.15	120.72 ±	217.23	310.53 ±	395.41	431.24 ±	450.00	0.03	0.06	0.05	
	1993	113.25 ±	114.42	1843.07 ±	1034.34	1956.32 ±	1034.97	0.03	0.34	0.22	<0.005 ±	<0.005	275.62 ±	240.56	275.62 ±	240.10	<0.005	0.05	0.03	
	1994	1131.65 ±	963.70	1409.52 ±	739.40	2541.17 ±	1203.90	0.32	0.26	0.28										
	1996	164.27 ±	155.86	1673.13 ±	1368.87	1837.41 ±	1370.42	0.05	0.31	0.20	<0.005 ±	<0.005	75.16 ±	110.18	75.16 ±	109.97	<0.005	0.01	0.01	
	1998	180.59 ±	153.40	2610.60 ±	3224.38	2791.20 ±	3211.41	0.05	0.48	0.31	<0.005 ±	<0.005	108.22 ±	149.90	108.22 ±	149.62	<0.005	0.02	0.01	
	2000	162.66 ±	300.62	919.48 ±	722.52	1082.14 ±	777.87	0.05	0.17	0.12	<0.005 ±	<0.005	25.31 ±	24.90	25.31 ±	24.85	<0.005	0.00	0.00	
2004	70.33 ±	69.07	882.25 ±	1037.03	952.58 ±	1033.69	0.02	0.16	0.11	<0.005 ±	<0.005	238.05 ±	237.58	238.05 ±	237.11	<0.005	0.04	0.03		
2005	322.48 ±	319.20	714.62 ±	541.06	1037.10 ±	623.97	0.09	0.13	0.12	<0.005 ±	<0.005	663.92 ±	831.12	663.92 ±	829.47	0.12	<0.005	0.08		
Surf Scoter	1989										3.12 ±	5.20	524.84 ±	376.20	527.96 ±	375.08	0.00	0.10	0.06	
	1990	1156.02 ±	602.79	3390.79 ±	1198.58	4546.81 ±	1333.06	0.32	0.63	0.51	1268.53 ±	2280.93	686.96 ±	558.32	1955.49 ±	2337.39	0.35	0.13	0.23	
	1991	1526.67 ±	759.39	7786.42 ±	4612.21	9313.08 ±	4649.20	0.43	1.44	1.04	120.72 ±	217.23	947.93 ±	666.70	1068.65 ±	699.69	0.03	0.18	0.12	
	1993	1594.11 ±	804.24	4326.48 ±	1754.42	5920.60 ±	1917.28	0.45	0.80	0.66	30.84 ±	38.83	1949.61 ±	1016.58	1980.45 ±	1015.40	0.01	0.36	0.23	
	1994	1697.52 ±	756.92	5753.35 ±	4800.97	7450.87 ±	4832.96	0.47	1.06	0.83										
	1996	1584.94 ±	1037.22	4907.37 ±	2871.88	6492.31 ±	3035.48	0.44	0.91	0.72	<0.005 ±	<0.005	3023.93 ±	2095.49	3023.93 ±	2091.59	<0.005	0.56	0.35	
	1998	1058.65 ±	635.00	28496.06 ±	47804.91	29554.71 ±	47563.65	0.30	5.27	3.29	373.96 ±	549.64	850.62 ±	500.89	1224.58 ±	741.04	0.10	0.16	0.14	
	2000	2372.25 ±	1414.62	4143.50 ±	2462.34	6515.75 ±	2821.04	0.66	0.77	0.73	1826.48 ±	2545.19	4190.59 ±	3358.72	6017.07 ±	4201.78	0.51	0.78	0.70	
2004	3049.21 ±	1902.70	2192.08 ±	1020.56	5241.29 ±	2138.25	0.85	0.41	0.58	1162.81 ±	1397.35	3850.49 ±	4485.11	5013.30 ±	4687.30	0.33	0.71	0.58		
2005	5837.04 ±	7006.84	5555.42 ±	3246.26	11392.46 ±	7646.91	1.63	1.03	1.27	<0.005 ±	<0.005	725.21 ±	837.16	725.21 ±	835.50	0.13	<0.005	0.08		

White-winged Scoter	1989									2367.36 ±	2937.70	656.96 ±	473.65	3024.32 ±	2956.32	0.66	0.12	0.34		
	1990	430.82 ±	229.00	2866.01 ±	1302.82	3296.83 ±	1315.66	0.12	0.53	0.37	244.23 ±	434.49	845.00 ±	1260.09	1089.24 ±	1330.00	0.07	0.16	0.13	
	1991	1039.25 ±	1199.21	4256.28 ±	2451.72	5295.52 ±	2712.02	0.29	0.79	0.59	2359.39 ±	2996.02	1204.16 ±	790.62	3563.55 ±	3084.36	0.66	0.22	0.41	
	1993	908.03 ±	1054.24	6050.83 ±	4181.93	6958.86 ±	4287.80	0.25	1.12	0.77	7298.37 ±	8045.69	294.68 ±	208.28	7593.04 ±	8009.95	2.04	0.05	0.88	
	1994	2684.12 ±	1864.80	5480.48 ±	3311.27	8164.60 ±	3774.51	0.75	1.01	0.91										
	1996	1346.02 ±	678.86	4857.26 ±	3600.14	6203.28 ±	3643.74	0.38	0.90	0.69	2.80 ±	4.60	433.84 ±	361.32	436.65 ±	360.67	0.00	0.08	0.05	
	1998	577.61 ±	505.86	18896.03 ±	26674.71	19473.63 ±	26542.49	0.16	3.50	2.17	82.52 ±	122.33	2299.03 ±	2972.66	2381.54 ±	2969.69	0.02	0.43	0.28	
	2000	2972.16 ±	3381.62	20904.68 ±	36225.53	23876.83 ±	36194.40	0.83	3.87	2.66	4837.85 ±	6141.70	329.50 ±	233.27	5167.35 ±	6116.66	1.35	0.06	0.60	
	2004	1625.51 ±	1196.83	1071.37 ±	1057.36	2696.88 ±	1583.46	0.45	0.20	0.30	1184.81 ±	1564.69	284.83 ±	214.36	1469.64 ±	1571.98	0.33	0.05	0.17	
	2005	1757.44 ±	2886.49	647.03 ±	541.01	2404.47 ±	2905.83	0.49	0.12	0.27	2.63 ±	4.27	510.11 ±	669.48	512.74 ±	668.17	0.09	0.00	0.06	
Unidentified Scoter	1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	368.11 ±	579.62	522.27 ±	805.85	890.39 ±	985.52	0.10	0.10	0.10	<0.005 ±	<0.005	886.98 ±	653.59	886.98 ±	652.36	<0.005	0.16	0.10	
	1993	844.76 ±	501.10	2916.43 ±	1951.77	3761.19 ±	2003.37	0.24	0.54	0.42	166.91 ±	269.85	640.69 ±	916.61	807.60 ±	953.49	0.05	0.12	0.09	
	1994	147.81 ±	131.23	2192.15 ±	2198.07	2339.96 ±	2189.86	0.04	0.41	0.26										
	1996	150.66 ±	107.64	1493.27 ±	1473.39	1643.94 ±	1469.56	0.04	0.28	0.18	<0.005 ±	<0.005	66.92 ±	79.57	66.92 ±	79.43	<0.005	0.01	0.01	
	1998	98.16 ±	133.86	4047.15 ±	7199.65	4145.32 ±	7163.92	0.03	0.75	0.46	786.47 ±	1015.31	624.07 ±	952.64	1410.55 ±	1387.46	0.22	0.12	0.16	
	2000	6.15 ±	11.67	306.87 ±	473.19	313.02 ±	470.91	0.00	0.06	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2004	200.12 ±	221.46	258.33 ±	251.71	458.45 ±	332.65	0.06	0.05	0.05	41.89 ±	67.23	<0.005 ±	<0.005	41.89 ±	66.92	0.01	<0.005	0.00	
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total Scoters	1989									3370.84 ±	3276.99	1416.72 ±	807.88	4787.56 ±	3353.57	0.94	0.26	0.53		
	1990	1964.54 ±	764.23	8639.90 ±	2518.61	10604.44 ±	2616.99	0.55	1.60	1.18	1512.77 ±	2715.39	1574.00 ±	1388.60	3086.77 ±	3037.07	0.42	0.29	0.36	
	1991	3281.47 ±	1929.47	13604.75 ±	6746.14	16886.21 ±	6976.97	0.92	2.52	1.88	2600.82 ±	3395.41	3349.60 ±	1660.46	5950.42 ±	3763.73	0.73	0.62	0.69	
	1993	3460.15 ±	1507.15	15136.82 ±	5496.68	18596.97 ±	5666.15	0.97	2.80	2.07	7496.12 ±	8050.30	3160.59 ±	1604.10	10656.71 ±	8170.26	2.10	0.58	1.23	
	1994	5661.11 ±	2398.13	14835.50 ±	6174.81	20496.60 ±	5883.14	1.58	2.75	2.28										
	1996	3245.90 ±	1343.97	12931.04 ±	5686.45	16176.94 ±	5810.84	0.91	2.39	1.80	2.80 ±	4.60	3599.85 ±	2173.46	3602.66 ±	2169.42	0.00	0.67	0.42	
	1998	1915.01 ±	1034.47	54049.85 ±	84610.13	55964.86 ±	84182.00	0.54	10.00	6.23	1242.95 ±	1546.67	3881.94 ±	3420.91	5124.89 ±	3745.48	0.35	0.72	0.59	
	2000	5513.22 ±	3855.98	26274.52 ±	36304.75	31787.74 ±	36319.13	1.54	4.86	3.54	6664.33 ±	8410.73	4545.41 ±	3434.63	11209.74 ±	9045.21	1.86	0.84	1.30	
	2004	4945.17 ±	2376.58	4404.03 ±	1809.65	9349.20 ±	2960.62	1.38	0.81	1.04	2389.52 ±	2930.49	4373.37 ±	4585.08	6762.89 ±	5426.53	0.67	0.81	0.78	
	2005	7916.96 ±	9815.04	6917.07 ±	3704.21	14834.03 ±	10385.41	2.21	1.28	1.65	2.63 ±	4.27	1899.24 ±	1422.08	1901.87 ±	1419.27	0.35	0.00	0.22	
Common Goldeneye	1989									0.45 ±	0.76	203.24 ±	191.12	203.69 ±	190.53	0.00	0.04	0.02		
	1990	17.25 ±	21.57	878.36 ±	715.48	895.60 ±	712.06	0.00	0.16	0.10	5.61 ±	9.09	22.87 ±	26.08	28.48 ±	27.55	0.00	0.00	0.00	
	1991	16.05 ±	27.50	131.58 ±	116.54	147.63 ±	119.08	0.00	0.02	0.02	2.80 ±	4.45	132.19 ±	136.79	135.00 ±	136.61	0.00	0.02	0.02	
	1993	55.22 ±	91.07	46.59 ±	64.09	101.81 ±	110.25	0.02	0.01	0.01	<0.005 ±	<0.005	123.26 ±	110.23	123.26 ±	110.02	<0.005	0.02	0.01	
	1994	120.64 ±	165.38	1721.48 ±	1727.60	1842.12 ±	1725.89	0.03	0.32	0.21										
	1996	252.10 ±	186.44	1518.37 ±	1063.46	1770.47 ±	1073.85	0.07	0.28	0.20	8.41 ±	10.13	52.68 ±	48.95	61.09 ±	49.89	0.00	0.01	0.01	
	1998	555.41 ±	324.64	3475.67 ±	3641.77	4031.07 ±	3637.27	0.16	0.64	0.45	8.66 ±	13.91	67.75 ±	56.04	76.41 ±	57.63	0.00	0.01	0.01	
	2000	123.80 ±	102.56	948.66 ±	507.58	1072.46 ±	515.06	0.03	0.18	0.12	8.41 ±	10.21	53.50 ±	56.75	61.91 ±	57.55	0.00	0.01	0.01	
	2004	124.92 ±	128.83	1398.41 ±	759.51	1523.32 ±	766.08	0.03	0.26	0.17	<0.005 ±	<0.005	43.80 ±	54.65	43.80 ±	54.54	<0.005	0.01	0.01	
	2005	67.66 ±	71.35	940.50 ±	585.22	1008.16 ±	586.35	0.02	0.17	0.11	34.28 ±	31.70	47.00 ±	44.63	81.28 ±	54.58	0.01	0.01	0.01	
Barrow's Goldeneye	1989									3.12 ±	5.16	95.43 ±	103.24	98.54 ±	103.05	0.00	0.02	0.01		
	1990	2977.65 ±	994.19	11989.95 ±	3434.26	14967.61 ±	3555.02	0.83	2.22	1.67	5.61 ±	9.15	<0.005 ±	<0.005	5.61 ±	9.11	0.00	<0.005	0.00	
	1991	3614.24 ±	1333.54	16696.63 ±	5876.76	20310.87 ±	5993.02	1.01	3.09	2.26	<0.005 ±	<0.005	50.23 ±	68.53	50.23 ±	68.40	<0.005	0.01	0.01	
	1993	2820.81 ±	1388.70	10873.66 ±	3328.83	13694.47 ±	3583.80	0.79	2.01	1.52	5.61 ±	8.89	67.32 ±	73.14	72.92 ±	73.53	0.00	0.01	0.01	
	1994	5017.65 ±	1740.98	26631.25 ±	15722.47	31648.90 ±	15730.71	1.40	4.93	3.52										
	1996	4284.10 ±	1174.04	22245.82 ±	4129.18	26529.91 ±	4268.59	1.20	4.12	2.95	<0.005 ±	<0.005	161.25 ±	157.86	161.25 ±	157.56	<0.005	0.03	0.02	
	1998	3234.11 ±	1165.79	29790.22 ±	16260.18	33024.33 ±	16217.74	0.90	5.51	3.68	17.32 ±	14.51	207.27 ±	216.14	224.59 ±	216.23	0.00	0.04	0.03	
	2000	3096.16 ±	1007.66	24919.88 ±	8346.13	28016.04 ±	8362.87	0.87	4.61	3.12	<0.005 ±	<0.005	123.65 ±	102.58	123.65 ±	102.39	<0.005	0.02	0.01	
	2004	3432.01 ±	1539.39	26133.46 ±	7503.02	29565.47 ±	7616.28	0.96	4.84	3.29	2.79 ±	4.50	91.56 ±	88.43	94.35 ±	88.36	0.00	0.02	0.01	
	2005	2819.84 ±	1864.77	15453.79 ±	4541.16	18273.63 ±	4879.06	0.79	2.86	2.03	5.71 ±	9.34	65.34 ±	51.61	71.05 ±	52.34	0.01	0.00	0.01	

Unidentified Goldeneye	1989									9.35 ± 15.78	78.08 ± 89.88	87.42 ± 90.97	0.00	0.01	0.01
	1990	456.86 ± 394.73	3221.06 ± 1618.76	3677.91 ± 1656.96	0.13	0.60	0.41	14.02 ± 18.74	189.01 ± 143.20	203.02 ± 144.15	0.00	0.03	0.02		
	1991	406.54 ± 328.81	2774.39 ± 2264.86	3180.94 ± 2276.39	0.11	0.51	0.35	494.08 ± 869.04	176.76 ± 173.07	670.84 ± 881.98	0.14	0.03	0.08		
	1993	2034.86 ± 1062.68	18239.02 ± 7740.35	20273.88 ± 7769.94	0.57	3.38	2.26	11.21 ± 12.48	434.57 ± 468.88	445.79 ± 468.16	0.00	0.08	0.05		
	1994	984.63 ± 669.89	18226.73 ± 10271.17	19211.37 ± 10236.26	0.28	3.37	2.14								
	1996	249.98 ± 125.08	7427.34 ± 4796.93	7677.32 ± 4773.50	0.07	1.37	0.85	21.16 ± 15.48	144.31 ± 193.93	165.46 ± 194.18	0.01	0.03	0.02		
	1998	104.30 ± 71.60	2200.63 ± 1844.52	2304.93 ± 1836.42	0.03	0.41	0.26	8.66 ± 7.92	51.85 ± 35.47	60.51 ± 36.27	0.00	0.01	0.01		
	2000	373.31 ± 200.76	5580.35 ± 5074.15	5953.66 ± 5052.00	0.10	1.03	0.66	14.53 ± 18.78	20.62 ± 21.74	35.15 ± 28.64	0.00	0.00	0.00		
	2004	192.70 ± 170.04	4518.37 ± 2828.62	4711.07 ± 2818.37	0.05	0.84	0.52	2.79 ± 4.40	41.87 ± 40.98	44.66 ± 41.14	0.00	0.01	0.01		
	2005	167.85 ± 129.76	624.40 ± 355.40	792.25 ± 376.08	0.05	0.12	0.09	<0.005 ± <0.005	39.12 ± 46.80	39.12 ± 46.71	0.01	<0.005	0.00		
Total Goldeneyes	1989								12.91 ± 16.52	376.74 ± 250.30	389.65 ± 250.06	0.00	0.07	0.04	
	1990	3451.76 ± 1067.02	16089.36 ± 4232.94	19541.12 ± 4341.07	0.96	2.98	2.18	25.23 ± 22.58	211.88 ± 144.17	237.11 ± 145.65	0.01	0.04	0.03		
	1991	4036.84 ± 1338.02	19602.60 ± 6171.97	23639.44 ± 6280.75	1.13	3.63	2.63	496.88 ± 869.05	359.19 ± 232.57	856.07 ± 895.51	0.14	0.07	0.10		
	1993	4910.89 ± 2153.09	29159.27 ± 8774.07	34070.15 ± 8982.25	1.37	5.40	3.79	16.82 ± 14.82	625.15 ± 550.79	641.97 ± 549.95	0.00	0.12	0.07		
	1994	6122.92 ± 1965.42	46579.47 ± 21613.43	52702.39 ± 21582.52	1.71	8.62	5.87								
	1996	4786.18 ± 1202.08	31191.52 ± 7202.97	35977.70 ± 7263.33	1.34	5.77	4.01	29.57 ± 17.92	358.23 ± 260.55	387.80 ± 260.68	0.01	0.07	0.04		
	1998	3893.82 ± 1320.75	35466.52 ± 16877.44	39360.33 ± 16841.52	1.09	6.56	4.38	34.64 ± 23.50	326.87 ± 224.67	361.51 ± 225.47	0.01	0.06	0.04		
	2000	3593.27 ± 1109.85	31448.89 ± 10018.78	35042.16 ± 10027.61	1.00	5.82	3.90	22.94 ± 21.30	197.78 ± 125.00	220.72 ± 126.56	0.01	0.04	0.03		
	2004	3749.63 ± 1555.01	32050.24 ± 8466.10	35799.87 ± 8559.72	1.05	5.93	3.99	5.59 ± 6.18	177.22 ± 111.32	182.81 ± 111.27	0.00	0.03	0.02		
	2005	3055.36 ± 1870.84	17018.69 ± 4736.19	20074.05 ± 5061.37	0.85	3.15	2.23	39.99 ± 32.85	151.45 ± 103.64	191.45 ± 108.48	0.03	0.01	0.02		
Bufflehead	1989								0.00	0.00	0.00	0.00	0.00	0.00	
	1990	210.03 ± 173.69	3908.78 ± 1642.27	4118.81 ± 1642.71	0.06	0.72	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	125.39 ± 92.17	2003.47 ± 649.05	2128.87 ± 652.07	0.04	0.37	0.24	<0.005 ± <0.005	19.61 ± 26.58	19.61 ± 26.53	<0.005	0.00	0.00		
	1993	254.48 ± 184.44	3870.94 ± 1833.76	4125.42 ± 1832.97	0.07	0.72	0.46	<0.005 ± <0.005	22.44 ± 27.52	22.44 ± 27.47	<0.005	0.00	0.00		
	1994	866.26 ± 718.58	5657.20 ± 2000.33	6523.47 ± 2112.51	0.24	1.05	0.73								
	1996	498.56 ± 304.31	6376.56 ± 2354.35	6875.12 ± 2361.32	0.14	1.18	0.77	0.00	0.00	0.00	0.00	0.00	0.00		
	1998	681.07 ± 475.77	9288.32 ± 4613.38	9969.40 ± 4613.75	0.19	1.72	1.11	<0.005 ± <0.005	3.27 ± 5.29	3.27 ± 5.28	<0.005	0.00	0.00		
	2000	226.03 ± 127.23	5171.89 ± 2395.90	5397.91 ± 2386.92	0.06	0.96	0.60	<0.005 ± <0.005	17.95 ± 30.94	17.95 ± 30.88	<0.005	0.00	0.00		
	2004	529.58 ± 345.99	5575.52 ± 2186.80	6105.09 ± 2201.76	0.15	1.03	0.68	0.00	0.00	0.00	0.00	0.00	0.00		
	2005	132.09 ± 87.07	3322.89 ± 1311.40	3454.97 ± 1307.22	0.04	0.61	0.38	0.00	0.00	0.00	0.00	0.00	0.00		
Hooded Merganser	1989								0.00	0.00	0.00	0.00	0.00	0.00	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Common Merganser	1989								650.36 ± 306.11	2020.05 ± 1294.96	2670.41 ± 1326.30	0.18	0.37	0.30	
	1990	635.02 ± 318.31	536.41 ± 283.40	1171.43 ± 422.59	0.18	0.10	0.13	565.82 ± 246.89	2859.60 ± 2003.64	3425.42 ± 2014.95	0.16	0.53	0.40		
	1991	1856.18 ± 1044.59	2609.84 ± 2057.27	4466.02 ± 2292.51	0.52	0.48	0.50	440.62 ± 290.71	1948.57 ± 833.65	2389.20 ± 880.95	0.12	0.36	0.28		
	1993	1425.48 ± 912.98	4528.68 ± 2957.17	5954.16 ± 3076.39	0.40	0.84	0.66	398.12 ± 174.25	2829.21 ± 957.28	3227.33 ± 971.09	0.11	0.52	0.37		
	1994	2329.98 ± 1975.43	5130.13 ± 3034.66	7460.11 ± 3595.34	0.65	0.95	0.83								
	1996	895.21 ± 581.24	1826.23 ± 1217.50	2721.45 ± 1340.65	0.25	0.34	0.30	624.52 ± 257.84	2261.65 ± 785.99	2886.17 ± 825.43	0.17	0.42	0.33		
	1998	2044.21 ± 1670.23	18596.65 ± 18106.68	20640.87 ± 18089.31	0.57	3.44	2.30	443.07 ± 194.33	3178.33 ± 1231.72	3621.40 ± 1244.57	0.12	0.59	0.42		
	2000	800.73 ± 358.73	1978.29 ± 1665.99	2779.02 ± 1694.98	0.22	0.37	0.31	421.47 ± 191.17	2649.91 ± 966.47	3071.38 ± 983.25	0.12	0.49	0.36		
	2004	703.35 ± 550.26	3539.82 ± 3409.95	4243.17 ± 3434.94	0.20	0.66	0.47	612.04 ± 388.97	3475.38 ± 3176.14	4087.43 ± 3193.40	0.17	0.64	0.47		
	2005	1251.42 ± 738.76	1757.24 ± 1384.41	3008.66 ± 1558.93	0.28	0.33	0.31	818.80 ± 635.09	4016.99 ± 2709.00	4835.79 ± 2776.51	0.74	0.23	0.56		

Red-breasted Merganser	1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	575.57 ± 248.46	901.02 ± 402.16	1476.59 ± 469.50	0.16	0.17	0.16	11.21 ± 14.16	94.68 ± 79.93	105.89 ± 81.02	0.00	0.00	0.00	0.02	0.01	0.00	0.02	0.01	
	1991	79.76 ± 76.52	151.38 ± 138.97	231.14 ± 157.61	0.02	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1993	92.80 ± 132.36	371.73 ± 383.34	464.53 ± 403.06	0.03	0.07	0.05	84.27 ± 76.27	267.55 ± 220.77	351.82 ± 233.06	0.02	0.05	0.04						
	1994	401.97 ± 323.99	7422.44 ± 11170.36	7824.41 ± 11113.66	0.11	1.37	0.87												
	1996	1191.08 ± 1258.02	1232.56 ± 605.41	2423.64 ± 1382.29	0.33	0.23	0.27	<0.005 ± <0.005	17.56 ± 22.30	17.56 ± 22.26	<0.005	0.00	0.00						
	1998	468.03 ± 259.10	1793.56 ± 2191.93	2261.60 ± 2195.68	0.13	0.33	0.25	<0.005 ± <0.005	68.97 ± 62.16	68.97 ± 62.04	<0.005	0.01	0.01						
	2000	186.87 ± 245.90	1030.41 ± 814.47	1217.28 ± 846.00	0.05	0.19	0.14	5.61 ± 9.07	52.24 ± 39.20	57.85 ± 40.15	0.00	0.01	0.01						
	2004	271.13 ± 257.30	727.30 ± 356.29	998.42 ± 436.29	0.08	0.13	0.11	16.76 ± 27.12	426.77 ± 338.39	443.53 ± 338.79	0.00	0.08	0.05						
	2005	75.38 ± 92.42	887.31 ± 460.68	962.69 ± 467.24	0.02	0.16	0.11	37.89 ± 33.53	701.34 ± 860.77	739.23 ± 859.71	0.13	0.01	0.09						
Unidentified Merganser	1989							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1990	351.94 ± 241.54	511.42 ± 483.43	863.37 ± 536.97	0.10	0.09	0.10	5.61 ± 9.18	403.72 ± 219.61	409.33 ± 219.39	0.00	0.07	0.05						
	1991	290.51 ± 425.83	935.92 ± 1573.08	1226.43 ± 1620.55	0.08	0.17	0.14	29.38 ± 33.37	269.21 ± 203.32	298.59 ± 205.64	0.01	0.05	0.03						
	1993	209.05 ± 131.25	2616.00 ± 3085.65	2825.05 ± 3071.79	0.06	0.48	0.31	92.52 ± 136.54	366.47 ± 194.45	458.99 ± 236.93	0.03	0.07	0.05						
	1994	765.17 ± 705.97	5698.48 ± 5445.98	6463.64 ± 5460.92	0.21	1.05	0.72												
	1996	123.06 ± 122.90	1241.35 ± 1228.80	1364.41 ± 1228.41	0.03	0.23	0.15	0.08 ± 0.13	199.98 ± 123.75	200.06 ± 123.52	0.00	0.04	0.02						
	1998	42.95 ± 49.79	119.76 ± 107.58	162.71 ± 117.81	0.01	0.02	0.02	14.43 ± 10.14	134.24 ± 110.88	148.68 ± 111.13	0.00	0.02	0.02						
	2000	163.06 ± 205.47	1628.43 ± 1737.49	1791.48 ± 1740.47	0.05	0.30	0.20	2.80 ± 4.56	275.70 ± 392.62	278.50 ± 391.92	0.00	0.05	0.03						
	2004	86.42 ± 85.76	261.69 ± 219.54	348.11 ± 234.26	0.02	0.05	0.04	<0.005 ± <0.005	39.91 ± 50.23	39.91 ± 50.13	<0.005	0.01	0.00						
	2005	95.38 ± 97.92	232.91 ± 170.91	328.29 ± 195.66	0.03	0.04	0.04	5.71 ± 6.63	67.08 ± 70.40	72.80 ± 70.57	0.01	0.00	0.01						
Total Mergansers	1989							650.36 ± 306.11	2020.05 ± 1294.96	2670.41 ± 1326.30	0.18	0.37	0.30						
	1990	1562.53 ± 500.53	1948.85 ± 725.83	3511.38 ± 875.44	0.44	0.36	0.39	582.64 ± 246.14	3358.00 ± 2020.32	3940.64 ± 2031.38	0.16	0.62	0.46						
	1991	2226.45 ± 1089.19	3697.14 ± 3129.05	5923.59 ± 3293.84	0.62	0.68	0.66	470.00 ± 290.85	2217.79 ± 872.95	2687.79 ± 918.13	0.13	0.41	0.31						
	1993	1727.33 ± 969.19	7516.41 ± 4617.19	9243.74 ± 4691.07	0.48	1.39	1.03	574.91 ± 221.69	3463.23 ± 976.76	4038.14 ± 999.58	0.16	0.64	0.47						
	1994	3497.12 ± 2139.11	18251.04 ± 18217.36	21748.16 ± 18240.50	0.98	3.38	2.42												
	1996	2209.35 ± 1608.98	4300.14 ± 1858.65	6509.50 ± 2439.44	0.62	0.80	0.72	624.60 ± 257.84	2479.18 ± 803.11	3103.79 ± 841.68	0.17	0.46	0.36						
	1998	2555.19 ± 1804.34	20509.98 ± 18107.37	23065.17 ± 18102.58	0.71	3.80	2.57	457.50 ± 195.64	3381.54 ± 1244.66	3839.04 ± 1257.53	0.13	0.63	0.44						
	2000	1150.66 ± 484.37	4637.12 ± 3145.84	5787.78 ± 3166.14	0.32	0.86	0.64	429.88 ± 197.27	2977.85 ± 1107.09	3407.73 ± 1122.33	0.12	0.55	0.39						
	2004	1060.90 ± 739.11	4528.80 ± 3443.63	5589.70 ± 3502.19	0.30	0.84	0.62	628.80 ± 389.51	3942.06 ± 3195.63	4570.86 ± 3212.77	0.18	0.73	0.53						
	2005	1422.18 ± 765.31	2877.46 ± 1725.10	4299.64 ± 1875.48	0.33	0.53	0.45	862.40 ± 634.80	4785.41 ± 2831.31	5647.81 ± 2895.44	0.89	0.24	0.65						
Unidentified Diving/Sea Duck	1989							146.42 ± 245.74	229.89 ± 183.13	376.31 ± 304.84	0.04	0.04	0.04						
	1990	226.49 ± 155.66	1975.24 ± 2728.46	2201.73 ± 2718.59	0.06	0.37	0.25	<0.005 ± <0.005	97.77 ± 97.43	97.77 ± 97.25	<0.005	0.02	0.01						
	1991	1110.12 ± 936.23	2116.48 ± 1167.83	3226.60 ± 1485.59	0.31	0.39	0.36	33.64 ± 45.62	973.86 ± 483.29	1007.51 ± 484.51	0.01	0.18	0.12						
	1993	704.95 ± 637.51	969.60 ± 623.75	1674.55 ± 883.95	0.20	0.18	0.19	14.02 ± 13.37	640.76 ± 425.91	654.77 ± 425.32	0.00	0.12	0.08						
	1994	262.62 ± 178.00	687.47 ± 500.95	950.08 ± 528.40	0.07	0.13	0.11												
	1996	30.68 ± 56.54	76.76 ± 143.28	107.44 ± 153.11	0.01	0.01	0.01	<0.005 ± <0.005	59.92 ± 94.07	59.92 ± 93.89	<0.005	0.01	0.01						
	1998	1.12 ± 2.10	28.58 ± 32.49	29.69 ± 32.39	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
	2000	12.27 ± 22.82	59.88 ± 76.55	72.15 ± 79.43	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00						
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Unidentified Duck	1989							0.98 ± 1.67	63.70 ± 82.11	64.68 ± 81.88	0.00	0.01	0.01						
	1990	92.89 ± 187.35	309.05 ± 346.85	401.95 ± 391.64	0.03	0.06	0.04	0.00	0.00	0.00	0.00	0.00	0.00						
	1991	30.68 ± 54.61	45.42 ± 60.59	76.09 ± 80.93	0.01	0.01	0.01	<0.005 ± <0.005	19.61 ± 26.88	19.61 ± 26.83	<0.005	0.00	0.00						
	1993	62.38 ± 76.53	345.97 ± 492.38	408.34 ± 495.53	0.02	0.06	0.05	<0.005 ± <0.005	4.49 ± 7.67	4.49 ± 7.66	<0.005	0.00	0.00						
	1994	<0.005 ± <0.005	24.21 ± 44.94	24.21 ± 44.70	<0.005	0.00	0.00												
	1996	61.35 ± 115.42	207.26 ± 320.59	268.61 ± 338.74	0.02	0.04	0.03	<0.005 ± <0.005	39.21 ± 41.18	39.21 ± 41.10	<0.005	0.01	0.00						
	1998	<0.005 ± <0.005	381.74 ± 697.73	381.74 ± 694.15	<0.005	0.07	0.04	8.66 ± 14.04	78.82 ± 95.92	87.48 ± 96.76	0.00	0.01	0.01						
	2000	0.53 ± 1.00	74.21 ± 71.99	74.74 ± 71.63	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00						
	2004	196.33 ± 271.49	6451.90 ± 10582.98	6648.23 ± 10529.29	0.05	1.19	0.74	<0.005 ± <0.005	73.29 ± 110.16	73.29 ± 109.94	<0.005	0.01	0.01						
	2005	433.03 ± 267.37	3597.39 ± 3603.00	4030.41 ± 3593.46	0.09	0.61	0.41	11.43 ± 18.54	109.18 ± 188.71	120.60 ± 189.24	0.02	0.00	0.01						









**Gruiformes**

*Rallidae: Rails, Gallinules, and Coots*

Sandhill Crane	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**Charadriiformes**

*Charadriidae: Plovers*

Semipalmated Plover	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17 ±	0.27	6.35 ±	10.25	6.51 ±	10.23	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unidentified Plover	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86 ±	4.68	<0.005 ±	<0.005	2.86 ±	4.66	<0.005	0.00	0.00

*Haematopodidae: Oystercatchers*

Black Oystercatcher	1989										114.39 ±	55.43	317.87 ±	111.17	432.26 ±	123.75	0.03	0.06	0.05
	1990	0.18 ±	0.33	14.90 ±	19.29	15.08 ±	19.20	0.00	0.00	0.00	161.81 ±	76.33	604.20 ±	183.82	766.02 ±	198.58	0.05	0.11	0.09
	1991	<0.005 ±	<0.005	7.57 ±	14.03	7.57 ±	13.96	<0.005	0.00	0.00	145.95 ±	72.85	627.18 ±	303.34	773.13 ±	311.33	0.04	0.12	0.09
	1993	12.27 ±	16.04	<0.005 ±	<0.005	12.27 ±	15.85	0.00	<0.005	0.00	218.25 ±	80.62	645.26 ±	206.20	863.51 ±	220.90	0.06	0.12	0.10
	1994	6.14 ±	11.58	8.07 ±	15.05	14.20 ±	18.85	0.00	0.00	0.00									
	1996	18.76 ±	25.18	14.91 ±	27.32	33.67 ±	36.86	0.01	0.00	0.00	198.77 ±	62.76	555.42 ±	179.00	754.19 ±	189.27	0.06	0.10	0.09
	1998	1.05 ±	2.00	66.08 ±	84.09	67.13 ±	83.68	0.00	0.01	0.01	195.60 ±	57.82	818.62 ±	239.40	1014.22 ±	245.79	0.05	0.15	0.12
	2000	2.81 ±	5.34	116.33 ±	212.90	119.14 ±	211.88	0.00	0.02	0.01	182.40 ±	63.91	710.30 ±	272.79	892.69 ±	279.62	0.05	0.13	0.10
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	195.63 ±	125.86	598.80 ±	248.89	794.43 ±	278.20	0.05	0.11	0.09
	2005	36.81 ±	67.79	214.20 ±	348.80	251.02 ±	353.36	0.01	0.04	0.03	140.63 ±	56.87	678.54 ±	276.05	819.17 ±	281.26	0.13	0.04	0.09

<i>Charadriidae: Plovers</i>																			
Black-bellied Plover	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	6.54 ±	10.73	6.54 ±	10.71	<0.005	0.00	0.00
	1998	6.14 ±	11.30	<0.005 ±	<0.005	6.14 ±	11.18	0.00	<0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Scolopacidae: Sandpipers, Phalaropes, and Allies</i>																			
Greater Yellowlegs	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	19.61 ±	32.15	19.61 ±	32.09	<0.005	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33 ±	0.55	17.18 ±	21.93	17.51 ±	21.90	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lesser Yellowlegs	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	11.02 ±	13.25	11.02 ±	13.23	<0.005	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	18.32 ±	24.10	18.32 ±	24.06	<0.005	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	4.81 ±	8.30	4.81 ±	8.28	0.00	<0.005	0.00
Unidentified Yellowlegs	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	4.49 ±	7.73	4.49 ±	7.72	<0.005	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solitary Sandpiper	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80 ±	4.56	<0.005 ±	<0.005	2.80 ±	4.54	0.00	<0.005	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.59 ±	6.11	<0.005 ±	<0.005	5.59 ±	6.08	0.00	<0.005	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.85 ±	37.52	9.83 ±	16.18	32.69 ±	40.67	0.00	0.01	0.00

Wandering Tattler	1989										3.12 ±	5.10	<0.005 ±	<0.005	3.12 ±	5.07	0.00	<0.005	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80 ±	4.55	81.61 ±	71.62	84.41 ±	71.63	0.00	0.02	0.01
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	7.76 ±	9.24	7.76 ±	9.23	<0.005	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.61 ±	6.42	90.63 ±	48.81	96.23 ±	49.13	0.00	0.02	0.01
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04 ±	0.06	21.18 ±	31.91	21.21 ±	31.86	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.97 ±	9.73	30.20 ±	22.18	36.18 ±	24.17	0.00	0.01	0.00
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	14.38 ±	14.37	14.38 ±	14.34	<0.005	0.00	0.00	
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86 ±	4.64	8.09 ±	9.92	10.95 ±	10.93	0.00	0.00	0.00	
Spotted Sandpiper	1989										<0.005 ±	<0.005	13.01 ±	12.98	13.01 ±	12.94	<0.005	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.61 ±	9.09	42.87 ±	23.77	48.48 ±	25.39	0.00	0.01	0.01	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.41 ±	10.11	12.24 ±	11.99	20.65 ±	15.63	0.00	0.00	0.00	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.41 ±	10.15	<0.005 ±	<0.005	8.41 ±	10.11	0.00	<0.005	0.00	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.63 ±	13.34	64.88 ±	37.95	84.50 ±	40.14	0.01	0.01	0.01	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.86 ±	6.62	57.03 ±	78.32	62.88 ±	78.45	0.00	0.01	0.01	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80 ±	4.52	62.87 ±	33.26	65.67 ±	33.51	0.00	0.01	0.01	
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.14 ±	11.86	12.87 ±	10.10	27.01 ±	15.53	0.00	0.00	0.00		
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Whimbrel	1989										<0.005 ±	<0.005	108.44 ±	131.67	108.44 ±	131.27	<0.005	0.02	0.01
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.82 ±	27.44	22.44 ±	28.27	39.26 ±	39.26	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.02 ±	22.46	14.02 ±	26.79	30.36 ±	34.85	0.00	0.00	0.00	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.61 ±	9.15	58.34 ±	74.02	63.95 ±	74.44	0.00	0.01	0.01	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80 ±	4.57	57.16 ±	63.46	59.97 ±	63.50	0.00	0.01	0.01	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	19.61 ±	31.87	19.61 ±	31.82	<0.005	0.00	0.00	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	67.32 ±	92.80	67.32 ±	92.63	<0.005	0.01	0.01	
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	4.81 ±	8.31	4.81 ±	8.29	0.00	<0.005	0.00		
Black Turnstone	1989										15.58 ±	26.18	5152.97 ±	8880.25	5168.55 ±	8852.93	0.00	0.95	0.58
	1990	36.81 ±	59.35	<0.005 ±	<0.005	36.81 ±	58.69	0.01	<0.005	0.00	318.61 ±	360.73	483.84 ±	660.93	802.45 ±	751.05	0.09	0.09	0.09
	1991	<0.005 ±	<0.005	302.77 ±	549.86	302.77 ±	546.99	<0.005	0.06	0.03	22.43 ±	26.03	<0.005 ±	<0.005	22.43 ±	25.91	0.01	<0.005	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.05 ±	45.59	26.93 ±	46.06	68.98 ±	64.59	0.01	0.00	0.01	
	1994	30.68 ±	57.27	<0.005 ±	<0.005	30.68 ±	56.65	0.01	<0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.21 ±	12.71	27.75 ±	28.48	38.97 ±	31.11	0.00	0.01	0.00	
	1998	165.65 ±	263.95	239.52 ±	422.54	405.18 ±	494.83	0.05	0.04	0.05	37.79 ±	40.71	152.46 ±	197.54	190.25 ±	201.29	0.01	0.03	0.02
	2000	12.27 ±	23.22	<0.005 ±	<0.005	12.27 ±	22.97	0.00	<0.005	0.00	<0.005 ±	<0.005	49.37 ±	84.45	49.37 ±	84.29	<0.005	0.01	0.01
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.69 ±	71.92	<0.005 ±	<0.005	44.69 ±	71.59	0.01	<0.005	0.01		
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.57 ±	14.07	<0.005 ±	<0.005	8.57 ±	14.00	<0.005	0.00	0.00		
Ruddy Turnstone	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1993	0.70 ±	1.34	30.17 ±	55.37	30.87 ±	55.09	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.43 ±	36.61	111.10 ±	182.16	133.53 ±	185.44	0.01	0.02	0.02	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

Unidentified Turnstone	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Surfbird	1989										557.66 ±	762.38	121.45 ±	210.21	679.11 ±	785.82	0.16	0.02	0.08
	1990	625.79 ±	1150.12	279.71 ±	520.37	905.50 ±	1249.74	0.17	0.05	0.10	591.57 ±	673.56	94.29 ±	101.19	685.86 ±	677.90	0.17	0.02	0.08
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2361.08 ±	2354.06	1519.29 ±	2376.60	3880.37 ±	3334.03	0.66	0.28	0.45
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	420.55 ±	644.89	3864.02 ±	4492.81	4284.57 ±	4530.06	0.12	0.72	0.50
	1994	<0.005 ±	<0.005	250.15 ±	383.70	250.15 ±	381.59	<0.005	0.05	0.03									
	1996	613.52 ±	1161.12	92.12 ±	167.21	705.64 ±	1160.35	0.17	0.02	0.08	891.56 ±	878.92	750.73 ±	862.38	1642.29 ±	1227.21	0.25	0.14	0.19
	1998	257.68 ±	357.46	<0.005 ±	<0.005	257.68 ±	353.52	0.07	<0.005	0.03	3020.80 ±	2294.70	768.29 ±	693.47	3789.09 ±	2386.16	0.84	0.14	0.44
	2000	490.82 ±	851.36	149.70 ±	165.21	640.52 ±	857.86	0.14	0.03	0.07	375.69 ±	484.51	427.61 ±	690.93	803.29 ±	841.49	0.11	0.08	0.09
	2004	294.49 ±	551.90	657.56 ±	688.03	952.05 ±	875.37	0.08	0.12	0.11	435.68 ±	605.75	96.19 ±	130.44	531.87 ±	616.81	0.12	0.02	0.06
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5142.70 ±	8633.96	562.89 ±	621.61	5705.58 ±	8613.51	0.10	1.44	0.66	
Sanderling	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Semipalmated Sandpiper	1989										<0.005 ±	<0.005	8.68 ±	14.98	8.68 ±	14.93	<0.005	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Western Sandpiper	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41 ±	0.68	15.87 ±	25.62	16.28 ±	25.58	0.00	0.00	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

Least Sandpiper	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.17 ±	14.13	<0.005 ±	<0.005	11.17 ±	14.06	0.00	<0.005	0.00
Pectoral Sandpiper	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rock Sandpiper	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1993	<0.005 ±	<0.005	434.83 ±	727.88	434.83 ±	723.97	<0.005	0.08	0.05	109.34 ±	131.76	<0.005 ±	<0.005	109.34 ±	131.13	0.03	<0.005	0.01
	1994	343.57 ±	340.79	1315.30 ±	1962.62	1658.87 ±	1980.74	0.10	0.24	0.18									
	1996	<0.005 ±	<0.005	168.88 ±	196.17	168.88 ±	195.15	<0.005	0.03	0.02	2.80 ±	4.59	<0.005 ±	<0.005	2.80 ±	4.57	0.00	<0.005	0.00
	1998	432.63 ±	791.15	2241.03 ±	2217.94	2673.66 ±	2341.17	0.12	0.41	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2000	<0.005 ±	<0.005	6169.66 ±	6253.12	6169.66 ±	6221.02	<0.005	1.14	0.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	<0.005 ±	<0.005	861.09 ±	1240.42	861.09 ±	1233.73	<0.005	0.16	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dunlin	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.41 ±	13.73	<0.005 ±	<0.005	8.41 ±	13.66	0.00	<0.005	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Short-billed Dowitcher	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	16.34 ±	26.16	16.34 ±	26.11	<0.005	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



Long-billed Dowitcher	1989										6.23 ± 10.40	<0.005 ± <0.005	6.23 ± 10.33	0.00	<0.005	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Unidentified Dowitcher	1989										0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Red-necked Phalarope	1989										1638.61 ± 1845.28	8062.07 ± 8864.46	9700.68 ± 9025.27	0.46	1.49	1.08
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	721.14 ± 642.22	1692.79 ± 1137.35	2413.93 ± 1302.78	0.20	0.31	0.28
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3044.84 ± 2577.20	16172.75 ± 27045.32	19217.59 ± 27116.06	0.85	2.99	2.22
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	235.12 ± 406.92	1703.21 ± 1667.11	1938.32 ± 1712.55	0.07	0.32	0.22
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1176.00 ± 1038.18	6251.45 ± 4115.41	7427.45 ± 4235.69	0.33	1.16	0.86
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	588.80 ± 563.71	2114.00 ± 1729.26	2702.80 ± 1814.95	0.16	0.39	0.31
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	110.79 ± 182.29	22.90 ± 40.37	133.69 ± 185.86	0.03	0.00	0.02	
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	272.94 ± 471.77	272.94 ± 470.84	0.05	<0.005	0.03	
Red Phalarope	1989										0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	258.51 ± 449.60	258.51 ± 448.71	<0.005	0.05	0.03	
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Unidentified Phalarope	1989										0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.87 ± 23.16	148.12 ± 257.45	162.99 ± 258.00	0.00	0.03	0.02
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	121.11 ± 202.11	121.11 ± 201.73	<0.005	0.02	0.01
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	603.58 ± 1086.16	<0.005 ± <0.005	603.58 ± 1080.94	0.17	<0.005	0.07
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	167.17 ± 156.84	666.93 ± 1034.31	834.11 ± 1044.14	0.05	0.12	0.10
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	302.38 ± 474.91	302.38 ± 473.97	<0.005	0.06	0.03	
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	



Parasitic Jaeger	1989										228.37 ± 226.70	277.06 ± 205.80	505.43 ± 304.65	0.06	0.05	0.06
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	55.85 ± 93.21	55.85 ± 93.21	55.85 ± 93.21	<0.005	0.01	0.01
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.31 ± 124.08	270.34 ± 209.70	370.65 ± 243.02	0.03	0.05	0.04	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.25 ± 63.57	86.92 ± 91.46	127.17 ± 111.07	0.01	0.02	0.01	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.47 ± 101.69	279.82 ± 299.74	341.29 ± 315.83	0.02	0.05	0.04	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	8.98 ± 15.49	8.98 ± 15.49	8.98 ± 15.49	<0.005	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.71 ± 63.52	174.34 ± 172.95	213.05 ± 183.84	0.01	0.03	0.02	
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	126.69 ± 228.08	120.83 ± 144.08	247.51 ± 268.72	0.04	0.02	0.03		
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	180.43 ± 178.03	180.43 ± 177.68	180.43 ± 177.68	0.03	<0.005	0.02	
Long-tailed Jaeger	1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	4.49 ± 7.74	4.49 ± 7.74	4.49 ± 7.74	<0.005	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	63.05 ± 93.49	63.05 ± 93.31	63.05 ± 93.31	<0.005	0.01	0.01
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74.70 ± 122.70	<0.005 ± <0.005	74.70 ± 122.11	0.02	<0.005	0.01	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	4.49 ± 7.58	4.49 ± 7.56	4.49 ± 7.56	<0.005	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.02 ± 7.57	101.95 ± 124.95	105.97 ± 124.93	0.00	0.02	0.01		
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86 ± 4.63	50.06 ± 86.45	52.92 ± 86.40	0.01	0.00	0.01		
Unidentified Jaeger	1989									815.17 ± 809.89	727.79 ± 486.13	1542.96 ± 939.25	0.23	0.13	0.17	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	304.48 ± 264.38	233.11 ± 212.62	537.59 ± 338.04	0.09	0.04	0.06	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74.88 ± 82.56	67.69 ± 67.69	115.46 ± 106.38	0.02	0.01	0.01	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	186.02 ± 156.92	186.02 ± 156.62	<0.005	0.03	0.02	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.61 ± 9.04	<0.005 ± <0.005	5.61 ± 8.99	0.00	<0.005	0.00	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	170.61 ± 193.17	170.61 ± 192.82	<0.005	0.03	0.02	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	52.99 ± 92.74	52.99 ± 92.55	<0.005	0.01	0.01		
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total Jaegers	1989									1426.03 ± 876.11	2130.15 ± 947.46	3556.18 ± 1284.39	0.40	0.39	0.40	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	583.96 ± 467.70	712.48 ± 408.16	1296.44 ± 618.57	0.16	0.13	0.15	
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	175.19 ± 146.38	373.97 ± 230.40	549.16 ± 272.23	0.05	0.07	0.06	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	204.42 ± 190.73	552.82 ± 339.43	757.24 ± 388.34	0.06	0.10	0.09	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	105.78 ± 120.24	385.00 ± 323.18	490.79 ± 344.06	0.03	0.07	0.06	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	224.56 ± 205.33	224.56 ± 204.95	<0.005	0.04	0.03	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.71 ± 63.52	174.34 ± 172.95	213.05 ± 183.84	0.01	0.03	0.02	
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	168.13 ± 236.57	356.93 ± 244.65	525.06 ± 339.20	0.05	0.07	0.06		
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86 ± 4.63	230.49 ± 195.56	233.35 ± 195.22	0.04	0.00	0.03		
Bonaparte's Gull	1989									220.73 ± 173.32	2248.62 ± 1811.46	2469.35 ± 1814.07	0.06	0.42	0.27	
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.94 ± 71.90	1378.41 ± 1135.61	1423.34 ± 1135.76	0.01	0.26	0.16	
	1991	93.75 ± 177.41		<0.005 ± <0.005		93.75 ± 175.46		0.03	<0.005	0.01	13.57 ± 11.22	809.08 ± 679.44	822.65 ± 678.25	0.00	0.15	0.10
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	2108.20 ± 1624.46	2108.20 ± 1621.41	<0.005	0.39	0.24	
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	106.38 ± 129.72	1513.37 ± 1318.57	1619.75 ± 1322.43	0.03	0.28	0.19	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.02 ± 62.59	599.99 ± 625.22	599.99 ± 627.17	0.01	0.10	0.07	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.61 ± 6.47	2562.76 ± 4058.81	2568.37 ± 4051.26	0.00	0.47	0.30	
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.59 ± 6.36	679.27 ± 774.68	684.86 ± 773.17	0.00	0.13	0.08		
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.85 ± 67.68	1559.18 ± 1701.79	1615.03 ± 1699.76	0.29	0.02	0.19		

Mew Gull	1989									624.13 ± 218.81	5021.18 ± 1872.65	5645.30 ± 1879.49	0.17	0.93	0.63	
	1990	405.83 ± 252.23	2137.04 ± 1258.18	2542.86 ± 1276.23	0.11	0.40	0.28	1111.57 ± 646.85	7142.25 ± 2679.30	8253.82 ± 2750.70	0.31	1.32	0.95			
	1991	3825.12 ± 1973.73	5959.54 ± 2670.32	9784.66 ± 3296.49	1.07	1.10	1.09	287.99 ± 99.43	2990.21 ± 1077.06	3278.21 ± 1079.58	0.08	0.55	0.38			
	1993	652.74 ± 357.16	8415.94 ± 9961.01	9068.69 ± 9913.71	0.18	1.56	1.01	758.80 ± 276.28	4593.91 ± 1306.12	5352.70 ± 1332.35	0.21	0.85	0.62			
	1994	5708.64 ± 2108.78	6881.75 ± 2558.17	12590.38 ± 3289.92	1.60	1.27	1.40									
	1996	5911.78 ± 4784.72	14412.50 ± 10594.81	20324.28 ± 11553.12	1.65	2.67	2.26	1258.19 ± 396.07	12905.74 ± 5438.39	14163.93 ± 5442.56	0.35	2.39	1.64			
	1998	2480.07 ± 2135.69	4337.14 ± 2602.87	6817.20 ± 3341.65	0.69	0.80	0.76	685.89 ± 250.30	4931.84 ± 1630.58	5617.72 ± 1646.53	0.19	0.91	0.65			
	2000	972.35 ± 962.81	2133.31 ± 1401.93	3105.66 ± 1688.77	0.27	0.39	0.35	723.26 ± 266.20	6040.74 ± 1836.48	6764.00 ± 1852.10	0.20	1.12	0.78			
	2004	721.02 ± 636.04	1040.71 ± 520.61	1761.73 ± 814.80	0.20	0.19	0.20	387.59 ± 139.03	2713.25 ± 1006.08	3100.84 ± 1013.58	0.11	0.50	0.36			
	2005	6334.06 ± 3405.92	2591.89 ± 942.41	8925.95 ± 3497.39	1.77	0.48	0.99	188.33 ± 77.51	2259.56 ± 828.98	2447.89 ± 830.93	0.42	0.05	0.28			
Herring Gull	1989							3.12 ± 5.27	4.34 ± 7.54	7.45 ± 9.16	0.00	0.00	0.00			
	1990	98.43 ± 156.66	55.70 ± 70.91	154.13 ± 170.24	0.03	0.01	0.02	8.19 ± 7.60	116.52 ± 126.70	124.71 ± 126.69	0.00	0.02	0.01			
	1991	39.23 ± 77.24	56.39 ± 107.15	95.62 ± 131.14	0.01	0.01	0.01	123.64 ± 145.08	90.66 ± 103.23	214.30 ± 177.38	0.03	0.02	0.02			
	1993	317.80 ± 255.79	539.84 ± 480.97	857.65 ± 541.00	0.09	0.10	0.10	28.04 ± 32.12	20.00 ± 19.02	48.04 ± 37.18	0.01	0.00	0.01			
	1994	357.20 ± 397.54	1629.59 ± 1992.78	1986.78 ± 2020.47	0.10	0.30	0.22									
	1996	12.27 ± 16.11	48.16 ± 69.43	60.43 ± 70.89	0.00	0.01	0.01	48.75 ± 62.54	8.98 ± 10.84	57.73 ± 63.17	0.01	0.00	0.01			
	1998	113.78 ± 97.36	562.10 ± 780.71	675.88 ± 782.64	0.03	0.10	0.08	43.61 ± 62.84	8.98 ± 15.39	52.58 ± 64.39	0.01	0.00	0.01			
	2000	138.54 ± 172.39	167.68 ± 173.31	306.22 ± 242.48	0.04	0.03	0.03	5.61 ± 6.40	138.59 ± 135.08	144.20 ± 134.98	0.00	0.03	0.02			
	2004	666.39 ± 556.69	243.28 ± 208.78	909.68 ± 588.48	0.19	0.05	0.10	54.62 ± 63.20	726.91 ± 438.23	781.53 ± 441.86	0.02	0.13	0.09			
	2005	1231.24 ± 714.30	799.54 ± 404.71	2030.77 ± 813.26	0.34	0.15	0.23	37.35 ± 61.37	<0.005 ± <0.005	37.35 ± 61.07	<0.005	0.01	0.00			
Thayer's Gull	1989							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Glaucon-winged Gull	1989							5034.85 ± 1867.08	16220.25 ± 4441.46	21255.10 ± 4800.57	1.41	3.00	2.37			
	1990	4322.26 ± 1562.09	4119.89 ± 1059.15	8442.15 ± 1870.01	1.21	0.76	0.94	10505.94 ± 3271.70	21473.38 ± 6959.69	31979.32 ± 7671.94	2.94	3.97	3.70			
	1991	3659.22 ± 2019.99	6566.66 ± 3065.88	10225.88 ± 3645.95	1.02	1.22	1.14	6633.71 ± 2942.04	18473.43 ± 4571.07	25107.13 ± 5421.19	1.85	3.42	2.90			
	1993	4302.17 ± 3205.89	5750.96 ± 3349.20	10053.13 ± 4596.01	1.20	1.06	1.12	7624.44 ± 3699.79	25991.12 ± 9739.58	33615.56 ± 10395.24	2.13	4.81	3.89			
	1994	18103.19 ± 16570.59	24376.55 ± 8657.54	42479.74 ± 18514.61	5.06	4.51	4.73									
	1996	6893.60 ± 4596.71	7042.15 ± 2879.63	13935.74 ± 5373.44	1.93	1.30	1.55	6779.03 ± 4696.38	18315.67 ± 4451.47	25094.71 ± 6448.77	1.89	3.39	2.90			
	1998	3868.07 ± 1980.28	10755.00 ± 7086.18	14623.07 ± 7316.78	1.08	1.99	1.63	7672.47 ± 3582.18	16380.56 ± 5029.89	24053.03 ± 6157.46	2.14	3.03	2.78			
	2000	2742.09 ± 2295.05	10015.15 ± 4290.86	12757.24 ± 4834.73	0.77	1.85	1.42	6649.68 ± 3052.34	20935.46 ± 6502.75	27585.14 ± 7166.31	1.86	3.87	3.19			
	2004	3945.91 ± 2406.89	5439.12 ± 2679.36	9385.03 ± 3573.41	1.10	1.01	1.04	9022.56 ± 4226.10	27237.41 ± 6619.03	36259.98 ± 7831.41	2.52	5.04	4.20			
	2005	19086.56 ± 7168.99	16277.37 ± 5324.95	35363.92 ± 8851.64	5.34	3.01	3.94	7896.33 ± 3103.80	20010.71 ± 7886.45	27907.03 ± 8455.09	3.70	2.21	3.23			
Glaucon Gull	1989							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	2.80 ± 4.58	<0.005 ± <0.005	2.80 ± 4.56	0.00	<0.005	0.00			
	1996	0.00	0.00	0.00	0.00	0.00	0.00	2.80 ± 4.48	<0.005 ± <0.005	2.80 ± 4.46	0.00	<0.005	0.00			
	1998	0.00	0.00	0.00	0.00	0.00	0.00	16.08 ± 30.30	197.50 ± 343.27	213.58 ± 343.96	0.00	0.04	0.02			
	2000	6.14 ± 11.49	<0.005 ± <0.005	6.14 ± 11.37	0.00	<0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	<0.005 ± <0.005	76.48 ± 128.93	76.48 ± 128.24	<0.005	0.01	0.01	5.71 ± 6.58	<0.005 ± <0.005	5.71 ± 6.55	<0.005	0.00	0.00			

Black-legged Kittiwake	1989									24967.69 ± 5510.83	33674.42 ± 7689.13	58642.11 ± 9419.65	6.98	6.23	6.53
	1990	55.69 ± 68.04	101.33 ± 95.96	157.02 ± 116.79	0.02	0.02	0.02	20602.88 ± 6728.25	21588.11 ± 5447.23	21588.11 ± 5447.23	42190.99 ± 8625.42	42190.99 ± 8625.42	5.76	3.99	4.88
	1991	401.33 ± 249.98	441.93 ± 377.04	843.26 ± 449.23	0.11	0.08	0.09	28015.30 ± 6208.28	33581.18 ± 7108.82	33581.18 ± 7108.82	61596.48 ± 9408.56	61596.48 ± 9408.56	7.83	6.21	7.13
	1993	2610.08 ± 2888.05	681.99 ± 426.53	3292.06 ± 2883.90	0.73	0.13	0.37	25221.36 ± 8800.80	47872.04 ± 23070.38	47872.04 ± 23070.38	73093.40 ± 24636.55	73093.40 ± 24636.55	7.05	8.86	8.46
	1994	956.28 ± 906.55	3495.12 ± 1975.79	4451.40 ± 2159.89	0.27	0.65	0.50								
	1996	1776.90 ± 958.70	3501.84 ± 1886.24	5278.75 ± 2102.35	0.50	0.65	0.59	12305.21 ± 4241.13	35921.46 ± 18146.77	35921.46 ± 18146.77	48226.67 ± 18598.27	48226.67 ± 18598.27	3.44	6.65	5.58
	1998	2098.39 ± 1123.40	10499.81 ± 5989.91	12598.20 ± 6061.84	0.59	1.94	1.40	12397.70 ± 3880.98	22678.31 ± 6280.42	22678.31 ± 6280.42	35076.01 ± 7363.06	35076.01 ± 7363.06	3.47	4.20	4.06
	2000	1671.22 ± 1463.99	4529.71 ± 2564.92	6200.93 ± 2933.89	0.47	0.84	0.69	12064.03 ± 4260.93	15918.71 ± 6144.14	15918.71 ± 6144.14	27982.74 ± 7455.99	27982.74 ± 7455.99	3.37	2.95	3.24
	2004	892.06 ± 820.79	8675.54 ± 11693.93	9567.60 ± 11659.12	0.25	1.61	1.07	6818.73 ± 1718.41	27590.41 ± 7421.47	27590.41 ± 7421.47	34409.14 ± 7601.66	34409.14 ± 7601.66	1.91	5.11	3.98
	2005	2486.35 ± 1069.73	13416.65 ± 5340.36	15903.00 ± 5416.17	0.69	2.48	1.77	22722.12 ± 6028.84	32394.89 ± 11980.08	32394.89 ± 11980.08	55117.01 ± 13376.92	55117.01 ± 13376.92	5.99	6.35	6.38
Sabine's Gull	1989							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	126.62 ± 213.21	<0.005 ± <0.005	<0.005 ± <0.005	126.62 ± 212.17	126.62 ± 212.17	0.04	<0.005	0.01
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unidentified Gull	1989							1887.89 ± 2760.13	11174.88 ± 7619.04	11174.88 ± 7619.04	13062.77 ± 8075.33	13062.77 ± 8075.33	0.53	2.07	1.45
	1990	753.34 ± 588.00	3472.13 ± 4677.90	4225.48 ± 4689.68	0.21	0.64	0.47	552.84 ± 267.85	4421.82 ± 2096.07	4421.82 ± 2096.07	4974.66 ± 2109.08	4974.66 ± 2109.08	0.15	0.82	0.58
	1991	359.33 ± 245.73	1080.75 ± 933.91	1440.08 ± 960.30	0.10	0.20	0.16	155.74 ± 119.96	3968.09 ± 1789.05	3968.09 ± 1789.05	4123.83 ± 1789.67	4123.83 ± 1789.67	0.04	0.73	0.48
	1993	5697.07 ± 7030.19	12849.61 ± 9622.05	18546.67 ± 11823.95	1.59	2.38	2.06	30.84 ± 21.11	2478.75 ± 2146.78	2478.75 ± 2146.78	2509.59 ± 2142.85	2509.59 ± 2142.85	0.01	0.46	0.29
	1994	684.94 ± 466.52	3247.33 ± 2128.08	3932.27 ± 2166.12	0.19	0.60	0.44								
	1996	37.34 ± 61.86	1354.43 ± 1447.24	1391.77 ± 1440.99	0.01	0.25	0.15	176.91 ± 144.21	410.55 ± 247.85	410.55 ± 247.85	587.46 ± 286.01	587.46 ± 286.01	0.05	0.08	0.07
	1998	203.60 ± 199.24	342.51 ± 345.41	546.11 ± 396.12	0.06	0.06	0.06	126.76 ± 122.56	2015.00 ± 1769.89	2015.00 ± 1769.89	2141.75 ± 1770.84	2141.75 ± 1770.84	0.04	0.37	0.25
	2000	461.27 ± 381.43	1030.79 ± 925.36	1492.06 ± 994.89	0.13	0.19	0.17	11.21 ± 13.91	4882.56 ± 8184.68	4882.56 ± 8184.68	4893.77 ± 8169.46	4893.77 ± 8169.46	0.00	0.90	0.57
	2004	1436.06 ± 852.02	2283.00 ± 1441.37	3719.06 ± 1662.94	0.40	0.42	0.41	162.59 ± 127.32	1992.75 ± 1683.86	1992.75 ± 1683.86	2155.34 ± 1685.29	2155.34 ± 1685.29	0.05	0.37	0.25
	2005	2390.53 ± 882.13	2270.11 ± 1005.92	4660.64 ± 1327.65	0.67	0.42	0.52	327.55 ± 218.89	3577.86 ± 1908.58	3577.86 ± 1908.58	3905.40 ± 1917.21	3905.40 ± 1917.21	0.66	0.09	0.45
Total Gulls	1989							32735.27 ± 7164.62	68339.36 ± 14024.87	68339.36 ± 14024.87	101074.63 ± 15689.01	101074.63 ± 15689.01	9.15	12.65	11.25
	1990	5537.12 ± 1943.44	9830.39 ± 5123.28	15367.51 ± 5446.94	1.55	1.82	1.71	32818.17 ± 9218.31	56003.98 ± 12423.86	56003.98 ± 12423.86	88822.14 ± 15425.37	88822.14 ± 15425.37	9.17	10.36	10.28
	1991	8338.74 ± 2921.20	14048.89 ± 4512.22	22387.63 ± 5338.07	2.33	2.60	2.49	35106.31 ± 7780.34	59821.99 ± 10080.32	59821.99 ± 10080.32	94928.31 ± 12695.98	94928.31 ± 12695.98	9.81	11.07	10.98
	1993	13579.86 ± 8827.22	28238.34 ± 14703.19	41818.20 ± 17025.84	3.80	5.23	4.66	33666.27 ± 10108.14	83064.03 ± 25552.04	83064.03 ± 25552.04	116730.30 ± 27416.33	116730.30 ± 27416.33	9.41	15.37	13.51
	1994	25810.25 ± 17235.89	39630.33 ± 12423.70	65440.58 ± 21055.23	7.21	7.33	7.29								
	1996	14631.88 ± 5854.69	26359.09 ± 14091.94	40990.97 ± 15167.19	4.09	4.88	4.56	20677.28 ± 7191.39	69075.76 ± 20112.89	69075.76 ± 20112.89	89753.04 ± 21313.03	89753.04 ± 21313.03	5.78	12.78	10.38
	1998	8650.13 ± 3852.56	25934.46 ± 10551.92	34584.59 ± 11167.78	2.42	4.80	3.85	21067.53 ± 6174.06	46761.17 ± 11418.52	46761.17 ± 11418.52	67828.70 ± 12948.08	67828.70 ± 12948.08	5.89	8.65	7.85
	2000	5853.07 ± 3276.07	17708.96 ± 5934.79	23562.02 ± 6734.84	1.64	3.28	2.62	19453.79 ± 5673.99	50340.23 ± 14680.50	50340.23 ± 14680.50	69794.02 ± 15703.55	69794.02 ± 15703.55	5.44	9.32	8.08
	2004	7661.44 ± 3013.25	17681.65 ± 12337.05	25343.09 ± 12627.25	2.14	3.27	2.82	16451.68 ± 5245.53	60940.01 ± 11646.21	60940.01 ± 11646.21	77391.69 ± 12741.87	77391.69 ± 12741.87	4.60	11.28	8.95
	2005	31528.73 ± 9906.91	35432.03 ± 7797.80	66960.77 ± 12498.47	8.81	6.56	7.46	31233.24 ± 7921.00	59802.19 ± 15698.04	59802.19 ± 15698.04	91035.43 ± 17537.83	91035.43 ± 17537.83	11.07	8.73	10.53
Caspian Tern	1989							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	40.38 ± 67.39	40.38 ± 67.39	40.38 ± 67.26	40.38 ± 67.26	<0.005	0.01	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	4.49 ± 7.87	4.49 ± 7.87	4.49 ± 7.85	4.49 ± 7.85	<0.005	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	40.82 ± 34.37	40.82 ± 34.37	40.82 ± 34.31	40.82 ± 34.31	<0.005	0.01	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Arctic Tern	1989										2531.07 ± 1569.71	4748.19 ± 1851.96	7279.26 ± 2416.67	0.71	0.88	0.81
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2369.63 ± 911.97	3870.28 ± 1504.89	6239.91 ± 1754.99	0.66	0.72	0.72
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1262.80 ± 626.81	4960.83 ± 1214.18	6223.63 ± 1363.02	0.35	0.92	0.72
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1321.39 ± 1000.48	7236.32 ± 4724.51	8557.70 ± 4819.60	0.37	1.34	0.99
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1776.92 ± 1052.80	3075.43 ± 1252.11	4852.35 ± 1630.87	0.50	0.57	0.56
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	945.78 ± 493.18	1472.39 ± 874.83	2418.17 ± 1001.69	0.26	0.27	0.28
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1124.46 ± 548.32	1771.75 ± 1138.84	2896.22 ± 1260.92	0.31	0.33	0.34
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	268.52 ± 196.17	2294.96 ± 1471.66	2563.47 ± 1481.66	0.08	0.42	0.30
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	820.51 ± 717.49	1568.91 ± 1554.60	2389.42 ± 1707.90	0.29	0.23	0.28
Aleutian Tern	1989										0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.69 ± 25.43	308.19 ± 475.76	322.88 ± 475.54	0.00	0.06	0.04
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	89.40 ± 124.30	24.82 ± 42.74	114.22 ± 130.85	0.02	0.00	0.01
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	319.71 ± 541.96	319.71 ± 540.95	<0.005	0.06	0.04
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	457.31 ± 677.45	766.53 ± 949.13	1223.84 ± 1162.72	0.13	0.14	0.14
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unidentified Tern	1989										0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	86.28 ± 123.75	191.42 ± 285.65	277.71 ± 310.57	0.02	0.04	0.03
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	187.68 ± 308.14	293.02 ± 261.24	480.69 ± 402.54	0.05	0.05	0.06
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	126.69 ± 228.12	97.51 ± 95.19	224.20 ± 246.10	0.04	0.02	0.03
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	1366.13 ± 2226.90	1366.13 ± 2222.50	0.25	<0.005	0.16
Total Terns	1989										2531.07 ± 1569.71	4748.19 ± 1851.96	7279.26 ± 2416.67	0.71	0.88	0.81
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2369.63 ± 911.97	3870.28 ± 1504.89	6239.91 ± 1754.99	0.66	0.72	0.72
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1363.78 ± 631.99	5500.82 ± 1386.26	6864.60 ± 1519.90	0.38	1.02	0.79
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1598.46 ± 1006.21	7554.16 ± 4731.49	9152.62 ± 4827.60	0.45	1.40	1.06
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1903.61 ± 1062.85	3492.65 ± 1313.03	5396.26 ± 1684.18	0.53	0.65	0.62
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	945.78 ± 493.18	1476.87 ± 874.80	2422.66 ± 1001.67	0.26	0.27	0.28
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1124.46 ± 548.32	1812.58 ± 1140.26	2937.04 ± 1262.19	0.31	0.34	0.34
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	725.82 ± 692.65	3061.49 ± 1745.01	3787.31 ± 1873.04	0.20	0.57	0.44
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	820.51 ± 717.49	2935.04 ± 3735.31	3755.55 ± 3795.67	0.54	0.23	0.43
<i>Alcidae: Auks, Murres, and Puffins</i>																
Common Murre	1989										22.74 ± 29.64	245.53 ± 204.04	268.27 ± 205.53	0.01	0.05	0.03
	1990	1911.37 ± 1298.50	2952.31 ± 1617.25	4863.68 ± 2058.52	0.53	0.55	0.54	107.68 ± 117.93	767.63 ± 509.45	875.31 ± 521.87	0.03	0.14	0.10			
	1991	3655.08 ± 3329.79	8079.94 ± 5695.44	11735.01 ± 6553.28	1.02	1.50	1.31	1247.95 ± 596.62	3284.98 ± 1349.44	4532.93 ± 1471.97	0.35	0.61	0.52			
	1993	21743.64 ± 11933.27	135433.26 ± 140928.29	157176.90 ± 140665.01	6.08	25.06	17.50	11624.88 ± 5633.24	4379.82 ± 2959.40	16004.70 ± 6336.88	3.25	0.81	1.85			
	1994	15285.83 ± 11243.56	32054.54 ± 14046.93	47340.37 ± 17856.23	4.27	5.93	5.27									
	1996	8895.42 ± 4622.65	35960.12 ± 18899.23	44855.53 ± 19348.49	2.49	6.65	4.99	408.06 ± 403.55	2343.56 ± 2083.85	2751.62 ± 2118.39	0.11	0.43	0.32			
	1998	12967.24 ± 6205.21	74320.08 ± 48572.03	87287.32 ± 48710.80	3.62	13.75	9.72	1303.27 ± 1301.71	2519.37 ± 2616.19	3822.65 ± 2915.01	0.36	0.47	0.44			
	2000	2219.24 ± 1500.01	24770.73 ± 12129.41	26989.97 ± 12157.98	0.62	4.58	3.01	95.02 ± 82.85	965.75 ± 707.35	1060.78 ± 710.84	0.03	0.18	0.12			
	2004	13522.22 ± 5522.14	48709.13 ± 22626.34	62231.35 ± 23157.58	3.78	9.01	6.93	750.03 ± 477.02	2449.23 ± 1228.57	3199.26 ± 1314.84	0.21	0.45	0.37			
	2005	29529.92 ± 11580.46	61372.51 ± 20272.25	90902.43 ± 23191.06	8.25	11.36	10.12	3832.93 ± 1897.80	8392.54 ± 5234.13	12225.47 ± 5554.62	1.55	1.07	1.41			

Thick-billed Murre	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.36 ±	108.62	<0.005 ±	<0.005	60.36 ±	108.09	0.02	<0.005	0.02	<0.005	0.01			
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	264.17 ±	505.18	<0.005 ±	<0.005	264.17 ±	498.97	0.07	<0.005	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	53.48 ±	92.07	53.48 ±	91.90	<0.005	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	37.16 ±	74.94	60.12 ±	116.50	97.28 ±	137.57	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	611.73 ±	767.99	611.73 ±	766.47	<0.005	0.11	0.11	0.11	0.11	0.11	0.11	0.11	
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	373.59 ±	485.81	137.81 ±	181.31	511.39 ±	516.16	0.03	0.10	0.10	0.10	0.10	0.10	0.10	0.10	
Unidentified Murre	1989										711.75 ±	578.29	1202.56 ±	1295.74	1914.31 ±	1413.74	0.20	0.22	0.21					
	1990	654.95 ±	417.22	1920.25 ±	1863.96	2575.20 ±	1899.59	0.18	0.36	0.29	83.71 ±	83.59	492.50 ±	547.49	576.21 ±	552.77	0.02	0.09	0.07					
	1991	6532.60 ±	6042.61	5835.36 ±	3283.76	12367.97 ±	6810.72	1.83	1.08	1.38	794.06 ±	475.30	1711.27 ±	1178.58	2505.33 ±	1267.91	0.22	0.32	0.29					
	1993	19169.80 ±	17382.62	44358.42 ±	33579.37	63528.22 ±	37553.24	5.36	8.21	7.07	151.53 ±	202.89	212.01 ±	279.40	363.54 ±	344.30	0.04	0.04	0.04					
	1994	1121.34 ±	682.65	3265.20 ±	1716.98	4386.54 ±	1836.22	0.31	0.60	0.49														
	1996	503.71 ±	338.27	719.33 ±	560.11	1223.04 ±	649.91	0.14	0.13	0.14	269.45 ±	272.32	205.17 ±	336.97	474.62 ±	431.94	0.08	0.04	0.05					
	1998	82.01 ±	85.40	344.84 ±	352.31	426.85 ±	360.54	0.02	0.06	0.05	41.56 ±	62.10	91.78 ±	110.08	133.34 ±	126.06	0.01	0.02	0.02					
	2000	969.62 ±	490.18	3101.78 ±	1696.77	4071.40 ±	1756.29	0.27	0.57	0.45	<0.005 ±	<0.005	53.29 ±	90.33	53.29 ±	90.16	<0.005	0.01	0.01					
2004	3617.89 ±	2705.58	5085.56 ±	2586.44	8703.44 ±	3712.02	1.01	0.94	0.97	85.53 ±	123.69	454.31 ±	536.08	539.84 ±	549.00	0.02	0.08	0.06						
2005	234.87 ±	119.42	1639.29 ±	981.28	1874.16 ±	983.15	0.07	0.30	0.21	77.53 ±	122.79	3.28 ±	5.26	80.81 ±	122.29	0.00	0.02	0.01						
Total Murres	1989										734.49 ±	577.82	1448.09 ±	1367.51	2182.57 ±	1479.21	0.21	0.27	0.24					
	1990	2566.33 ±	1544.74	4872.56 ±	2482.98	7438.88 ±	2904.32	0.72	0.90	0.83	251.74 ±	177.39	1260.13 ±	765.29	1511.88 ±	784.00	0.07	0.23	0.17					
	1991	10187.68 ±	9133.31	13915.30 ±	7822.68	24102.98 ±	11922.73	2.85	2.57	2.68	2042.00 ±	761.00	4996.25 ±	1887.18	7038.26 ±	2030.19	0.57	0.92	0.81					
	1993	41177.61 ±	28243.96	179791.68 ±	158954.59	220969.29 ±	160541.99	11.51	33.27	24.60	11776.40 ±	5635.07	4591.84 ±	2968.42	16368.24 ±	6342.69	3.29	0.85	1.89					
	1994	16407.17 ±	11431.07	35319.74 ±	14669.28	51726.91 ±	18457.55	4.59	6.54	5.76														
	1996	9399.12 ±	4606.57	36679.45 ±	18876.73	46078.58 ±	19322.99	2.63	6.79	5.13	677.51 ±	477.07	2602.21 ±	2095.45	3279.72 ±	2144.76	0.19	0.48	0.38					
	1998	13049.25 ±	6198.79	74664.92 ±	48522.42	87714.17 ±	48661.03	3.65	13.82	9.77	1344.83 ±	1297.39	2611.16 ±	2680.34	3955.98 ±	2970.65	0.38	0.48	0.46					
	2000	3226.02 ±	1616.31	27932.63 ±	12143.74	31158.65 ±	12186.68	0.90	5.17	3.47	95.02 ±	82.85	1019.04 ±	730.47	1114.06 ±	733.75	0.03	0.19	0.13					
2004	17140.10 ±	8015.36	53794.68 ±	22776.23	70934.79 ±	24000.54	4.79	9.95	7.90	835.56 ±	490.30	3515.26 ±	1868.46	4350.82 ±	1927.56	0.23	0.65	0.50						
2005	29764.79 ±	11601.27	63011.81 ±	20528.98	92776.60 ±	23423.50	8.32	11.66	10.33	4284.05 ±	2174.00	8533.62 ±	5276.30	12817.68 ±	5692.87	1.58	1.20	1.48						
Pigeon Guillemot	1989										1547.60 ±	876.03	2522.50 ±	1181.48	4070.09 ±	1464.47	0.43	0.47	0.45					
	1990	252.91 ±	205.07	556.84 ±	275.73	809.75 ±	341.13	0.07	0.10	0.09	1226.33 ±	468.84	1734.25 ±	588.81	2960.57 ±	750.41	0.34	0.32	0.34					
	1991	777.31 ±	382.55	2064.30 ±	2128.38	2841.61 ±	2150.81	0.22	0.38	0.32	984.33 ±	347.25	5640.61 ±	4863.95	6624.94 ±	4867.09	0.28	1.04	0.77					
	1993	428.13 ±	521.91	1211.61 ±	747.43	1639.74 ±	904.65	0.12	0.22	0.18	1480.03 ±	618.67	2467.19 ±	710.29	3947.23 ±	939.00	0.41	0.46	0.46					
	1994	455.12 ±	316.38	821.10 ±	575.36	1276.22 ±	652.19	0.13	0.15	0.14														
	1996	991.08 ±	719.70	1549.44 ±	765.99	2540.51 ±	1042.73	0.28	0.29	0.28	891.06 ±	312.68	2091.24 ±	837.05	2982.30 ±	891.56	0.25	0.39	0.35					
	1998	222.07 ±	252.32	685.05 ±	663.15	907.11 ±	705.36	0.06	0.13	0.10	1050.05 ±	359.86	2427.05 ±	746.28	3477.10 ±	826.51	0.29	0.45	0.40					
	2000	165.89 ±	143.08	961.05 ±	1086.40	1126.93 ±	1090.05	0.05	0.18	0.13	883.54 ±	361.15	913.41 ±	363.98	1796.95 ±	511.04	0.25	0.17	0.21					
2004	484.45 ±	272.27	461.61 ±	445.40	946.06 ±	518.43	0.14	0.09	0.11	725.83 ±	348.65	1506.98 ±	515.30	2232.81 ±	620.41	0.20	0.28	0.26						
2005	354.34 ±	262.94	1131.22 ±	862.24	1485.56 ±	896.20	0.10	0.21	0.17	580.84 ±	211.43	1466.28 ±	486.50	2047.12 ±	529.16	0.27	0.16	0.24						
Marbled Murrelet	1989										29010.34 ±	8717.66	30273.84 ±	7801.65	59284.19 ±	11640.10	8.11	5.60	6.60					
	1990	4450.97 ±	3022.30	9235.75 ±	5032.46	13686.72 ±	5830.66	1.24	1.71	1.52	14935.27 ±	7207.30	24550.79 ±	6742.79	39486.05 ±	9835.85	4.17	4.54	4.57					
	1991	2439.65 ±	1751.58	5277.67 ±	4214.96	7717.32 ±	4536.73	0.68	0.98	0.86	14757.54 ±	4695.69	27719.42 ±	7722.66	42476.95 ±	9014.14	4.13	5.13	4.91					
	1993	3302.47 ±	3017.19	4057.47 ±	2742.93	7359.93 ±	4040.27	0.92	0.75	0.82	5335.31 ±	2094.19	8841.33 ±	3917.73	14176.64 ±	4431.11	1.49	1.64	1.64					
	1994	7670.13 ±	5116.82	15590.26 ±	14568.71	23260.39 ±	15347.32	2.14	2.88	2.59														
	1996	10670.42 ±	7276.22	15130.31 ±	5294.03	25800.73 ±	8917.46	2.98	2.80	2.87	17905.72 ±	7911.03	45549.70 ±	13727.02	63455.42 ±	15802.39	5.01	8.43	7.34					
	1998	12563.03 ±	8150.71	16629.92 ±	7880.51	29192.96 ±	11244.66	3.51	3.08	3.25	24853.54 ±	6586.33	25067.25 ±	6613.87	49920.78 ±	9302.78	6.95	4.64	5.78					
	2000	3849.75 ±	1793.44	13554.38 ±	10153.86	17404.13 ±	10256.26	1.08	2.51	1.94	22179.24 ±	8516.37	30098.56 ±	11477.43	52277.80 ±	14250.46	6.20	5.57	6.05					
2004	3661.31 ±	1682.45	16078.77 ±	15966.37	19740.07 ±	15967.15	1.02	2.98	2.20	8582.77 ±	2804.54	27009.93 ±	7194.02	35592.71 ±	7703.29	2.40	5.00	4.12						
2005	2135.16 ±	1071.49	7296.61 ±	3133.30	9431.77 ±	3291.86	0.60	1.35	1.05	11852.07 ±	5239.25	21944.79 ±	4992.54	33796.85 ±	7211.45	4.06	3.31	3.91						





Cassin's Auklet	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	18.50 ±	32.03	20.37 ±	35.58	38.87 ±	47.50	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Parakeet Auklet	1989										150.13 ±	246.78	351.34 ±	608.90	501.46 ±	654.66	0.04	0.07	0.06
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	560.91 ±	450.25	281.15 ±	266.74	842.07 ±	521.22	0.16	0.05	0.10
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	6.54 ±	10.79	6.54 ±	10.77	<0.005	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	159.30 ±	145.21	565.38 ±	622.97	724.68 ±	638.37	0.04	0.10	0.08
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	687.53 ±	398.78	121.66 ±	112.38	809.18 ±	412.42	0.19	0.02	0.09
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	298.65 ±	275.16	291.55 ±	282.45	590.20 ±	393.02	0.08	0.05	0.07
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	300.07 ±	429.67	161.52 ±	269.54	461.60 ±	505.20	0.08	0.03	0.05
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Crested Auklet	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	9375.00 ±	5606.33	4947.62 ±	3490.22	14322.62 ±	6542.18	2.62	0.92	1.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rhinoceros Auklet	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.79 ±	4.47	<0.005 ±	<0.005	2.79 ±	4.45	0.00	<0.005	0.00	
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.03 ±	7.67	49.37 ±	85.83	53.41 ±	86.00	0.01	0.00	0.01	
Tufted Puffin	1989										1566.95 ±	947.70	714.92 ±	589.62	2281.88 ±	1109.90	0.44	0.13	0.25
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1909.64 ±	969.64	1909.14 ±	1232.68	3818.79 ±	1563.67	0.53	0.35	0.44
	1991	<0.005 ±	<0.005	22.71 ±	42.23	22.71 ±	42.01	<0.005	0.00	0.00	2418.36 ±	1191.98	2624.84 ±	1589.17	5043.20 ±	1980.72	0.68	0.49	0.58
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2574.41 ±	1169.85	1517.80 ±	656.43	4092.21 ±	1335.96	0.72	0.28	0.47
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3277.33 ±	1939.36	1771.68 ±	812.73	5049.01 ±	2093.61	0.92	0.33	0.58
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2067.10 ±	1195.27	2418.58 ±	2608.32	4485.67 ±	2862.36	0.58	0.45	0.52
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	610.07 ±	229.29	4096.56 ±	3897.85	4706.63 ±	3897.28	0.17	0.76	0.54
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	982.80 ±	542.99	1101.54 ±	748.48	2084.35 ±	922.01	0.27	0.20	0.24	
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1444.13 ±	989.57	860.78 ±	618.02	2304.91 ±	1161.90	0.16	0.40	0.27	



Total Alcids		1989																	
		1990	9664.98 ± 4392.88	24725.09 ± 9539.89	34390.07 ± 10437.31	2.70	4.58	3.83	46921.45 ± 11561.54	71456.83 ± 13617.04	118378.28 ± 17781.98	13.12	13.22	13.18					
		1991	20954.07 ± 10497.42	30345.72 ± 13739.95	51299.78 ± 17164.16	5.86	5.62	5.71	33786.39 ± 9098.01	58823.80 ± 15248.20	92610.19 ± 17709.44	9.44	10.89	10.72					
		1993	47349.12 ± 29863.62	189711.03 ± 158958.22	237060.16 ± 160831.24	13.24	35.11	26.39	51464.13 ± 13889.27	76875.59 ± 16549.19	128339.72 ± 21538.80	14.39	14.23	14.85					
		1994	29387.81 ± 15337.86	60301.74 ± 22845.13	89689.54 ± 27319.57	8.21	11.16	9.99	74333.50 ± 21761.00	114173.22 ± 36241.60	188506.72 ± 42160.97	20.78	21.13	21.81					
		1996	28668.19 ± 13687.11	64283.43 ± 18790.67	92951.62 ± 23079.33	8.01	11.90	10.35	31522.44 ± 11645.54	63917.40 ± 15227.99	95439.84 ± 19114.12	8.81	11.83	11.04					
		1998	28372.07 ± 13461.44	94143.05 ± 49697.53	122515.13 ± 51203.37	7.93	17.42	13.64	32993.19 ± 7856.80	34264.97 ± 8601.15	67258.17 ± 11612.01	9.22	6.34	7.78					
		2000	10131.71 ± 3511.83	45434.84 ± 20257.58	55566.55 ± 20450.65	2.83	8.41	6.19	24566.20 ± 8586.38	38405.21 ± 12212.07	62971.41 ± 14886.23	6.87	7.11	7.29					
		2004	21698.30 ± 8938.71	72662.36 ± 28102.08	94360.66 ± 29315.43	6.07	13.45	10.51	11934.87 ± 3159.75	35020.62 ± 7744.59	46955.49 ± 8344.56	3.34	6.48	5.43					
		2005	33761.72 ± 11792.52	74186.70 ± 21197.65	107948.41 ± 24096.53	9.44	13.73	12.02	20401.29 ± 6675.19	41320.44 ± 8237.06	61721.73 ± 10568.74	7.65	5.70	7.14					
<b>Strigiformes</b>																			
<i>Strigidae: Owls</i>																			
Snowy Owl		1989							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Northern Hawk Owl		1989							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Apodiformes</b>																			
<i>Trochilidae: Hummingbirds</i>																			
Rufous Hummingbird		1989							<0.005 ± <0.005	53.38 ± 93.82	53.38 ± 93.53	<0.005	0.01	0.01					
		1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	9.80 ± 9.13	9.80 ± 9.12	<0.005	0.00	0.00				
		1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.54 ± 6.31	0.26 ± 0.44	5.80 ± 6.29	0.00	0.00	0.00				
		2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.79 ± 4.54	<0.005 ± <0.005	2.79 ± 4.52	0.00	<0.005	0.00				
		2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Unidentified Hummingbird		1989							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1990	0.00	0.00	0.00	0.00	0.00	0.00	2.80 ± 4.59	7.76 ± 9.48	10.56 ± 10.51	0.00	0.00	0.00					
		1991	0.00	0.00	0.00	0.00	0.00	0.00	2.80 ± 4.54	7.76 ± 9.30	10.56 ± 10.33	0.00	0.00	0.00					
		1993	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ± <0.005	6.54 ± 7.42	6.54 ± 7.40	<0.005	0.00	0.00					
		1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		2005	0.00	0.00	0.00	0.00	0.00	0.00	2.86 ± 4.67	3.28 ± 5.27	6.13 ± 7.02	0.00	0.00	0.00					

**Coraciiformes**

*Alcedinidae: Kingfishers*

Belted Kingfisher	1989										12.46 ±	12.55	8.68 ±	10.34	21.14 ±	16.18	0.00	0.00	0.00
	1990	11.78 ±	15.14	0.61 ±	1.14	12.38 ±	15.02	0.00	0.00	0.00	4.79 ±	5.49	5.43 ±	7.86	10.23 ±	9.56	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	12.24 ±	11.95	12.24 ±	11.92	<0.005	0.00	0.00
	1993	24.54 ±	21.77	7.76 ±	14.62	32.31 ±	25.96	0.01	0.00	0.00	28.04 ±	23.82	35.90 ±	32.16	63.94 ±	39.91	0.01	0.01	0.01
	1994	24.54 ±	25.59	56.49 ±	36.25	81.03 ±	44.05	0.01	0.01	0.01									
	1996	24.54 ±	25.10	23.03 ±	23.38	47.57 ±	34.02	0.01	0.00	0.01	14.02 ±	10.02	106.49 ±	52.32	120.51 ±	53.17	0.00	0.02	0.01
	1998	67.49 ±	97.52	44.91 ±	31.58	112.40 ±	101.44	0.02	0.01	0.01	8.66 ±	8.12	39.17 ±	24.90	47.83 ±	26.13	0.00	0.01	0.01
	2000	1.12 ±	2.10	36.06 ±	54.76	37.18 ±	54.51	0.00	0.01	0.00	<0.005 ±	<0.005	7.76 ±	9.27	7.76 ±	9.25	<0.005	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.79 ±	4.55	4.58 ±	7.87	7.37 ±	9.07	0.00	0.00	0.00
	2005	6.14 ±	10.92	15.30 ±	19.82	21.43 ±	22.48	0.00	0.00	0.00	<0.005 ±	<0.005	24.06 ±	21.16	24.06 ±	21.12	0.00	<0.005	0.00

**Piciformes**

*Picidae: Woodpeckers*

Northern Flicker	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**Passeriformes**

*Hirundinidae: Swallows*

Tree Swallow	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	8.98 ±	15.34	8.98 ±	15.31	<0.005	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bank Swallow	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	4.49 ±	7.68	4.49 ±	7.66	<0.005	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Violet-green Swallow	1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08 ±	0.13	58.72 ±	85.31	58.80 ±	85.15	0.00	0.01	0.01	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	4.49 ±	7.82	4.49 ±	7.81	<0.005	0.00	0.00	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.77 ±	9.27	6.54 ±	7.59	12.31 ±	11.94	0.00	0.00	0.00	
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	3.27 ±	5.37	3.27 ±	5.36	<0.005	0.00	0.00	
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barn Swallow	1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	13.46 ±	23.01	13.46 ±	22.96	<0.005	0.00	0.00	
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unidentified Swallow																		
	1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04 ±	4.55	73.18 ±	70.87	76.22 ±	70.88	0.00	0.01	0.01
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	3.27 ±	5.40	3.27 ±	5.39	<0.005	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	4.49 ±	7.74	4.49 ±	7.73	<0.005	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	170.13 ±	182.65	170.13 ±	182.29	0.03	<0.005	0.02
<i>Corvidae: Jays, Magpies, and Crows</i>																		
Steller's Jay																		
	1989									3.12 ±	5.20	<0.005 ±	<0.005	3.12 ±	5.17	0.00	<0.005	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	4.49 ±	7.83	4.49 ±	7.82	<0.005	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.61 ±	8.89	4.49 ±	7.70	10.10 ±	11.72	0.00	0.00	0.00
	1994	<0.005 ±	<0.005	8.07 ±	14.91	8.07 ±	14.83	<0.005	0.00	0.00	0.00							
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.41 ±	7.71	8.98 ±	10.78	17.39 ±	13.22	0.00	0.00	0.00
	1998	12.27 ±	15.38	<0.005 ±	<0.005	12.27 ±	15.21	0.00	<0.005	8.66 ±	10.41	54.29 ±	25.28	62.95 ±	27.27	0.00	0.01	0.01
	2000	<0.005 ±	<0.005	22.46 ±	41.76	22.46 ±	41.54	<0.005	0.00	<0.005 ±	<0.005	15.51 ±	17.32	15.51 ±	17.29	<0.005	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	<0.005 ±	<0.005	53.54 ±	64.50	53.54 ±	64.16	<0.005	0.01	2.86 ±	4.63	12.90 ±	12.87	15.76 ±	13.64	0.00	0.00	0.00
Gray Jay																		
	1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unidentified Jay																		
	1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Black-billed Magpie	1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1990	43.02 ±	40.29	45.26 ±	69.11	88.29 ±	79.46	0.01	0.01	0.01	22.43 ±	21.20	27.75 ±	25.20	50.18 ±	32.83	0.01	0.01	0.01
	1991	6.14 ±	11.46	45.42 ±	48.87	51.55 ±	49.92	0.00	0.01	0.01	25.23 ±	18.30	17.95 ±	22.23	43.18 ±	28.71	0.01	0.00	0.00
	1993	30.68 ±	29.14	69.88 ±	45.16	100.56 ±	53.35	0.01	0.01	0.01	22.43 ±	20.07	6.54 ±	7.59	28.96 ±	21.36	0.01	0.00	0.00
	1994	110.65 ±	87.00	411.26 ±	190.98	521.90 ±	208.52	0.03	0.08	0.06									
	1996	115.45 ±	86.16	267.94 ±	212.15	383.39 ±	227.60	0.03	0.05	0.04	53.27 ±	30.32	11.02 ±	10.78	64.29 ±	32.04	0.01	0.00	0.01
	1998	79.08 ±	83.60	375.08 ±	155.80	454.16 ±	175.68	0.02	0.07	0.05	25.98 ±	29.71	8.98 ±	10.57	34.96 ±	31.39	0.01	0.00	0.00
	2000	169.82 ±	77.50	249.41 ±	218.58	419.23 ±	230.57	0.05	0.05	0.05	16.37 ±	12.23	16.86 ±	14.21	33.23 ±	18.70	0.00	0.00	0.00
	2004	45.67 ±	37.94	254.85 ±	189.46	300.52 ±	192.14	0.01	0.05	0.03	25.54 ±	22.34	25.03 ±	30.32	50.57 ±	37.55	0.01	0.00	0.01
	2005	60.86 ±	46.79	313.53 ±	258.38	374.39 ±	261.13	0.02	0.06	0.04	22.85 ±	24.17	8.09 ±	9.80	30.94 ±	25.96	0.00	0.01	0.00
Northwestern Crow	1989										332.30 ±	217.82	1146.56 ±	560.87	1478.86 ±	599.56	0.09	0.21	0.16
	1990	868.42 ±	670.13	2173.07 ±	1744.10	3041.49 ±	1857.28	0.24	0.40	0.34	379.22 ±	130.58	1258.50 ±	499.85	1637.72 ±	515.57	0.11	0.23	0.19
	1991	185.64 ±	160.21	3139.26 ±	1586.63	3324.90 ±	1586.29	0.05	0.58	0.37	383.95 ±	108.97	1676.84 ±	589.53	2060.79 ±	598.33	0.11	0.31	0.24
	1993	491.70 ±	394.00	2413.75 ±	1150.25	2905.45 ±	1208.44	0.14	0.45	0.32	449.74 ±	146.97	1494.39 ±	576.48	1944.12 ±	593.69	0.13	0.28	0.22
	1994	1374.29 ±	571.72	4615.65 ±	1915.34	5989.95 ±	1987.00	0.38	0.85	0.67									
	1996	710.43 ±	330.72	6342.28 ±	3779.29	7052.71 ±	3773.77	0.20	1.17	0.79	596.66 ±	184.89	1977.61 ±	668.26	2574.27 ±	691.93	0.17	0.37	0.30
	1998	1131.58 ±	585.93	5064.14 ±	2429.94	6195.72 ±	2485.94	0.32	0.94	0.69	837.92 ±	210.81	1781.76 ±	483.78	2619.69 ±	526.49	0.23	0.33	0.30
	2000	1272.08 ±	697.56	3672.54 ±	1718.25	4944.63 ±	1843.38	0.36	0.68	0.55	864.98 ±	259.58	1387.25 ±	404.59	2252.23 ±	479.39	0.24	0.26	0.26
	2004	783.07 ±	381.56	3353.29 ±	1882.83	4136.36 ±	1910.32	0.22	0.62	0.46	494.04 ±	179.14	880.13 ±	326.98	1374.17 ±	371.86	0.14	0.16	0.16
	2005	440.27 ±	208.60	3905.21 ±	4303.98	4345.48 ±	4285.92	0.09	0.72	0.47	532.38 ±	171.34	1514.68 ±	445.10	2047.06 ±	475.82	0.28	0.15	0.24
Common Raven	1989										0.18 ±	0.30	121.20 ±	188.03	121.38 ±	187.45	0.00	0.02	0.01
	1990	49.08 ±	38.52	128.52 ±	173.71	177.60 ±	176.95	0.01	0.02	0.02	11.21 ±	9.16	145.66 ±	146.05	156.87 ±	146.07	0.00	0.03	0.02
	1991	36.81 ±	50.81	264.92 ±	271.05	301.73 ±	274.28	0.01	0.05	0.03	8.41 ±	7.41	53.85 ±	79.01	62.26 ±	79.20	0.00	0.01	0.01
	1993	199.92 ±	255.10	251.29 ±	195.91	451.21 ±	318.52	0.06	0.05	0.05	39.41 ±	25.38	39.81 ±	31.23	79.22 ±	40.12	0.01	0.01	0.01
	1994	67.66 ±	47.39	40.12 ±	39.52	107.78 ±	61.17	0.02	0.01	0.01									
	1996	96.20 ±	138.42	155.99 ±	160.96	252.19 ±	210.66	0.03	0.03	0.03	36.45 ±	34.44	8.98 ±	10.80	45.42 ±	35.93	0.01	0.00	0.01
	1998	92.03 ±	73.77	82.34 ±	49.64	174.36 ±	88.10	0.03	0.02	0.02	11.10 ±	8.92	48.27 ±	40.57	59.36 ±	41.46	0.00	0.01	0.01
	2000	37.16 ±	38.03	1353.40 ±	2415.28	1390.57 ±	2403.18	0.01	0.25	0.15	5.61 ±	8.99	58.34 ±	86.43	63.95 ±	86.73	0.00	0.01	0.01
	2004	220.24 ±	211.04	102.57 ±	68.19	322.81 ±	219.49	0.06	0.02	0.04	2.79 ±	4.48	170.98 ±	145.03	173.78 ±	144.81	0.00	0.03	0.02
	2005	17.91 ±	24.78	77.09 ±	55.95	95.01 ±	60.81	0.01	0.01	0.01	14.28 ±	10.04	48.53 ±	37.78	62.81 ±	39.01	0.01	0.00	0.01
<i>Muscicapidae: Thrushes</i>																			
Hermit Thrush	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	4.49 ±	7.58	4.49 ±	7.56	<0.005	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.53 ±	0.86	2.67 ±	4.33	3.20 ±	4.41	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Varied Thrush	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	3.27 ±	5.40	3.27 ±	5.39	<0.005	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.61 ±	9.16	7.76 ±	9.27	13.36 ±	12.99	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	7.76 ±	9.43	7.76 ±	9.41	<0.005	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	4.49 ±	7.82	4.49 ±	7.81	<0.005	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.79 ±	4.40	4.58 ±	7.79	7.37 ±	8.92	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	4.81 ±	8.39	4.81 ±	8.37	0.00	<0.005	0.00







*Fringillidae: Finches and Allies*

Pine Grosbeak	1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	6.54 ±	10.80	6.54 ±	10.78	<0.005	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	6.55 ±	10.87	6.55 ±	10.85	0.00	<0.005	0.00
	Unidentified Redpoll	1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1990		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1991		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1993		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1994		<0.005 ±	<0.005	8.07 ±	15.11	8.07 ±	15.02	<0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1996		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1998		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2000		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2005		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gray-crowned Rosy-Finch		1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Pine Siskin	1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1990		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1991		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1993		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1994		<0.005 ±	<0.005	72.62 ±	131.22	72.62 ±	130.50	<0.005	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1996		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	4.49 ±	7.81	4.49 ±	7.80	<0.005	0.00	0.00	0.00
1998		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2000		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2004		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2005		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Unidentified Passerine		1989									18.69 ±	26.68	8.68 ±	10.44	27.37 ±	28.47	0.01	0.00	0.00
	1990	<0.005 ±	<0.005	149.81 ±	270.72	149.81 ±	269.30	<0.005	0.03	0.02	<0.005 ±	<0.005	12.24 ±	16.38	12.24 ±	16.35	<0.005	0.00	
	1991	<0.005 ±	<0.005	7.57 ±	14.10	7.57 ±	14.03	<0.005	0.00	0.00	22.59 ±	17.71	19.81 ±	16.71	42.40 ±	24.27	0.01	0.00	
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.63 ±	17.44	11.02 ±	13.17	30.65 ±	21.77	0.01	0.00		
	1994	5.64 ±	10.32	154.01 ±	152.49	159.66 ±	152.00	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	1998	<0.005 ±	<0.005	59.88 ±	108.62	59.88 ±	108.06	<0.005	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	3.27 ±	5.36	3.27 ±	5.35	<0.005	0.00		
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.61 ±	4.32	2.42 ±	3.17	6.02 ±	5.34	0.00	0.00		
	Unidentified Bird	1989									1416.56 ±	791.86	639.93 ±	554.64	2056.49 ±	961.53	0.40	0.12	
1990		86.47 ±	88.42	1188.34 ±	1168.56	1274.81 ±	1165.75	0.02	0.22	0.14	294.61 ±	137.74	576.16 ±	449.16	870.77 ±	468.81	0.08	0.11	
1991		1861.82 ±	2313.53	426.68 ±	442.26	2288.50 ±	2330.02	0.52	0.08	0.25	52.23 ±	65.69	228.81 ±	211.12	281.03 ±	220.63	0.01	0.04	
1993		236.62 ±	273.43	945.16 ±	714.59	1181.79 ±	760.32	0.07	0.17	0.13	204.04 ±	191.44	<0.005 ±	<0.005	204.04 ±	190.52	0.06	<0.005	
1994		16.78 ±	16.86	505.26 ±	465.55	522.04 ±	463.30	0.00	0.09	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1996		6.14 ±	11.18	7.68 ±	14.22	13.81 ±	17.96	0.00	0.00	0.00	5.38 ±	6.16	61.87 ±	92.27	67.25 ±	92.31	0.00	0.01	
1998		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2000		6.14 ±	11.50	394.63 ±	532.62	400.76 ±	530.00	0.00	0.07	0.04	126.16 ±	190.13	<0.005 ±	<0.005	126.16 ±	189.22	0.04	<0.005	
2004		<0.005 ±	<0.005	7.83 ±	14.57	7.83 ±	14.49	<0.005	0.00	0.00	59.83 ±	70.24	19.14 ±	28.33	78.98 ±	75.42	0.02	0.00	
2005		18.26 ±	31.03	102.12 ±	152.09	120.39 ±	154.36	0.01	0.02	0.01	200.72 ±	211.77	211.52 ±	204.05	412.24 ±	293.04	0.04	0.06	

Appendix I: Population estimates, confidence intervals, and densities (individuals/km2) for mammals recorded in PWS surveys, 1989-2005. nd = no data recorded.

Taxon	Year	March									July								
		POPULATION ESTIMATES						DENSITIES			POPULATION ESTIMATES						DENSITIES		
		Oiled Area		Unoiled Area		Total		Oil	Unoil	Total	Oiled Area		Unoiled Area		Total		Oil	Unoil	Total
<b>MAMMALS</b>																			
<b>Rodentia</b>																			
<i>Sciuridae: Squirrels</i>																			
Red Squirrel	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hoary Marmot	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80 ±	4.53	<0.005 ±	<0.005	2.80 ±	4.51	0.00	<0.005	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86 ±	4.61	6.55 ±	7.41	9.41 ±	8.70	0.00	0.00	0.00
<i>Castoridae: Beavers</i>																			
Beaver	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Erethizontidae: New World Porcupines</i>																			
Porcupine	1989										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80 ±	4.57	<0.005 ±	<0.005	2.80 ±	4.55	0.00	<0.005	0.00
	1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	3.27 ±	5.23	3.27 ±	5.22	<0.005	0.00	0.00
	1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**Cetacea**

*Delphinidae: Dolphins, Porpoises and Killer Whales*

Harbor Porpoise		1989								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1990	<0.005 ±	<0.005	193.89 ±	354.03	193.89 ±	352.18	<0.005	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1991	154.84 ±	256.27	<0.005 ±	<0.005	154.84 ±	253.45	0.04	<0.005	0.02	<0.005 ±	<0.005	111.50 ±	188.96	111.50 ±	188.61	<0.005	0.02
		1993	306.23 ±	289.10	66.16 ±	116.50	372.39 ±	308.15	0.09	0.01	0.04	309.38 ±	247.47	480.00 ±	547.95	789.38 ±	599.81	0.09	0.09
		1994	74.71 ±	123.77	<0.005 ±	<0.005	74.71 ±	122.43	0.02	<0.005	0.01								
		1996	<0.005 ±	<0.005	412.98 ±	435.59	412.98 ±	433.31	<0.005	0.08	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2000	<0.005 ±	<0.005	40.58 ±	68.07	40.58 ±	67.72	<0.005	0.01	0.00	<0.005 ±	<0.005	3.27 ±	5.33	3.27 ±	5.32	<0.005	0.00
		2004	<0.005 ±	<0.005	81.16 ±	136.20	81.16 ±	135.46	<0.005	0.02	0.01	74.87 ±	82.54	121.46 ±	202.65	196.33 ±	218.30	0.02	0.02
		2005	176.10 ±	320.54	80.13 ±	151.61	256.23 ±	351.14	0.05	0.01	0.03	253.61 ±	340.19	<0.005 ±	<0.005	253.61 ±	338.50	<0.005	0.07
Dall Porpoise		1989																	
		1990	441.05 ±	388.12	879.28 ±	1192.09	1320.33 ±	1246.44	0.12	0.16	0.15	105.46 ±	127.72	47.63 ±	83.48	153.09 ±	151.74	0.03	0.01
		1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	196.46 ±	206.91	285.59 ±	210.56	482.05 ±	294.23	0.05	0.05
		1993	<0.005 ±	<0.005	1393.75 ±	1668.22	1393.75 ±	1659.25	<0.005	0.26	0.16	430.56 ±	497.36	4.49 ±	7.86	435.05 ±	495.05	0.12	0.00
		1994	450.52 ±	476.48	493.93 ±	502.65	944.45 ±	687.04	0.13	0.09	0.11								
		1996	820.63 ±	664.93	907.41 ±	905.20	1728.05 ±	1115.05	0.23	0.17	0.19	612.13 ±	478.16	491.59 ±	517.61	1103.71 ±	702.40	0.17	0.09
		1998	529.99 ±	454.69	1828.68 ±	1377.84	2358.67 ±	1442.63	0.15	0.34	0.26	2060.44 ±	1721.25	202.11 ±	355.98	2262.55 ±	1749.35	0.58	0.04
		2000	111.05 ±	131.85	2627.48 ±	2623.21	2738.53 ±	2613.00	0.03	0.49	0.30	424.22 ±	523.49	484.99 ±	456.56	909.21 ±	692.16	0.12	0.09
		2004	1521.26 ±	1170.81	819.01 ±	1206.22	2340.27 ±	1667.45	0.43	0.15	0.26	1179.80 ±	893.72	291.03 ±	289.34	1470.83 ±	935.23	0.33	0.05
		2005	3201.30 ±	2171.41	2980.15 ±	2460.01	6181.45 ±	3256.01	0.89	0.55	0.69	2196.21 ±	1146.74	444.07 ±	394.41	2640.28 ±	1207.04	0.08	0.61
Pacific White-sided Dolphin		1989																	
		1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
		1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Killer Whale		1989																	
		1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.36 ±	24.04	20.65 ±	37.32	36.00 ±	44.27	0.00	0.00
		1993	<0.005 ±	<0.005	15.53 ±	28.43	15.53 ±	28.28	<0.005	0.00	0.00	37.34 ±	61.33	<0.005 ±	<0.005	37.34 ±	61.04	0.01	<0.005
		1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
		1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.61 ±	9.16	<0.005 ±	<0.005	5.61 ±	9.12	0.00	<0.005
		1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2000	<0.005 ±	<0.005	81.21 ±	143.60	81.21 ±	142.87	<0.005	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2005	248.92 ±	449.50	<0.005 ±	<0.005	248.92 ±	444.69	0.07	<0.005	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pilot Whale		1989																	
		1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
		1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00





**Carnivora**

*Canidae: Wolves, coyotes*

Coyote		1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	4.49 ±	7.81	4.49 ±	7.80	<0.005	0.00
		1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2000	<0.005 ±	<0.005	22.46 ±	41.49	22.46 ±	41.28	<0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*Ursidae: Bears*

Brown Bear		1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	4.49 ±	7.67	4.49 ±	7.66	<0.005	0.00
		2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	11.02 ±	13.15	11.02 ±	13.12	<0.005	0.00
		2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	3.27 ±	5.32	3.27 ±	5.31	<0.005	0.00
		2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Black Bear		1989									9.35 ±	15.74	13.01 ±	12.73	22.36 ±	20.14	0.00	0.00
		1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.58 ±	4.17	6.80 ±	10.77	9.38 ±	11.52	0.00	0.00
		1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	14.29 ±	14.13	14.29 ±	14.10	<0.005	0.00
		1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80 ±	4.53	24.49 ±	22.99	27.29 ±	23.39	0.00	0.00
		1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.84 ±	4.57	37.91 ±	27.03	40.75 ±	27.36	0.00	0.01
		1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.66 ±	10.34	4.49 ±	7.70	13.15 ±	12.84	0.00	0.00
		2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.41 ±	7.76	13.46 ±	13.24	21.87 ±	15.31	0.00	0.00
		2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.55 ±	19.04	21.59 ±	16.20	41.14 ±	24.91	0.01	0.00
		2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.54 ±	8.46	22.01 ±	19.76	32.55 ±	21.44	0.00	0.00

*Mustelidae: Minks, Martens and Otters*

Mink		1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	7.76 ±	9.40	7.76 ±	9.39	<0.005	0.00
		1994	<0.005 ±	<0.005	16.14 ±	29.23	16.14 ±	29.07	<0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1996	5.00 ±	9.15	1.42 ±	2.67	6.42 ±	9.43	0.00	0.00	2.80 ±	4.56	<0.005 ±	<0.005	2.80 ±	4.54	0.00	<0.005
		1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.61 ±	9.09	<0.005 ±	<0.005	5.61 ±	9.04	0.00	<0.005
		2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Martens		1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Wolverine																								
1989																								
1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
2005	<0.005	±	<0.005	7.65	±	13.91	7.65	±	13.83	<0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
Sea Otter																								
1989																								
1990	2019.06	±	1254.84	3889.63	±	1089.50	5908.69	±	1647.68	0.56	0.72	0.66	1761.11	±	667.56	6476.91	±	1918.49	8238.03	±	2024.29	0.49	1.20	0.92
1991	1011.82	±	496.86	3330.30	±	838.26	4342.12	±	967.91	0.28	0.62	0.48	1251.80	±	564.25	4470.92	±	2788.14	5722.72	±	2839.04	0.35	0.83	0.66
1993	1687.39	±	1015.30	5125.19	±	1549.07	6812.58	±	1838.34	0.47	0.95	0.76	1052.91	±	477.40	4192.72	±	1404.24	5245.63	±	1479.94	0.29	0.78	0.61
1994	1149.10	±	382.26	6597.37	±	2022.88	7746.47	±	2047.00	0.32	1.22	0.86	1528.00	±	625.75	6687.86	±	2320.42	8215.86	±	2398.33	0.43	1.24	0.95
1996	1647.39	±	436.59	6491.33	±	2146.63	8138.73	±	2178.64	0.46	1.20	0.91	1628.61	±	514.87	9147.19	±	3902.15	10775.79	±	3928.45	0.46	1.69	1.25
1998	1326.18	±	754.25	5256.66	±	3127.83	6582.84	±	3199.93	0.37	0.97	0.73	1545.18	±	749.45	6512.11	±	3949.85	8057.29	±	4012.51	0.43	1.21	0.93
2000	836.81	±	381.98	3812.30	±	1093.11	4649.10	±	1151.24	0.23	0.71	0.52	1401.49	±	867.60	3662.38	±	1421.84	5063.86	±	1661.22	0.39	0.68	0.59
2004	1313.77	±	770.34	4370.68	±	1350.71	5684.45	±	1544.46	0.37	0.81	0.63	1119.64	±	478.61	7957.07	±	6041.82	9076.71	±	6048.63	0.31	1.47	1.05
2005	982.94	±	582.53	5567.67	±	2136.58	6550.61	±	2201.90	0.27	1.03	0.73	1564.29	±	1497.08	3695.24	±	1518.82	5259.53	±	2125.27	0.68	0.44	0.61
River Otter																								
1989																								
1990	37.16	±	35.11	37.37	±	39.74	74.53	±	52.61	0.01	0.01	0.01	9.35	±	15.50	<0.005	±	<0.005	9.35	±	15.40	0.00	<0.005	0.00
1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.71	±	12.39	7.35	±	8.50	15.06	±	14.97	0.00	0.00	0.00
1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.71	±	23.16	3.17	±	5.12	22.88	±	23.61	0.01	0.00	0.00
1994	42.63	±	47.27	56.90	±	55.61	99.53	±	72.42	0.01	0.01	0.01	16.82	±	23.06	60.39	±	40.22	77.21	±	46.24	0.00	0.01	0.01
1996	36.81	±	47.92	23.03	±	24.27	59.84	±	53.19	0.01	0.00	0.01	28.68	±	23.27	106.61	±	80.42	135.29	±	83.54	0.01	0.02	0.02
1998	25.66	±	25.13	21.09	±	22.17	46.75	±	33.22	0.01	0.00	0.01	2.97	±	4.72	43.17	±	27.73	46.14	±	28.07	0.00	0.01	0.01
2000	36.81	±	39.41	29.94	±	34.38	66.75	±	51.86	0.01	0.01	0.01	8.47	±	7.91	68.12	±	41.34	76.59	±	42.01	0.00	0.01	0.01
2004	30.68	±	47.39	62.62	±	55.36	93.30	±	72.31	0.01	0.01	0.01	22.34	±	28.22	7.85	±	9.62	30.19	±	29.68	0.01	0.00	0.00
2005	<0.005	±	<0.005	68.83	±	63.99	68.83	±	63.65	<0.005	0.01	0.01	11.43	±	9.12	25.80	±	27.46	37.23	±	28.87	0.00	0.00	0.00
Unidentified Otter																								
1989																								
1990	6.14	±	11.56	<0.005	±	<0.005	6.14	±	11.44	0.00	<0.005	0.00	2.80	±	4.52	<0.005	±	<0.005	2.80	±	4.50	0.00	<0.005	0.00
1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005	±	<0.005	4.49	±	7.58	4.49	±	7.56	<0.005	0.00	0.00
1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1996	5.64	±	10.32	0.62	±	1.16	6.26	±	10.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Pinnipedia																								
<i>Otaridae: Sea Lions, Fur Seals</i>																								
Steller Sea Lion																								
1989																								
1990	6116.32	±	10031.81	143.43	±	171.97	6259.75	±	9923.05	1.71	0.03	0.70	1564.92	±	2071.00	793.33	±	1094.03	2358.25	±	2328.59	0.44	0.15	0.26
1991	3247.26	±	4516.31	547.88	±	823.78	3795.14	±	4541.24	0.91	0.10	0.42	3495.06	±	3030.84	206.89	±	143.13	3701.96	±	3019.68	0.98	0.04	0.43
1993	2424.27	±	3515.00	835.43	±	1128.74	3259.70	±	3648.77	0.68	0.15	0.36	2150.38	±	2338.15	161.49	±	93.85	2311.87	±	2328.87	0.60	0.03	0.27
1994	1661.69	±	2347.75	418.39	±	496.39	2080.08	±	2374.17	0.46	0.08	0.23	947.27	±	787.14	52.49	±	38.23	999.77	±	784.31	0.26	0.01	0.12
1996	1384.57	±	1583.44	570.60	±	468.87	1955.17	±	1634.02	0.39	0.11	0.22	828.30	±	860.32	124.37	±	119.16	952.67	±	864.41	0.23	0.02	0.11
1998	1914.17	±	1823.55	311.66	±	190.15	2225.83	±	1813.33	0.54	0.06	0.25	876.02	±	951.34	77.72	±	50.39	953.73	±	948.06	0.24	0.01	0.11
2000	1873.34	±	2032.53	372.62	±	292.22	2245.96	±	2031.02	0.52	0.07	0.25	736.49	±	778.02	97.31	±	121.76	833.80	±	783.77	0.21	0.02	0.10
2004	2031.35	±	1798.44	377.94	±	592.36	2409.29	±	1873.87	0.57	0.07	0.27	420.68	±	460.45	58.59	±	69.97	479.27	±	463.59	0.12	0.01	0.06
2005	1561.59	±	1374.08	46.60	±	60.68	1608.19	±	1360.69	0.44	0.01	0.18	368.52	±	361.76	145.41	±	203.07	513.92	±	413.10	0.03	0.10	0.06



California Sea Lion		1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	4.49 ±	7.70	4.49 ±	7.68	<0.005	0.00	0.00	0.00
		2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Northern Fur Seal		1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	40.49 ±	67.55	40.49 ±	67.42	<0.005	0.01	0.00	0.00
		1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unidentified Pinniped		1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1991	12.27 ±	22.92	<0.005 ±	<0.005	12.27 ±	22.67	0.00	<0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Phocidae: Seals</i>																				
Harbor Seal		1989									730.23 ±	390.50	1697.62 ±	765.40	2427.85 ±	855.99	0.20	0.31	0.27	
		1990	516.64 ±	247.75	1313.02 ±	731.45	1829.67 ±	767.78	0.14	0.24	0.20	526.91 ±	220.39	2139.46 ±	2761.72	2666.37 ±	2765.30	0.15	0.40	0.31
		1991	239.90 ±	227.54	670.67 ±	387.33	910.56 ±	446.21	0.07	0.12	0.10	645.85 ±	359.15	937.19 ±	326.42	1583.05 ±	483.64	0.18	0.17	0.18
		1993	267.54 ±	208.71	1245.43 ±	1287.20	1512.96 ±	1296.76	0.07	0.23	0.17	744.03 ±	326.44	16176.46 ±	26429.65	16920.49 ±	26381.98	0.21	2.99	1.96
		1994	209.54 ±	130.50	1224.49 ±	1151.84	1434.02 ±	1152.77	0.06	0.23	0.16									
		1996	153.38 ±	100.56	829.32 ±	402.44	982.70 ±	412.51	0.04	0.15	0.11	554.13 ±	289.96	640.70 ±	255.74	1194.83 ±	385.26	0.15	0.12	0.14
		1998	287.39 ±	200.41	922.66 ±	414.25	1210.05 ±	457.31	0.08	0.17	0.13	371.44 ±	221.94	1129.30 ±	633.16	1500.74 ±	669.48	0.10	0.21	0.17
		2000	548.35 ±	654.33	1015.86 ±	1046.43	1564.21 ±	1225.78	0.15	0.19	0.17	488.80 ±	214.46	707.79 ±	503.34	1196.59 ±	545.86	0.14	0.13	0.14
		2004	679.00 ±	359.60	495.29 ±	214.52	1174.28 ±	414.76	0.19	0.09	0.13	412.47 ±	237.30	5316.43 ±	7810.57	5728.90 ±	7798.66	0.12	0.98	0.66
		2005	190.19 ±	178.93	614.16 ±	419.88	804.36 ±	453.59	0.05	0.11	0.09	515.33 ±	366.22	735.17 ±	302.85	1250.50 ±	473.44	0.14	0.14	0.14
<i>Artiodactyla: Even-toed Ungulates</i>																				
<i>Cervidae: Deer</i>																				
Sitka Black-tailed Deer		1989									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1990	233.84 ±	209.42	157.89 ±	106.67	391.73 ±	232.71	0.07	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1991	491.11 ±	532.44	552.19 ±	412.03	1043.30 ±	667.31	0.14	0.10	0.12	22.43 ±	17.44	8.98 ±	15.34	31.40 ±	23.14	0.01	0.00	0.00
		1993	99.77 ±	67.04	137.74 ±	127.58	237.50 ±	143.13	0.03	0.03	0.03	5.77 ±	6.40	24.30 ±	32.96	30.07 ±	33.51	0.00	0.00	0.00
		1994	100.45 ±	120.17	174.52 ±	198.50	274.97 ±	230.43	0.03	0.03	0.03									
		1996	645.62 ±	495.46	750.51 ±	666.79	1396.13 ±	824.68	0.18	0.14	0.16	19.63 ±	18.38	21.22 ±	19.38	40.84 ±	26.62	0.01	0.00	0.00
		1998	18.41 ±	24.76	14.97 ±	27.06	33.38 ±	36.39	0.01	0.00	0.00	25.98 ±	20.02	<0.005 ±	<0.005	25.98 ±	19.92	0.01	<0.005	0.00
		2000	24.54 ±	27.61	269.46 ±	254.12	294.01 ±	254.29	0.01	0.05	0.03	5.32 ±	6.04	56.67 ±	44.67	61.99 ±	44.99	0.00	0.01	0.01
		2004	208.77 ±	252.40	46.74 ±	52.85	255.52 ±	255.13	0.06	0.01	0.03	83.70 ±	113.26	26.17 ±	26.08	109.87 ±	115.69	0.02	0.00	0.01
		2005	<0.005 ±	<0.005	15.30 ±	19.83	15.30 ±	19.73	<0.005	0.00	0.00	5.71 ±	9.36	30.61 ±	42.42	36.32 ±	43.35	0.01	0.00	0.00

<i>Bovidae: Goats and Sheep</i>																	
Mountain Goat																	
1989											0.00	0.00	0.00	0.00	0.00	0.00	0.00
1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unidentified Mammal																	
1989											12.46 ±	10.30	13.01 ±	12.96	25.47 ±	16.49	0.00
1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	3.27 ±	5.23	3.27 ±	5.22	<0.005	0.00
1991	6.14 ±	11.41	88.78 ±	144.31	94.91 ±	144.00	0.00	0.02	0.01	2.80 ±	4.55	109.34 ±	120.22	112.15 ±	120.08	0.00	0.02
1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80 ±	4.52	<0.005 ±	<0.005	2.80 ±	4.50	0.00	<0.005
1994	6.14 ±	11.46	<0.005 ±	<0.005	6.14 ±	11.33	0.00	<0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	48.74 ±	61.93	53.54 ±	71.77	102.28 ±	94.49	0.01	0.01
2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005 ±	<0.005	8.09 ±	9.81	8.09 ±	9.79	0.00	<0.005

Appendix J. Estimated number of marine birds ( $\pm$  95% CI) from small boat surveys of Prince William Sound during winter and summer of 1972-73 (Haddock et al., unpubl. data), 1989-91 (Klosiewski and Laing 1994), 1993 (Agler et al. 1994), 1994 (Agler et al. 1995), 1996 (Agler and Kendall 1997), 1998 (Lance et al. 1999), 2000 (Stephensen et al. 2001), and 2004.

Year	Winter <sup>a</sup>			Summer <sup>b</sup>	
	<i>N</i>	CI		<i>N</i>	CI
1972	235,579	63,480		628,696	141,858
1973	328,091	59,955		475,618	144,213
1989	nd <sup>c</sup>	nd <sup>c</sup>		302,538	54,444
1990	141,911	22,902		237,900	32,570
1991	171,433	30,868		343,357	98,670
1993	402,760	167,697		371,327	58,189
1994	320,470	62,640		nd <sup>c</sup>	nd <sup>c</sup>
1996	253,001	34,917		246,572	41,400
1998	358,935	143,974		201,765	46,179
2000	210,945	52,471		204,349	35,071
2004	254,463	48,893		171,936	21,539
2005	273,067	39,379		194,780	25,053

<sup>a</sup> All winter surveys were conducted in March, except for March 1989, when no survey was conducted.

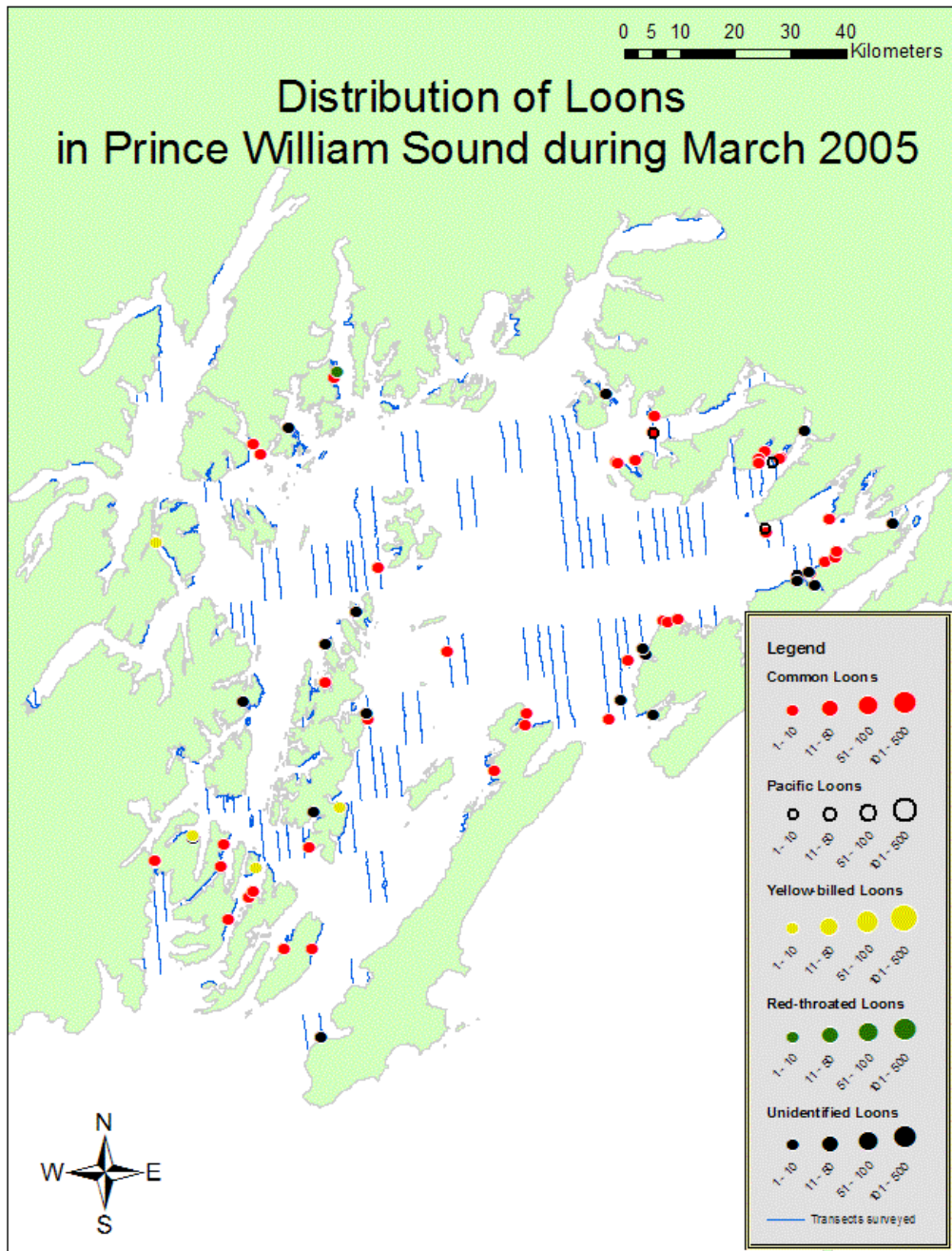
<sup>b</sup> Surveys were conducted during July, except for 1973 and 1994, when the Sound was surveyed in August. There was no summer survey in 1994.

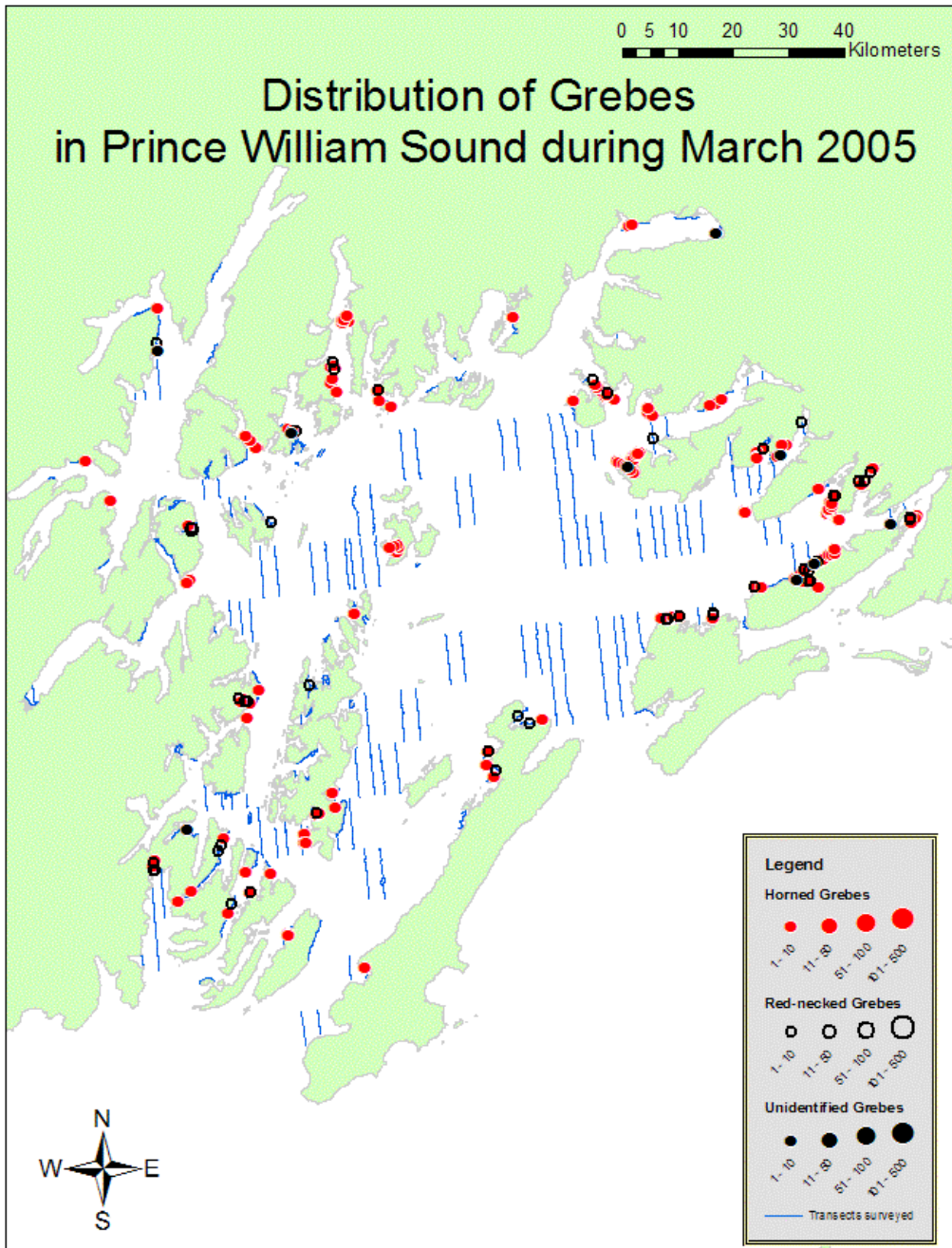
<sup>c</sup> nd = no data

Appendix K. Estimated number of marine birds ( $\pm$  95% CI) from small boat surveys of Prince William Sound during March 1990-91 (Klosiewski and Laing 1994), 1993 (Agler et al. 1994), 1994 (Agler et al. 1995), and 1996, and July 1989-91 (Klosiewski and Laing 1994), 1993 (Agler et al. 1994), 1996 (Agler and Kendall 1997), 1998 (Lance et al. 1999), and 2000 listed by zone oiled by the *T/V Exxon Valdez* oil spill.

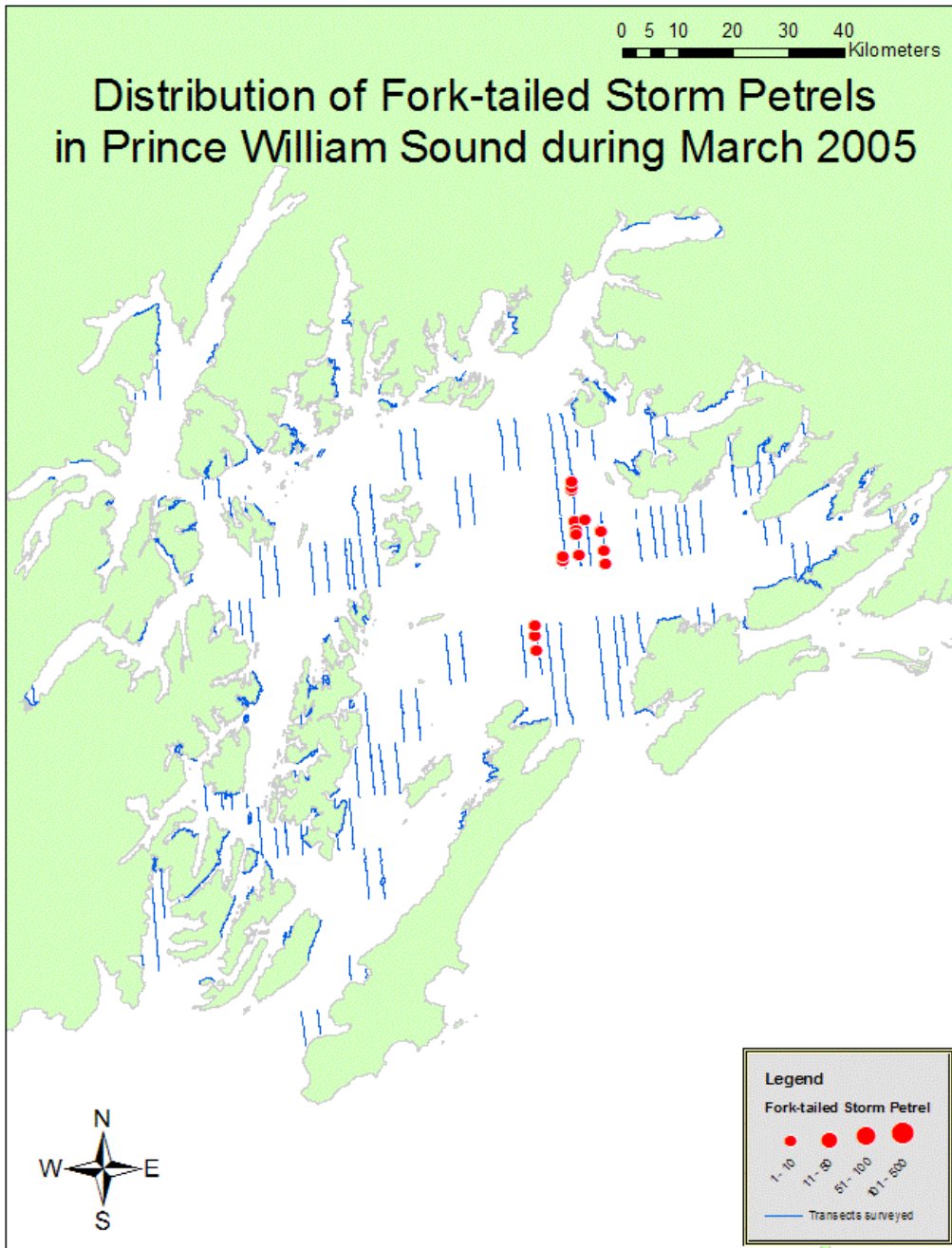
Year	Oiled Area			Unoiled Area	
	N	CI		N	CI
March					
1990	36,343	7,760		105,568	21,547
1991	49,649	13,422		121,784	27,797
1993	83,171	34,794		319,589	164,048
1994	86,045	27,031		234,425	56,507
1996	64,402	17,081		188,599	30,454
1998	58,304	16,511		300,632	143,024
2000	37,468	8,197		173,477	51,826
2004	64,696	12,175		189,768	47,644
2005	90,457	23,823		182,610	31,718
July					
1989	102,402	20,032		200,136	50,625
1990	88,191	20,140		149,709	25,597
1991	116,115	24,129		227,242	95,674
1993	116,219	26,896		255,108	51,600
1996	74,039	25,200		172,533	32,846
1998	70,483	12,409		131,281	44,481
2000	80,388	26,215		123,960	23,297
2004	44,613	11,097		127,323	18,528

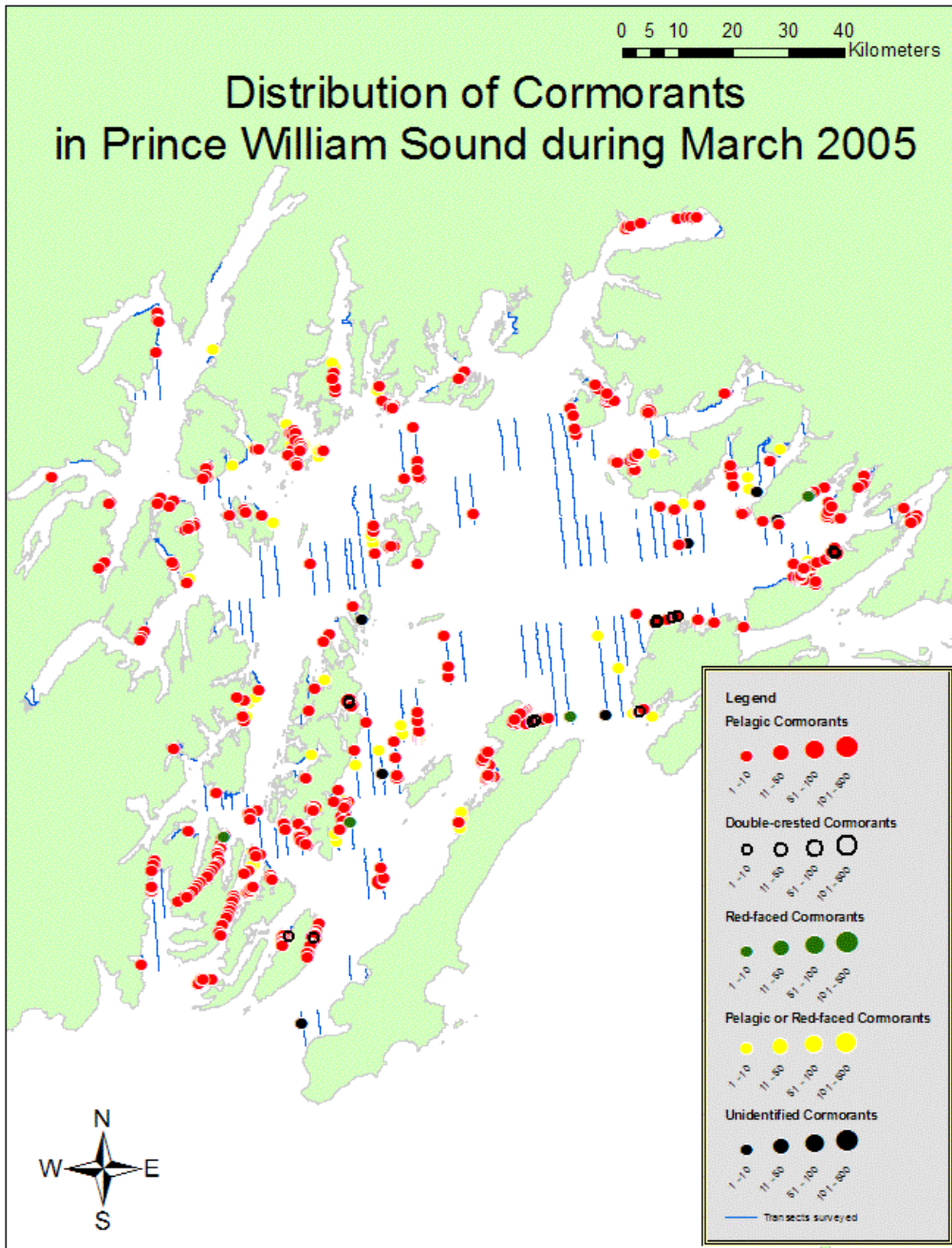
Appendix L: Distribution maps for species recorded during March 2005.



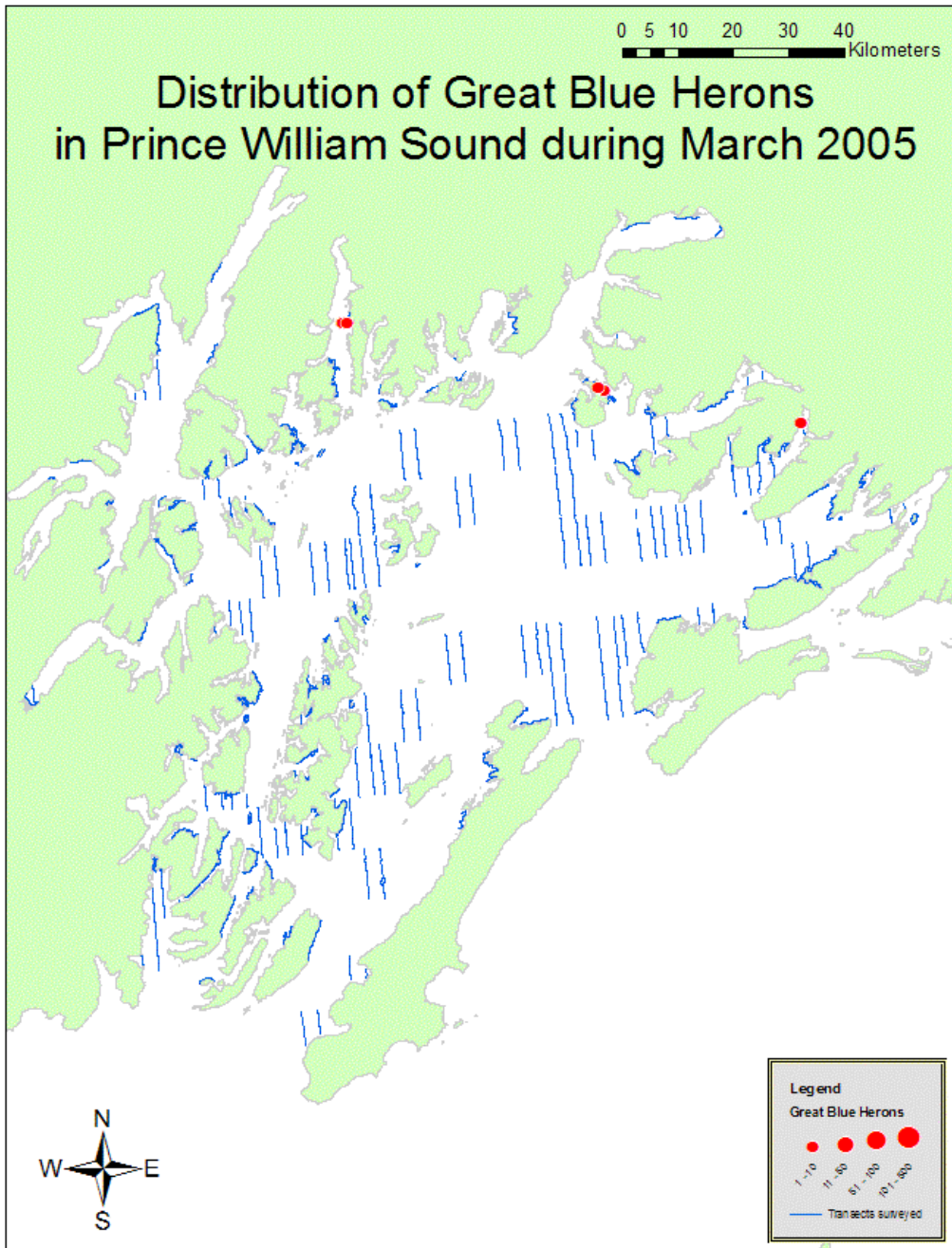


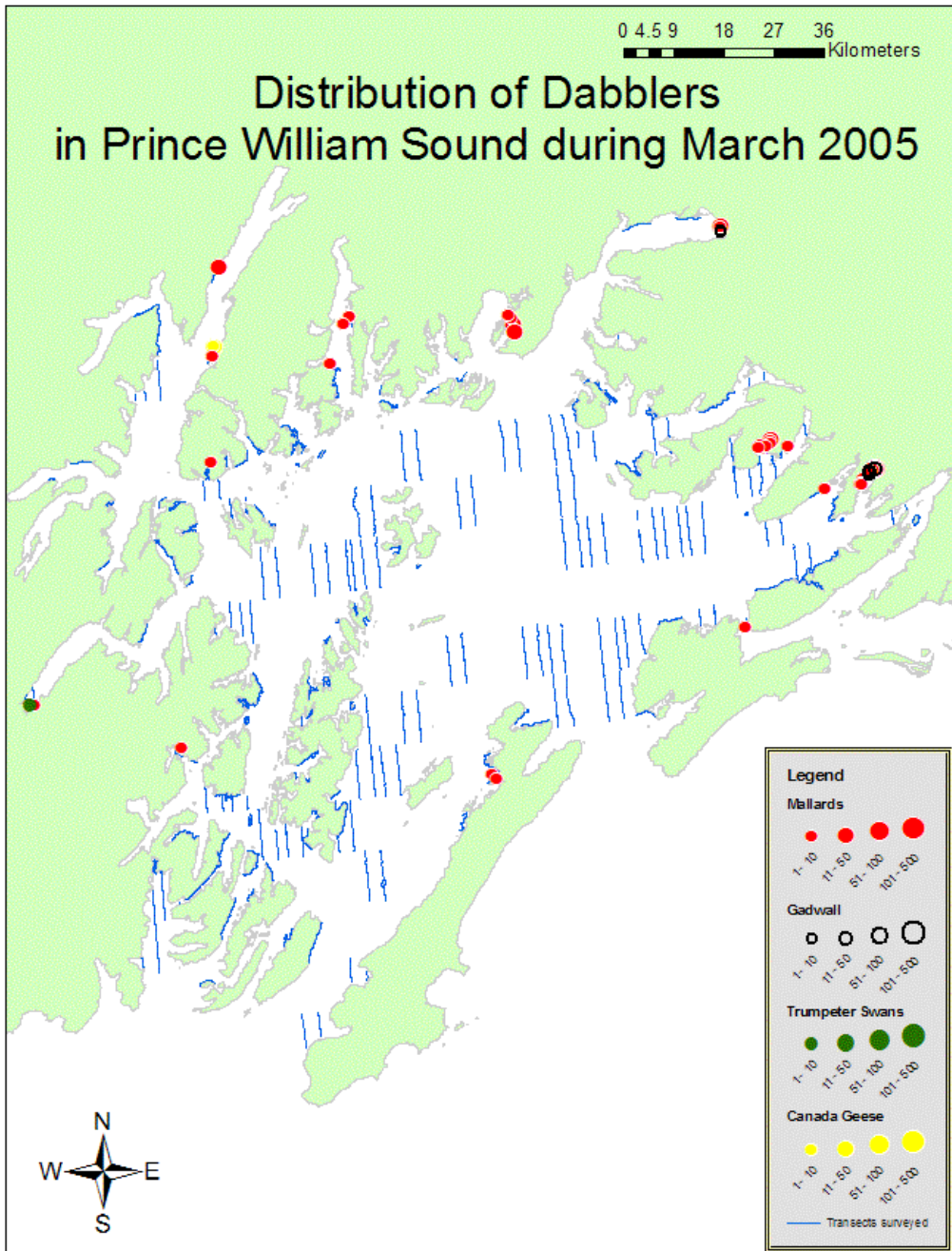


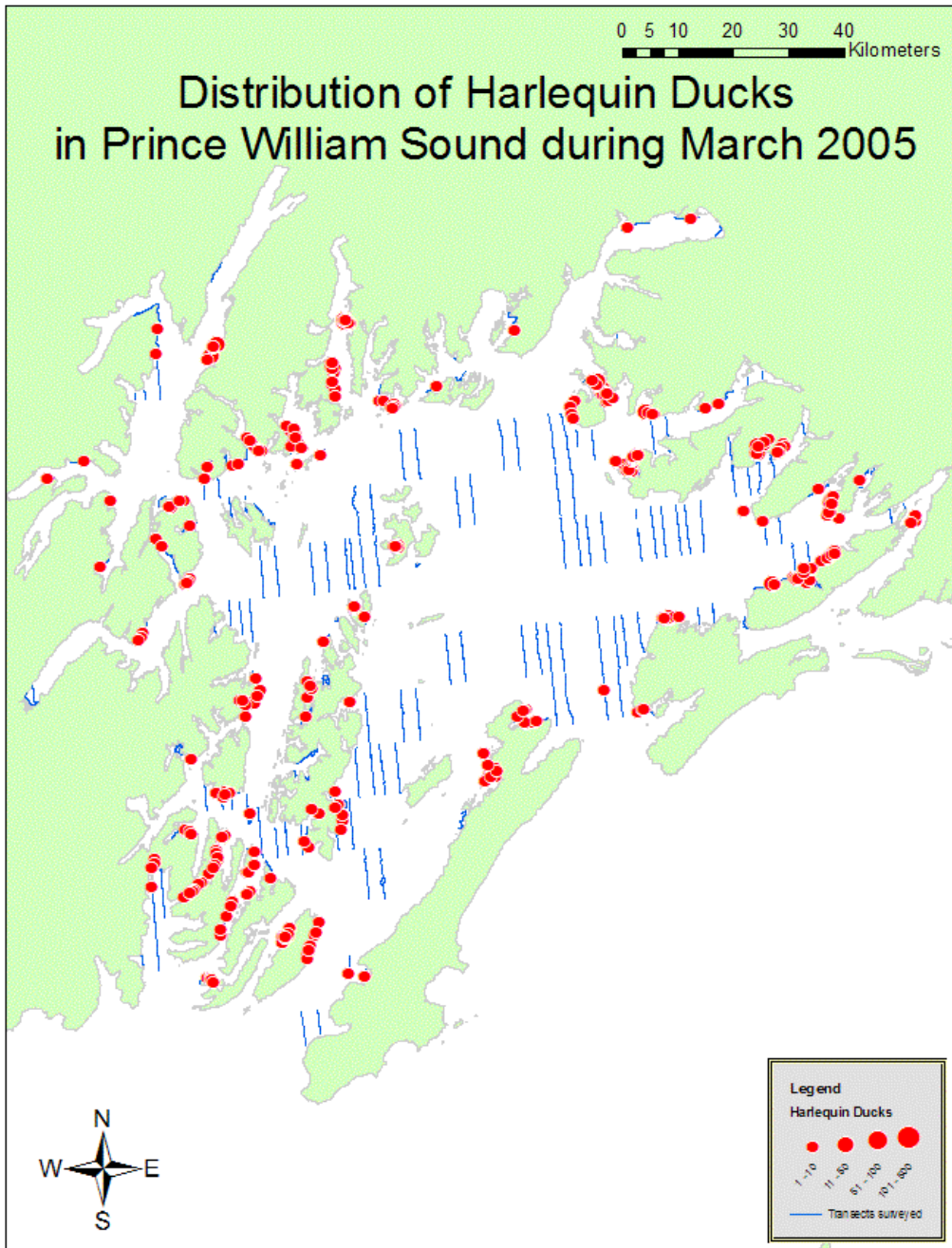




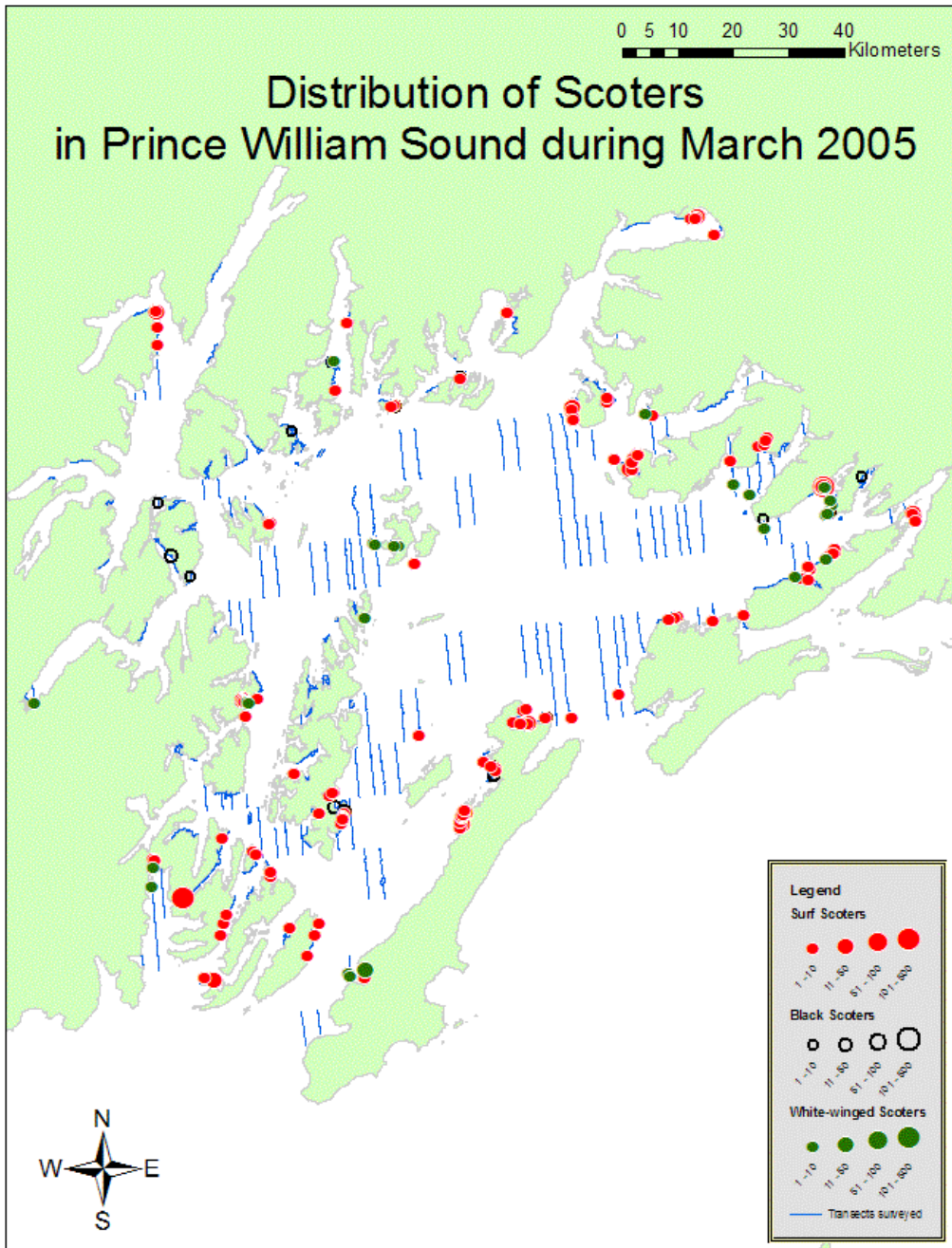


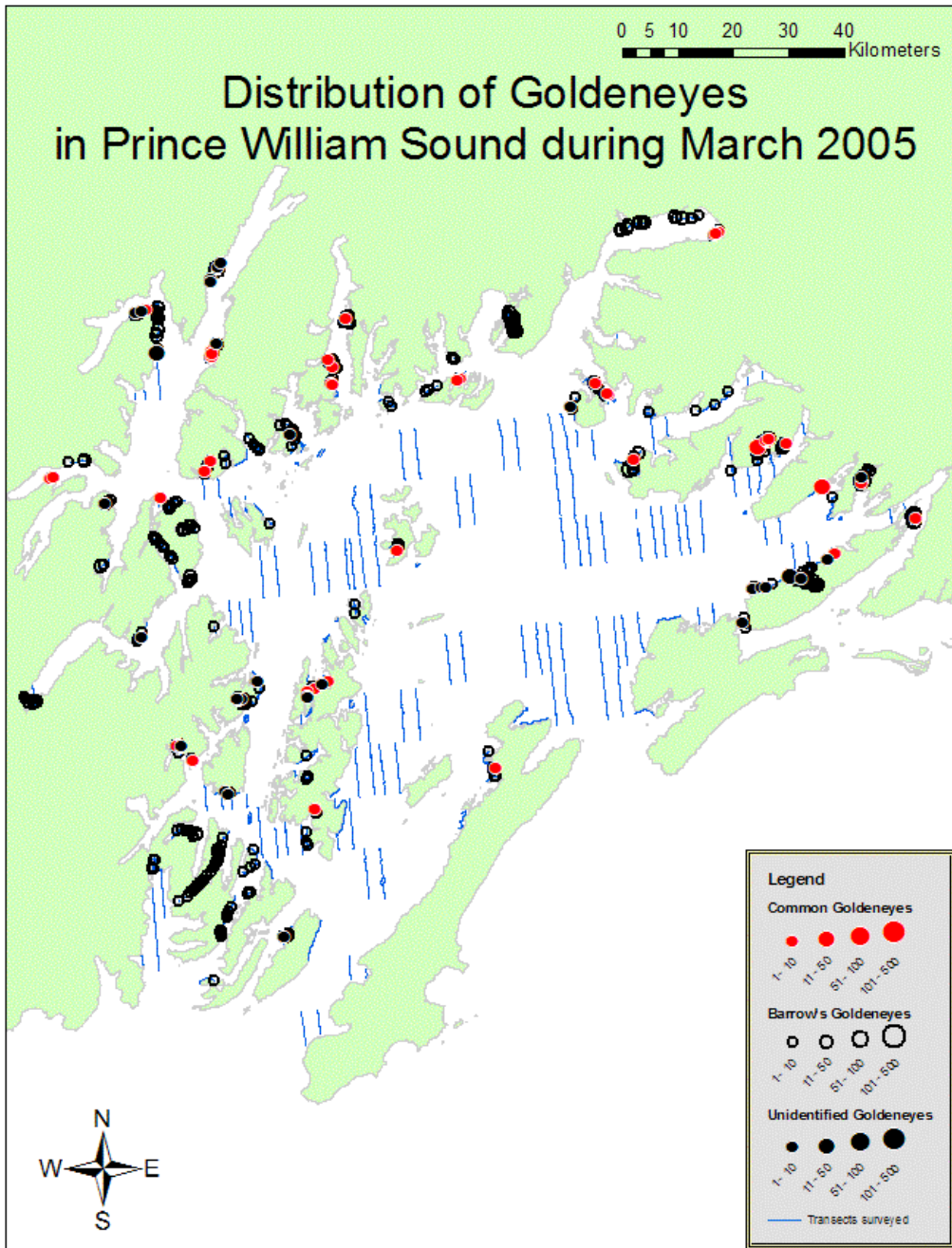


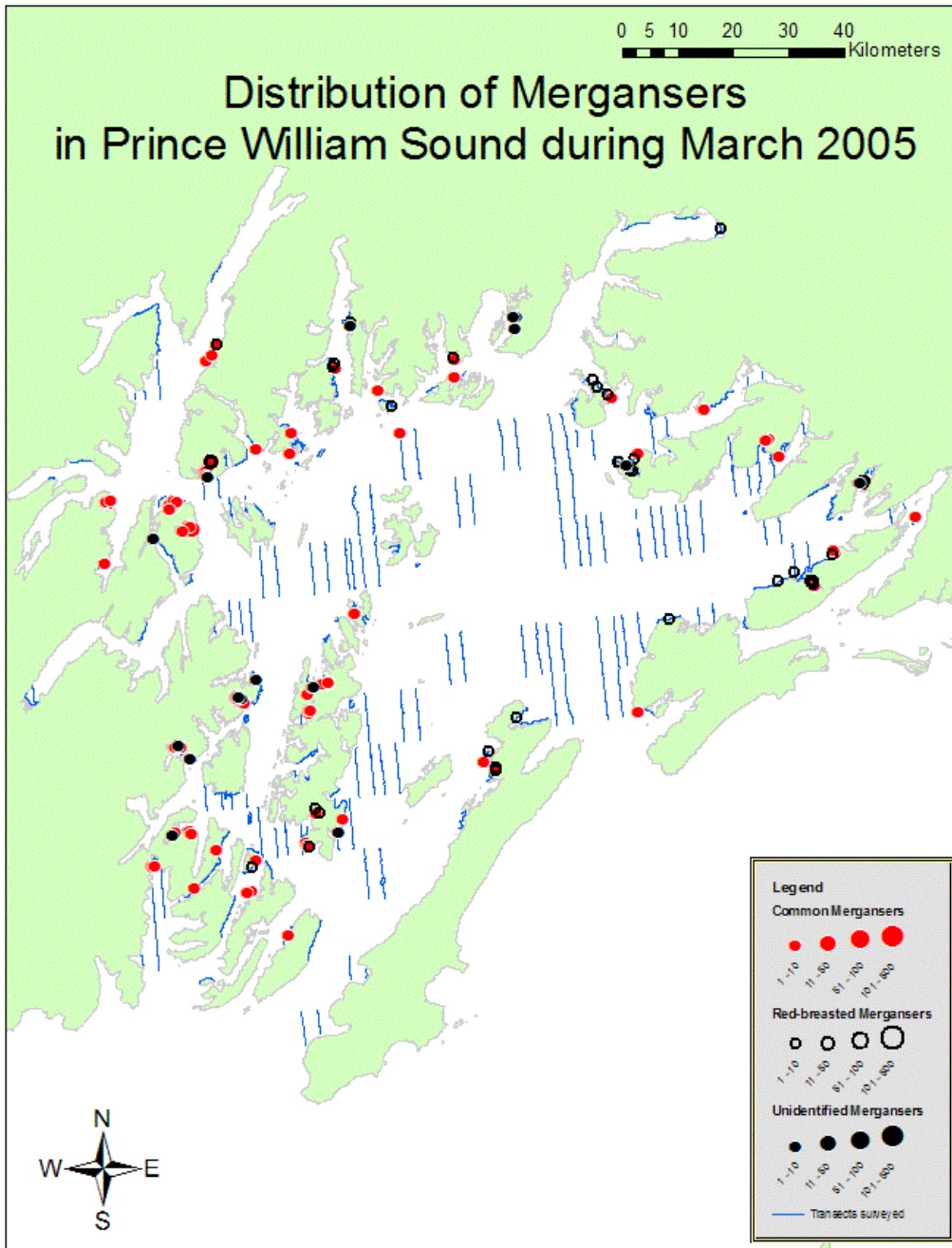




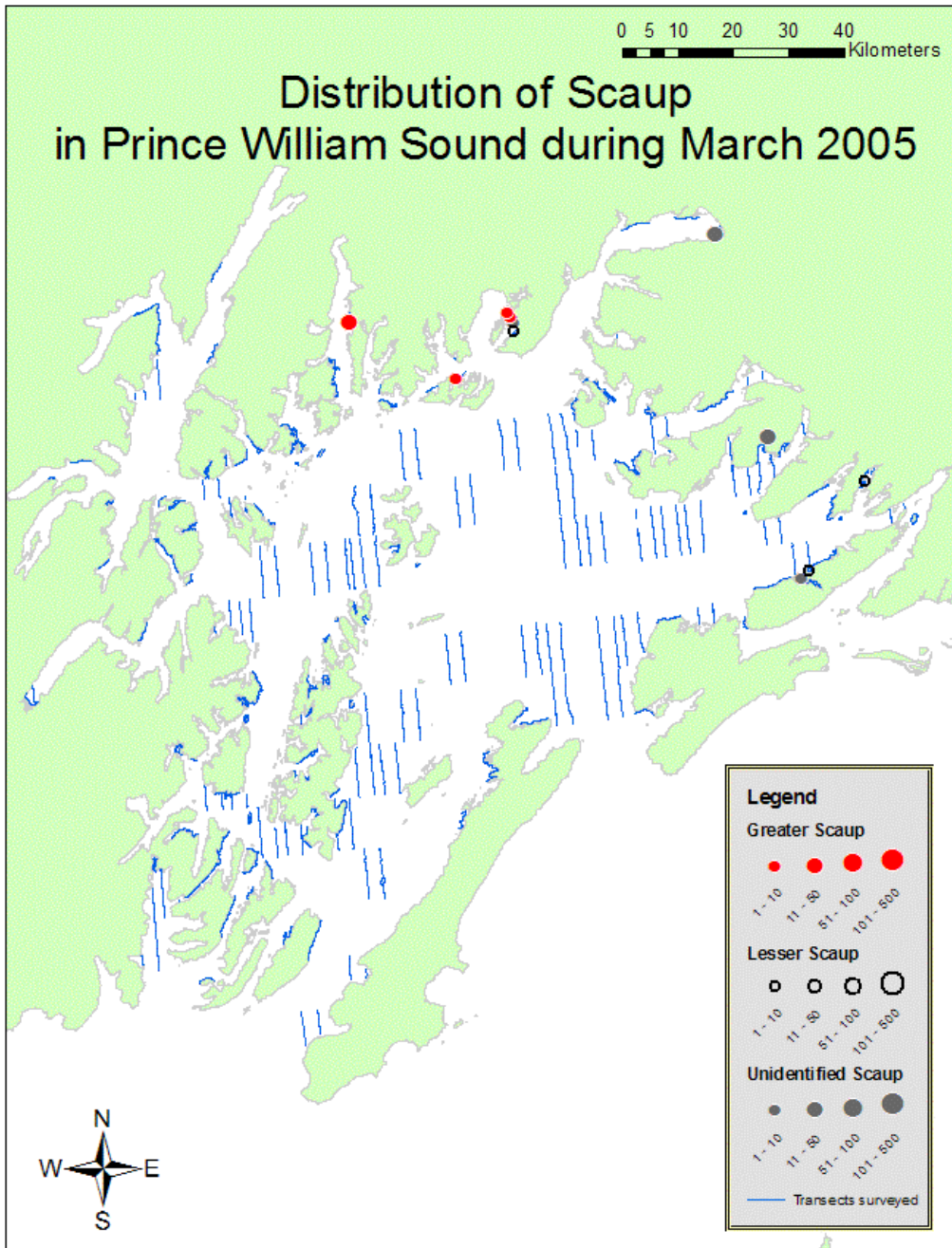


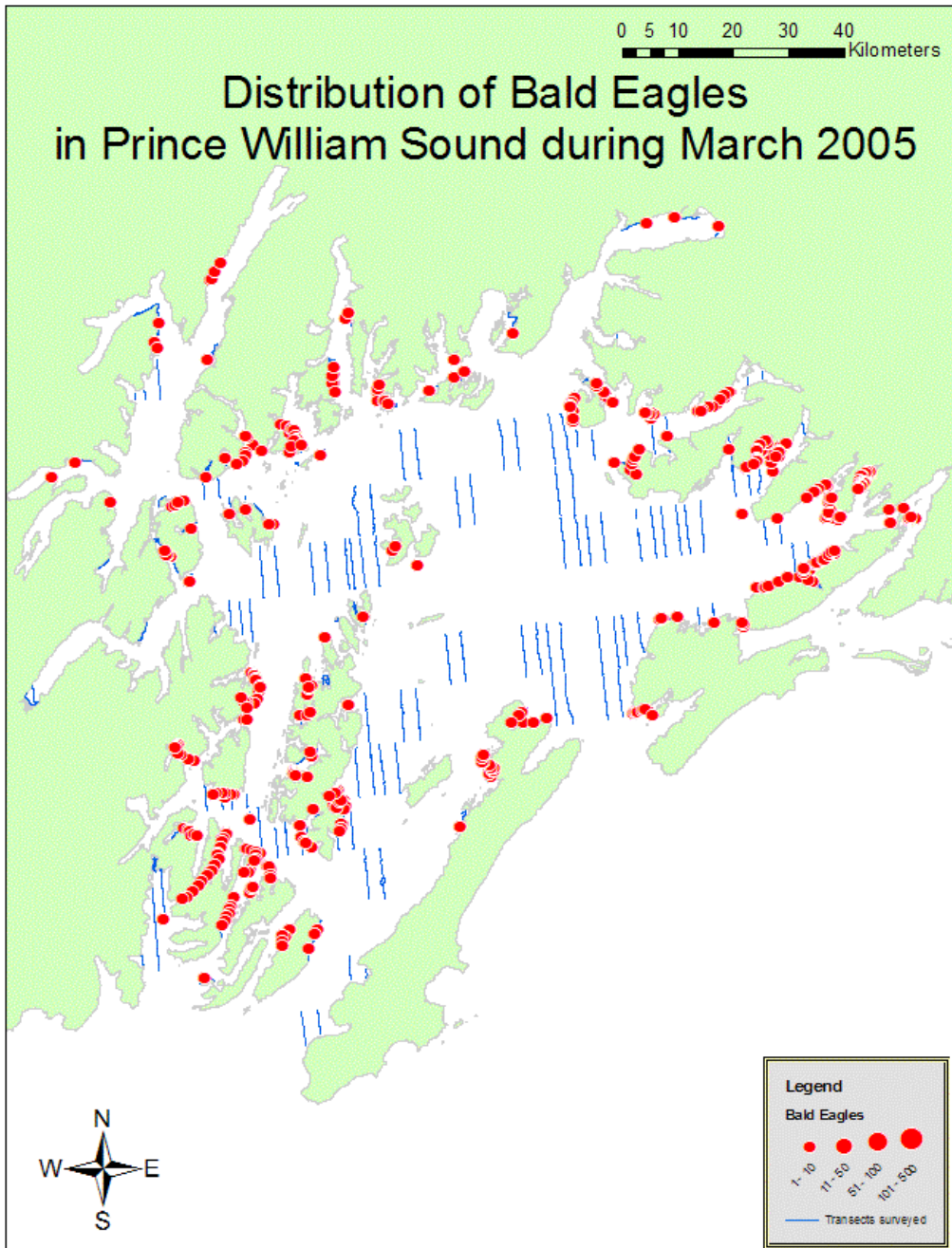




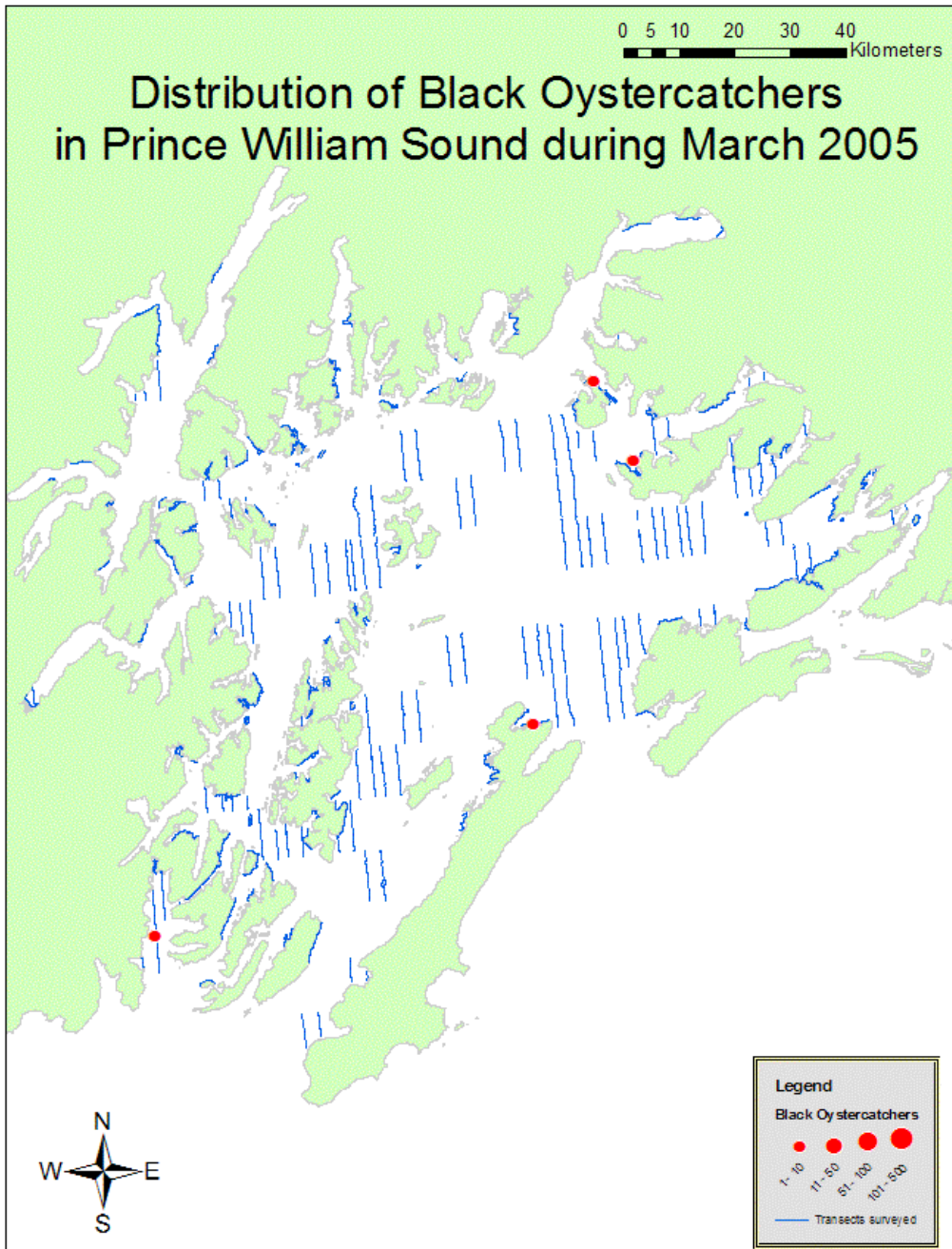


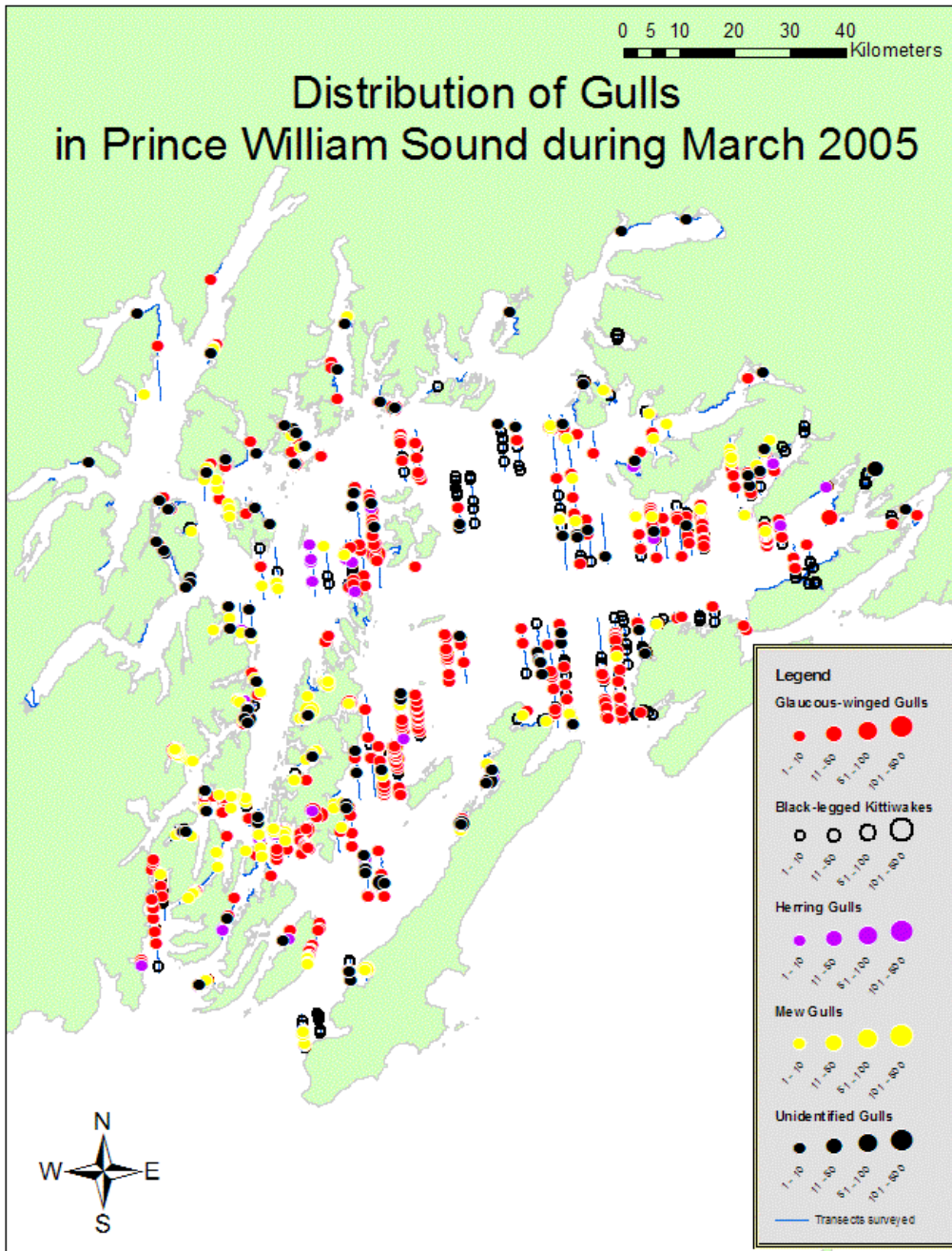


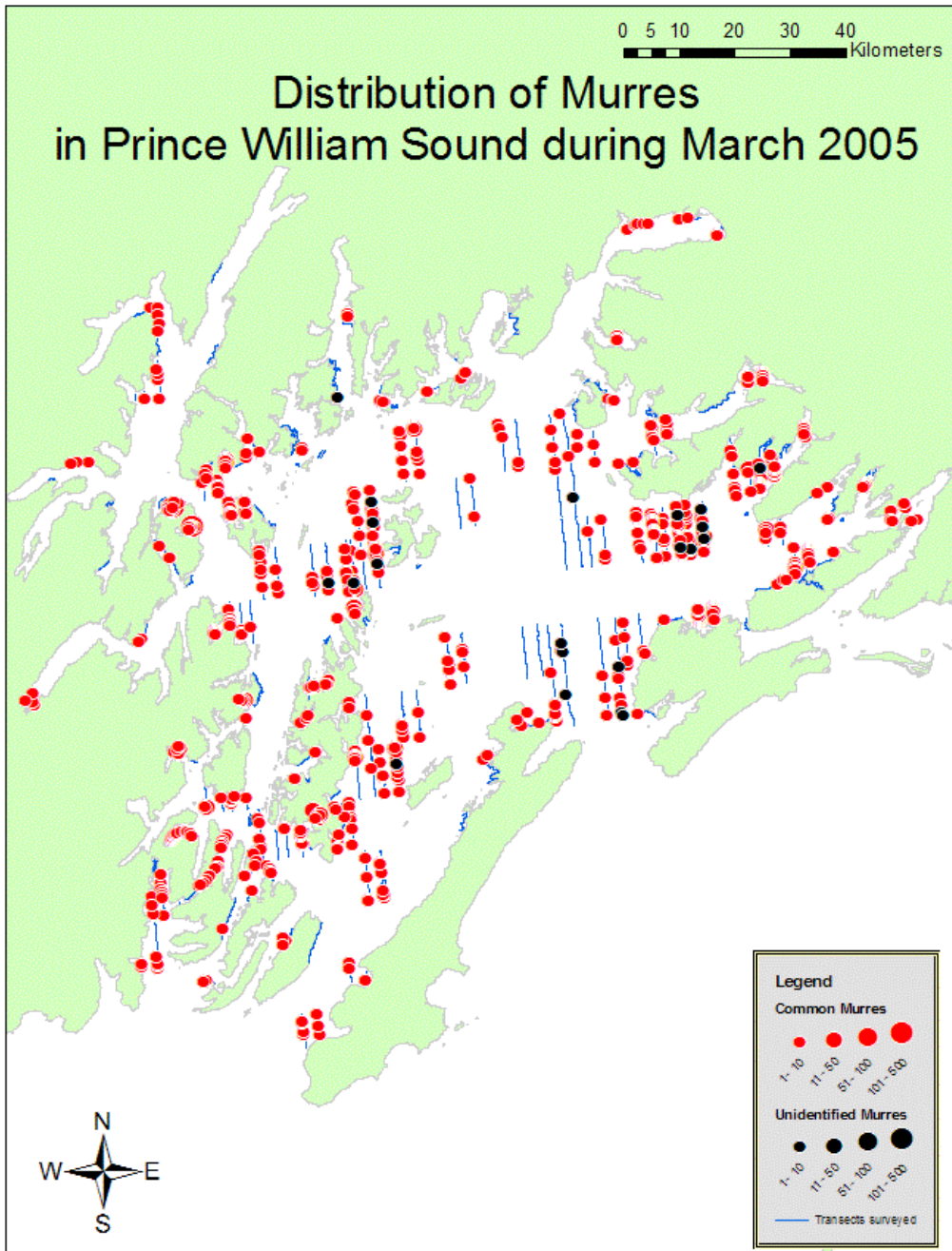




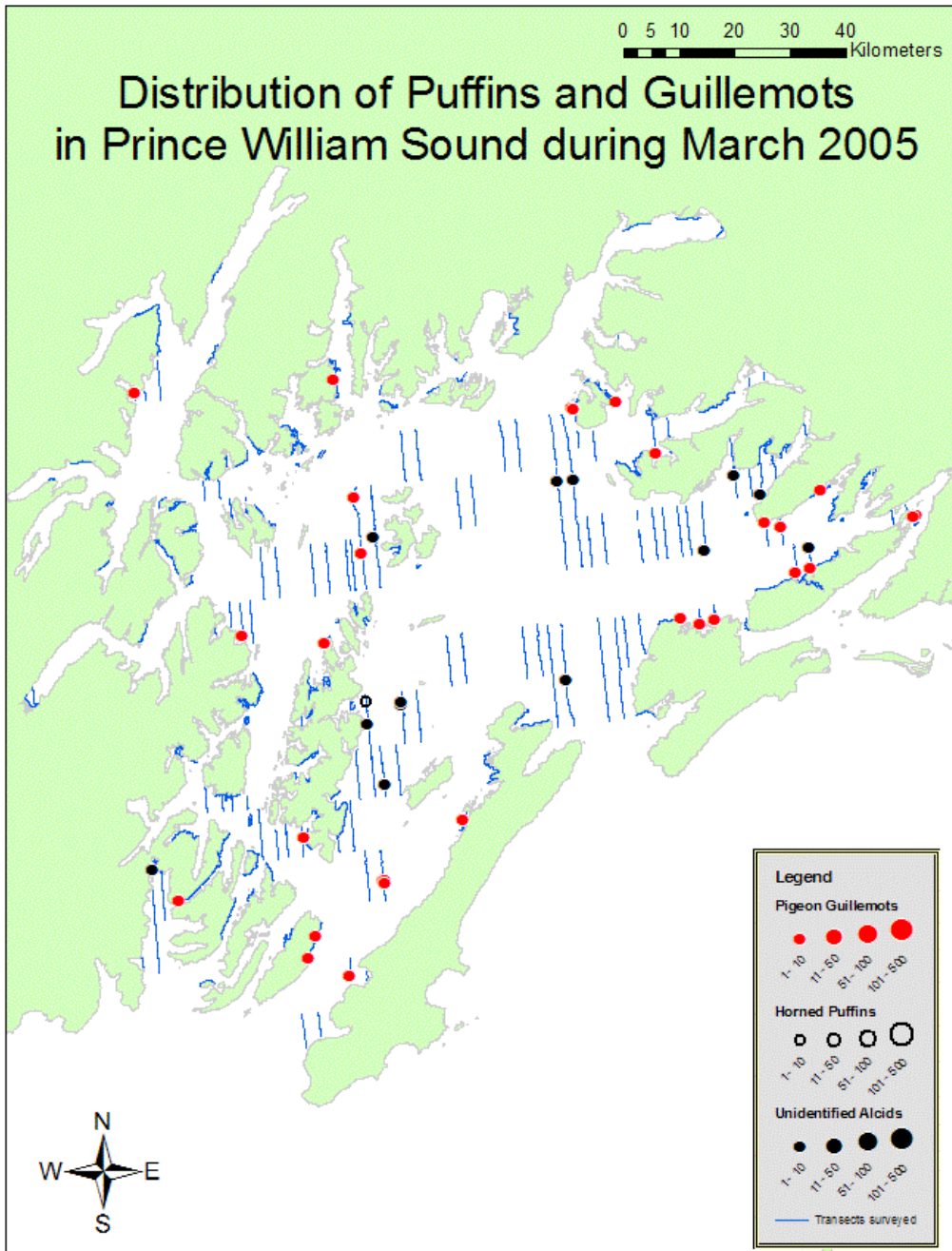


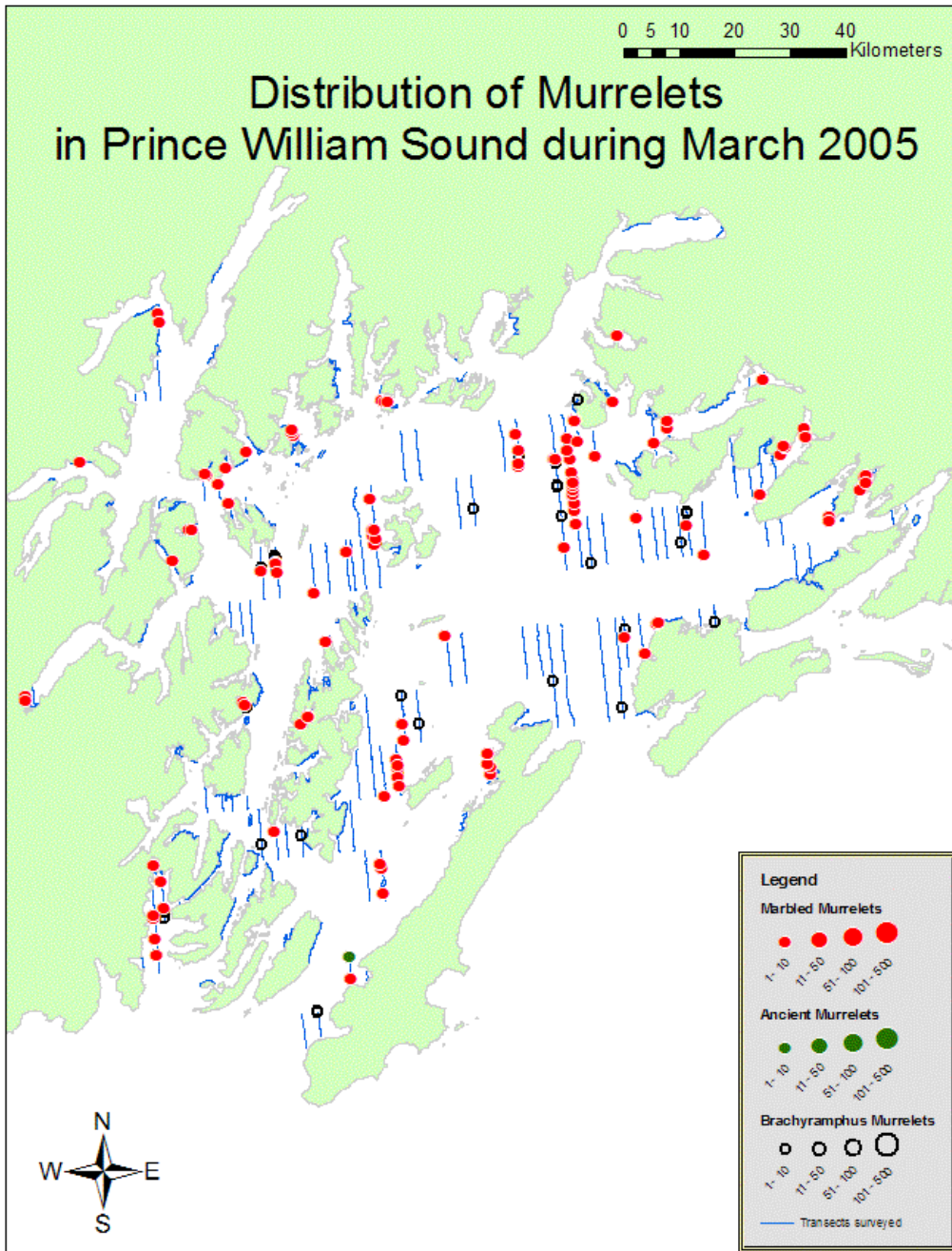


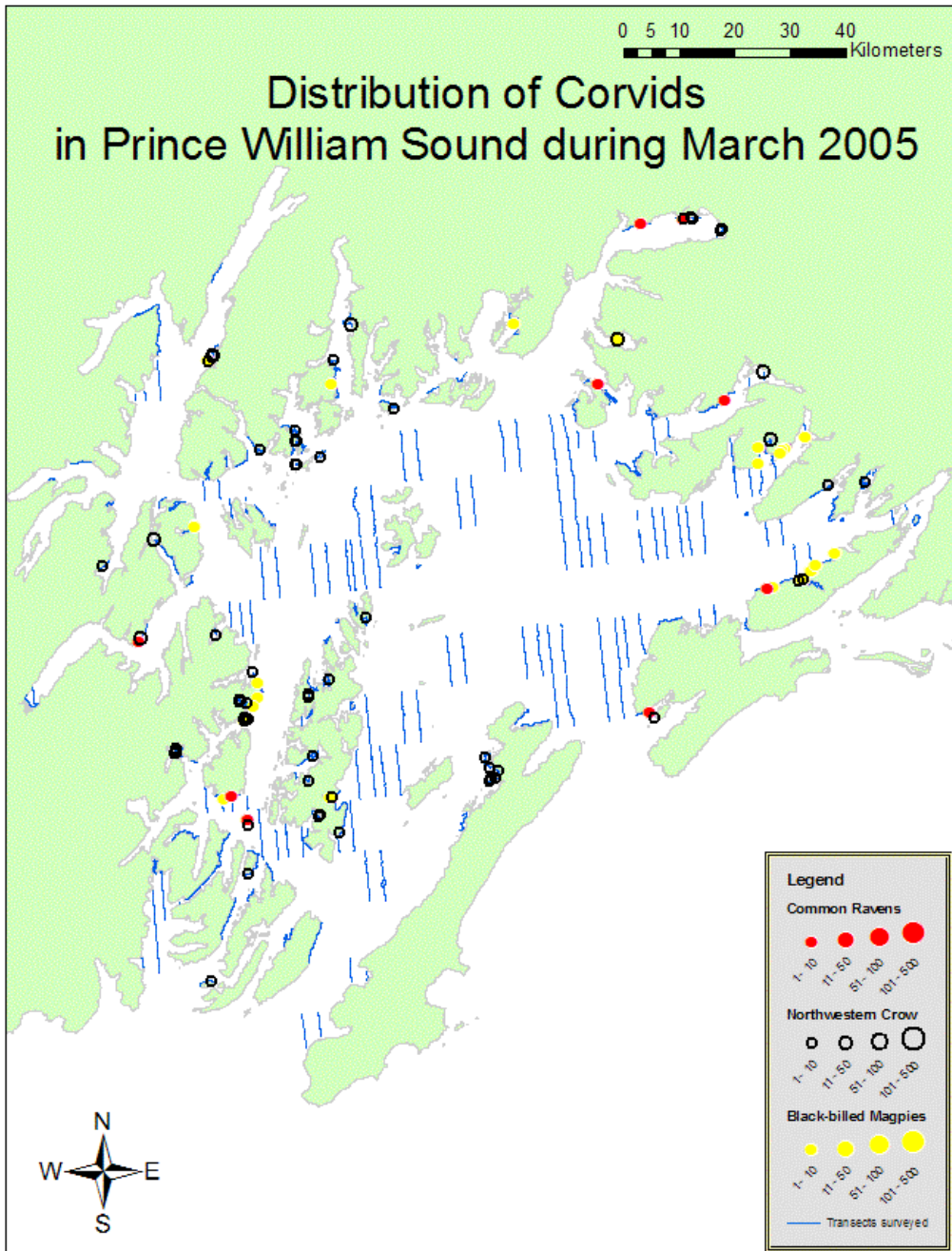




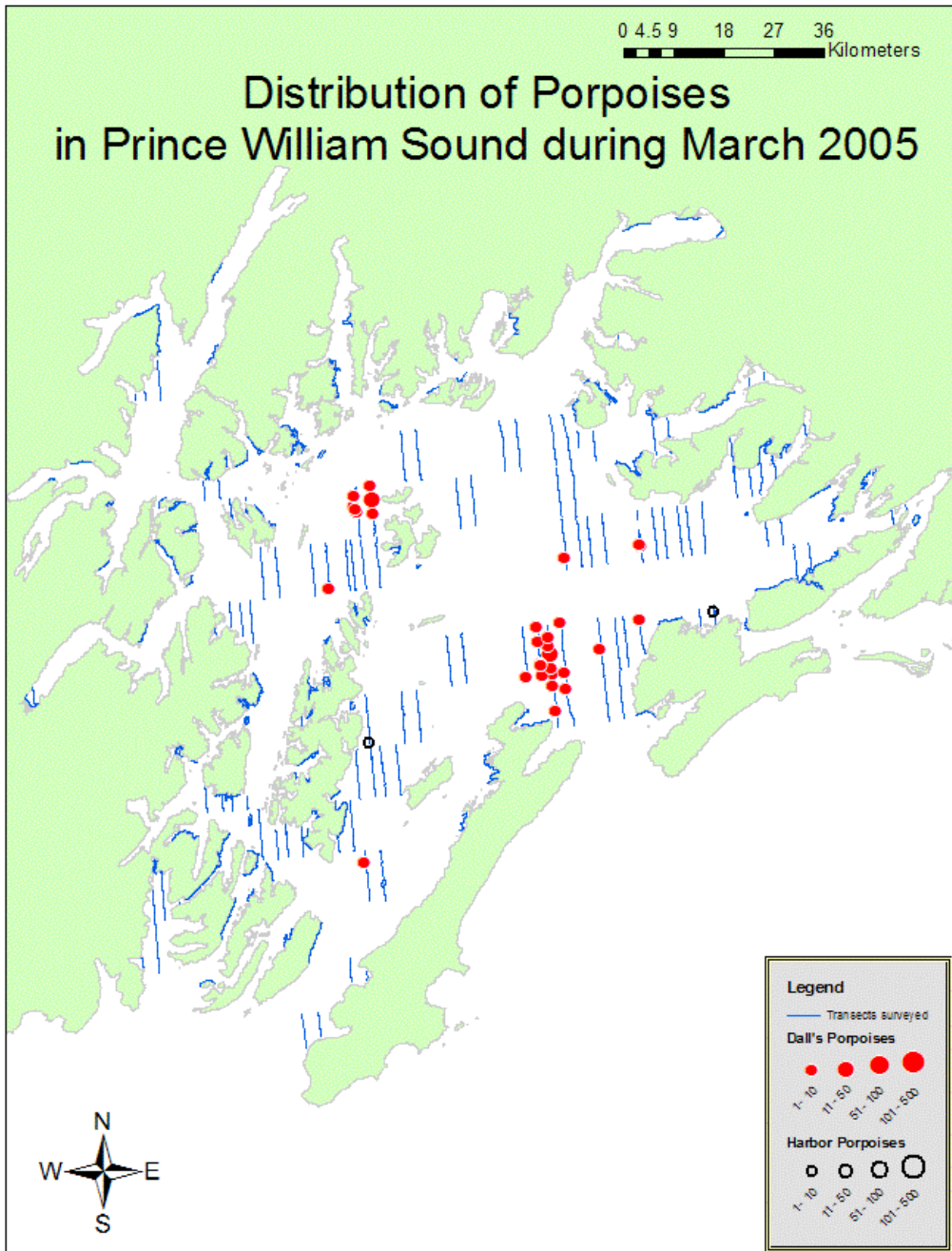


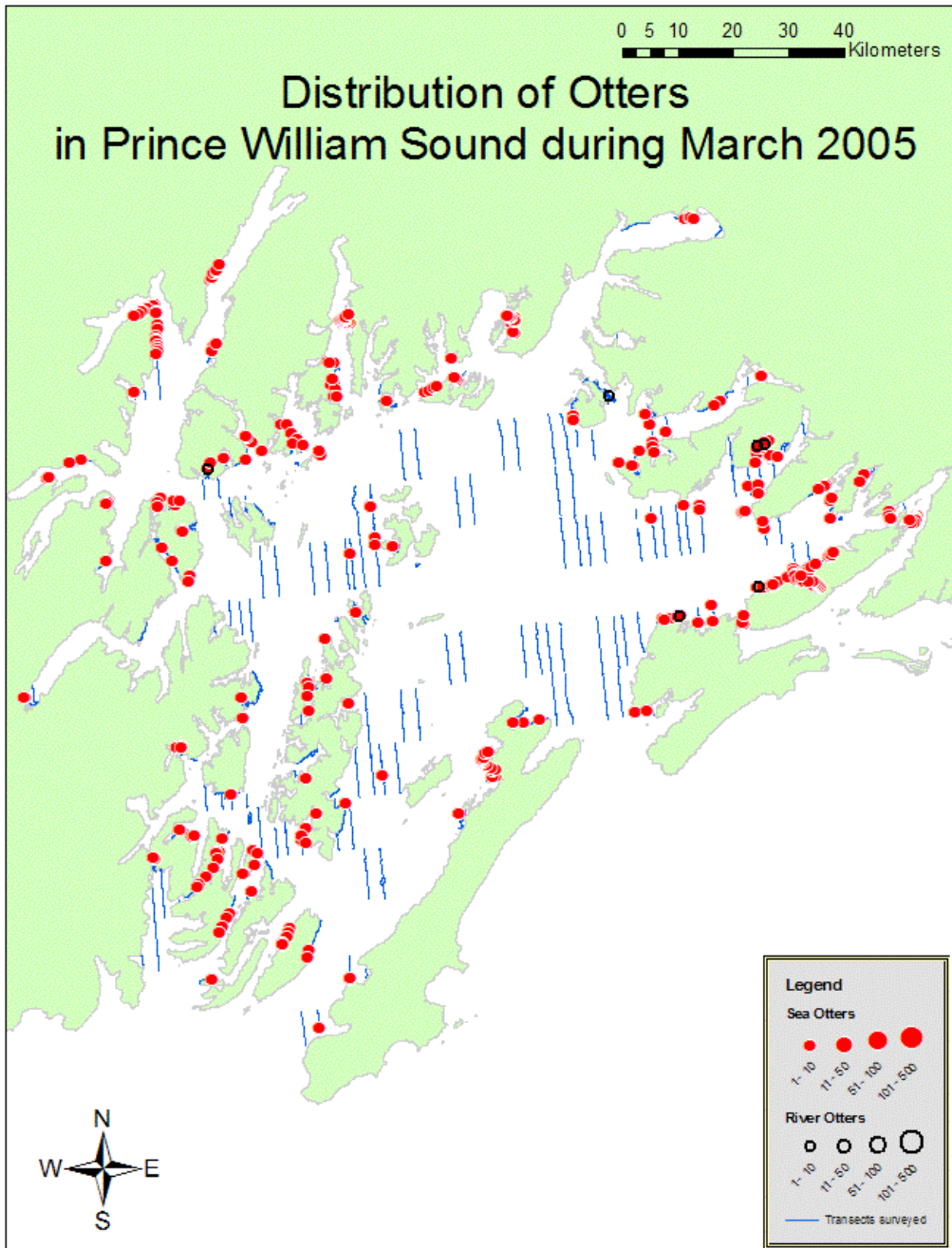




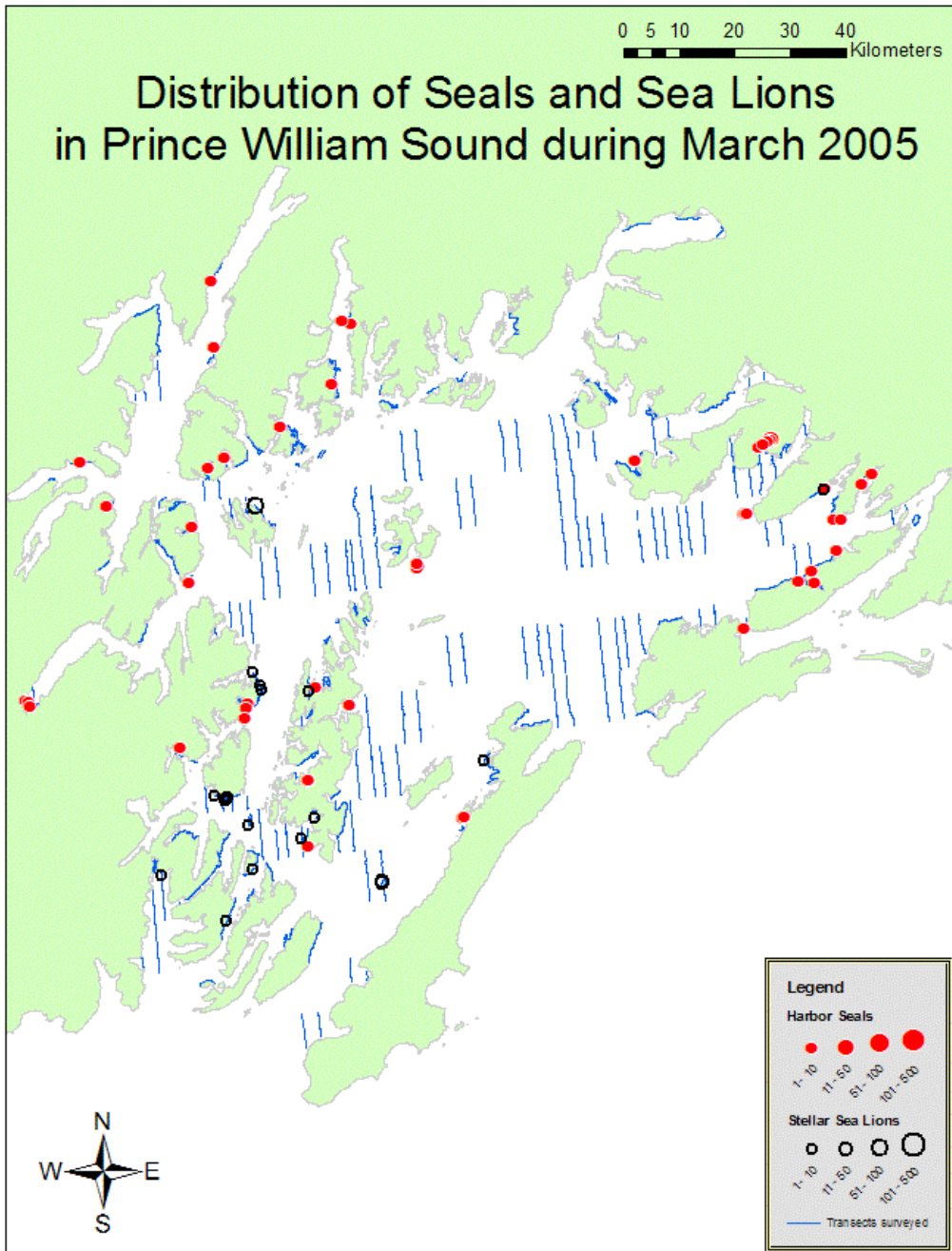












Appendix M: Distribution maps for species recorded in July 2005

