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# AERIAL SURVEYS OF WATERFOWL AND GULLS ON THE FRASER RIVER DELTA, 1995-96

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**K.R. Summers  
K. Fry and  
R. McKelvey**

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Pacific and Yukon Region 1996  
Canadian Wildlife Service  
Environmental Conservation Branch

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## ABSTRACT

This report presents the results of 14 weekly aerial surveys for waterfowl and gulls flown over the Fraser River estuary between mid October 1995 and mid January 1996. The data are compared to those summarized for 1966-74, 1982-83, 1983-84, 1989-90, and 1992-93 by Summers, Hayes and McKelvey (1994). The annual estimate of dabbling duck use of the entire estuary (Boundary Bay and the Fraser River foreshore) was higher than for any previous survey. This was attributed to good brood survival during the previous breeding season and the unseasonably mild weather on the Pacific coast while other parts of North America were experiencing record cold temperatures. Mean total numbers of gulls were below the 1992-93 peak, but were within the range of numbers recorded on previous surveys. Comparisons with mid-winter counts from the U.S. in the Pacific flyway were made. Between 1966-74 and 1990, the Fraser River estuary waterfowl counts indicated a decreasing trend. Since the 1990 low count, two subsequent surveys (1992-93 and 1995-96) have indicated an increasing trend. The most recent high count caused a reversal in the decreasing to an overall increasing trend for the Fraser River estuary since 1966-74. The Pacific flyway states also had a high count in 1996, resulting in a weakening of the decreasing trend in the flyway.

## RÉSUMÉ

Ce rapport présente les résultats de 14 relevés aériens hebdomadaires de sauvagine et des goélands au-dessus de l'estuaire du Fraser entre la mi-octobre 1995 et la mi-janvier 1996. Les résultats sont comparés aux résultats de 1966-1974, de 1982-1983, de 1983-1984, de 1989-1990 et de 1992-1993, réunis par Summers, Hayes et McKelvey (1994). Les résultats de l'estimation annuelle de l'utilisation de l'ensemble de l'estuaire par les canards de surface (estrans de la baie Boundary et du Fraser) sont supérieurs à ceux de tout autre relevé précédent. Cette situation est attribuable à la bonne survie des couvées au cours de la saison de nidification précédente et aux conditions météorologiques anormalement douces sur la côte du Pacifique, alors que d'autres régions de l'Amérique du Nord connaissaient des froids records. La population totale moyenne de goélands était inférieure au maximum de 1992-1993; mais demeurait comparable aux populations dénombrées lors des relevés antérieurs. On a procédé à des comparaisons avec les recensements hivernaux américains effectués dans la voie migratoire du Pacifique. Entre 1966-1974 et 1990, les dénombrements de sauvagine dans l'estuaire du Fraser indiquaient une baisse des populations. Depuis le creux de 1990, deux recensements subséquents ont fait état d'un rétablissement des populations. Les dénombrements élevés les plus récents ont changé la tendance à la baisse en une tendance globale à la hausse dans l'estuaire du Fraser depuis 1966-1974. Les États de la voie migratoire du Pacifique signalent également des effectifs élevés en 1996, ce qui a pour effet de ralentir la baisse des populations dans cette voie.

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## INTRODUCTION

The estuary of the Fraser River, British Columbia is one of the most important wintering habitats for migratory birds in Canada (Taylor 1970; Cooperative Waterfowl Management Plan for British Columbia [CWMPBC] 1993). It is also adjacent to a large and growing human population whose development activities have resulted in the loss of considerable wetland habitat. The study reported here is part of a program designed to increase the existing information base on waterfowl populations. Its purpose is to assess long term trends in waterfowl populations, and incidentally gull populations, wintering in Boundary Bay and on the Fraser River foreshore, or collectively, the Fraser River estuary. The program was designed in 1989-90 to measure wintering populations at three-year intervals. This report documents the results of the third triennial survey, conducted in 1995-96.

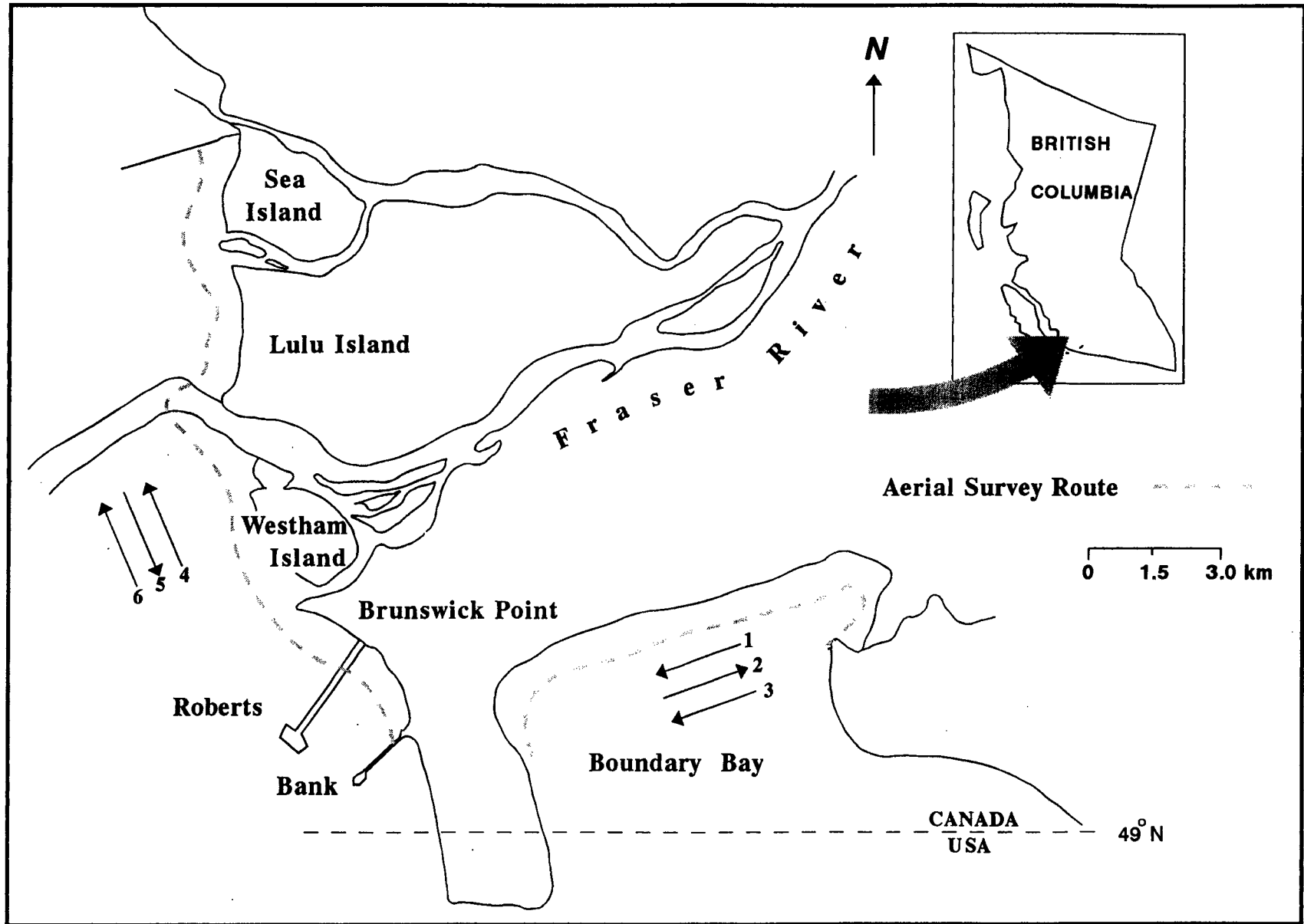
The 1995-96 results are presented and compared with those of 1966-74, 1982-83, and 1983-84 as reported by McKelvey *et al.* (1985), and with the first two triennial surveys in 1989-90 and 1992-93 (McKelvey and Summers 1990; Summers *et al.* 1994). Trends are also compared with those of the U.S. Pacific flyway mid-winter waterfowl survey (Bartonek 1994; Trost, *pers. comm.*). The results of species composition surveys on Boundary Bay and Roberts Bank are also reported. These data are being used to assess the health of the Fraser River delta ecosystem, to evaluate the effectiveness of habitat conservation through the Pacific Coast Joint Venture, and to measure the impact of hunting throughout the Pacific flyway.

## METHODS

### *Survey Procedure*

Fourteen aerial surveys were conducted weekly from October 1995 to January 1996 over the Fraser River estuary. The shoreline route and procedure used by McKelvey *et al.* (1985) was repeated for this study. The route is shown schematically on Figure 1. The October to January period was selected again as it coincided with the waterfowl hunting season in southern British Columbia. At this time most ducks are believed to be located on the foreshore during the day, rather than being dispersed throughout adjacent farmland (Jury 1981; personal observations of wildlife biologists).

Surveys were conducted from a Cessna 172 which flew at an elevation of between 45 and 60 m (150-200 feet) and at approximately 165 kph (85 knots), just outside the tide line. Surveys were flown to coincide with the 3.5 m (11 foot) tide at Point Atkinson. This tide level has been found to correspond with the highest concentration of ducks on the foreshore (McKelvey *et al.* 1985). Lower or higher tides tend to cause an unpredictable dispersion of birds, making number estimations more difficult. Where birds were found to be dispersed,



2

Figure 1. Fraser River estuary study area and the location of aerial survey routes, 1995-96.

adjustments in the flight line were sometimes necessary, but priority was given to birds near the land/water interface. Flights were generally not made on days when the wind exceeded 25 kmp due to the difficulty of observing birds in choppy water.

The Boundary Bay and Fraser River foreshore survey areas were divided into subunits. For Boundary Bay, the flight line was divided at each major street which ended at the Bay. The foreshore was divided into geographically discrete areas of Boundary Bay, Roberts Bank, etc. (Figure 1). Observers sat on either side of the aircraft and recorded their observations into tape recorders for each survey unit. The observer on the landward side normally encountered most of the birds. Subsequent replicate counts were made with alternate observers facing the landward side. Counts from both sides of the aircraft were summed to determine the total number of birds present per survey per subunit. Usually, the Fraser foreshore was surveyed before Boundary Bay.

Generally, each subunit was flown three times per day, resulting in three replicate estimates for each subunit. Unlike other years, replicate counts of Sea Island and the Middle Arm were always done; they were not prevented by flight restrictions sometimes imposed by Air Traffic Control at Vancouver International Airport. Three replicates were made of all areas with two exceptions: only two counts were useable for Boundary Bay on October 31st (due to tape recorder problems) and only two counts were done for Sea Island on January 4th (due to air traffic control restrictions).

### *Species Composition*

Ground surveys were also conducted on the Boundary Bay and Roberts Bank foreshores to determine approximate species composition of flocks surveyed from the air. This was the first year of the study that species composition counts were done at Roberts Bank as well as Boundary Bay. In Boundary Bay, flocks were surveyed from the dyke if they were close enough for reliable species identification. The results were summed for subunits delineated by the streets that ended at Boundary Bay. On Roberts Bank, surveys were made from two locations, namely, from the access roads that follow the southeast and northwest shorelines of the Roberts Bank causeway. Species were recorded and summarized as Mallard, Green-winged Teal, American Wigeon, Northern Pintail, Scaup, other dabblers, and other divers. For each survey, the Boundary Bay samples were combined to give a total species composition estimate for the Bay.

The accuracy of species composition surveys can be questioned because of differences in species distribution. Particularly, pintails tended to occur more along the shoreline, often in pure flocks. Green-winged Teal, when they were present, were also near shore. On the other hand, flocks occurring farther offshore were more integrated, consisting of Mallards, wigeon, and pintails, but were often near the limit of visibility for species identification. Mallards appeared to occur the farthest offshore and may therefore have been underrepresented in the sample.

An attempt was made to correct for a bias toward pintails when they occurred inshore of mixed flocks. This was done by surveying a sample of birds for as far offshore as could be done accurately, then adding a number of pintails equal to the total offshore sample, or equal to the total number of inshore pintails, whichever was lower. This could have resulted in either an overestimate or underestimate of pintails, depending on the relative abundance of inshore and offshore birds, but it was not possible to know that from the limited perspective of an observer on the shoreline.

### *Data Analysis*

Each replicate aerial count was treated as an estimate of the number of birds present on that day. The mean of the three replicates was calculated and used as the final estimate for that day. Monthly means, standard deviations, and standard errors were then calculated from the daily mean estimates to allow comparisons with data from previous years. Monthly standard errors were calculated using the methods described in McKelvey *et al.* (1985).

To facilitate trend comparisons between years, the four monthly means were added together to give an annual index representing the total use for the period. This is analogous to measuring the area under the curve of a graph of bird numbers versus time, and gives a measure of bird use-days. There are two advantages to using such a number. First, bird numbers on an area such as the Fraser River delta are very dynamic. The birds move from place to place very quickly, between days and throughout the winter season, in response to weather, food and disturbance. Numbers fluctuate seasonally to such an extent that a calculated mean number of birds present throughout the season will have an inherently large standard deviation, making between-year comparisons very difficult. Using bird-days overcomes this problem because the precision of that estimate is high in comparison to the population standard deviation.

The second advantage results from the fact that many other coastal mid-winter surveys make a population estimate at only one time of the year, when it is assumed that the population is stable and all the birds are actually counted. Whether or not that is true, a single winter data point in any survey facilitates plotting of annual trends, the main purpose of such surveys.

Comparisons between monthly means and annual means were performed by calculating the value of the normal deviate,  $Z$  (Zar 1974). A  $Z$ -test is used to determine the probability of two means being significantly different when the number of degrees of freedom is difficult to determine. That was the case in this study wherein monthly means were added to produce the annual estimate of bird use. With a  $Z$ -test, probability can be expressed liberally as significant at the 0.05 level or conservatively as  $0.05/n$ , where  $n$  is the number of comparisons being made. A two-tailed test was used because we were testing for a difference between means (whether greater or less than 0), not testing to see if one was greater than the other.

## RESULTS

### *Weather*

Table 1 summarizes the 1995-96 weather conditions in the study area compared with the normals for the same region. Temperatures tended to be above normal, particularly in November. The early January survey period also had higher than normal temperatures, although this does not show in Table 1 because low temperatures occurred in the latter half of the month. This year was wet and windy, with higher than average rainfall and wind speed in all months. Precipitation was up to 48% higher than average (November). Sunshine hours were below normal in October and November and above normal in December and January.

**Table 1. Weather conditions on the Fraser River delta in 1995-96, compared with long-term averages.**

| Variable                    | Month    | Long-term Normals (1961-90) | 1995-96 Average |
|-----------------------------|----------|-----------------------------|-----------------|
| Mean temperature range (°C) | October  | 6.4 - 13.5                  | 7.2 - 13.6      |
|                             | November | 3.0 - 9.0                   | 4.9 - 11.1      |
|                             | December | 0.8 - 6.1                   | 2.0 - 7.4       |
|                             | January  | 0.1 - 5.7                   | 0.4 - 5.4       |
| Precipitation (mm)          | October  | 115.3                       | 141.4           |
|                             | November | 169.9                       | 251.7           |
|                             | December | 178.5                       | 221.0           |
|                             | January  | 149.8                       | 160.4           |
| Sunshine (hrs)              | October  | 124.4                       | 107.5           |
|                             | November | 66.7                        | 56.7            |
|                             | December | 53.6                        | 66.1            |
|                             | January  | 54.9                        | 63.9            |
| Wind speed (km/h)           | October  | 11E                         | 12.3E           |
|                             | November | 12E                         | 14.1E           |
|                             | December | 12E                         | 13.5E           |
|                             | January  | 12E                         | 13.0E           |

Source: *Canadian Climate Normals 1961-1990 for Vancouver International Airport (Environment Canada, Atmospheric Environment Service) and, for 1995-96, the AES's statistical records department.*

**Seasonal and Regional Trends in Waterfowl and Gull Numbers**

Table 2 shows the average monthly dabbling duck numbers from October 1995 to January 1996 in comparison to those recorded on previous surveys. In 1995-96, peak numbers occurred in November for both Boundary Bay and the Fraser foreshore. In both locations, the November numbers were the highest on record and were the highest for any of the months surveyed; in Boundary Bay, November numbers were 67% higher than the next highest record, in December 1992. For Boundary Bay, the number recorded in each survey month was also the highest on record for that month. The November peak is consistent with other years.

**Table 2. Mean number of dabbling ducks (in thousands) recorded per month on aerial surveys of the Fraser River estuary, 1966-74 to 1995-96. Annual peak monthly counts are highlighted.**

| Month/Year | Sample size | Mean number of ducks (thousands) |             |              |             |      |
|------------|-------------|----------------------------------|-------------|--------------|-------------|------|
|            |             | Fraser Foreshore                 |             | Boundary Bay |             |      |
|            |             | Mean                             | SE*         | Mean         | SE*         |      |
| October    | 1966-74     | 13                               | 28.5        | 3.4          | 18.3        | 4.0  |
|            | 1982        | 2                                | 28.3        | 5.9          | 29.6        | 5.7  |
|            | 1983        | 4                                | 19.8        | 1.6          | 24.3        | 2.5  |
|            | 1985        | 1                                | 26.0        | -            | 25.4        | -    |
|            | 1989        | 3                                | <b>22.3</b> | 2.5          | 20.0        | 2.4  |
|            | 1992        | 3                                | 22.0        | 3.8          | 41.9        | 4.3  |
|            | 1995        | 3                                | 25.4        | 4.5          | 56.4        | 3.7  |
| November   | 1966-74     | 11                               | <b>40.3</b> | 7.8          | <b>39.3</b> | 5.9  |
|            | 1982        | 5                                | 28.7        | 4.4          | <b>37.9</b> | 5.2  |
|            | 1983        | 5                                | <b>22.9</b> | 4.9          | 30.0        | 3.9  |
|            | 1989        | 6                                | 14.5        | 1.5          | 24.7        | 1.9  |
|            | 1992        | 4                                | <b>22.5</b> | 1.7          | 44.4        | 6.8  |
|            | 1995        | 4                                | <b>40.9</b> | 7.9          | <b>76.0</b> | 12.0 |
| December   | 1966-74     | 8                                | 35.1        | 6.5          | 31.4        | 2.3  |
|            | 1982        | 4                                | <b>37.4</b> | 6.6          | 33.6        | 2.8  |
|            | 1983        | 3                                | 14.9        | 2.0          | 22.7        | 4.3  |
|            | 1989        | 42                               | 11.1        | 2.5          | <b>33.6</b> | 3.8  |
|            | 1992        | 5                                | 20.3        | 2.8          | <b>45.5</b> | 8.9  |
|            | 1995        | 4                                | 32.3        | 3.5          | 53.3        | 2.7  |
| January    | 1966-74     | 6                                | 17.1        | 6.9          | 10.7        | 5.7  |
|            | 1983        | 5                                | 20.9        | 6.5          | 29.9        | 4.2  |
|            | 1984        | 3                                | 16.5        | 1.7          | <b>31.5</b> | 6.6  |
|            | 1986        | 1                                | 34.7        | -            | 15.7        | -    |
|            | 1990        | 3                                | 11.7        | 0.9          | 23.9        | 0.9  |
|            | 1993        | 2                                | 13.1        | 0.1          | 5.2         | 0.1  |
|            | 1996        | 3                                | 21.5        | 0.6          | 35.1        | 1.9  |

\* SE = standard error

As in previous surveys, Boundary Bay continued to receive the highest level of dabbling duck use, the majority of which again occurred between Beach Grove and Boundary Bay Airport. Also as in past years, large numbers were distributed along the shoreline east to the Serpentine River and on the mud flats east of Blackie Spit (Appendices 1 and 2).

Dabbling duck distribution in the various Fraser River foreshore subunits (see Table 3) was also similar to that observed in other years, except that Westham Island had the highest proportion since 1974 and Sea Island had the lowest proportion on record. The largest number was again at Roberts Bank between the Tsawwassen causeway and Brunswick Point (mostly between the causeways). However, the number of scaup using the Sea Island foreshore, particularly during January, has increased during the three triennial surveys. This is discussed further under *Annual Trends*.

**Table 3. A comparison of the total mean annual number of dabbling ducks (in thousands) on the Fraser River foreshore, as calculated from aerial surveys since 1966-74, and the proportion each sub-area represents.**

| Survey Route           | Number of Dabbling Ducks (thousands) |      |         |      |         |      |         |      |         |      |         |      |
|------------------------|--------------------------------------|------|---------|------|---------|------|---------|------|---------|------|---------|------|
|                        | 1966-74                              |      | 1982-83 |      | 1983-84 |      | 1989-90 |      | 1992-93 |      | 1995-96 |      |
|                        | No.                                  | %    | No.     | %    | No.     | %    | No.     | %    | No.     | %    | No.     | %    |
| <b>Sea Island</b>      | 22.6                                 | 18.7 | 22.6    | 19.6 | 7.0     | 9.5  | 3.7     | 6.3  | 9.7     | 12.5 | 4.2     | 3.5  |
| <b>Middle Arm</b>      | not determined <sup>1</sup>          |      | 1.1     | 0.9  | 1.2     | 1.6  | 0.3     | 0.5  | 0.3     | 0.4  | 0.8     | 0.7  |
| <b>Lulu Island</b>     | 15.0                                 | 12.4 | 8.1     | 1.7  | 4.8     | 6.5  | 9.1     | 15.3 | 4.6     | 5.9  | 6.1     | 5.1  |
| <b>Westham Island</b>  | 53.8                                 | 44.5 | 18.4    | 16.0 | 4.3     | 5.8  | 6.5     | 10.9 | 8.5     | 10.9 | 26.9    | 22.4 |
| <b>Brunswick Point</b> | 29.6                                 | 24.5 | 24.4    | 21.2 | 16.8    | 22.7 | 3.9     | 6.6  | 12.6    | 16.2 | 15.0    | 12.5 |
| <b>Roberts Bank</b>    | not determined <sup>1</sup>          |      | 48.6    | 35.2 | 40.0    | 54.0 | 36.0    | 60.4 | 42.2    | 54.2 | 67.0    | 55.8 |

<sup>1</sup>River Mouth data probably included in Sea Island or Lulu Island; Roberts Bank probably not distinguished from Brunswick Point, prior to causeway construction.

Gull numbers were higher on Boundary Bay than on the Fraser foreshore, as in other years (Table 4). The month receiving the highest use appears to have little consistency between years and between areas. The high on Boundary Bay was in October, while the Fraser Foreshore high was in November, a month when the number of gulls is usually lower.



**Table 4. Mean number of gulls recorded per month on aerial surveys of the Fraser River delta, 1982-83 to 1995-96. Annual peak monthly counts are highlighted.**

| Month/Year | Sample size | Mean number of gulls (thousands) |             |                  |             |     |
|------------|-------------|----------------------------------|-------------|------------------|-------------|-----|
|            |             | Boundary Bay                     |             | Fraser Foreshore |             |     |
|            |             | Mean                             | SE*         | Mean             | SE*         |     |
| October    | 1982        | 2                                | 1168        | 828              | 28          | 23  |
|            | 1983        | 4                                | <b>4939</b> | 3075             | 644         | 106 |
|            | 1985        | 1                                | 382         | -                | 158         | -   |
|            | 1989        | 3                                | 1332        | 418              | 395         | 171 |
|            | 1992        | 3                                | 1425        | 458              | 622         | 201 |
|            | 1995        | 3                                | <b>4226</b> | 1214             | 306         | 155 |
| November   | 1982        | 5                                | 498         | 194              | 221         | 116 |
|            | 1983        | 5                                | 348         | 305              | 236         | 24  |
|            | 1989        | 6                                | 870         | 459              | 121         | 50  |
|            | 1992        | 4                                | 888         | 112              | 400         | 96  |
|            | 1995        | 4                                | 667         | 274              | <b>464</b>  | 267 |
| December   | 1982        | 4                                | <b>1419</b> | 1121             | <b>1006</b> | 402 |
|            | 1983        | 3                                | 1507        | 669              | <b>667</b>  | 173 |
|            | 1989        | 4                                | <b>2309</b> | 774              | 432         | 81  |
|            | 1992        | 5                                | 1762        | 432              | 639         | 302 |
|            | 1995        | 4                                | 1234        | 506              | 219         | 53  |
| January    | 1983        | 5                                | 143         | 637              | 867         | 319 |
|            | 1984        | 3                                | 2261        | 1193             | 500         | 55  |
|            | 1986        | 1                                | 2590        |                  | 433         |     |
|            | 1990        | 3                                | 1957        | 808              | <b>494</b>  | 211 |
|            | 1993        | 2                                | <b>7234</b> | 2419             | <b>852</b>  | 193 |
|            | 1996        | 3                                | 825         | 459              | 106         | 51  |

\*SE = standard error

### *Annual Trends in Waterfowl and Gull Numbers*

Annual measurements of dabbling duck and gull use are given in Table 5 and shown graphically on Figures 2 and 3. Statistical comparisons of the number of birds recorded between years are summarized in Table 6 and Appendix 3. Data from which Tables 2, 5 and 6 are calculated are in Appendix 4. Dabbling duck use of the entire Fraser River estuary followed the trend reversal observed in 1992-93 and was the highest recorded on the estuary during the period beginning in 1966-74. This number is significantly greater than those observed in all other years ( $p = < .001$ ; Table 6). The number of dabbling ducks at Boundary Bay was also significantly higher than for all other years, while for the Fraser foreshore, the difference was significantly higher than only the three most recent years of comparison.

Scaup numbers have increased steadily during the last three surveys. The annual number of diving ducks (primarily scaup) recorded on Sea Island was 278 in 1989-90, 1378 in 1992-93, and 3333 in 1995-96 (McKelvey *et al.* 1990; Summers *et al.* 1994; Appendix 1, this report). The peak daily count for Sea Island was over 4100 scaup on January 10, 1996 (Appendix 1), and other observers reported possibly as many as 10,000 during this month (M. Gebauer, *pers. comm.*).

On Boundary Bay, the number of diving ducks (primarily scaup) also increased, although not as dramatically as on Sea Island, and without any monthly trends. The annual total number of diving ducks in Boundary Bay during the same three surveys referred to in the previous paragraph, was 4133, 6834, and 8731 respectively.

Brant have also shown an increase over the three triennial surveys. The annual number of geese (Canada Geese and Brant) in Boundary Bay during the three surveys has increased from 16 to 71 to 327. The 1995-96 increase was the result of unusually high numbers of Brant at this time of the year, with a daily maximum of about 400 on January 10th. This may have just represented a difference in the distribution of the birds, which are not usually seen inshore on the tide level at which the surveys are flown.

Gull numbers on this survey dropped to 1989-90 levels after a weather related peak in 1992-93. On the Fraser River foreshore, the number of gulls was significantly lower ( $p=0.012$ ) this year than the number on the year of peak use; no other significant differences occurred.

Table 5. A comparison of annual estimates of dabbling duck and gull use between October and January on Boundary Bay, the Fraser River foreshore, and the Fraser River estuary from 1966-74 to 1995-96. Values in parenthesis are  $\pm 2$  standard errors.

| Year          | Dabbling Ducks (thousands) |                      |                      | Gulls (thousands)   |                      |                      |
|---------------|----------------------------|----------------------|----------------------|---------------------|----------------------|----------------------|
|               | Foreshore                  | Boundary Bay         | Total                | Foreshore           | Boundary Bay         | Total                |
| 1966 - 74 n=4 | 121.0 ( $\pm 25.5$ )       | 99.7 ( $\pm 18.9$ )  | 220.7 ( $\pm 31.7$ ) | -                   | -                    | -                    |
| 1982 - 83 n=4 | 115.3 ( $\pm 23.7$ )       | 131.0 ( $\pm 18.5$ ) | 245.6 ( $\pm 30.1$ ) | 2122 ( $\pm 1054$ ) | 3228 ( $\pm 3090$ )  | 5350 ( $\pm 3264$ )  |
| 1983 - 84 n=4 | 74.1 ( $\pm 11.5$ )        | 108.5 ( $\pm 18.2$ ) | 182.6 ( $\pm 21.5$ ) | 2047 ( $\pm 424$ )  | 9055 ( $\pm 6758$ )  | 11102 ( $\pm 6772$ ) |
| 1989 - 90 n=4 | 59.6 ( $\pm 8.0$ )         | 101.9 ( $\pm 10.0$ ) | 161.5 ( $\pm 12.8$ ) | 1442 ( $\pm 576$ )  | 6468 ( $\pm 2560$ )  | 7910 ( $\pm 2624$ )  |
| 1992 - 93 n=4 | 77.9 ( $\pm 9.9$ )         | 137.0 ( $\pm 24.0$ ) | 214.9 ( $\pm 26.0$ ) | 2513 ( $\pm 844$ )  | 11309 ( $\pm 5004$ ) | 13822 ( $\pm 5075$ ) |
| 1995 - 96 n=4 | 120.0 ( $\pm 19.5$ )       | 220.7 ( $\pm 25.8$ ) | 340.7 ( $\pm 32.3$ ) | 1096 ( $\pm 744$ )  | 6952 ( $\pm 3444$ )  | 8048 ( $\pm 3524$ )  |

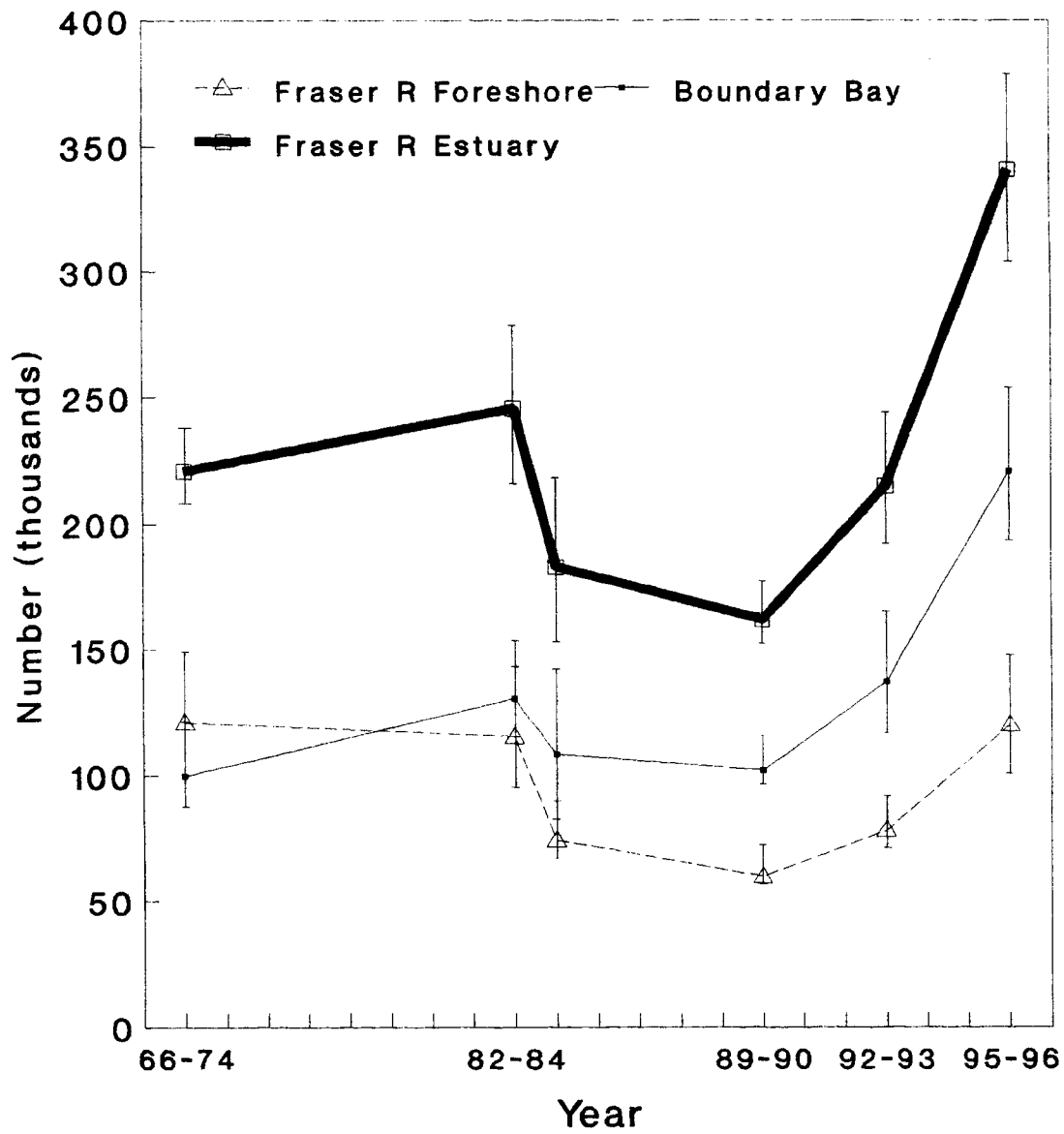


Figure 2. Mean number of dabbling ducks recorded per winter on aerial surveys of Boundary Bay, the Fraser River foreshore and the Fraser River estuary from 1966-74 to 1995-96.

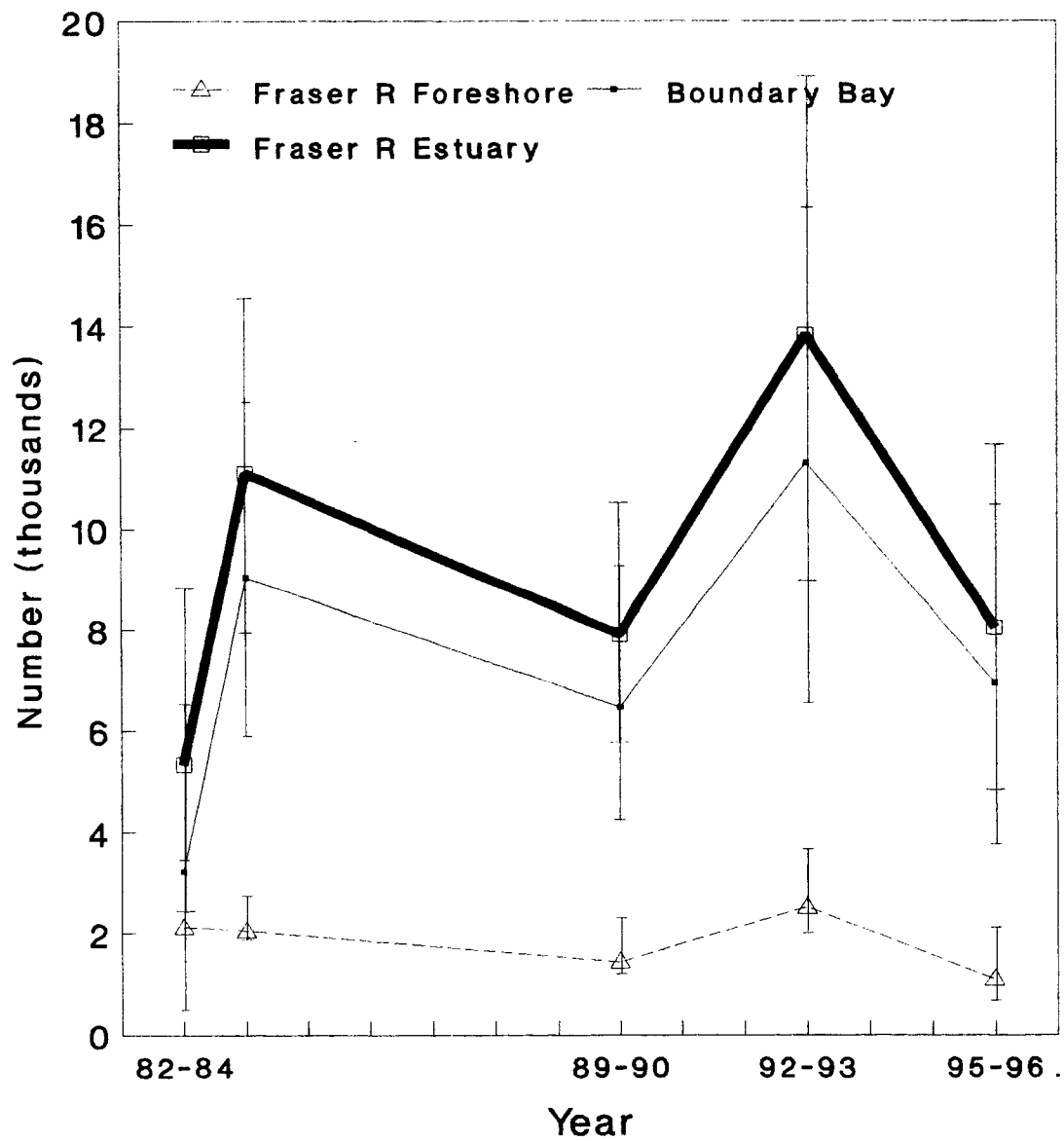


Figure 3. Mean number of gulls recorded per winter on aerial surveys of Boundary Bay, the Fraser River foreshore and the Fraser River estuary from 1982-83 to 1995-96.

**Table 6. Probability values resulting from Z-test comparisons of annual numbers of birds recorded (Oct.-Jan.) between years for Boundary Bay, the Fraser River foreshore, and the Fraser River estuary.**

| Year  | Probability of being the same |         |         |         |         |              |         |         |         |         |                      |         |         |         |         |
|---|-------------------------------|---------|---------|---------|---------|--------------|---------|---------|---------|---------|----------------------|---------|---------|---------|---------|
|   | Fraser River Foreshore        |         |         |         |         | Boundary Bay |         |         |         |         | Fraser River Estuary |         |         |         |         |
| <b>DABBLING DUCKS</b>   |                               |         |         |         |         |              |         |         |         |         |                      |         |         |         |         |
|   | 1966-74                       | 1982-83 | 1983-84 | 1989-90 | 1994-93 | 1966-74      | 1982-83 | 1983-84 | 1989-90 | 1994-93 | 1966-74              | 1982-83 | 1983-84 | 1989-90 | 1994-93 |
| 1982-83   | .746                          |         |         |         |         | .018         |         |         |         |         | .254                 |         |         |         |         |
| 1983-84   | .001*                         | .002*   |         |         |         | .502         | .083    |         |         |         | .047                 | .001*   |         |         |         |
| 1989-90   | .001*                         | .001*   | .038    |         |         | .837         | .006*   | .526    |         |         | .001*                | .001*   | .092    |         |         |
| 1992-93   | .002*                         | .004*   | .616    | .004*   |         | .015         | .693    | .058    | .007*   |         | .777                 | .123    | .057    | <.001*  |         |
| 1995-96   | .951                          | .761    | .001*   | .001*   | <.001*  | .001*        | .001*   | .001*   | .001*   | .001*   | .001*                | .001*   | .001*   | .001*   | .001*   |
| *significant at $\mu = 0.01$ ( $=0.05/5$ where 5 is the number of other years with which each is being compared)  |                               |         |         |         |         |              |         |         |         |         |                      |         |         |         |         |
| <b>GULLS</b>  |                               |         |         |         |         |              |         |         |         |         |                      |         |         |         |         |
|   | 1966-74                       | 1982-83 | 1983-84 | 1989-90 | 1994-93 | 1966-74      | 1982-83 | 1983-84 | 1989-90 | 1994-93 | 1966-74              | 1982-83 | 1983-84 | 1989-90 | 1994-93 |
| 1982-83   |                               |         |         |         |         |              |         |         |         |         |                      |         |         |         |         |
| 1983-84   |                               | .897    |         |         |         |              | .116    |         |         |         |                      | .126    |         |         |         |
| 1989-90   |                               | .258    | .091    |         |         |              | .107    | .472    |         |         |                      | .208    | .373    |         |         |
| 1992-93   |                               | .562    | .322    | .044    |         |              | .006*   | .589    | .085    |         |                      | .005*   | .522    | .036    |         |
| 1995-96   |                               | .112    | .026    | .459    | .012*   |              | .107    | .582    | .818    | .153    |                      | .263    | .424    | .952    | .061    |
| *significant at $\mu = 0.013$ ( $=0.05/4$ where 4 is the number of other years with which each is being compared) |                               |         |         |         |         |              |         |         |         |         |                      |         |         |         |         |

A comparison of the Fraser River estuary dabbling duck counts with Pacific flyway mid-winter counts is shown in Figure 4. The dabbling duck population of the Fraser River estuary showed a trend reversal since the previous survey from decreasing to increasing:  $r = -0.33$  between 1970 and 1992-93 and  $r = +0.33$  after the addition of the 1995-96 survey. However, dabbling duck counts from 1996 for the 11 Pacific flyway states were the highest since 1982. This resulted in only a slight weakening of the decreasing trend:  $r = -0.85$  between 1970 and 1992, and  $r = -0.81$  between 1970 and 1996. The small effect of the 1996 increase on the flyway trend is due to high populations in the 1970's. The low  $r$  values for the Fraser data are due to the small number of samples (6 surveys).

### *Species Composition*

Species composition varied among surveys. Detailed data are presented in Appendices 5 to 7. Of dabbling ducks on Boundary Bay, on average American Wigeon were again the most abundant species (38.6%) followed by Northern Pintails (33.1%), Mallards (23.9%), and Green-winged Teal (2.0%). Table 7 compares this species composition to that of previous years. Green-winged Teal numbers on Boundary Bay dropped off again after increasing since 1983; most teal were recorded on the northwest side of the Roberts Bank causeway. Northern Pintails on Boundary Bay showed a reversal of a decreasing trend seen since 1983.

On Roberts Bank, southeast of the causeway, Northern Pintails were most abundant (47.2%) followed by American Wigeon (39.4%). Mallards comprised only 10.1% and Green-winged Teal 0.8%. On the other side of the causeway (NW) pintails were the least abundant species (10.9%). There, wigeon were most abundant (31.7%) followed by Mallards (28.4%) and teal (27.8%).

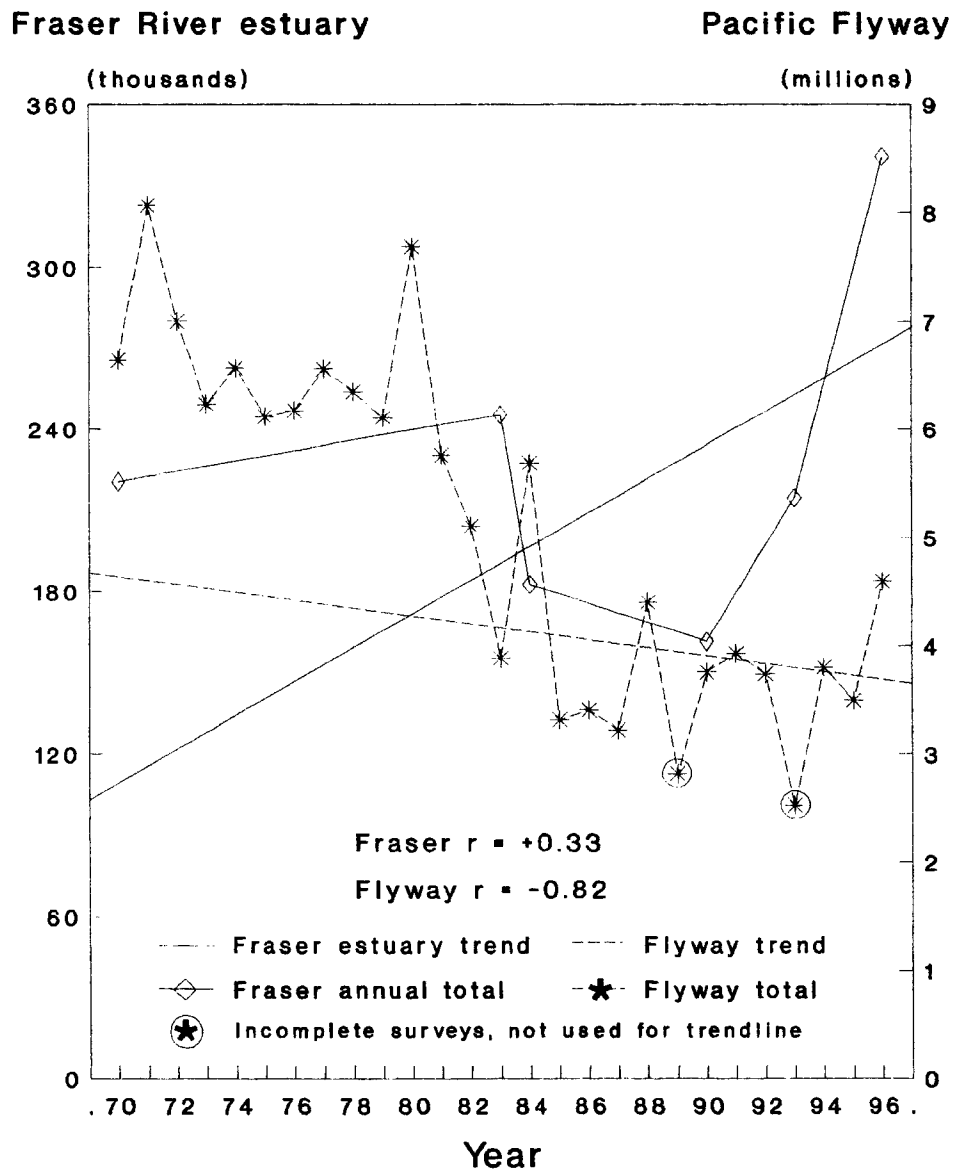


Figure 4. Number of dabbling ducks on the Fraser River estuary compared to total mid-winter estimates for the 11 Pacific Flyway states from 1966-74 (1970) to 1996.

**Table 7. Comparison of the relative abundance of dabbling duck species on Boundary Bay from 1966-74 to 1995-96. Values presented are annual average percentages based on the total number of ducks counted.**

| Year                 | Percentage |                   |                 |                  |
|----------------------|------------|-------------------|-----------------|------------------|
|                      | Mallard    | Green-winged Teal | American Wigeon | Northern Pintail |
| 1966-74 <sup>1</sup> | 29.7       | 9.4               | 25.0            | 35.9             |
| 1983-84 <sup>2</sup> | 13.3       | 0.6               | 27.9            | 58.2             |
| 1989-90 <sup>3</sup> | 18.1       | 1.8               | 55.1            | 24.8             |
| 1992-93              | 25.6       | 11.7              | 33.7            | 29.0             |
| 1995-96              | 23.9       | 2.0               | 38.6            | 33.1             |

<sup>1</sup> data from McKelvey *et al.* (1985). Percentages were first readjusted for each month to only consider identified dabbling ducks. Figures were then averaged for October to January to correspond with other year's aerial surveys.

<sup>2</sup> data from McKelvey *et al.* (1985). Percentages for November and December were averaged. No data was available for October.

<sup>3</sup> unpublished data from Breault and McCormick, collected in 1989-90.

## DISCUSSION AND CONCLUSIONS

The most noteworthy result of this year's survey was the record high number of dabbling ducks and scaup. The annual number of dabbling ducks recorded on the Fraser River foreshore almost equalled the previous peak of 1966-74; one monthly total exceeded all previous records while two came third of six or seven survey periods. Boundary Bay had 61% more use than the previous high in 1992-93 and equalled the total recorded for the Bay and Foreshore in 1966-74. As a whole, the annual dabbling duck use of the Fraser River estuary was up about 39%, or 95,000 over the next highest total in 1982-83.

The higher numbers of ducks this winter were anticipated by the U.S. Fish and Wildlife Service because of good brood survival observed during the 1995 season (R. Trost, U.S. Fish and Wildlife Service, *pers. comm.*). The population of the 11 Pacific Flyway states was at a 14 year high, resulting in a weakening of the long term decreasing trend. The mild weather on the coast while the interior of the continent experienced record cold temperatures may have also contributed to the higher numbers of dabblers. The colder weather on the coast in December and January of 1992-93 suppressed the increasing trend observed on that survey. Interestingly, the numbers were higher this year despite the higher than usual amount of field flooding, and the apparently higher dabbling duck use of those fields in Surrey (*pers. obs.*). Another possible contribution to the large record of dabbling ducks could be the large errors inherent in this type of survey, although the error is lower than for the single counts used on the U.S. mid winter

surveys. Other potential contributions to differences between surveys, such as changes in land use resulting from development on important uplands or other estuarine areas, are not known to be a factor.

Conversely, gull numbers were down this year. Because of the mild conditions, they were not forced to seek out the estuary for feeding and roosting, as happened during the freezing weather the 1992-93 survey. Another contribution to the decline may have been an observer bias toward the large number of ducks.

Dabbling duck species composition in Boundary Bay showed no real trends. Differences between Boundary Bay and Roberts Bank, southeast and northwest of the causeway, may indicate a preferential use of different habitats by each of the four main species: Mallards, Green-winged Teal, American Wigeon and Northern Pintails. Because this is the only year of data for the two Roberts Bank locations, little can be said about the significance of observed differences in species composition yet.

It is important that this year's data not be viewed in isolation. Surveys must continue in order to determine whether these observations were an anomaly, marked a reversal in trend, or whether or not long term trends exist. It is also essential to remember that trends that appear insignificant according to statistics may be significant from a conservation perspective. Caution should be exercised when analyzing the situation strictly on statistics or one year's data.



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## **APPENDICES**

**APPENDIX 1**  
**Daily summaries of numbers of birds recorded by species groups,**  
**on each transect, for each survey during 1995-96 aerial census.**

**BOUNDARY BAY**

| <u>Date</u>           | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|-----------------------|----------------------|-------------|------------------|----------------|----------------|
| <i>Dabbling Ducks</i> |                      |             |                  |                |                |
| 95/10/18              | 3                    | 55,033      | 7,966            | 47,621         | 63,457         |
| 95/10/24              | 3                    | 50,785      | 8,430            | 44,061         | 60,242         |
| 95/10/31              | 2                    | 63,314      | 6,664            | 58,601         | 68,026         |
| 95/11/09              | 3                    | 66,915      | 5,042            | 62,230         | 72,251         |
| 95/11/14              | 3                    | 68,870      | 8,012            | 60,599         | 76,596         |
| 95/11/21              | 3                    | 111,032     | 5,619            | 104,980        | 116,082        |
| 95/11/29              | 3                    | 57,205      | 5,798            | 53,816         | 63,900         |
| 95/12/06              | 3                    | 51,137      | 8,217            | 45,180         | 60,512         |
| 95/12/13              | 3                    | 49,632      | 5,782            | 46,202         | 56,307         |
| 95/12/19              | 3                    | 51,141      | 7,162            | 45,065         | 59,038         |
| 95/12/27              | 3                    | 61,180      | 2,905            | 58,185         | 63,985         |
| 96/01/04              | 3                    | 31,392      | 5,333            | 25,717         | 36,299         |
| 96/01/10              | 3                    | 36,423      | 2,989            | 33,030         | 38,665         |
| 96/01/17              | 3                    | 37,377      | 409              | 37,022         | 37,824         |
| <i>Diving Ducks</i>   |                      |             |                  |                |                |
| 95/10/18              | 3                    | 567         | 395              | 200            | 985            |
| 95/10/24              | 3                    | 1,189       | 501.1            | 803            | 1,755          |
| 95/10/31              | 2                    | 2,591       | 787.7            | 2,034          | 3,148          |
| 95/11/09              | 3                    | 3,825       | 870              | 2,897          | 4,622          |
| 95/11/14              | 3                    | 3,687       | 4,145            | 959            | 8,456          |
| 95/11/21              | 3                    | 2,455       | 1,731            | 1,180          | 4,426          |
| 95/11/29              | 3                    | 2,139       | 1,643            | 911            | 4,006          |
| 95/12/06              | 3                    | 2,904       | 295.5            | 2,699          | 3,243          |
| 95/12/13              | 3                    | 1,838       | 110.8            | 1,723          | 1,944          |
| 95/12/19              | 3                    | 2,372       | 1,100            | 1,109          | 3,121          |
| 95/12/27              | 3                    | 1,032       | 487.1            | 656            | 1,582          |
| 96/01/04              | 3                    | 1,630       | 299.1            | 1,293          | 1,863          |
| 96/01/10              | 3                    | 3,564       | 1,457            | 2,160          | 5,068          |
| 96/01/17              | 3                    | 1,460       | 435.5            | 1,025          | 1,896          |
| <i>Total Ducks</i>    |                      |             |                  |                |                |
| 95/10/18              | 3                    | 55,600      | 8,092            | 47,821         | 63,973         |
| 95/10/24              | 3                    | 51,973      | 8,176            | 45,816         | 61,250         |
| 95/10/31              | 2                    | 65,905      | 7,452            | 60,635         | 71,174         |
| 95/11/09              | 3                    | 70,740      | 5,890            | 65,127         | 76,873         |
| 95/11/14              | 3                    | 72,557      | 4,967            | 69,055         | 78,241         |
| 95/11/21              | 3                    | 113,488     | 6,383            | 106,160        | 117,842        |
| 95/11/29              | 3                    | 59,344      | 7,423            | 54,727         | 67,906         |
| 95/12/06              | 3                    | 54,042      | 8,513            | 47,879         | 63,755         |
| 95/12/13              | 3                    | 51,470      | 5,789            | 48,109         | 58,155         |
| 95/12/19              | 3                    | 53,513      | 8,072            | 46,174         | 62,159         |
| 95/12/27              | 3                    | 62,211      | 2,872            | 59,042         | 64,641         |
| 96/01/04              | 3                    | 33,022      | 5,240            | 27,580         | 38,034         |
| 96/01/10              | 3                    | 39,987      | 3,159            | 36,494         | 42,643         |
| 96/01/17              | 3                    | 38,836      | 88.68            | 38,742         | 38,918         |

| <b>Date</b>               | <b>No. of Counts</b> | <b>Mean</b> | <b>Std. Dev.</b> | <b>Minimum</b> | <b>Maximum</b> |
|---------------------------|----------------------|-------------|------------------|----------------|----------------|
| <b><i>Snow Geese</i></b>  |                      |             |                  |                |                |
| 95/10/18                  | 3                    | 0           | 0                | 0              | 0              |
| 95/10/24                  | 3                    | 0           | 0                | 0              | 0              |
| 95/10/31                  | 2                    | 0           | 0                | 0              | 0              |
| 95/11/09                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/14                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/21                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/29                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/06                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/13                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/19                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/27                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/04                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/10                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/17                  | 3                    | 0           | 0                | 0              | 0              |
| <b><i>Total Geese</i></b> |                      |             |                  |                |                |
| 95/10/18                  | 3                    | 96          | 10.15            | 85             | 105            |
| 95/10/24                  | 3                    | 30.67       | 9.018            | 22             | 40             |
| 95/10/31                  | 2                    | 9           | 4.243            | 6              | 12             |
| 95/11/09                  | 3                    | 20          | 17.32            | 0              | 30             |
| 95/11/14                  | 3                    | 10          | 4.359            | 5              | 13             |
| 95/11/21                  | 3                    | 7.667       | 7.506            | 0              | 15             |
| 95/11/29                  | 3                    | 56.67       | 50.33            | 10             | 110            |
| 95/12/06                  | 3                    | 11.667      | 12.58            | 0              | 25             |
| 95/12/13                  | 3                    | 57          | 53.08            | 0              | 105            |
| 95/12/19                  | 3                    | 107         | 78.43            | 18             | 166            |
| 95/12/27                  | 3                    | 3.333       | 5.774            | 0              | 10             |
| 96/01/04                  | 3                    | 3.333       | 5.774            | 0              | 10             |
| 96/01/10                  | 3                    | 370         | 59.43            | 302            | 412            |
| 96/01/17                  | 3                    | 7.333       | 6.429            | 0              | 12             |
| <b><i>Total Swans</i></b> |                      |             |                  |                |                |
| 95/10/18                  | 3                    | 0           | 0                | 0              | 0              |
| 95/10/24                  | 3                    | 0           | 0                | 0              | 0              |
| 95/10/31                  | 2                    | 0           | 0                | 0              | 0              |
| 95/11/09                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/14                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/21                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/29                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/06                  | 3                    | 2           | 3.464            | 0              | 6              |
| 95/12/13                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/19                  | 3                    | 1.333       | 2.309            | 0              | 4              |
| 95/12/27                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/04                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/10                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/17                  | 3                    | 2.333       | 4.041            | 0              | 7              |

| <b>Date</b>       | <b>No. of Counts</b> | <b>Mean</b> | <b>Std. Dev.</b> | <b>Minimum</b> | <b>Maximum</b> |
|-------------------|----------------------|-------------|------------------|----------------|----------------|
| <b>Waterfowl</b>  |                      |             |                  |                |                |
| 95/10/18          | 3                    | 55,696      | 8,090            | 47,926         | 64,071         |
| 95/10/24          | 3                    | 52,004      | 8,177            | 45,838         | 61,280         |
| 95/10/31          | 2                    | 65,914      | 7,456            | 60,641         | 71,186         |
| 95/11/09          | 3                    | 70,760      | 5,905            | 65,127         | 76,903         |
| 95/11/14          | 3                    | 72,567      | 4,966            | 69,068         | 78,253         |
| 95/11/21          | 3                    | 113,495     | 6,390            | 106,160        | 117,857        |
| 95/11/29          | 3                    | 59,400      | 7,468            | 54,777         | 68,016         |
| 95/12/06          | 3                    | 54,055      | 8,524            | 47,879         | 63,780         |
| 95/12/13          | 3                    | 51,527      | 5,798            | 48,109         | 58,221         |
| 95/12/19          | 3                    | 53,621      | 8,004            | 46,315         | 62,177         |
| 95/12/27          | 3                    | 62,215      | 2,866            | 59,052         | 64,641         |
| 96/01/04          | 3                    | 33,026      | 5,245            | 27,580         | 38,044         |
| 96/01/10          | 3                    | 40,357      | 3,218            | 36,796         | 43,055         |
| 96/01/17          | 3                    | 38,846      | 80.55            | 38,759         | 38,918         |
| <b>Shorebirds</b> |                      |             |                  |                |                |
| 95/10/18          | 3                    | 2,633       | 2,325            | 0              | 4,400          |
| 95/10/24          | 3                    | 11,933      | 2,341            | 9,450          | 14,100         |
| 95/10/31          | 2                    | 1,313       | 1,149            | 500            | 2,125          |
| 95/11/09          | 3                    | 24,133      | 19,269           | 2,350          | 38,950         |
| 95/11/14          | 3                    | 9,253       | 6,195            | 3,200          | 15,580         |
| 95/11/21          | 3                    | 4,683       | 5,602            | 1,300          | 11,150         |
| 95/11/29          | 3                    | 3,333       | 3,512            | 0              | 7,000          |
| 95/12/06          | 3                    | 10,243      | 1,142            | 9,180          | 11,450         |
| 95/12/13          | 3                    | 7,517       | 8,779            | 1,000          | 17,500         |
| 95/12/19          | 3                    | 10,000      | 5,292            | 6,000          | 16,000         |
| 95/12/27          | 3                    | 12,247      | 842.9            | 11,600         | 13,200         |
| 96/01/04          | 3                    | 15,450      | 2,295            | 12,800         | 16,800         |
| 96/01/10          | 3                    | 19,420      | 16,631           | 6,100          | 38,060         |
| 96/01/17          | 3                    | 11,324      | 3,615            | 7,672          | 14,900         |
| <b>Gulls</b>      |                      |             |                  |                |                |
| 95/10/18          | 3                    | 2,481       | 905.8            | 1,465          | 3,204          |
| 95/10/24          | 3                    | 3,637       | 3,652            | 1,521          | 7,854          |
| 95/10/31          | 2                    | 6,559       | 304.1            | 6,344          | 6,774          |
| 95/11/09          | 3                    | 574         | 276.0            | 331            | 874            |
| 95/11/14          | 3                    | 1,402       | 1,020            | 286            | 2,285          |
| 95/11/21          | 3                    | 74          | 58.23            | 19             | 135            |
| 95/11/29          | 3                    | 618         | 749.0            | 137            | 1,481          |
| 95/12/06          | 3                    | 2,259       | 624.6            | 1,693          | 2,929          |
| 95/12/13          | 3                    | 766.3       | 254.1            | 480            | 965            |
| 95/12/19          | 3                    | 49          | 10.54            | 39             | 60             |
| 95/12/27          | 3                    | 1,861       | 1,071            | 970            | 3,049          |
| 96/01/04          | 3                    | 375.3       | 247.7            | 180            | 654            |
| 96/01/10          | 3                    | 358         | 116              | 242            | 474            |
| 96/01/17          | 3                    | 1,743       | 414.5            | 1,327          | 2,156          |

| <u>Date</u>                                  | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|--|----------------------|-------------|------------------|----------------|----------------|
| <b><i>Divers</i></b>                         |                      |             |                  |                |                |
| 95/10/18                                     | 3                    | 6.667       | 1.155            | 6              | 8              |
| 95/10/24                                     | 3                    | 12.67       | 11.02            | 2              | 24             |
| 95/10/31                                     | 2                    | 10          | 1.414            | 9              | 11             |
| 95/11/09                                     | 3                    | 22.33       | 4.509            | 18             | 27             |
| 95/11/14                                     | 3                    | 49          | 15.72            | 35             | 66             |
| 95/11/21                                     | 3                    | 42.67       | 15.01            | 28             | 58             |
| 95/11/29                                     | 3                    | 29          | 14.93            | 18             | 46             |
| 95/12/06                                     | 3                    | 44.67       | 13.50            | 31             | 58             |
| 95/12/13                                     | 3                    | 22.67       | 30.66            | 3              | 58             |
| 95/12/19                                     | 3                    | 43          | 11.14            | 33             | 55             |
| 95/12/27                                     | 3                    | 17.67       | 1.528            | 16             | 19             |
| 96/01/04                                     | 3                    | 28.33       | 18.50            | 7              | 40             |
| 96/01/10                                     | 3                    | 18          | 16.52            | 7              | 37             |
| 96/01/17                                     | 3                    | 12.67       | 11.02            | 2              | 24             |
| <b><i>Total Birds without Shorebirds</i></b> |                      |             |                  |                |                |
| 95/10/18                                     | 3                    | 58,234      | 7,202            | 51,197         | 65,590         |
| 95/10/24                                     | 3                    | 55,666      | 7,803            | 47,369         | 62,858         |
| 95/10/31                                     | 2                    | 72,498      | 7,766            | 67,006         | 77,989         |
| 95/11/09                                     | 3                    | 71,361      | 5,748            | 66,028         | 77,450         |
| 95/11/14                                     | 3                    | 74,040      | 5,706            | 70,730         | 80,629         |
| 95/11/21                                     | 3                    | 113,616     | 6,377            | 106,289        | 117,919        |
| 95/11/29                                     | 3                    | 60,055      | 7,133            | 55,600         | 68,282         |
| 95/12/06                                     | 3                    | 56,360      | 8,346            | 50,868         | 65,965         |
| 95/12/13                                     | 3                    | 52,317      | 5,536            | 49,079         | 58,710         |
| 95/12/19                                     | 3                    | 53,717      | 8,003            | 46,411         | 62,271         |
| 95/12/27                                     | 3                    | 64,108      | 3,512            | 60,054         | 66,233         |
| 96/01/04                                     | 3                    | 33,430      | 5,072            | 28,241         | 38,377         |
| 96/01/10                                     | 3                    | 40,733      | 3,170            | 37,191         | 43,304         |
| 96/01/17                                     | 3                    | 40,601      | 366.1            | 40,200         | 40,917         |
| <b><i>TOTAL BIRDS</i></b>                    |                      |             |                  |                |                |
| 95/10/18                                     | 3                    | 60,868      | 5,589            | 54,697         | 65,590         |
| 95/10/24                                     | 3                    | 67,599      | 8,751            | 59,619         | 76,958         |
| 95/10/31                                     | 2                    | 73,810      | 8,915            | 67,506         | 80,114         |
| 95/11/09                                     | 3                    | 95,494      | 24,606           | 68,378         | 116,400        |
| 95/11/14                                     | 3                    | 83,294      | 11,556           | 73,930         | 96,209         |
| 95/11/21                                     | 3                    | 118,299     | 9,982            | 107,889        | 127,789        |
| 95/11/29                                     | 3                    | 63,388      | 10,464           | 55,600         | 75,282         |
| 95/12/06                                     | 3                    | 66,604      | 8,395            | 60,048         | 76,065         |
| 95/12/13                                     | 3                    | 59,834      | 6,684            | 53,213         | 66,579         |
| 95/12/19                                     | 3                    | 63,717      | 13,232           | 52,411         | 78,271         |
| 95/12/27                                     | 3                    | 76,354      | 4,135            | 71,654         | 79,433         |
| 96/01/04                                     | 3                    | 48,880      | 3,346            | 45,041         | 51,177         |
| 96/01/10                                     | 3                    | 60,153      | 13,928           | 47,805         | 75,251         |
| 96/01/17                                     | 3                    | 51,925      | 3,510            | 48,589         | 55,587         |

## SEA ISLAND

| <u>Date</u>         | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|---------------------|----------------------|-------------|------------------|----------------|----------------|
| <i>Dabblers</i>     |                      |             |                  |                |                |
| 95/10/18            | 3                    | 2,083       | 591.7            | 1,500          | 2,683          |
| 95/10/24            | 3                    | 2,807       | 702.2            | 2,265          | 3,600          |
| 95/10/31            | 3                    | 623.3       | 515.4            | 120            | 1,150          |
| 95/11/09            | 3                    | 241.7       | 87.80            | 150            | 325            |
| 95/11/14            | 3                    | 442.7       | 280.0            | 260            | 765            |
| 95/11/21            | 3                    | 606.7       | 274.6            | 375            | 910            |
| 95/11/29            | 3                    | 745.7       | 379.3            | 310            | 1,002          |
| 95/12/06            | 3                    | 1,556       | 752.5            | 972            | 2,405          |
| 95/12/13            | 3                    | 1,023       | 325.0            | 663            | 1,295          |
| 95/12/19            | 3                    | 1,071       | 186.9            | 863            | 1,225          |
| 95/12/27            | 3                    | 621.7       | 510.3            | 235            | 1,200          |
| 96/01/04            | 2                    | 947.5       | 45.96            | 915            | 980            |
| 95/01/10            | 3                    | 952.7       | 355.7            | 545            | 1,200          |
| 96/01/17            | 3                    | 376.7       | 183.2            | 185            | 550            |
| <i>Diving Ducks</i> |                      |             |                  |                |                |
| 95/10/18            | 3                    | 88.33       | 43.11            | 50             | 135            |
| 95/10/24            | 3                    | 169.7       | 286.1            | 0              | 500            |
| 95/10/31            | 3                    | 97.67       | 91.36            | 40             | 203            |
| 95/11/09            | 3                    | 66.67       | 115.5            | 0              | 200            |
| 95/11/14            | 3                    | 1.667       | 2.887            | 0              | 5              |
| 95/11/21            | 3                    | 70.67       | 61.33            | 0              | 110            |
| 95/11/29            | 3                    | 72.67       | 112.9            | 5              | 203            |
| 95/12/06            | 3                    | 300.7       | 88.00            | 213            | 389            |
| 95/12/13            | 3                    | 251.3       | 237.5            | 2              | 475            |
| 95/12/19            | 3                    | 524.3       | 18.01            | 506            | 542            |
| 95/12/27            | 3                    | 906.7       | 313.9            | 660            | 1,260          |
| 96/01/04            | 2                    | 350         | 388.9            | 75             | 625            |
| 95/01/10            | 3                    | 4,142       | 700.0            | 3,710          | 4,950          |
| 96/01/17            | 3                    | 3,534       | 529.1            | 3,000          | 4,058          |
| <i>Total Ducks</i>  |                      |             |                  |                |                |
| 95/10/18            | 3                    | 2,171       | 607.0            | 1,550          | 2,763          |
| 95/10/24            | 3                    | 2,976       | 557.9            | 2,555          | 3,609          |
| 95/10/31            | 3                    | 721         | 444.1            | 323            | 1,200          |
| 95/11/09            | 3                    | 308.3       | 52.04            | 250            | 350            |
| 95/11/14            | 3                    | 444.3       | 278.4            | 265            | 765            |
| 95/11/21            | 3                    | 677.3       | 215.4            | 485            | 910            |
| 95/11/29            | 3                    | 818.3       | 435.8            | 320            | 1,128          |
| 95/12/06            | 3                    | 1,856       | 690.3            | 1,272          | 2,618          |
| 95/12/13            | 3                    | 1,274       | 126.1            | 1,138          | 1,387          |
| 95/12/19            | 3                    | 1,595       | 175.2            | 1,405          | 1,750          |
| 95/12/27            | 3                    | 1,528       | 316.3            | 1,230          | 1,860          |
| 96/01/04            | 2                    | 1,298       | 434.9            | 990            | 1,605          |
| 95/01/10            | 3                    | 5,095       | 353.8            | 4,823          | 5,495          |
| 96/01/17            | 3                    | 3,911       | 626.4            | 3,395          | 4,608          |

| <u>Date</u>               | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|---------------------------|----------------------|-------------|------------------|----------------|----------------|
| <b><i>Snow Geese</i></b>  |                      |             |                  |                |                |
| 95/10/18                  | 3                    | 1,500       | 866.0            | 1000           | 2,500          |
| 95/10/24                  | 3                    | 303.3       | 105.0            | 200            | 410            |
| 95/10/31                  | 3                    | 541.7       | 490.1            | 25             | 1,000          |
| 95/11/09                  | 3                    | 673.3       | 283.1            | 500            | 1,000          |
| 95/11/14                  | 3                    | 1,028       | 418.8            | 700            | 1,500          |
| 95/11/21                  | 3                    | 330.7       | 58.45            | 265            | 377            |
| 95/11/29                  | 3                    | 75          | 66.14            | 0              | 125            |
| 95/12/06                  | 3                    | 1.333       | 2.309            | 0              | 4              |
| 95/12/13                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/19                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/27                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/04                  | 2                    | 0           | 0                | 0              | 0              |
| 95/01/10                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/17                  | 3                    | 0           | 0                | 0              | 0              |
| <b><i>Total Geese</i></b> |                      |             |                  |                |                |
| 95/10/18                  | 3                    | 1,500       | 866.0            | 1,000          | 2,500          |
| 95/10/24                  | 3                    | 313.7       | 106.1            | 200            | 410            |
| 95/10/31                  | 3                    | 541.7       | 490.1            | 25             | 1,000          |
| 95/11/09                  | 3                    | 703.3       | 283.6            | 520            | 1,030          |
| 95/11/14                  | 3                    | 1,088       | 452.3            | 700            | 1,585          |
| 95/11/21                  | 3                    | 355.7       | 61.33            | 285            | 395            |
| 95/11/29                  | 3                    | 75          | 66.14            | 0              | 125            |
| 95/12/06                  | 3                    | 16.33       | 13.05            | 4              | 30             |
| 95/12/13                  | 3                    | 3.333       | 5.774            | 0              | 10             |
| 95/12/19                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/27                  | 3                    | 3.333       | 5.774            | 0              | 10             |
| 96/01/04                  | 2                    | 0           | 0                | 0              | 0              |
| 95/01/10                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/17                  | 3                    | 0           | 0                | 0              | 0              |
| <b><i>Total Swans</i></b> |                      |             |                  |                |                |
| 95/10/18                  | 3                    | 0           | 0                | 0              | 0              |
| 95/10/24                  | 3                    | 0           | 0                | 0              | 0              |
| 95/10/31                  | 3                    | 3.333       | 5.774            | 0              | 10             |
| 95/11/09                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/14                  | 3                    | 1.333       | 2.309            | 0              | 4              |
| 95/11/21                  | 3                    | 13.33       | 12.58            | 0              | 25             |
| 95/11/29                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/06                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/13                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/19                  | 3                    | 5.333       | 5.774            | 5              | 6              |
| 95/12/27                  | 3                    | 1.667       | 2.887            | 0              | 5              |
| 96/01/04                  | 2                    | 3           | 4.243            | 0              | 6              |
| 95/01/10                  | 3                    | 1.333       | 2.309            | 0              | 4              |
| 96/01/17                  | 3                    | 6.333       | 1.155            | 5              | 7              |



| <u>Date</u>       | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|-------------------|----------------------|-------------|------------------|----------------|----------------|
| <b>Waterfowl</b>  |                      |             |                  |                |                |
| 95/10/18          | 3                    | 3,671       | 1,078            | 2,550          | 4,700          |
| 95/10/24          | 3                    | 3,290       | 562.9            | 2,965          | 3,940          |
| 95/10/31          | 3                    | 1,266       | 931.3            | 348            | 2,210          |
| 95/11/09          | 3                    | 1,012       | 324.1            | 770            | 1,380          |
| 95/11/14          | 3                    | 1,534       | 325.0            | 1,249          | 1,888          |
| 95/11/21          | 3                    | 1,046       | 260.0            | 785            | 1,305          |
| 95/11/29          | 3                    | 893.3       | 498.8            | 320            | 1,228          |
| 95/12/06          | 3                    | 1,873       | 682.4            | 1,287          | 2,622          |
| 95/12/13          | 3                    | 1,277       | 130.6            | 1,138          | 1,397          |
| 95/12/19          | 3                    | 1,601       | 175.3            | 1,410          | 1,755          |
| 95/12/27          | 3                    | 1,533       | 318.4            | 1,230          | 1,865          |
| 96/01/04          | 2                    | 1,301       | 439.1            | 990            | 1,611          |
| 95/01/10          | 3                    | 5,096       | 353.1            | 4,823          | 5,495          |
| 96/01/17          | 3                    | 3,917       | 625.3            | 3,402          | 4,613          |
| <b>Shorebirds</b> |                      |             |                  |                |                |
| 95/10/18          | 3                    | 0           | 0                | 0              | 0              |
| 95/10/24          | 3                    | 0           | 0                | 0              | 0              |
| 95/10/31          | 3                    | 0           | 0                | 0              | 0              |
| 95/11/09          | 3                    | 10          | 17.32            | 0              | 30             |
| 95/11/14          | 3                    | 533.3       | 550.8            | 0              | 1,100          |
| 95/11/21          | 3                    | 433.3       | 750.6            | 0              | 1,300          |
| 95/11/29          | 3                    | 66.67       | 115.5            | 0              | 200            |
| 95/12/06          | 3                    | 675         | 1,169            | 0              | 2,025          |
| 95/12/13          | 3                    | 33.33       | 57.74            | 0              | 100            |
| 95/12/19          | 3                    | 8.333       | 14.43            | 0              | 25             |
| 95/12/27          | 3                    | 1,200       | 1,281            | 0              | 2,550          |
| 96/01/04          | 2                    | 500         | 707.1            | 0              | 1,000          |
| 95/01/10          | 3                    | 0           | 0                | 0              | 0              |
| 96/01/17          | 3                    | 366.7       | 635.1            | 0              | 1,100          |
| <b>Gulls</b>      |                      |             |                  |                |                |
| 95/10/18          | 3                    | 61          | 52.60            | 2              | 103            |
| 95/10/24          | 3                    | 22.33       | 17.50            | 5              | 40             |
| 95/10/31          | 3                    | .3333       | .5774            | 0              | 1              |
| 95/11/09          | 3                    | 103.7       | 137.7            | 12             | 262            |
| 95/11/14          | 3                    | 71.33       | 18.56            | 52             | 89             |
| 95/11/21          | 3                    | .6667       | .5774            | 0              | 1              |
| 95/11/29          | 3                    | 5.333       | 4.163            | 2              | 10             |
| 95/12/06          | 3                    | 27.33       | 8.021            | 19             | 35             |
| 95/12/13          | 3                    | 3           | 2.646            | 1              | 6              |
| 95/12/19          | 3                    | 10.67       | 18.48            | 0              | 32             |
| 95/12/27          | 3                    | 52.67       | 15.04            | 37             | 67             |
| 96/01/04          | 2                    | 13          | 18.38            | 0              | 26             |
| 95/01/10          | 3                    | 1           | 1                | 0              | 2              |
| 96/01/17          | 3                    | 4.333       | 5.132            | 0              | 10             |

| <u>Date</u>   | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|---------------|----------------------|-------------|------------------|----------------|----------------|
| <b>Divers</b> |                      |             |                  |                |                |
| 95/10/18      | 3                    | 1           | 1                | 0              | 2              |
| 95/10/24      | 3                    | 6           | 6.928            | 2              | 14             |
| 95/10/31      | 3                    | 2.667       | .5774            | 2              | 3              |
| 95/11/09      | 3                    | 1.667       | 1.528            | 0              | 3              |
| 95/11/14      | 3                    | .3333       | .5774            | 0              | 1              |
| 95/11/21      | 3                    | 2.667       | 2.517            | 0              | 5              |
| 95/11/29      | 3                    | 1.333       | 2.309            | 0              | 4              |
| 95/12/06      | 3                    | 1           | 1                | 0              | 2              |
| 95/12/13      | 3                    | .3333       | .5774            | 0              | 1              |
| 95/12/19      | 3                    | .6667       | .5774            | 0              | 1              |
| 95/12/27      | 3                    | .3333       | .5774            | 0              | 1              |
| 96/01/04      | 2                    | 1.5         | .7071            | 1              | 2              |
| 95/01/10      | 3                    | 0           | 0                | 0              | 0              |
| 96/01/17      | 3                    | 5.333       | 6.807            | 0              | 13             |

**Total Birds without Shorebirds**

|          |   |       |       |       |       |
|----------|---|-------|-------|-------|-------|
| 95/10/18 | 3 | 3,746 | 1,133 | 2,559 | 4,815 |
| 95/10/24 | 3 | 3,319 | 560.0 | 2,972 | 3,965 |
| 95/10/31 | 3 | 1,270 | 931.3 | 352   | 2,214 |
| 95/11/09 | 3 | 1,117 | 271.0 | 897   | 1,420 |
| 95/11/14 | 3 | 1,606 | 321.2 | 1,338 | 1,962 |
| 95/11/21 | 3 | 1,050 | 256.0 | 793   | 1,305 |
| 95/11/29 | 3 | 900   | 500.6 | 324   | 1,230 |
| 95/12/06 | 3 | 1,901 | 689.1 | 1,308 | 2,657 |
| 95/12/13 | 3 | 1,281 | 127.5 | 1,145 | 1,398 |
| 95/12/19 | 3 | 1,612 | 189.7 | 1,411 | 1,788 |
| 95/12/27 | 3 | 1,587 | 333.8 | 1,267 | 1,933 |
| 96/01/04 | 2 | 1,315 | 458.2 | 991   | 1,639 |
| 95/01/10 | 3 | 5,098 | 352.0 | 4,825 | 5,495 |
| 96/01/17 | 3 | 3,927 | 629.4 | 3,405 | 4,626 |

**TOTAL BIRDS**

|          |   |       |       |       |       |
|----------|---|-------|-------|-------|-------|
| 95/10/18 | 3 | 3,746 | 1,133 | 2,559 | 4,815 |
| 95/10/24 | 3 | 3,319 | 560.0 | 2,972 | 3,965 |
| 95/10/31 | 3 | 1,270 | 931.3 | 352   | 2,214 |
| 95/11/09 | 3 | 1,127 | 267.0 | 897   | 1,420 |
| 95/11/14 | 3 | 2,139 | 260.2 | 1,962 | 2,438 |
| 95/11/21 | 3 | 1,484 | 795.2 | 793   | 2,353 |
| 95/11/29 | 3 | 966.7 | 559.6 | 324   | 1,346 |
| 95/12/06 | 3 | 2,576 | 800.6 | 1,738 | 3,333 |
| 95/12/13 | 3 | 1,314 | 177.0 | 1,145 | 1,498 |
| 95/12/19 | 3 | 1,620 | 201.5 | 1,411 | 1,813 |
| 95/12/27 | 3 | 2,787 | 1,615 | 1,267 | 4,483 |
| 96/01/04 | 2 | 1,815 | 1,165 | 991   | 2,639 |
| 95/01/10 | 3 | 5,098 | 352.0 | 4,825 | 5,495 |
| 96/01/17 | 3 | 4,294 | 1,252 | 3,405 | 5,726 |

**FRASER RIVER MIDDLE ARM (mouth)**

| <b>Date</b>                | <b>No. of Counts</b> | <b>Mean</b> | <b>Std. Dev.</b> | <b>Minimum</b> | <b>Maximum</b> |
|----------------------------|----------------------|-------------|------------------|----------------|----------------|
| <b><i>Dabblers</i></b>     |                      |             |                  |                |                |
| 95/10/18                   | 3                    | 83.33       | 76.38            | 0              | 150            |
| 95/10/24                   | 3                    | 1,451       | 86.03            | 1,400          | 1,550          |
| 95/10/31                   | 3                    | 216.7       | 202.1            | 0              | 400            |
| 95/11/09                   | 3                    | 234         | 230.4            | 100            | 500            |
| 95/11/14                   | 3                    | 33.33       | 57.74            | 0              | 100            |
| 95/11/21                   | 3                    | 133.3       | 57.74            | 100            | 200            |
| 95/11/29                   | 3                    | 8.333       | 14.43            | 0              | 25             |
| 95/12/06                   | 3                    | 16.67       | 28.87            | 0              | 50             |
| 95/12/13                   | 3                    | 8.333       | 14.43            | 0              | 25             |
| 95/12/19                   | 3                    | 100         | 50               | 50             | 150            |
| 95/12/27                   | 3                    | 103.7       | 102.5            | 0              | 205            |
| 96/01/04                   | 3                    | 6.667       | 11.55            | 0              | 20             |
| 95/01/10                   | 3                    | 6.667       | 11.55            | 0              | 20             |
| 96/01/17                   | 3                    | 16.67       | 28.87            | 0              | 50             |
| <b><i>Diving Ducks</i></b> |                      |             |                  |                |                |
| 95/10/18                   | 3                    | 100         | 100              | 0              | 200            |
| 95/10/24                   | 3                    | 376.7       | 186.1            | 180            | 550            |
| 95/10/31                   | 3                    | 116.7       | 28.87            | 100            | 150            |
| 95/11/09                   | 3                    | 23.33       | 32.15            | 0              | 60             |
| 95/11/14                   | 3                    | 243.7       | 264.5            | 0              | 525            |
| 95/11/21                   | 3                    | 53.33       | 50.33            | 0              | 100            |
| 95/11/29                   | 3                    | 7.667       | 10.79            | 0              | 20             |
| 95/12/06                   | 3                    | 5           | 8.660            | 0              | 15             |
| 95/12/13                   | 3                    | 0           | 0                | 0              | 0              |
| 95/12/19                   | 3                    | 9.667       | 16.74            | 0              | 29             |
| 95/12/27                   | 3                    | 1.667       | 2.887            | 0              | 5              |
| 96/01/04                   | 3                    | 0           | 0                | 0              | 0              |
| 95/01/10                   | 3                    | 0           | 0                | 0              | 0              |
| 96/01/17                   | 3                    | 0           | 0                | 0              | 0              |
| <b><i>Total Ducks</i></b>  |                      |             |                  |                |                |
| 95/10/18                   | 3                    | 183.3       | 144.3            | 100            | 350            |
| 95/10/24                   | 3                    | 1,827       | 113.5            | 1,730          | 1,952          |
| 95/10/31                   | 3                    | 333.3       | 208.2            | 100            | 500            |
| 95/11/09                   | 3                    | 257.3       | 211.5            | 112            | 500            |
| 95/11/14                   | 3                    | 277         | 318.5            | 0              | 625            |
| 95/11/21                   | 3                    | 186.7       | 80.83            | 100            | 260            |
| 95/11/29                   | 3                    | 16          | 14.42            | 0              | 28             |
| 95/12/06                   | 3                    | 21.67       | 37.53            | 0              | 65             |
| 95/12/13                   | 3                    | 8.333       | 14.43            | 0              | 25             |
| 95/12/19                   | 3                    | 109.7       | 36.47            | 79             | 150            |
| 95/12/27                   | 3                    | 105.3       | 100.0            | 5              | 205            |
| 96/01/04                   | 3                    | 6.667       | 11.55            | 0              | 20             |
| 95/01/10                   | 3                    | 6.667       | 11.55            | 0              | 20             |
| 96/01/17                   | 3                    | 16.67       | 28.87            | 0              | 50             |

| <u>Date</u> | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|-------------|----------------------|-------------|------------------|----------------|----------------|
|-------------|----------------------|-------------|------------------|----------------|----------------|

***Snow Geese***

|          |   |       |       |     |       |
|----------|---|-------|-------|-----|-------|
| 95/10/18 | 3 | 736.7 | 1,146 | 50  | 2,060 |
| 95/10/24 | 3 | 134   | 76.60 | 50  | 200   |
| 95/10/31 | 3 | 16.67 | 28.87 | 0   | 50    |
| 95/11/09 | 3 | 318.3 | 259.3 | 100 | 605   |
| 95/11/14 | 3 | 0     | 0     | 0   | 0     |
| 95/11/21 | 3 | 91.67 | 52.04 | 50  | 150   |
| 95/11/29 | 3 | 0     | 0     | 0   | 0     |
| 95/12/06 | 3 | 0     | 0     | 0   | 0     |
| 95/12/13 | 3 | 0     | 0     | 0   | 0     |
| 95/12/19 | 3 | 3.333 | 5.774 | 0   | 10    |
| 95/12/27 | 3 | 0     | 0     | 0   | 0     |
| 96/01/04 | 3 | 30    | 26.46 | 0   | 50    |
| 95/01/10 | 3 | 166.7 | 288.7 | 0   | 500   |
| 96/01/17 | 3 | 1,267 | 404.1 | 800 | 1,500 |

***Total Geese***

|          |   |       |       |     |       |
|----------|---|-------|-------|-----|-------|
| 95/10/18 | 3 | 736.7 | 1,146 | 50  | 2,060 |
| 95/10/24 | 3 | 134   | 76.60 | 50  | 200   |
| 95/10/31 | 3 | 16.67 | 28.87 | 0   | 50    |
| 95/11/09 | 3 | 318.3 | 259.3 | 100 | 605   |
| 95/11/14 | 3 | 0     | 0     | 0   | 0     |
| 95/11/21 | 3 | 91.67 | 52.04 | 50  | 150   |
| 95/11/29 | 3 | 0     | 0     | 0   | 0     |
| 95/12/06 | 3 | 0     | 0     | 0   | 0     |
| 95/12/13 | 3 | 0     | 0     | 0   | 0     |
| 95/12/19 | 3 | 3.333 | 5.774 | 0   | 10    |
| 95/12/27 | 3 | 0     | 0     | 0   | 0     |
| 96/01/04 | 3 | 30    | 26.46 | 0   | 50    |
| 95/01/10 | 3 | 166.7 | 288.7 | 0   | 500   |
| 96/01/17 | 3 | 1,267 | 404.1 | 800 | 1,500 |

***Total Swans***

|          |   |       |       |   |   |
|----------|---|-------|-------|---|---|
| 95/10/18 | 3 | 0     | 0     | 0 | 0 |
| 95/10/24 | 3 | 0     | 0     | 0 | 0 |
| 95/10/31 | 3 | 0     | 0     | 0 | 0 |
| 95/11/09 | 3 | 0     | 0     | 0 | 0 |
| 95/11/14 | 3 | 0     | 0     | 0 | 0 |
| 95/11/21 | 3 | 0     | 0     | 0 | 0 |
| 95/11/29 | 3 | 0     | 0     | 0 | 0 |
| 95/12/06 | 3 | 0     | 0     | 0 | 0 |
| 95/12/13 | 3 | 1.333 | 2.309 | 0 | 4 |
| 95/12/19 | 3 | 0     | 0     | 0 | 0 |
| 95/12/27 | 3 | 0     | 0     | 0 | 0 |
| 96/01/04 | 3 | 0     | 0     | 0 | 0 |
| 95/01/10 | 3 | 0     | 0     | 0 | 0 |
| 96/01/17 | 3 | 0     | 0     | 0 | 0 |

| <u>Date</u>       | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|-------------------|----------------------|-------------|------------------|----------------|----------------|
| <b>Waterfowl</b>  |                      |             |                  |                |                |
| 95/10/18          | 3                    | 920         | 1,077            | 200            | 2,160          |
| 95/10/24          | 3                    | 1,961       | 186.2            | 1780           | 2,152          |
| 95/10/31          | 3                    | 350         | 229.1            | 100            | 550            |
| 95/11/09          | 3                    | 575.7       | 273.9            | 260            | 750            |
| 95/11/14          | 3                    | 277         | 318.5            | 0              | 625            |
| 95/11/21          | 3                    | 278.3       | 130.0            | 150            | 410            |
| 95/11/29          | 3                    | 16          | 14.42            | 0              | 28             |
| 95/12/06          | 3                    | 21.67       | 37.53            | 0              | 65             |
| 95/12/13          | 3                    | 9.667       | 13.43            | 0              | 25             |
| 95/12/19          | 3                    | 113         | 42.04            | 79             | 160            |
| 95/12/27          | 3                    | 105.3       | 100.0            | 5              | 205            |
| 96/01/04          | 3                    | 36.67       | 15.28            | 20             | 50             |
| 95/01/10          | 3                    | 173.3       | 283.1            | 0              | 500            |
| 96/01/17          | 3                    | 1,283       | 419.3            | 800            | 1,550          |
| <b>Shorebirds</b> |                      |             |                  |                |                |
| 95/10/18          | 3                    | 0           | 0                | 0              | 0              |
| 95/10/24          | 3                    | 8.333       | 14.43            | 0              | 25             |
| 95/10/31          | 3                    | 0           | 0                | 0              | 0              |
| 95/11/09          | 3                    | 0           | 0                | 0              | 0              |
| 95/11/14          | 3                    | 0           | 0                | 0              | 0              |
| 95/11/21          | 3                    | 16.67       | 28.87            | 0              | 50             |
| 95/11/29          | 3                    | 0           | 0                | 0              | 0              |
| 95/12/06          | 3                    | 0           | 0                | 0              | 0              |
| 95/12/13          | 3                    | 0           | 0                | 0              | 0              |
| 95/12/19          | 3                    | 0           | 0                | 0              | 0              |
| 95/12/27          | 3                    | 0           | 0                | 0              | 0              |
| 96/01/04          | 3                    | 0           | 0                | 0              | 0              |
| 95/01/10          | 3                    | 0           | 0                | 0              | 0              |
| 96/01/17          | 3                    | 0           | 0                | 0              | 0              |
| <b>Gulls</b>      |                      |             |                  |                |                |
| 95/10/18          | 3                    | 5.333       | 6.110            | 0              | 12             |
| 95/10/24          | 3                    | .3333       | .5774            | 0              | 1              |
| 95/10/31          | 3                    | 0           | 0                | 0              | 0              |
| 95/11/09          | 3                    | 2           | 2.646            | 0              | 5              |
| 95/11/14          | 3                    | 69          | 117.8            | 0              | 205            |
| 95/11/21          | 3                    | 2.333       | 1.528            | 1              | 4              |
| 95/11/29          | 3                    | 2.333       | 2.517            | 0              | 5              |
| 95/12/06          | 3                    | 3.333       | 2.517            | 1              | 6              |
| 95/12/13          | 3                    | .6667       | .5774            | 0              | 1              |
| 95/12/19          | 3                    | 8.667       | 14.15            | 0              | 25             |
| 95/12/27          | 3                    | 4.333       | 1.528            | 3              | 6              |
| 96/01/04          | 3                    | .3333       | .5774            | 0              | 1              |
| 95/01/10          | 3                    | 1           | 1                | 0              | 2              |
| 96/01/17          | 3                    | 1.333       | 1.528            | 0              | 3              |

| <u>Date</u> | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|-------------|----------------------|-------------|------------------|----------------|----------------|
|-------------|----------------------|-------------|------------------|----------------|----------------|

***Divers (loons, grebes, cormorants)***

|          |   |       |       |   |     |
|----------|---|-------|-------|---|-----|
| 95/10/18 | 3 | 1     | 1.732 | 0 | 3   |
| 95/10/24 | 3 | .6667 | 1.155 | 0 | 2   |
| 95/10/31 | 3 | 1.333 | 1.155 | 0 | 2   |
| 95/11/09 | 3 | 1.333 | 1.155 | 0 | 2   |
| 95/11/14 | 3 | 36.33 | 56.89 | 2 | 102 |
| 95/11/21 | 3 | 1.333 | 2.309 | 0 | 4   |
| 95/11/29 | 3 | 0     | 0     | 0 | 0   |
| 95/12/06 | 3 | 2     | 1     | 1 | 3   |
| 95/12/13 | 3 | .6667 | 1.155 | 0 | 2   |
| 95/12/19 | 3 | 2.667 | .5774 | 2 | 3   |
| 95/12/27 | 3 | 0     | 0     | 0 | 0   |
| 96/01/04 | 3 | .3333 | .5774 | 0 | 1   |
| 95/01/10 | 3 | .3333 | .5774 | 0 | 1   |
| 96/01/17 | 3 | .6667 | 1.155 | 0 | 2   |

***Total Birds without Shorebirds***

|          |   |       |       |       |       |
|----------|---|-------|-------|-------|-------|
| 95/10/18 | 3 | 926.3 | 1,076 | 204   | 2,163 |
| 95/10/24 | 3 | 1,962 | 186.1 | 1,780 | 2,152 |
| 95/10/31 | 3 | 351.3 | 230.2 | 100   | 552   |
| 95/11/09 | 3 | 579   | 276.9 | 260   | 757   |
| 95/11/14 | 3 | 382.3 | 334.7 | 2     | 632   |
| 95/11/21 | 3 | 282   | 129.1 | 156   | 414   |
| 95/11/29 | 3 | 18.33 | 14.22 | 2     | 28    |
| 95/12/06 | 3 | 27    | 37.27 | 4     | 70    |
| 95/12/13 | 3 | 11    | 13.23 | 1     | 26    |
| 95/12/19 | 3 | 124.3 | 56.13 | 82    | 188   |
| 95/12/27 | 3 | 110   | 102   | 8     | 212   |
| 96/01/04 | 3 | 37.33 | 14.84 | 21    | 50    |
| 95/01/10 | 3 | 174.7 | 282.8 | 2     | 501   |
| 96/01/17 | 3 | 1,285 | 420.2 | 801   | 1,553 |

***TOTAL BIRDS***

|          |   |       |       |       |       |
|----------|---|-------|-------|-------|-------|
| 95/10/18 | 3 | 926.3 | 1,076 | 204   | 2,163 |
| 95/10/24 | 3 | 1,971 | 199.0 | 1,780 | 2,177 |
| 95/10/31 | 3 | 351.3 | 230.2 | 100   | 552   |
| 95/11/09 | 3 | 579   | 276.9 | 260   | 757   |
| 95/11/14 | 3 | 382.3 | 334.7 | 2     | 632   |
| 95/11/21 | 3 | 298.7 | 131.2 | 156   | 414   |
| 95/11/29 | 3 | 18.33 | 14.22 | 2     | 28    |
| 95/12/06 | 3 | 27    | 37.27 | 4     | 70    |
| 95/12/13 | 3 | 11    | 13.23 | 1     | 26    |
| 95/12/19 | 3 | 124.3 | 56.13 | 82    | 188   |
| 95/12/27 | 3 | 110   | 102   | 8     | 212   |
| 96/01/04 | 3 | 37.33 | 14.84 | 21    | 50    |
| 95/01/10 | 3 | 174.7 | 282.8 | 2     | 501   |
| 96/01/17 | 3 | 1,285 | 420.2 | 801   | 1,553 |

## LULU ISLAND

| <u>Date</u>                | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|----------------------------|----------------------|-------------|------------------|----------------|----------------|
| <b><i>Dabblers</i></b>     |                      |             |                  |                |                |
| 95/10/18                   | 3                    | 3,674       | 1,220            | 2,750          | 5,056          |
| 95/10/24                   | 3                    | 3,863       | 1,019            | 2,690          | 4,524          |
| 95/10/31                   | 3                    | 1,525       | 1,147            | 301            | 2,575          |
| 95/11/09                   | 3                    | 353.7       | 48.50            | 305            | 402            |
| 95/11/14                   | 3                    | 400         | 180.3            | 250            | 600            |
| 95/11/21                   | 3                    | 1,139       | 307.3            | 784            | 1,325          |
| 95/11/29                   | 3                    | 261.3       | 26.69            | 233            | 286            |
| 95/12/06                   | 3                    | 1,009       | 334.3            | 650            | 1,311          |
| 95/12/13                   | 3                    | 475.3       | 194.2            | 291            | 678            |
| 95/12/19                   | 3                    | 2,337       | 814.7            | 1,490          | 3,115          |
| 95/12/27                   | 3                    | 956.7       | 529.2            | 625            | 1,567          |
| 96/01/04                   | 3                    | 1,367       | 242.1            | 1,205          | 1,645          |
| 95/01/10                   | 3                    | 1,100       | 338.9            | 850            | 1,486          |
| 96/01/17                   | 3                    | 1,670       | 361.4            | 1,460          | 2,087          |
| <b><i>Diving Ducks</i></b> |                      |             |                  |                |                |
| 95/10/18                   | 3                    | 0           | 0                | 0              | 0              |
| 95/10/24                   | 3                    | 100         | 173.2            | 0              | 300            |
| 95/10/31                   | 3                    | 1           | 1.732            | 0              | 3              |
| 95/11/09                   | 3                    | 3           | 2.646            | 1              | 6              |
| 95/11/14                   | 3                    | 0           | 0                | 0              | 0              |
| 95/11/21                   | 3                    | 8.333       | 3.786            | 4              | 11             |
| 95/11/29                   | 3                    | 11.67       | 12.58            | 0              | 25             |
| 95/12/06                   | 3                    | 11.33       | 17.93            | 0              | 32             |
| 95/12/13                   | 3                    | 16.67       | 28.87            | 0              | 50             |
| 95/12/19                   | 3                    | 176.7       | 280.4            | 0              | 500            |
| 95/12/27                   | 3                    | 24.33       | 35.23            | 3              | 65             |
| 96/01/04                   | 3                    | 77.33       | 68.86            | 0              | 132            |
| 95/01/10                   | 3                    | 3.667       | 6.351            | 0              | 11             |
| 96/01/17                   | 3                    | 6           | 10.39            | 0              | 18             |
| <b><i>Total Ducks</i></b>  |                      |             |                  |                |                |
| 95/10/18                   | 3                    | 3,674       | 1,220            | 2,750          | 5,056          |
| 95/10/24                   | 3                    | 3,963       | 1,105            | 2,690          | 4,675          |
| 95/10/31                   | 3                    | 1,526       | 1,145            | 304            | 2,575          |
| 95/11/09                   | 3                    | 356.7       | 49.08            | 306            | 404            |
| 95/11/14                   | 3                    | 400         | 180.3            | 250            | 600            |
| 95/11/21                   | 3                    | 1,147       | 311              | 788            | 1,335          |
| 95/11/29                   | 3                    | 273         | 34.70            | 243            | 311            |
| 95/12/06                   | 3                    | 1,021       | 317.3            | 682            | 1,311          |
| 95/12/13                   | 3                    | 492         | 171.2            | 341            | 678            |
| 95/12/19                   | 3                    | 2,513       | 566.6            | 1,990          | 3,115          |
| 95/12/27                   | 3                    | 981         | 564.5            | 628            | 1,632          |
| 96/01/04                   | 3                    | 1,444       | 275.3            | 1,205          | 1,745          |
| 95/01/10                   | 3                    | 1,104       | 345.2            | 850            | 1,497          |
| 96/01/17                   | 3                    | 1,676       | 356.4            | 1,460          | 2,087          |

| <u>Date</u> | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|-------------|----------------------|-------------|------------------|----------------|----------------|
|-------------|----------------------|-------------|------------------|----------------|----------------|

***Snow Geese***

|          |   |       |         |       |       |
|----------|---|-------|---------|-------|-------|
| 95/10/18 | 3 | 3,202 | 501.5   | 2,702 | 3,705 |
| 95/10/24 | 3 | 5,283 | 3,031   | 2,150 | 8,200 |
| 95/10/31 | 3 | 2,267 | 1,125.1 | 1,000 | 3,150 |
| 95/11/09 | 3 | 3,067 | 929.2   | 2,000 | 3,700 |
| 95/11/14 | 3 | 4,467 | 2,139   | 2,600 | 6,800 |
| 95/11/21 | 3 | 2,417 | 419.3   | 2,150 | 2,900 |
| 95/11/29 | 3 | 3,500 | 2,559   | 1,400 | 6,350 |
| 95/12/06 | 3 | 2,613 | 2,080   | 1,190 | 5,000 |
| 95/12/13 | 3 | 2,367 | 1,026   | 1,500 | 3,500 |
| 95/12/19 | 3 | 1,770 | 1,730   | 550   | 3,750 |
| 95/12/27 | 3 | 1,867 | 709.5   | 1,100 | 2,500 |
| 96/01/04 | 3 | 2,333 | 288.7   | 2,000 | 2,500 |
| 95/01/10 | 3 | 2,275 | 565.7   | 1,676 | 2,800 |
| 96/01/17 | 3 | 0     | 0       | 0     | 0     |

***Total Geese***

|          |   |       |       |       |       |
|----------|---|-------|-------|-------|-------|
| 95/10/18 | 3 | 3,207 | 496.5 | 2,712 | 3,705 |
| 95/10/24 | 3 | 5,287 | 3,036 | 2,150 | 8,210 |
| 95/10/31 | 3 | 2,270 | 1,124 | 1,004 | 3,150 |
| 95/11/09 | 3 | 3,067 | 929.2 | 2,000 | 3,700 |
| 95/11/14 | 3 | 4,467 | 2,139 | 2,600 | 6,800 |
| 95/11/21 | 3 | 2,433 | 407.2 | 2,150 | 2,900 |
| 95/11/29 | 3 | 3,500 | 2,559 | 1,400 | 6,350 |
| 95/12/06 | 3 | 2,615 | 2,082 | 1,190 | 5,004 |
| 95/12/13 | 3 | 2,367 | 1,026 | 1,500 | 3,500 |
| 95/12/19 | 3 | 1,770 | 1,730 | 550   | 3,750 |
| 95/12/27 | 3 | 1,867 | 709.5 | 1,100 | 2,500 |
| 96/01/04 | 3 | 2,333 | 288.7 | 2,000 | 2,500 |
| 95/01/10 | 3 | 2,275 | 565.7 | 1,676 | 2,800 |
| 96/01/17 | 3 | 0     | 0     | 0     | 0     |

***Total Swans***

|          |   |       |       |    |    |
|----------|---|-------|-------|----|----|
| 95/10/18 | 3 | 0     | 0     | 0  | 0  |
| 95/10/24 | 3 | 0     | 0     | 0  | 0  |
| 95/10/31 | 3 | 2.333 | 4.041 | 0  | 7  |
| 95/11/09 | 3 | 20    | 26.46 | 0  | 50 |
| 95/11/14 | 3 | 42.67 | 17.50 | 25 | 60 |
| 95/11/21 | 3 | 28    | 22.07 | 7  | 51 |
| 95/11/29 | 3 | 54.67 | 1.155 | 54 | 56 |
| 95/12/06 | 3 | 2.667 | 1.155 | 2  | 4  |
| 95/12/13 | 3 | 51    | 6.557 | 45 | 58 |
| 95/12/19 | 3 | 15    | 12.12 | 4  | 28 |
| 95/12/27 | 3 | 66.33 | 13.28 | 51 | 74 |
| 96/01/04 | 3 | 38.67 | 11.93 | 25 | 47 |
| 95/01/10 | 3 | 34.67 | 12.66 | 25 | 49 |
| 96/01/17 | 3 | 18.33 | 6.506 | 12 | 25 |



| <u>Date</u>       | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|-------------------|----------------------|-------------|------------------|----------------|----------------|
| <b>Waterfowl</b>  |                      |             |                  |                |                |
| 95/10/18          | 3                    | 6,881       | 1,628            | 5,927          | 8,761          |
| 95/10/24          | 3                    | 9,250       | 4,028            | 4,840          | 12,734         |
| 95/10/31          | 3                    | 3,799       | 2,262            | 1,308          | 5,725          |
| 95/11/09          | 3                    | 3,443       | 860.3            | 2,454          | 4,016          |
| 95/11/14          | 3                    | 4,909       | 2,330            | 2,893          | 7,460          |
| 95/11/21          | 3                    | 3,608       | 574.2            | 3,089          | 4,225          |
| 95/11/29          | 3                    | 3,828       | 593              | 1,699          | 6,715          |
| 95/12/06          | 3                    | 3,638       | 2,322            | 2,261          | 6,319          |
| 95/12/13          | 3                    | 2,910       | 941              | 2,015          | 3,891          |
| 95/12/19          | 3                    | 4,298       | 2,234            | 2,989          | 6,878          |
| 95/12/27          | 3                    | 2,914       | 1,198            | 1,802          | 4,183          |
| 96/01/04          | 3                    | 3,816       | 100.2            | 3,730          | 3,926          |
| 95/01/10          | 3                    | 3,414       | 234.2            | 3,222          | 3,675          |
| 96/01/17          | 3                    | 1,694       | 362              | 1,478          | 2,112          |
| <b>Shorebirds</b> |                      |             |                  |                |                |
| 95/10/18          | 3                    | 0           | 0                | 0              | 0              |
| 95/10/24          | 3                    | 0           | 0                | 0              | 0              |
| 95/10/31          | 3                    | 0           | 0                | 0              | 0              |
| 95/11/09          | 3                    | 0           | 0                | 0              | 0              |
| 95/11/14          | 3                    | 0           | 0                | 0              | 0              |
| 95/11/21          | 3                    | 0           | 0                | 0              | 0              |
| 95/11/29          | 3                    | 0           | 0                | 0              | 0              |
| 95/12/06          | 3                    | 0           | 0                | 0              | 0              |
| 95/12/13          | 3                    | 0           | 0                | 0              | 0              |
| 95/12/19          | 3                    | 0           | 0                | 0              | 0              |
| 95/12/27          | 3                    | 0           | 0                | 0              | 0              |
| 96/01/04          | 3                    | 0           | 0                | 0              | 0              |
| 95/01/10          | 3                    | 166.7       | 288.7            | 0              | 500            |
| 96/01/17          | 3                    | 16.67       | 28.87            | 0              | 50             |
| <b>Gulls</b>      |                      |             |                  |                |                |
| 95/10/18          | 3                    | 72.67       | 112.1            | 3              | 202            |
| 95/10/24          | 3                    | 104.3       | 49.52            | 54             | 153            |
| 95/10/31          | 3                    | 0           | 0                | 0              | 0              |
| 95/11/09          | 3                    | 18.33       | 12.01            | 6              | 30             |
| 95/11/14          | 3                    | 37          | 57.16            | 4              | 103            |
| 95/11/21          | 3                    | 2.667       | 1.155            | 2              | 4              |
| 95/11/29          | 3                    | 20.67       | 20.43            | 6              | 44             |
| 95/12/06          | 3                    | 19.67       | 4.163            | 15             | 23             |
| 95/12/13          | 3                    | 3           | 3.606            | 0              | 7              |
| 95/12/19          | 3                    | 17.67       | 29.74            | 0              | 52             |
| 95/12/27          | 3                    | 106.3       | 85.42            | 41             | 203            |
| 96/01/04          | 3                    | 13          | 6.245            | 8              | 20             |
| 95/01/10          | 3                    | 3.667       | 1.155            | 3              | 5              |
| 96/01/17          | 3                    | 15          | 19.47            | 0              | 37             |

| <u>Date</u> | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|-------------|----------------------|-------------|------------------|----------------|----------------|
|-------------|----------------------|-------------|------------------|----------------|----------------|

***Divers (loons, grebes, cormorants)***

|          |   |       |       |   |    |
|----------|---|-------|-------|---|----|
| 95/10/18 | 3 | .3333 | .5774 | 0 | 1  |
| 95/10/24 | 3 | 4     | 1.732 | 3 | 6  |
| 95/10/31 | 3 | 1     | 1.732 | 0 | 3  |
| 95/11/09 | 3 | 1.333 | .5774 | 1 | 2  |
| 95/11/14 | 3 | 5.333 | 2.309 | 4 | 8  |
| 95/11/21 | 3 | 2     | 2     | 0 | 4  |
| 95/11/29 | 3 | 8     | 10.39 | 2 | 20 |
| 95/12/06 | 3 | 1     | 0     | 1 | 1  |
| 95/12/13 | 3 | .3333 | .5774 | 0 | 1  |
| 95/12/19 | 3 | 1.667 | 1.155 | 1 | 3  |
| 95/12/27 | 3 | 2.667 | 1.155 | 2 | 4  |
| 96/01/04 | 3 | 7     | 6.245 | 2 | 14 |
| 95/01/10 | 3 | 1.667 | .5774 | 1 | 2  |
| 96/01/17 | 3 | 3     | 5.196 | 0 | 9  |

***Total Birds without Shorebirds***

|          |   |       |       |       |        |
|----------|---|-------|-------|-------|--------|
| 95/10/18 | 3 | 6,956 | 1,580 | 5,960 | 8,777  |
| 95/10/24 | 3 | 9,358 | 3,980 | 4,997 | 12,794 |
| 95/10/31 | 3 | 3,801 | 2,261 | 1,312 | 5,726  |
| 95/11/09 | 3 | 3,464 | 859   | 2,475 | 4,024  |
| 95/11/14 | 3 | 4,958 | 2,284 | 3,010 | 7,471  |
| 95/11/21 | 3 | 3,614 | 575.1 | 3,093 | 4,231  |
| 95/11/29 | 3 | 3,856 | 2,609 | 1,713 | 6,761  |
| 95/12/06 | 3 | 3,659 | 2,318 | 2,285 | 6,335  |
| 95/12/13 | 3 | 2,913 | 943.2 | 2,018 | 3,898  |
| 95/12/19 | 3 | 4,319 | 2,218 | 3,034 | 6,880  |
| 95/12/27 | 3 | 3,024 | 1,282 | 1,847 | 4,390  |
| 96/01/04 | 3 | 3,838 | 106.8 | 3,742 | 3,953  |
| 95/01/10 | 3 | 3,420 | 235.4 | 3,227 | 3,682  |
| 96/01/17 | 3 | 1,712 | 347.5 | 1,486 | 2,112  |

***TOTAL BIRDS***

|          |   |       |       |       |        |
|----------|---|-------|-------|-------|--------|
| 95/10/18 | 3 | 6,956 | 1,580 | 5,960 | 8,777  |
| 95/10/24 | 3 | 9,358 | 3,980 | 4,997 | 12,794 |
| 95/10/31 | 3 | 3,801 | 2,261 | 1,312 | 5,726  |
| 95/11/09 | 3 | 3,464 | 859   | 2,475 | 4,024  |
| 95/11/14 | 3 | 4,958 | 2,284 | 3,010 | 7,471  |
| 95/11/21 | 3 | 3,614 | 575.1 | 3,093 | 4,231  |
| 95/11/29 | 3 | 3,856 | 2,609 | 1,713 | 6,761  |
| 95/12/06 | 3 | 3,659 | 2,318 | 2,285 | 6,335  |
| 95/12/13 | 3 | 2,913 | 943.2 | 2,018 | 3,898  |
| 95/12/19 | 3 | 4,319 | 2,218 | 3,034 | 6,880  |
| 95/12/27 | 3 | 3,024 | 1,282 | 1,847 | 4,390  |
| 96/01/04 | 3 | 3,838 | 106.8 | 3,742 | 3,953  |
| 95/01/10 | 3 | 3,586 | 322.3 | 3,227 | 3,850  |
| 96/01/17 | 3 | 1,729 | 76.18 | 1,486 | 2,162  |

## WESTHAM ISLAND

| <u>Date</u> | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|-------------|----------------------|-------------|------------------|----------------|----------------|
|-------------|----------------------|-------------|------------------|----------------|----------------|

### *Dabblers*

|          |   |        |       |        |        |
|----------|---|--------|-------|--------|--------|
| 95/10/18 | 3 | 4,492  | 1,983 | 2,203  | 5,682  |
| 95/10/24 | 3 | 2,598  | 722.7 | 1,770  | 3,100  |
| 95/10/31 | 3 | 2,475  | 1,698 | 525    | 3,625  |
| 95/11/09 | 3 | 2,675  | 2,672 | 1,102  | 5,760  |
| 95/11/14 | 3 | 15,720 | 1,065 | 14,507 | 16,500 |
| 95/11/21 | 3 | 13,350 | 3,111 | 9,800  | 15,600 |
| 95/11/29 | 3 | 7,208  | 2,070 | 4,825  | 8,554  |
| 95/12/06 | 3 | 1,300  | 1,116 | 11,707 | 13,660 |
| 95/12/13 | 3 | 7,331  | 1,471 | 5,815  | 8,752  |
| 95/12/19 | 3 | 9,478  | 2,269 | 6,925  | 11,265 |
| 95/12/27 | 3 | 8,265  | 1,167 | 7,536  | 9,611  |
| 96/01/04 | 3 | 1,778  | 443.7 | 1,355  | 2,240  |
| 95/01/10 | 3 | 5,550  | 3,888 | 1,370  | 9,058  |
| 96/01/17 | 3 | 6,095  | 2,188 | 3,600  | 7,690  |

### *Diving Ducks*

|          |   |       |       |    |     |
|----------|---|-------|-------|----|-----|
| 95/10/18 | 3 | 1.667 | 2.887 | 0  | 5   |
| 95/10/24 | 3 | 10    | 17.32 | 0  | 30  |
| 95/10/31 | 3 | 23    | 18.08 | 4  | 40  |
| 95/11/09 | 3 | 21.33 | 7.234 | 13 | 26  |
| 95/11/14 | 3 | 202   | 348.1 | 0  | 604 |
| 95/11/21 | 3 | 100.3 | 99.50 | 1  | 200 |
| 95/11/29 | 3 | 1     | 1.732 | 0  | 3   |
| 95/12/06 | 3 | 1     | 1.732 | 0  | 3   |
| 95/12/13 | 3 | 261   | 266.7 | 0  | 533 |
| 95/12/19 | 3 | 6.667 | 11.55 | 0  | 20  |
| 95/12/27 | 3 | 57.67 | 25.32 | 35 | 85  |
| 96/01/04 | 3 | 13    | 11.53 | 4  | 26  |
| 95/01/10 | 3 | 1.333 | 1.155 | 0  | 2   |
| 96/01/17 | 3 | 3     | 3     | 0  | 6   |

### *Total Ducks*

|          |   |        |       |        |        |
|----------|---|--------|-------|--------|--------|
| 95/10/18 | 3 | 4,494  | 1,980 | 2,208  | 5,682  |
| 95/10/24 | 3 | 2,608  | 733.2 | 1,770  | 3,130  |
| 95/10/31 | 3 | 2,498  | 1,713 | 529    | 3,650  |
| 95/11/09 | 3 | 2,696  | 2,676 | 1,127  | 5,786  |
| 95/11/14 | 3 | 15,920 | 723.2 | 15,111 | 16,500 |
| 95/11/21 | 3 | 1,345  | 3,189 | 9,801  | 15,700 |
| 95/11/29 | 3 | 7,209  | 2,070 | 4,825  | 8,554  |
| 95/12/06 | 3 | 1,300  | 1,117 | 11,707 | 13,663 |
| 95/12/13 | 3 | 7,592  | 1,335 | 6,348  | 9,002  |
| 95/12/19 | 3 | 9,485  | 2,258 | 6,945  | 11,265 |
| 95/12/27 | 3 | 8,323  | 1,162 | 7,621  | 9,664  |
| 96/01/04 | 3 | 1,791  | 445.5 | 1,359  | 2,249  |
| 95/01/10 | 3 | 5,551  | 3,887 | 1,372  | 9,058  |
| 96/01/17 | 3 | 6,098  | 2,186 | 3,606  | 7,693  |

| <b>Date</b>               | <b>No. of Counts</b> | <b>Mean</b> | <b>Std. Dev.</b> | <b>Minimum</b> | <b>Maximum</b> |
|---------------------------|----------------------|-------------|------------------|----------------|----------------|
| <b><i>Snow Geese</i></b>  |                      |             |                  |                |                |
| 95/10/18                  | 3                    | 1,592       | 512.6            | 1,075          | 2,100          |
| 95/10/24                  | 3                    | 10,894      | 719              | 10,073         | 11,410         |
| 95/10/31                  | 3                    | 2,200       | 1,856            | 75             | 3,500          |
| 95/11/09                  | 3                    | 7,333       | 3,215            | 5,000          | 11,000         |
| 95/11/14                  | 3                    | 5,700       | 346.4            | 5,500          | 6,100          |
| 95/11/21                  | 3                    | 10,075      | 1,141            | 2,500          | 23,200         |
| 95/11/29                  | 3                    | 7,667       | 20,812           | 6,000          | 10,000         |
| 95/12/06                  | 3                    | 8,581       | 487.9            | 8,138          | 9,104          |
| 95/12/13                  | 3                    | 5,700       | 1,664            | 4,500          | 7,600          |
| 95/12/19                  | 3                    | 3,100       | 655.7            | 2,500          | 3,800          |
| 95/12/27                  | 3                    | 13.33       | 23.09            | 0              | 40             |
| 96/01/04                  | 3                    | 0           | 0                | 0              | 0              |
| 95/01/10                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/17                  | 3                    | 0           | 0                | 0              | 0              |
| <b><i>Total Geese</i></b> |                      |             |                  |                |                |
| 95/10/18                  | 3                    | 1,602       | 513.1            | 1075           | 2,100          |
| 95/10/24                  | 3                    | 10,894      | 719.0            | 10,073         | 11,410         |
| 95/10/31                  | 3                    | 2,200       | 1,856            | 75             | 3,500          |
| 95/11/09                  | 3                    | 7,333       | 3,215            | 5,000          | 11,000         |
| 95/11/14                  | 3                    | 5,700       | 346.4            | 5,500          | 6,100          |
| 95/11/21                  | 3                    | 10,075      | 11,412           | 2,500          | 23,200         |
| 95/11/29                  | 3                    | 7,667       | 2,082            | 6,000          | 10,000         |
| 95/12/06                  | 3                    | 8,588       | 488.7            | 8,148          | 9,114          |
| 95/12/13                  | 3                    | 5,700       | 1,664            | 4,500          | 7,600          |
| 95/12/19                  | 3                    | 3,100       | 655.7            | 2,500          | 3,800          |
| 95/12/27                  | 3                    | 13.33       | 23.09            | 0              | 40             |
| 96/01/04                  | 3                    | 0           | 0                | 0              | 0              |
| 95/01/10                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/17                  | 3                    | 0           | 0                | 0              | 0              |
| <b><i>Total Swans</i></b> |                      |             |                  |                |                |
| 95/10/18                  | 3                    | 0           | 0                | 0              | 0              |
| 95/10/24                  | 3                    | 0           | 0                | 0              | 0              |
| 95/10/31                  | 3                    | 3           | 3                | 0              | 6              |
| 95/11/09                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/14                  | 3                    | 7.333       | 11.02            | 0              | 20             |
| 95/11/21                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/29                  | 3                    | .6667       | 1.155            | 0              | 2              |
| 95/12/06                  | 3                    | 54.33       | 34.30            | 15             | 78             |
| 95/12/13                  | 3                    | 13          | 4.583            | 8              | 17             |
| 95/12/19                  | 3                    | 5           | 8.660            | 0              | 15             |
| 95/12/27                  | 3                    | 9.333       | 8.083            | 2              | 18             |
| 96/01/04                  | 3                    | 50.67       | 3.512            | 47             | 54             |
| 95/01/10                  | 3                    | 26          | 4.583            | 21             | 30             |
| 96/01/17                  | 3                    | 346.3       | 65.26            | 278            | 408            |

| <u>Date</u>       | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|-------------------|----------------------|-------------|------------------|----------------|----------------|
| <b>Waterfowl</b>  |                      |             |                  |                |                |
| 95/10/18          | 3                    | 6,096       | 2,452            | 3,283          | 7,782          |
| 95/10/24          | 3                    | 13,503      | 539.1            | 13,180         | 14,125         |
| 95/10/31          | 3                    | 4,701       | 3,549            | 604            | 6,818          |
| 95/11/09          | 3                    | 10,029      | 3,385            | 6,127          | 12,175         |
| 95/11/14          | 3                    | 21,629      | 385.2            | 21,231         | 22,000         |
| 95/11/21          | 3                    | 23,525      | 13,777           | 12,301         | 38,900         |
| 95/11/29          | 3                    | 14,876      | 3,409            | 11,825         | 18,556         |
| 95/12/06          | 3                    | 21,639      | 1,557            | 19,870         | 22,804         |
| 95/12/13          | 3                    | 13,305      | 1,188            | 11,934         | 14,016         |
| 95/12/19          | 3                    | 12,590      | 2,556            | 9,960          | 15,065         |
| 95/12/27          | 3                    | 8,346       | 1,158            | 7,629          | 9,682          |
| 96/01/04          | 3                    | 1,842       | 449.0            | 1,406          | 2,303          |
| 95/01/10          | 3                    | 5,577       | 3,884            | 1,399          | 9,079          |
| 96/01/17          | 3                    | 6,444       | 2,241            | 3,884          | 8,046          |
| <b>Shorebirds</b> |                      |             |                  |                |                |
| 95/10/18          | 3                    | 0           | 0                | 0              | 0              |
| 95/10/24          | 3                    | 16.67       | 28.87            | 0              | 50             |
| 95/10/31          | 3                    | 0           | 0                | 0              | 0              |
| 95/11/09          | 3                    | 0           | 0                | 0              | 0              |
| 95/11/14          | 3                    | 0           | 0                | 0              | 0              |
| 95/11/21          | 3                    | 0           | 0                | 0              | 0              |
| 95/11/29          | 3                    | 0           | 0                | 0              | 0              |
| 95/12/06          | 3                    | 0           | 0                | 0              | 0              |
| 95/12/13          | 3                    | 0           | 0                | 0              | 0              |
| 95/12/19          | 3                    | 0           | 0                | 0              | 0              |
| 95/12/27          | 3                    | 33.33       | 57.74            | 0              | 100            |
| 96/01/04          | 3                    | 0           | 0                | 0              | 0              |
| 95/01/10          | 3                    | 304         | 273.7            | 60             | 600            |
| 96/01/17          | 3                    | 0           | 0                | 0              | 0              |
| <b>Gulls</b>      |                      |             |                  |                |                |
| 95/10/18          | 3                    | 50.33       | 24.58            | 22             | 66             |
| 95/10/24          | 3                    | 163         | 68.99            | 110            | 241            |
| 95/10/31          | 3                    | 2.333       | 2.082            | 0              | 4              |
| 95/11/09          | 3                    | 185         | 77.16            | 137            | 274            |
| 95/11/14          | 3                    | 972         | 850.2            | 361            | 1,943          |
| 95/11/21          | 3                    | 47.33       | 64.13            | 4              | 121            |
| 95/11/29          | 3                    | 20.67       | 3.215            | 17             | 23             |
| 95/12/06          | 3                    | 85.67       | 76.17            | 2              | 151            |
| 95/12/13          | 3                    | 41.67       | 56.09            | 3              | 106            |
| 95/12/19          | 3                    | 136.7       | 30.07            | 115            | 171            |
| 95/12/27          | 3                    | 50.67       | 27.06            | 21             | 74             |
| 96/01/04          | 3                    | 24.33       | 5.508            | 19             | 30             |
| 95/01/10          | 3                    | 5           | 2                | 3              | 7              |
| 96/01/17          | 3                    | 94          | 29.72            | 60             | 115            |

| <u>Date</u> | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|-------------|----------------------|-------------|------------------|----------------|----------------|
|-------------|----------------------|-------------|------------------|----------------|----------------|

***Divers. (loons, grebes, cormorants)***

|          |   |       |       |    |     |
|----------|---|-------|-------|----|-----|
| 95/10/18 | 3 | 45.67 | 58.23 | 3  | 112 |
| 95/10/24 | 3 | 37    | 27.62 | 11 | 66  |
| 95/10/31 | 3 | 12.33 | 12.66 | 1  | 26  |
| 95/11/09 | 3 | 28    | 5.568 | 22 | 33  |
| 95/11/14 | 3 | 21.67 | 4.041 | 18 | 26  |
| 95/11/21 | 3 | 11.33 | 7.234 | 3  | 16  |
| 95/11/29 | 3 | 17.67 | 17.21 | 4  | 37  |
| 95/12/06 | 3 | 9     | 6.928 | 5  | 17  |
| 95/12/13 | 3 | 6.333 | 3.215 | 4  | 10  |
| 95/12/19 | 3 | 9.667 | 2.517 | 7  | 12  |
| 95/12/27 | 3 | 16.67 | 8.083 | 12 | 26  |
| 96/01/04 | 3 | 13.67 | 6.506 | 7  | 20  |
| 95/01/10 | 3 | 2.667 | 2.082 | 1  | 5   |
| 96/01/17 | 3 | 8     | 6.557 | 1  | 14  |

***Total Birds without Shorebirds***

|          |   |        |        |        |        |
|----------|---|--------|--------|--------|--------|
| 95/10/18 | 3 | 6,196  | 2,385  | 3,465  | 7,873  |
| 95/10/24 | 3 | 13,706 | 474.4  | 13,378 | 14,250 |
| 95/10/31 | 3 | 4,722  | 3,539  | 636    | 6,829  |
| 95/11/09 | 3 | 10,245 | 3,304  | 6,436  | 12,344 |
| 95/11/14 | 3 | 22,628 | 1,002  | 21,621 | 23,625 |
| 95/11/21 | 3 | 23,586 | 13,721 | 12,440 | 38,910 |
| 95/11/29 | 3 | 14,914 | 3,423  | 11,852 | 18,610 |
| 95/12/06 | 3 | 21,734 | 1,495  | 20,027 | 22,811 |
| 95/12/13 | 3 | 13,353 | 1,207  | 11,960 | 14,075 |
| 95/12/19 | 3 | 12,736 | 2,534  | 10,138 | 15,201 |
| 95/12/27 | 3 | 8,417  | 1,186  | 7,701  | 9,786  |
| 96/01/04 | 3 | 1,880  | 457.8  | 1,432  | 2,347  |
| 95/01/10 | 3 | 5,585  | 3,886  | 1,404  | 9,087  |
| 96/01/17 | 3 | 6,546  | 2,215  | 4,013  | 8,115  |

***TOTAL BIRDS***

|          |   |        |         |        |        |
|----------|---|--------|---------|--------|--------|
| 95/10/18 | 3 | 6,196  | 2,385   | 3,465  | 7,873  |
| 95/10/24 | 3 | 13,723 | 463.8   | 13,378 | 14,250 |
| 95/10/31 | 3 | 4,722  | 3,539   | 636    | 6,829  |
| 95/11/09 | 3 | 10,245 | 3,304   | 6,436  | 12,344 |
| 95/11/14 | 3 | 22,628 | 1,002   | 21,621 | 23,625 |
| 95/11/21 | 3 | 23,586 | 13,721  | 12,440 | 38,910 |
| 95/11/29 | 3 | 14,914 | 3,423   | 11,852 | 18,610 |
| 95/12/06 | 3 | 21,734 | 1,495.1 | 20,027 | 22,811 |
| 95/12/13 | 3 | 13,353 | 1,207   | 11,960 | 14,075 |
| 95/12/19 | 3 | 12,736 | 2,534   | 10,138 | 15,201 |
| 95/12/27 | 3 | 8,450  | 1,244   | 7,701  | 9,886  |
| 96/01/04 | 3 | 1,880  | 457.8   | 1,432  | 2,347  |
| 95/01/10 | 3 | 5,889  | 3,687   | 2,004  | 9,339  |
| 96/01/17 | 3 | 6,546  | 2,215   | 4,013  | 8,115  |

## BRUNSWICK POINT

| <u>Date</u>                | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|----------------------------|----------------------|-------------|------------------|----------------|----------------|
| <b><i>Dabblers</i></b>     |                      |             |                  |                |                |
| 95/10/18                   | 3                    | 11,039      | 6,455            | 4,927          | 17,790         |
| 95/10/24                   | 3                    | 3,003       | 266.5            | 2,700          | 3,200          |
| 95/10/31                   | 3                    | 4,108       | 3,190            | 425            | 6,000          |
| 95/11/09                   | 3                    | 21.67       | 25.66            | 0              | 50             |
| 95/11/14                   | 3                    | 4,582       | 3,481            | 2,500          | 8,600          |
| 95/11/21                   | 3                    | 7,567       | 8,018            | 2,877          | 16,825         |
| 95/11/29                   | 3                    | 68          | 114.3            | 0              | 200            |
| 95/12/06                   | 3                    | 5,567       | 1,692            | 3,700          | 7,000          |
| 95/12/13                   | 3                    | 20          | 26.46            | 0              | 50             |
| 95/12/19                   | 3                    | 2,137       | 1,319            | 1,350          | 3,660          |
| 95/12/27                   | 3                    | 8,527       | 3,102            | 5,255          | 11,426         |
| 96/01/04                   | 3                    | 336.3       | 311.7            | 116            | 693            |
| 95/01/10                   | 3                    | 1,230       | 723.2            | 497            | 1,943          |
| 96/01/17                   | 3                    | 4,031       | 548.4            | 3,627          | 4,655          |
| <b><i>Diving Ducks</i></b> |                      |             |                  |                |                |
| 95/10/18                   | 3                    | 2.667       | 4.619            | 0              | 8              |
| 95/10/24                   | 3                    | 0           | 0                | 0              | 0              |
| 95/10/31                   | 3                    | 11.33       | 19.63            | 0              | 34             |
| 95/11/09                   | 3                    | 0           | 0                | 0              | 0              |
| 95/11/14                   | 3                    | 67.67       | 117.2            | 0              | 203            |
| 95/11/21                   | 3                    | 333.3       | 288.7            | 0              | 500            |
| 95/11/29                   | 3                    | 0           | 0                | 0              | 0              |
| 95/12/06                   | 3                    | 133.67      | 231.5            | 0              | 401            |
| 95/12/13                   | 3                    | 0           | 0                | 0              | 0              |
| 95/12/19                   | 3                    | 67.33       | 116.6            | 0              | 202            |
| 95/12/27                   | 3                    | 0           | 0                | 0              | 0              |
| 96/01/04                   | 3                    | 0           | 0                | 0              | 0              |
| 95/01/10                   | 3                    | .66667      | 1.155            | 0              | 2              |
| 96/01/17                   | 3                    | 16.67       | 28.87            | 0              | 50             |
| <b><i>Total Ducks</i></b>  |                      |             |                  |                |                |
| 95/10/18                   | 3                    | 11,042      | 6,459            | 4,927          | 17,798         |
| 95/10/24                   | 3                    | 3,003       | 266.5            | 2,700          | 3,200          |
| 95/10/31                   | 3                    | 4,120       | 3,171            | 459            | 6,000          |
| 95/11/09                   | 3                    | 21.67       | 25.66            | 0              | 50             |
| 95/11/14                   | 3                    | 4,649       | 3,598            | 2,500          | 8,803          |
| 95/11/21                   | 3                    | 7,901       | 7,729            | 3,377          | 16,825         |
| 95/11/29                   | 3                    | 68          | 114.3            | 0              | 200            |
| 95/12/06                   | 3                    | 5,700       | 1,473            | 4,101          | 7,000          |
| 95/12/13                   | 3                    | 20          | 26.46            | 0              | 50             |
| 95/12/19                   | 3                    | 2,204       | 1,263            | 1,400          | 3,660          |
| 95/12/27                   | 3                    | 8,527       | 3,102            | 5,255          | 11,426         |
| 96/01/04                   | 3                    | 336.3       | 311.7            | 116            | 693            |
| 95/01/10                   | 3                    | 1,231       | 723.2            | 497            | 1,943          |
| 96/01/17                   | 3                    | 4,047       | 539.0            | 3,627          | 4,655          |

| <b>Date</b>               | <b>No. of Counts</b> | <b>Mean</b> | <b>Std. Dev.</b> | <b>Minimum</b> | <b>Maximum</b> |
|---------------------------|----------------------|-------------|------------------|----------------|----------------|
| <b><i>Snow Geese</i></b>  |                      |             |                  |                |                |
| 95/10/18                  | 3                    | 4,333       | 763.8            | 3,500          | 5,000          |
| 95/10/24                  | 3                    | 0           | 0                | 0              | 0              |
| 95/10/31                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/09                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/14                  | 3                    | 25          | 43.30            | 0              | 75             |
| 95/11/21                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/29                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/06                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/13                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/19                  | 3                    | 1,500       | 500              | 1,000          | 2,000          |
| 95/12/27                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/04                  | 3                    | 0           | 0                | 0              | 0              |
| 95/01/10                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/17                  | 3                    | 0           | 0                | 0              | 0              |
| <b><i>Total Geese</i></b> |                      |             |                  |                |                |
| 95/10/18                  | 3                    | 4,333       | 763.8            | 3,500          | 5,000          |
| 95/10/24                  | 3                    | 0           | 0                | 0              | 0              |
| 95/10/31                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/09                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/14                  | 3                    | 25          | 43.30            | 0              | 75             |
| 95/11/21                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/29                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/06                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/13                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/19                  | 3                    | 1,500       | 500              | 1,000          | 2,000          |
| 95/12/27                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/04                  | 3                    | 0           | 0                | 0              | 0              |
| 95/01/10                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/17                  | 3                    | 0           | 0                | 0              | 0              |
| <b><i>Total Swans</i></b> |                      |             |                  |                |                |
| 95/10/18                  | 3                    | 0           | 0                | 0              | 0              |
| 95/10/24                  | 3                    | 0           | 0                | 0              | 0              |
| 95/10/31                  | 3                    | 30          | 27.84            | 0              | 55             |
| 95/11/09                  | 3                    | 35          | 4.359            | 32             | 40             |
| 95/11/14                  | 3                    | 11.67       | 3.055            | 9              | 15             |
| 95/11/21                  | 3                    | 98.33       | 21.08            | 75             | 116            |
| 95/11/29                  | 3                    | 4.333       | 3.055            | 1              | 7              |
| 95/12/06                  | 3                    | 82.33       | 16.50            | 64             | 96             |
| 95/12/13                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/19                  | 3                    | .3333       | .5774            | 0              | 1              |
| 95/12/27                  | 3                    | .3333       | .5774            | 0              | 1              |
| 96/01/04                  | 3                    | 7           | 0                | 7              | 7              |
| 95/01/10                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/17                  | 3                    | 270         | 86.38            | 210            | 369            |



| <u>Date</u>       | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|-------------------|----------------------|-------------|------------------|----------------|----------------|
| <b>Waterfowl</b>  |                      |             |                  |                |                |
| 95/10/18          | 3                    | 15,375      | 7,197            | 8,427          | 22,798         |
| 95/10/24          | 3                    | 3,003       | 266.5            | 2,700          | 3,200          |
| 95/10/31          | 3                    | 4,150       | 3,196            | 459            | 6,035          |
| 95/11/09          | 3                    | 56.67       | 24.54            | 33             | 82             |
| 95/11/14          | 3                    | 4,686       | 3,639            | 2,515          | 8,887          |
| 95/11/21          | 3                    | 7,999       | 7,709            | 3,481          | 16,900         |
| 95/11/29          | 3                    | 72.33       | 111.5            | 5              | 201            |
| 95/12/06          | 3                    | 5,783       | 1,458            | 4,197          | 7,064          |
| 95/12/13          | 3                    | 20          | 26.46            | 0              | 50             |
| 95/12/19          | 3                    | 3,704       | 1,725            | 2,401          | 5,660          |
| 95/12/27          | 3                    | 8,527       | 3,103            | 5,255          | 11,427         |
| 96/01/04          | 3                    | 343.3       | 311.7            | 123            | 700            |
| 95/01/10          | 3                    | 1,231       | 723.2            | 497            | 1,943          |
| 96/01/17          | 3                    | 4,317       | 621.1            | 3,858          | 5,024          |
| <b>Shorebirds</b> |                      |             |                  |                |                |
| 95/10/18          | 3                    | 0           | 0                | 0              | 0              |
| 95/10/24          | 3                    | 2,440       | 1,684            | 1,020          | 4,300          |
| 95/10/31          | 3                    | 0           | 0                | 0              | 0              |
| 95/11/09          | 3                    | 366.67      | 635.1            | 0              | 1,100          |
| 95/11/14          | 3                    | 3,067       | 2,686            | 0              | 5,000          |
| 95/11/21          | 3                    | 333.3       | 577.4            | 0              | 1,000          |
| 95/11/29          | 3                    | 18.33       | 27.54            | 0              | 50             |
| 95/12/06          | 3                    | 2,000       | 2,646            | 0              | 5,000          |
| 95/12/13          | 3                    | 1,001       | 1,734            | 0              | 3,003          |
| 95/12/19          | 3                    | 333.3       | 577.4            | 0              | 1,000          |
| 95/12/27          | 3                    | 2,033       | 2,627            | 0              | 5,000          |
| 96/01/04          | 3                    | 1,233       | 873.7            | 500            | 2,200          |
| 95/01/10          | 3                    | 1,501       | 500.0            | 1,000          | 2,000          |
| 96/01/17          | 3                    | 1,333       | 1,528            | 0              | 3,000          |
| <b>Gulls</b>      |                      |             |                  |                |                |
| 95/10/18          | 3                    | 89.33       | 49.41            | 44             | 142            |
| 95/10/24          | 3                    | 198.3       | 62.93            | 127            | 246            |
| 95/10/31          | 3                    | 24.33       | 27.47            | 2              | 55             |
| 95/11/09          | 3                    | 57.67       | 55.58            | 17             | 121            |
| 95/11/14          | 3                    | 84          | 83.16            | 34             | 180            |
| 95/11/21          | 3                    | 2.333       | 2.517            | 0              | 5              |
| 95/11/29          | 3                    | 64          | 8.888            | 57             | 74             |
| 95/12/06          | 3                    | 1.667       | 2.082            | 0              | 4              |
| 95/12/13          | 3                    | 13.33       | 10.26            | 2              | 22             |
| 95/12/19          | 3                    | 20          | 15               | 5              | 35             |
| 95/12/27          | 3                    | 52.33       | 85.47            | 1              | 151            |
| 96/01/04          | 3                    | 15.67       | 7.371            | 10             | 24             |
| 95/01/10          | 3                    | 13.33       | 10.60            | 2              | 23             |
| 96/01/17          | 3                    | 33.33       | 18.50            | 15             | 52             |

| <u>Date</u>                                      | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|--|----------------------|-------------|------------------|----------------|----------------|
| <b><i>Divers (loons, grebes, cormorants)</i></b> |                      |             |                  |                |                |
| 95/10/18   | 3                    | 0           | 0                | 0              | 0              |
| 95/10/24   | 3                    | 16          | 7.550            | 9              | 24             |
| 95/10/31   | 3                    | 2.667       | 2.082            | 1              | 5              |
| 95/11/09   | 3                    | 2.667       | 2.887            | 1              | 6              |
| 95/11/14   | 3                    | .6667       | .5774            | 0              | 1              |
| 95/11/21   | 3                    | 3.333       | 1.528            | 2              | 5              |
| 95/11/29   | 3                    | 8.333       | 4.163            | 5              | 13             |
| 95/12/06   | 3                    | 3.667       | 5.508            | 0              | 10             |
| 95/12/13   | 3                    | 1.333       | 1.528            | 0              | 3              |
| 95/12/19   | 3                    | 0           | 0                | 0              | 0              |
| 95/12/27   | 3                    | .3333       | .5774            | 0              | 1              |
| 96/01/04   | 3                    | 1.333       | 2.309            | 0              | 4              |
| 95/01/10   | 3                    | 1           | 1                | 0              | 2              |
| 96/01/17   | 3                    | 0           | 0                | 0              | 0              |
| <b><i>Total Birds without Shorebirds</i></b>     |                      |             |                  |                |                |
| 95/10/18   | 3                    | 15,468      | 7,212            | 8,475          | 22,881         |
| 95/10/24   | 3                    | 3,219       | 332.8            | 2,842          | 3,473          |
| 95/10/31   | 3                    | 4,184       | 3,220            | 466            | 6,070          |
| 95/11/09   | 3                    | 120         | 78.63            | 54             | 207            |
| 95/11/14   | 3                    | 4,774       | 3,599            | 2,693          | 8,930          |
| 95/11/21   | 3                    | 8,006       | 7,707            | 3,487          | 16,905         |
| 95/11/29   | 3                    | 144.67      | 106.3            | 75             | 267            |
| 95/12/06   | 3                    | 5,788       | 1,459            | 4,202          | 7,074          |
| 95/12/13   | 3                    | 34.67       | 30.53            | 5              | 66             |
| 95/12/19   | 3                    | 3,724       | 1,728            | 2,406          | 5,680          |
| 95/12/27   | 3                    | 8,581       | 3,114            | 5,258          | 11,433         |
| 96/01/04   | 3                    | 360.67      | 318.79           | 133            | 725            |
| 95/01/10   | 3                    | 1,245       | 726.56           | 513            | 1,966          |
| 96/01/17   | 3                    | 4,351       | 624.24           | 3,873          | 5,057          |
| <b><i>Total Birds</i></b>                        |                      |             |                  |                |                |
| 95/10/18   | 3                    | 15,468      | 7,212            | 8,475          | 22,881         |
| 95/10/24   | 3                    | 5,659       | 1,896            | 3,862          | 7,641          |
| 95/10/31   | 3                    | 4,184       | 3,220            | 466            | 6,070          |
| 95/11/09   | 3                    | 486.7       | 710.8            | 54             | 1,307          |
| 95/11/14   | 3                    | 7,840       | 5,218            | 2,698          | 13,130         |
| 95/11/21   | 3                    | 8,340       | 7,430            | 3,627          | 16,905         |
| 95/11/29   | 3                    | 163         | 91.15            | 97             | 267            |
| 95/12/06   | 3                    | 7,788       | 1,577            | 6,088          | 9,202          |
| 95/12/13   | 3                    | 1,036       | 1,761            | 5              | 3,069          |
| 95/12/19   | 3                    | 4,058       | 1,414            | 3,087          | 5,680          |
| 95/12/27   | 3                    | 10,614      | 3,911            | 6,358          | 14,051         |
| 96/01/04   | 3                    | 1,594       | 640.0            | 1,224          | 2,333          |
| 95/01/10   | 3                    | 2,746       | 1,073            | 1,513          | 3,468          |
| 96/01/17   | 3                    | 5,684       | 2,148            | 3,873          | 8,057          |

## ROBERTS BANK

| <u>Date</u>                | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|----------------------------|----------------------|-------------|------------------|----------------|----------------|
| <b><i>Dabblers</i></b>     |                      |             |                  |                |                |
| 95/10/18                   | 3                    | 11,336      | 2,918            | 8,500          | 14,330         |
| 95/10/24                   | 3                    | 12,360      | 2,279            | 9,770          | 14,060         |
| 95/10/31                   | 3                    | 8,371       | 2,365            | 5,900          | 10,613         |
| 95/11/09                   | 3                    | 21,358      | 2,684            | 18,300         | 23,325         |
| 95/11/14                   | 3                    | 29,201      | 3,536            | 26,203         | 33,100         |
| 95/11/21                   | 3                    | 35,140      | 4,072            | 30,700         | 38,700         |
| 95/11/29                   | 3                    | 21,997      | 3,247            | 19,640         | 25,700         |
| 95/12/06                   | 3                    | 8,417       | 941.2            | 7,800          | 9,500          |
| 95/12/13                   | 3                    | 15,870      | 3,575            | 11,800         | 18,505         |
| 95/12/19                   | 3                    | 18,475      | 8,396            | 8,930          | 24,720         |
| 95/12/27                   | 3                    | 22,676      | 4,830            | 19,313         | 28,210         |
| 96/01/04                   | 3                    | 15,945      | 3,296            | 13,200         | 19,600         |
| 95/01/10                   | 3                    | 13,621      | 2,916            | 11,203         | 16,860         |
| 96/01/17                   | 3                    | 9,400       | 1,417            | 8,100          | 10,910         |
| <b><i>Diving Ducks</i></b> |                      |             |                  |                |                |
| 95/10/18                   | 3                    | 133.3333    | 230.9            | 0              | 400            |
| 95/10/24                   | 3                    | 0           | 0                | 0              | 0              |
| 95/10/31                   | 3                    | 19          | 24.76            | 0              | 47             |
| 95/11/09                   | 3                    | 273.3       | 200.3            | 120            | 500            |
| 95/11/14                   | 3                    | 250         | 278.4            | 0              | 550            |
| 95/11/21                   | 3                    | 372.3       | 116.1            | 269            | 498            |
| 95/11/29                   | 3                    | 301.7       | 203.0            | 99             | 505            |
| 95/12/06                   | 3                    | 275         | 265.1            | 5              | 535            |
| 95/12/13                   | 3                    | 292.3       | 160.7            | 111            | 417            |
| 95/12/19                   | 3                    | 284         | 170.7            | 181            | 481            |
| 95/12/27                   | 3                    | 92.33       | 101.0            | 10             | 205            |
| 96/01/04                   | 3                    | 300.7       | 148.5            | 163            | 458            |
| 95/01/10                   | 3                    | 67          | 33.78            | 47             | 106            |
| 96/01/17                   | 3                    | 599.3       | 793.0            | 139            | 1,515          |
| <b><i>Total Ducks</i></b>  |                      |             |                  |                |                |
| 95/10/18                   | 3                    | 11,470      | 3,125            | 8,500          | 14,730         |
| 95/10/24                   | 3                    | 12,360      | 2,279            | 9,770          | 14,060         |
| 95/10/31                   | 3                    | 8,390       | 2,382            | 5,910          | 10,660         |
| 95/11/09                   | 3                    | 21,632      | 2,796            | 18,420         | 23,525         |
| 95/11/14                   | 3                    | 29,451      | 3,758            | 26,403         | 33,650         |
| 95/11/21                   | 3                    | 35,512      | 4,181            | 30,969         | 39,198         |
| 95/11/29                   | 3                    | 22,298      | 3,284            | 19,739         | 26,001         |
| 95/12/06                   | 3                    | 8,692       | 1,006            | 7,805          | 9,785          |
| 95/12/13                   | 3                    | 16,162      | 3,736            | 11,911         | 18,922         |
| 95/12/19                   | 3                    | 18,759      | 8,504            | 9,120          | 25,201         |
| 95/12/27                   | 3                    | 22,768      | 4,817            | 19,323         | 28,272         |
| 96/01/04                   | 3                    | 16,246      | 3,157            | 13,658         | 19,763         |
| 95/01/10                   | 3                    | 13,688      | 2,893            | 11,309         | 16,908         |
| 96/01/17                   | 3                    | 9,999       | 1,530            | 8,244          | 11,049         |

| <u>Date</u>               | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|---------------------------|----------------------|-------------|------------------|----------------|----------------|
| <b><i>Snow Geese</i></b>  |                      |             |                  |                |                |
| 95/10/18                  | 3                    | 0           | 0                | 0              | 0              |
| 95/10/24                  | 3                    | 0           | 0                | 0              | 0              |
| 95/10/31                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/09                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/14                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/21                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/29                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/06                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/13                  | 3                    | .6667       | 1.155            | 0              | 2              |
| 95/12/19                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/27                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/04                  | 3                    | 0           | 0                | 0              | 0              |
| 95/01/10                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/17                  | 3                    | 0           | 0                | 0              | 0              |
| <b><i>Total Geese</i></b> |                      |             |                  |                |                |
| 95/10/18                  | 3                    | 4           | 6.928            | 0              | 12             |
| 95/10/24                  | 3                    | 0           | 0                | 0              | 0              |
| 95/10/31                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/09                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/14                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/21                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/29                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/06                  | 3                    | 7.333       | 11.02            | 0              | 20             |
| 95/12/13                  | 3                    | 51.33       | 12.50            | 37             | 60             |
| 95/12/19                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/27                  | 3                    | 1.333       | 2.309            | 0              | 4              |
| 96/01/04                  | 3                    | 43.33       | 51.32            | 0              | 100            |
| 95/01/10                  | 3                    | 5           | 8.660            | 0              | 15             |
| 96/01/17                  | 3                    | 0           | 0                | 0              | 0              |
| <b><i>Total Swans</i></b> |                      |             |                  |                |                |
| 95/10/18                  | 3                    | 0           | 0                | 0              | 0              |
| 95/10/24                  | 3                    | 0           | 0                | 0              | 0              |
| 95/10/31                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/09                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/14                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/21                  | 3                    | 0           | 0                | 0              | 0              |
| 95/11/29                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/06                  | 3                    | .6667       | 1.155            | 0              | 2              |
| 95/12/13                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/19                  | 3                    | 0           | 0                | 0              | 0              |
| 95/12/27                  | 3                    | .3333       | .5774            | 0              | 1              |
| 96/01/04                  | 3                    | 0           | 0                | 0              | 0              |
| 95/01/10                  | 3                    | 0           | 0                | 0              | 0              |
| 96/01/17                  | 3                    | 0           | 0                | 0              | 0              |

| <u>Date</u>              | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|--------------------------|----------------------|-------------|------------------|----------------|----------------|
| <b><i>Waterfowl</i></b>  |                      |             |                  |                |                |
| 95/10/18                 | 3                    | 11,474      | 3,131            | 8,500          | 14,742         |
| 95/10/24                 | 3                    | 12,360      | 2,279            | 9,770          | 14,060         |
| 95/10/31                 | 3                    | 8,390       | 2,382            | 5,910          | 10,660         |
| 95/11/09                 | 3                    | 21,632      | 2,796            | 18,420         | 23,525         |
| 95/11/14                 | 3                    | 29,451      | 3,758            | 26,403         | 33,650         |
| 95/11/21                 | 3                    | 35,512      | 4,181            | 30,969         | 39,198         |
| 95/11/29                 | 3                    | 22,298      | 3,284            | 19,739         | 26,001         |
| 95/12/06                 | 3                    | 8,700       | 1,016            | 7,807          | 9,805          |
| 95/12/13                 | 3                    | 16,213      | 3,727            | 11,971         | 18,959         |
| 95/12/19                 | 3                    | 18,759      | 8,504            | 9,120          | 25,201         |
| 95/12/27                 | 3                    | 22,770      | 4,820            | 19,323         | 28,277         |
| 96/01/04                 | 3                    | 16,289      | 3,112            | 13,758         | 19,763         |
| 95/01/10                 | 3                    | 13,693      | 2,901            | 11,309         | 16,923         |
| 96/01/17                 | 3                    | 9,999       | 1,530            | 8,244          | 11,049         |
| <b><i>Shorebirds</i></b> |                      |             |                  |                |                |
| 95/10/18                 | 3                    | 0           | 0                | 0              | 0              |
| 95/10/24                 | 3                    | 70          | 112.7            | 0              | 200            |
| 95/10/31                 | 3                    | 0           | 0                | 0              | 0              |
| 95/11/09                 | 3                    | 85          | 102.1            | 5              | 200            |
| 95/11/14                 | 3                    | 0           | 0                | 0              | 0              |
| 95/11/21                 | 3                    | 0           | 0                | 0              | 0              |
| 95/11/29                 | 3                    | 0           | 0                | 0              | 0              |
| 95/12/06                 | 3                    | 0           | 0                | 0              | 0              |
| 95/12/13                 | 3                    | 0           | 0                | 0              | 0              |
| 95/12/19                 | 3                    | 666.7       | 577.4            | 0              | 1,000          |
| 95/12/27                 | 3                    | 33.33       | 57.74            | 0              | 100            |
| 96/01/04                 | 3                    | 900         | 360.6            | 500            | 1,200          |
| 95/01/10                 | 3                    | 200         | 264.6            | 0              | 500            |
| 96/01/17                 | 3                    | 2,090       | 2,686            | 120            | 5,150          |
| <b><i>Gulls</i></b>      |                      |             |                  |                |                |
| 95/10/18                 | 3                    | 47.33       | 10.97            | 35             | 56             |
| 95/10/24                 | 3                    | 76          | 15.52            | 60             | 91             |
| 95/10/31                 | 3                    | 0           | 0                | 0              | 0              |
| 95/11/09                 | 3                    | 41          | 31.95            | 5              | 66             |
| 95/11/14                 | 3                    | .6667       | 1.155            | 0              | 2              |
| 95/11/21                 | 3                    | .6667       | .5774            | 0              | 1              |
| 95/11/29                 | 3                    | 47          | 43.31            | 1              | 87             |
| 95/12/06                 | 3                    | 175         | 287.6            | 3              | 507            |
| 95/12/13                 | 3                    | 5.667       | 8.144            | 0              | 15             |
| 95/12/19                 | 3                    | 38          | 29.51            | 4              | 57             |
| 95/12/27                 | 3                    | .6667       | .5774            | 0              | 1              |
| 96/01/04                 | 3                    | 9.333       | 6.110            | 4              | 16             |
| 95/01/10                 | 3                    | 13          | 19.16            | 0              | 35             |
| 96/01/17                 | 3                    | 56.67       | 40.43            | 10             | 81             |

| <u>Date</u>                                      | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|--|----------------------|-------------|------------------|----------------|----------------|
| <b><i>Divers (loons, grebes, cormorants)</i></b> |                      |             |                  |                |                |
| 95/10/18   | 3                    | 67.33       | 114.9            | 1              | 200            |
| 95/10/24   | 3                    | 0           | 0                | 0              | 0              |
| 95/10/31   | 3                    | 4           | 3.464            | 0              | 6              |
| 95/11/09   | 3                    | 4.667       | 3.215            | 1              | 7              |
| 95/11/14   | 3                    | 6.667       | 4.726            | 3              | 12             |
| 95/11/21   | 3                    | .3333       | .5774            | 0              | 1              |
| 95/11/29   | 3                    | 4           | 3                | 1              | 7              |
| 95/12/06   | 3                    | 1           | 1                | 0              | 2              |
| 95/12/13   | 3                    | 2.333       | 2.082            | 0              | 4              |
| 95/12/19   | 3                    | 2           | 1.732            | 0              | 3              |
| 95/12/27   | 3                    | 3.667       | 5.508            | 0              | 10             |
| 96/01/04   | 3                    | 2           | 1                | 1              | 3              |
| 95/01/10   | 3                    | .6667       | 1.155            | 0              | 2              |
| 96/01/17   | 3                    | 67.33       | 114.9            | 0              | 200            |
| <b><i>Total Birds without Shorebirds</i></b>     |                      |             |                  |                |                |
| 95/10/18   | 3                    | 11,599      | 3,042            | 8,762          | 14,812         |
| 95/10/24   | 3                    | 12,438      | 2,292            | 9,832          | 14,140         |
| 95/10/31   | 3                    | 8,396       | 2,380            | 5,920          | 10,667         |
| 95/11/09   | 3                    | 21,677      | 2,793            | 18,473         | 23,598         |
| 95/11/14   | 3                    | 29,471      | 3,754            | 26,421         | 33,664         |
| 95/11/21   | 3                    | 35,514      | 4,182            | 30,969         | 39,200         |
| 95/11/29   | 3                    | 22,349      | 3,296            | 19,744         | 26,055         |
| 95/12/06   | 3                    | 8,876       | 1,289            | 7,824          | 10,313         |
| 95/12/13   | 3                    | 16,221      | 3,733            | 11,973         | 18,977         |
| 95/12/19   | 3                    | 18,799      | 8,488            | 9,173          | 25,208         |
| 95/12/27   | 3                    | 22,774      | 4,817            | 19,334         | 28,279         |
| 96/01/04   | 3                    | 16,300      | 3,112            | 13,763         | 19,773         |
| 95/01/10   | 3                    | 13,707      | 2,899            | 11,309         | 16,929         |
| 96/01/17   | 3                    | 10123       | 1640             | 8256           | 11330          |
| <b><i>TOTAL BIRDS</i></b>                        |                      |             |                  |                |                |
| 95/10/18   | 3                    | 11,599      | 3,042            | 8,762          | 14,812         |
| 95/10/24   | 3                    | 12,508      | 2,362            | 9,842          | 14,340         |
| 95/10/31   | 3                    | 8,396       | 2,380            | 5,920          | 10,667         |
| 95/11/09   | 3                    | 21,762      | 2,814            | 18,523         | 23,603         |
| 95/11/14   | 3                    | 29,471      | 3,754            | 26,421         | 33,664         |
| 95/11/21   | 3                    | 35,514      | 4,182            | 30,969         | 39,200         |
| 95/11/29   | 3                    | 22,349      | 3,296            | 19,744         | 26,055         |
| 95/12/06   | 3                    | 8,876       | 1,289            | 7,824          | 10,313         |
| 95/12/13   | 3                    | 16,221      | 3,733            | 11,973         | 18,977         |
| 95/12/19   | 3                    | 19,466      | 8,122            | 10,173         | 25,208         |
| 95/12/27   | 3                    | 22,807      | 4,796            | 19,334         | 28,279         |
| 96/01/04   | 3                    | 17,200      | 2,809            | 14,763         | 20,273         |
| 95/01/10   | 3                    | 13,907      | 2,797            | 11,409         | 16,929         |
| 96/01/17   | 3                    | 12,213      | 3,780            | 8,376          | 15,934         |

## APPENDIX 2

**Monthly summaries of numbers of birds seen by species groups,  
on each transect, for each survey during 1995-96 aerial census.**

### BOUNDARY BAY

| <u>Date</u>                  | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|------------------------------|----------------------|-------------|------------------|----------------|----------------|
| <i><b>Dabbling Ducks</b></i> |                      |             |                  |                |                |
| Oct/95                       | 3                    | 56,377      | 6,372            | 50,785         | 63,314         |
| Nov/95                       | 4                    | 76,005      | 23,902           | 57,205         | 111,032        |
| Dec/95                       | 4                    | 53,272      | 5,319            | 49,632         | 61,180         |
| Jan/95                       | 3                    | 35,064      | 3,216            | 31,392         | 37,377         |
| <i><b>Diving Ducks</b></i>   |                      |             |                  |                |                |
| Oct/95                       | 3                    | 1,449       | 1,037            | 567            | 2,591          |
| Nov/95                       | 4                    | 3,027       | 853.9            | 2,139          | 3,825          |
| Dec/95                       | 4                    | 2,037       | 798.9            | 1,032          | 2,904          |
| Jan/95                       | 3                    | 2,218       | 1,169            | 1,460          | 3,564          |
| <i><b>Total Ducks</b></i>    |                      |             |                  |                |                |
| Oct/95                       | 3                    | 57,826      | 7,227            | 51,973         | 65,905         |
| Nov/95                       | 4                    | 790,323     | 23,703           | 59,344         | 113,488        |
| Dec/95                       | 4                    | 55,309      | 4,733            | 51,470         | 62,211         |
| Jan/95                       | 3                    | 37,282      | 3,734            | 33,022         | 39,987         |
| <i><b>Snow Goose</b></i>     |                      |             |                  |                |                |
| Oct/95                       | 3                    | 0           | 0                | 0              | 0              |
| Nov/95                       | 4                    | 0           | 0                | 0              | 0              |
| Dec/95                       | 4                    | 0           | 0                | 0              | 0              |
| Jan/95                       | 3                    | 0           | 0                | 0              | 0              |
| <i><b>Total Geese</b></i>    |                      |             |                  |                |                |
| Oct/95                       | 3                    | 45.22       | 45.29            | 9              | 96             |
| Nov/95                       | 4                    | 23.59       | 22.70            | 7.67           | 56.67          |
| Dec/95                       | 4                    | 44.75       | 47.73            | 3.33           | 107            |
| Jan/95                       | 3                    | 126.89      | 210.6            | 3.33           | 370            |
| <i><b>Total Swans</b></i>    |                      |             |                  |                |                |
| Oct/95                       | 3                    | 0           | 0                | 0              | 0              |
| Nov/95                       | 4                    | 0           | 0                | 0              | 0              |
| Dec/95                       | 4                    | .8325       | .9994            | 0              | 2              |
| Jan/95                       | 3                    | .7767       | 1.345            | 0              | 2.33           |

| <u>Date</u> | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|-------------|----------------------|-------------|------------------|----------------|----------------|
|-------------|----------------------|-------------|------------------|----------------|----------------|

***Waterfowl***

|        |   |        |        |        |         |
|--------|---|--------|--------|--------|---------|
| Oct/95 | 3 | 57,871 | 7,205  | 52,004 | 65,914  |
| Nov/95 | 4 | 79,055 | 23,688 | 59,400 | 113,495 |
| Dec/95 | 4 | 55,355 | 4,705  | 51,527 | 62,215  |
| Jan/95 | 3 | 37,410 | 3,871  | 33,026 | 40,357  |

***Shorebirds***

|        |   |        |       |        |        |
|--------|---|--------|-------|--------|--------|
| Oct/95 | 3 | 5,293  | 5,788 | 1,313  | 11,933 |
| Nov/95 | 4 | 10,351 | 9,531 | 3,333  | 24,133 |
| Dec/95 | 4 | 10,002 | 1,939 | 7,517  | 12,247 |
| Jan/95 | 3 | 15,398 | 4,048 | 11,324 | 19,420 |

***Gulls***

|        |   |       |       |       |       |
|--------|---|-------|-------|-------|-------|
| Oct/95 | 3 | 4,226 | 2,102 | 2,481 | 6,559 |
| Nov/95 | 4 | 667   | 548.6 | 74    | 1,402 |
| Dec/95 | 4 | 1,234 | 1,011 | 49    | 2,259 |
| Jan/95 | 3 | 825   | 794.5 | 358   | 1,743 |

***Divers (loons, grebes, cormorants)***

|        |   |       |       |       |       |
|--------|---|-------|-------|-------|-------|
| Oct/95 | 3 | 9.78  | 3.006 | 6.67  | 12.67 |
| Nov/95 | 4 | 35.75 | 12.24 | 22.33 | 49    |
| Dec/95 | 4 | 32.00 | 13.83 | 17.67 | 44.67 |
| Jan/95 | 3 | 19.67 | 7.962 | 12.67 | 28.33 |

***Total Birds without Shorebirds***

|        |   |         |        |        |         |
|--------|---|---------|--------|--------|---------|
| Oct/95 | 3 | 62,133  | 90,685 | 55,666 | 72,498  |
| Nov/95 | 4 | 79,768  | 23,365 | 60,055 | 113,616 |
| Dec/95 | 4 | 566,256 | 5,262  | 52,317 | 64,108  |
| Jan/95 | 3 | 38,255  | 4,179  | 33,430 | 40,733  |

***Total Birds***

|        |   |        |        |        |         |
|--------|---|--------|--------|--------|---------|
| Oct/95 | 3 | 67,426 | 6,473  | 60,868 | 73,810  |
| Nov/95 | 4 | 90,119 | 22,979 | 63,388 | 118,299 |
| Dec/95 | 4 | 66,627 | 7,053  | 59,834 | 76,354  |
| Jan/95 | 3 | 53,653 | 5,832  | 48,880 | 60,153  |

**FRASER RIVER FORESHORE**  
(all transects combined)

***Dabbling Ducks***

|        |   |        |        |        |        |
|--------|---|--------|--------|--------|--------|
| Oct/95 | 3 | 25,370 | 7,718  | 17,320 | 32,707 |
| Nov/95 | 4 | 40,872 | 15,803 | 24,884 | 57,936 |
| Dec/95 | 4 | 32,259 | 6,949  | 24,727 | 41,150 |
| Jan/95 | 3 | 21,477 | 1,045  | 20,381 | 22,461 |



| <u>Date</u>                | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|----------------------------|----------------------|-------------|------------------|----------------|----------------|
| <b><i>Diving Ducks</i></b> |                      |             |                  |                |                |
| Oct/95                     | 3                    | 417.0       | 209.2            | 268.7          | 656.3          |
| Nov/95                     | 4                    | 621.4       | 275.1            | 387.7          | 938.3          |
| Dec/95                     | 4                    | 924.8       | 178.5            | 726.7          | 1,083          |
| Jan/95                     | 3                    | 3,038       | 1,990            | 741            | 4,215          |
| <b><i>Total Ducks</i></b>  |                      |             |                  |                |                |
| Oct/95                     | 3                    | 25,787      | 7,766            | 17,588         | 33,033         |
| Nov/95                     | 4                    | 41,493      | 16,075           | 25,272         | 58,874         |
| Dec/95                     | 4                    | 33,184      | 7,089            | 25,548         | 42,233         |
| Jan/95                     | 3                    | 24,515      | 2,975            | 21,122         | 26,676         |
| <b><i>Snow Goose</i></b>   |                      |             |                  |                |                |
| Oct/95                     | 3                    | 11,001      | 5,804            | 5,025          | 16,615         |
| Nov/95                     | 4                    | 11,692      | 818.4            | 11,220         | 12,914         |
| Dec/95                     | 4                    | 6,879       | 3,886            | 1,880          | 11,196         |
| Jan/95                     | 3                    | 2,024       | 657.0            | 1,267          | 2,442          |
| <b><i>Total Geese</i></b>  |                      |             |                  |                |                |
| Oct/95                     | 3                    | 11,014      | 5,809            | 5,029          | 16,629         |
| Nov/95                     | 4                    | 11,725      | 824.3            | 11,242         | 12,956         |
| Dec/95                     | 4                    | 6,901       | 3,900            | 1,885          | 11,226         |
| Jan/95                     | 3                    | 2,040       | 670.1            | 1,267          | 2,447          |
| <b><i>Total Swans</i></b>  |                      |             |                  |                |                |
| Oct/95                     | 3                    | 12.87       | 22.32            | 0              | 38.66          |
| Nov/95                     | 4                    | 79.33       | 40.35            | 55             | 139.7          |
| Dec/95                     | 4                    | 77.25       | 47.41            | 25.66          | 140            |
| Jan/95                     | 3                    | 267.4       | 324.0            | 62             | 644.0          |
| <b><i>Waterfowl</i></b>    |                      |             |                  |                |                |
| Oct/95                     | 3                    | 36,813      | 12,272           | 22,656         | 44,416         |
| Nov/95                     | 4                    | 53,297      | 16,683           | 36,748         | 71,970         |
| Dec/95                     | 4                    | 40,162      | 4,495            | 33,735         | 44,195         |
| Jan/95                     | 3                    | 26,823      | 2,871            | 23,628         | 29,185         |
| <b><i>Shorebirds</i></b>   |                      |             |                  |                |                |
| Oct/95                     | 3                    | 845         | 1,464            | 0              | 2,535          |
| Nov/95                     | 4                    | 1,233       | 1,604            | 85             | 3,600          |
| Dec/95                     | 4                    | 2,004       | 1,164            | 1,008          | 3,300          |
| Jan/95                     | 3                    | 2,870       | 843.1            | 2,171          | 3,807          |
| <b><i>Gulls</i></b>        |                      |             |                  |                |                |
| Oct/95                     | 3                    | 305.8       | 269.2            | 26.99          | 564.3          |
| Nov/95                     | 4                    | 464.4       | 533.8            | 56             | 1,234          |
| Dec/95                     | 4                    | 219.7       | 106.8            | 67.34          | 312.7          |
| Jan/95                     | 3                    | 105.8       | 87.79            | 37             | 204.7          |

| <u>Date</u> | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|-------------|----------------------|-------------|------------------|----------------|----------------|
|-------------|----------------------|-------------|------------------|----------------|----------------|

***Divers (loons, grebes, cormorants)***

|        |   |       |       |       |       |
|--------|---|-------|-------|-------|-------|
| Oct/95 | 3 | 67.67 | 45.80 | 24    | 115.3 |
| Nov/95 | 4 | 42.75 | 20.76 | 20.99 | 71    |
| Dec/95 | 4 | 17.34 | 5.061 | 11.32 | 23.67 |
| Jan/95 | 3 | 38.83 | 40.59 | 6.34  | 84.33 |

***Total Birds without Shorebirds***

|        |   |        |        |        |        |
|--------|---|--------|--------|--------|--------|
| Oct/95 | 3 | 37,207 | 12,549 | 22,724 | 44,890 |
| Nov/95 | 4 | 53,814 | 16,773 | 37,202 | 72,052 |
| Dec/95 | 4 | 40,401 | 4,600  | 33,814 | 44,493 |
| Jan/95 | 3 | 26,968 | 2,876  | 23,731 | 29,229 |

**TOTAL BIRDS**

|        |   |        |        |        |        |
|--------|---|--------|--------|--------|--------|
| Oct/95 | 3 | 38,051 | 13,299 | 22,724 | 46,537 |
| Nov/95 | 4 | 55,047 | 17,654 | 37,664 | 72,836 |
| Dec/95 | 4 | 42,406 | 5,514  | 34,848 | 47,793 |
| Jan/95 | 3 | 29,839 | 3,014  | 26,365 | 31,751 |

**SEA ISLAND**

***Dabbling Ducks***

|        |   |       |       |       |       |
|--------|---|-------|-------|-------|-------|
| Oct/95 | 3 | 1,838 | 1,112 | 623.3 | 2,807 |
| Nov/95 | 4 | 509.2 | 217.1 | 241.7 | 745.7 |
| Dec/95 | 4 | 1,068 | 382.6 | 621.7 | 1,556 |
| Jan/95 | 3 | 758.9 | 331.1 | 376.7 | 952.7 |

***Diving Ducks***

|        |   |       |        |       |       |
|--------|---|-------|--------|-------|-------|
| Oct/95 | 3 | 118.6 | 44.51  | 88.33 | 169.7 |
| Nov/95 | 4 | 52.92 | 34.26  | 1.67  | 72.67 |
| Dec/95 | 4 | 495.8 | 298.68 | 251.3 | 906.7 |
| Jan/95 | 3 | 2,676 | 2,037  | 350   | 4,142 |

***Total Ducks***

|        |   |       |       |       |       |
|--------|---|-------|-------|-------|-------|
| Oct/95 | 3 | 1,956 | 1,143 | 721   | 2,976 |
| Nov/95 | 4 | 562.1 | 228.9 | 308.3 | 818.3 |
| Dec/95 | 4 | 1,563 | 239.3 | 1,274 | 1,856 |
| Jan/95 | 3 | 3,435 | 1,943 | 1,298 | 5,095 |

***Snow Goose***

|        |   |        |       |       |       |
|--------|---|--------|-------|-------|-------|
| Oct/95 | 3 | 781.7  | 633.4 | 303.3 | 1,500 |
| Nov/95 | 4 | 526.95 | 414.6 | 75    | 1,028 |
| Dec/95 | 4 | .3325  | .665  | 0     | 1.33  |
| Jan/95 | 3 | 0      | 0     | 0     | 0     |

| <b>Date</b>                               | <b>No. of Counts</b> | <b>Mean</b> | <b>Std. Dev.</b> | <b>Minimum</b> | <b>Maximum</b> |
|---|----------------------|-------------|------------------|----------------|----------------|
| <b>Total Geese</b>                        |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 785.1       | 629.5            | 313.7          | 1,500          |
| Nov/95                                    | 4                    | 555.5       | 438.4            | 75             | 1,088          |
| Dec/95                                    | 4                    | 5.748       | 7.228            | 0              | 16.33          |
| Jan/95                                    | 3                    | 0           | 0                | 0              | 0              |
| <b>Total Swans</b>                        |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 1.11        | 1.923            | 0              | 3.33           |
| Nov/95                                    | 4                    | 3.665       | 6.474            | 0              | 13.33          |
| Dec/95                                    | 4                    | 1.75        | 2.513            | 0              | 5.33           |
| Jan/95                                    | 3                    | 3.553       | 2.546            | 1.33           | 6.33           |
| <b>Waterfowl</b>                          |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 2,742       | 1,293            | 1,266          | 3,671          |
| Nov/95                                    | 4                    | 1,121       | 282.8            | 893.3          | 1,534          |
| Dec/95                                    | 4                    | 1,571       | 244.6            | 1,277          | 1,873          |
| Jan/95                                    | 3                    | 3,438       | 1,943            | 1,301          | 5,096          |
| <b>Shorebirds</b>                         |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 0           | 0                | 0              | 0              |
| Nov/95                                    | 4                    | 260.8       | 261.2            | 10             | 533.3          |
| Dec/95                                    | 4                    | 479.2       | 571.1            | 8.33           | 1,200          |
| Jan/95                                    | 3                    | 288.9       | 258.9            | 0              | 500            |
| <b>Gulls</b>                              |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 27.89       | 30.71            | .33            | 61             |
| Nov/95                                    | 4                    | 45.25       | 50.58            | .67            | 103.7          |
| Dec/95                                    | 4                    | 23.42       | 21.99            | 3              | 52.67          |
| Jan/95                                    | 3                    | 6.11        | 6.195            | 1              | 13             |
| <b>Divers (loons, grebes, cormorants)</b> |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 3.223       | 2.546            | 1              | 6              |
| Nov/95                                    | 4                    | 1.5         | .9653            | .33            | 2.67           |
| Dec/95                                    | 4                    | .5825       | .3212            | .33            | 1              |
| Jan/95                                    | 3                    | 2.277       | 2.749            | 0              | 5.33           |
| <b>Total Birds without Shorebirds</b>     |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 2,778       | 1,324            | 1,270          | 3,746          |
| Nov/95                                    | 4                    | 1,168       | 305.5            | 900            | 1,606          |
| Dec/95                                    | 4                    | 1,595       | 253.5            | 1,281          | 1,901          |
| Jan/95                                    | 3                    | 3,447       | 1,937            | 1,315          | 5,098          |
| <b>TOTAL BIRDS</b>                        |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 2,778       | 1,324            | 1,270          | 3,746          |
| Nov/95                                    | 4                    | 1,429       | 520.4            | 966.7          | 2,139          |
| Dec/95                                    | 4                    | 2,074       | 717.4            | 1,314          | 2,787          |
| Jan/95                                    | 3                    | 3,735       | 1,711            | 1,815          | 5,098          |

## FRASER RIVER MIDDLE ARM

(Mouth)

| <u>Date</u>                  | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|------------------------------|----------------------|-------------|------------------|----------------|----------------|
| <b><i>Dabbling Ducks</i></b> |                      |             |                  |                |                |
| Oct/95                       | 3                    | 583.6       | 753.9            | 83.33          | 1,451          |
| Nov/95                       | 4                    | 102.2       | 103.1            | 8.33           | 234            |
| Dec/95                       | 4                    | 57.17       | 51.71            | 8.33           | 103.7          |
| Jan/95                       | 3                    | 10.00       | 5.774            | 6.67           | 16.67          |
| <b><i>Diving Ducks</i></b>   |                      |             |                  |                |                |
| Oct/95                       | 3                    | 197.8       | 155.1            | 100            | 376.7          |
| Nov/95                       | 4                    | 82          | 109.4            | 7.67           | 243.7          |
| Dec/95                       | 4                    | 4.085       | 4.264            | 0              | 9.67           |
| Jan/95                       | 3                    | 0           | 0                | 0              | 0              |
| <b><i>Total Ducks</i></b>    |                      |             |                  |                |                |
| Oct/95                       | 3                    | 781.3       | 909.0            | 183.3          | 1,827          |
| Nov/95                       | 4                    | 184.3       | 118.7            | 16             | 277            |
| Dec/95                       | 4                    | 61.25       | 53.71            | 8.33           | 109.7          |
| Jan/95                       | 3                    | 10.00       | 5.774            | 6.67           | 16.67          |
| <b><i>Snow Goose</i></b>     |                      |             |                  |                |                |
| Oct/95                       | 3                    | 295.8       | 386.3            | 16.67          | 736.7          |
| Nov/95                       | 4                    | 102.5       | 150.28           | 0              | 318.3          |
| Dec/95                       | 4                    | .8325       | 1.665            | 0              | 3.33           |
| Jan/95                       | 3                    | 487.8       | 678.0            | 30             | 1,267          |
| <b><i>Total Geese</i></b>    |                      |             |                  |                |                |
| Oct/95                       | 3                    | 295.8       | 386.3            | 16.67          | 736.7          |
| Nov/95                       | 4                    | 102.5       | 150.2            | 0              | 318.3          |
| Dec/95                       | 4                    | .8325       | 1.665            | 0              | 3.33           |
| Jan/95                       | 3                    | 487.8       | 678.0            | 30             | 1,267          |
| <b><i>Total Swans</i></b>    |                      |             |                  |                |                |
| Oct/95                       | 3                    | 0           | 0                | 0              | 0              |
| Nov/95                       | 4                    | 0           | 0                | 0              | 0              |
| Dec/95                       | 4                    | .3325       | .665             | 0              | 1.33           |
| Jan/95                       | 3                    | 0           | 0                | 0              | 0              |
| <b><i>Waterfowl</i></b>      |                      |             |                  |                |                |
| Oct/95                       | 3                    | 1,077.1     | 817.1            | 350            | 1,961          |
| Nov/95                       | 4                    | 286.8       | 228.7            | 16             | 575.7          |
| Dec/95                       | 4                    | 62.42       | 54.29            | 9.67           | 113            |
| Jan/95                       | 3                    | 497.8       | 683.7            | 36.67          | 1,283          |

| <u>Date</u> | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|-------------|----------------------|-------------|------------------|----------------|----------------|
|-------------|----------------------|-------------|------------------|----------------|----------------|

***Shorebirds***

|        |   |       |       |   |       |
|--------|---|-------|-------|---|-------|
| Oct/95 | 3 | 2.777 | 4.809 | 0 | 8.33  |
| Nov/95 | 4 | 4.168 | 8.335 | 0 | 16.67 |
| Dec/95 | 4 | 0     | 0     | 0 | 0     |
| Jan/95 | 3 | 0     | 0     | 0 | 0     |

***Gulls***

|        |   |       |       |     |      |
|--------|---|-------|-------|-----|------|
| Oct/95 | 3 | 1.887 | 2.987 | 0   | 5.33 |
| Nov/95 | 4 | 18.92 | 33.39 | 2   | 69   |
| Dec/95 | 4 | 4.25  | 3.327 | .67 | 8.67 |
| Jan/95 | 3 | .8867 | .5095 | .33 | 1.33 |

***Divers (loons, grebes, cormorants)***

|        |   |       |       |     |       |
|--------|---|-------|-------|-----|-------|
| Oct/95 | 3 | 1     | .33   | .67 | 1.33  |
| Nov/95 | 4 | 9.748 | 17.73 | 0   | 36.33 |
| Dec/95 | 4 | 1.335 | 1.218 | 0   | 2.67  |
| Jan/95 | 3 | .4433 | .1963 | .33 | .67   |

***Total Birds without Shorebirds***

|        |   |       |       |       |       |
|--------|---|-------|-------|-------|-------|
| Oct/95 | 3 | 1,080 | 816.4 | 351.3 | 1,962 |
| Nov/95 | 4 | 315.4 | 233.3 | 18.33 | 579   |
| Dec/95 | 4 | 68.08 | 57.35 | 11    | 124.3 |
| Jan/95 | 3 | 499.1 | 684.3 | 37.33 | 1,285 |

***TOTAL BIRDS***

|        |   |       |       |       |       |
|--------|---|-------|-------|-------|-------|
| Oct/95 | 3 | 1,083 | 820.9 | 351.3 | 1,971 |
| Nov/95 | 4 | 319.6 | 232.7 | 18.33 | 579   |
| Dec/95 | 4 | 68.08 | 57.35 | 11    | 124.3 |
| Jan/95 | 3 | 499.1 | 684.3 | 37.33 | 1,285 |

**LULU ISLAND**

***Dabbling Ducks***

|        |   |       |       |       |       |
|--------|---|-------|-------|-------|-------|
| Oct/95 | 3 | 3,021 | 1,298 | 1,525 | 3,863 |
| Nov/95 | 4 | 538.4 | 404.3 | 261.3 | 1,139 |
| Dec/95 | 4 | 1,195 | 798.5 | 475.3 | 2,337 |
| Jan/95 | 3 | 1,379 | 284.9 | 1,100 | 1,670 |

***Diving Ducks***

|        |   |        |       |       |       |
|--------|---|--------|-------|-------|-------|
| Oct/95 | 3 | 33.667 | 57.45 | 0     | 100   |
| Nov/95 | 4 | 5.75   | 5.239 | 0     | 11.67 |
| Dec/95 | 4 | 57.25  | 79.79 | 11.33 | 176.7 |
| Jan/95 | 3 | 29     | 41.87 | 3.67  | 77.33 |

| <u>Date</u>        | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|--------------------|----------------------|-------------|------------------|----------------|----------------|
| <b>Total Ducks</b> |                      |             |                  |                |                |
| Oct/95             | 3                    | 3,054       | 1,331            | 1,526          | 3,963          |
| Nov/95             | 4                    | 544.2       | 405.3            | 273            | 1,147          |
| Dec/95             | 4                    | 1,252       | 874.7            | 492            | 2,513          |
| Jan/95             | 3                    | 1,408       | 287.5            | 1,104          | 1,676          |
| <b>Snow Goose</b>  |                      |             |                  |                |                |
| Oct/95             | 3                    | 3,584       | 1,544            | 2,267          | 5,283          |
| Nov/95             | 4                    | 3,363       | 860.3            | 2,417          | 4,467          |
| Dec/95             | 4                    | 2,154       | 402.6            | 1,770          | 2,613          |
| Jan/95             | 3                    | 1,536       | 1,331            | 0              | 2,333          |
| <b>Total Geese</b> |                      |             |                  |                |                |
| Oct/95             | 3                    | 3,588       | 1,544            | 2,270          | 5,287          |
| Nov/95             | 4                    | 3,367       | 854.2            | 2,433          | 4,467          |
| Dec/95             | 4                    | 2,155       | 403.1            | 1,770          | 2,615          |
| Jan/95             | 3                    | 1,536       | 1,331            | 0              | 2,333          |
| <b>Total Swans</b> |                      |             |                  |                |                |
| Oct/95             | 3                    | .7767       | 1.345            | 0              | 2.33           |
| Nov/95             | 4                    | 36.34       | 15.41            | 20             | 54.67          |
| Dec/95             | 4                    | 33.75       | 29.87            | 2.67           | 66.33          |
| Jan/95             | 3                    | 30.56       | 10.78            | 18.33          | 38.67          |
| <b>Waterfowl</b>   |                      |             |                  |                |                |
| Oct/95             | 3                    | 6,643       | 2,733            | 3,799          | 9,250          |
| Nov/95             | 4                    | 3,947       | 660.5            | 3,443          | 4,909          |
| Dec/95             | 4                    | 3,440       | 666.8            | 2,910          | 4,298          |
| Jan/95             | 3                    | 2,975       | 1,127            | 1,694          | 3,816          |
| <b>Shorebirds</b>  |                      |             |                  |                |                |
| Oct/95             | 3                    | 0           | 0                | 0              | 0              |
| Nov/95             | 4                    | 0           | 0                | 0              | 0              |
| Dec/95             | 4                    | 0           | 0                | 0              | 0              |
| Jan/95             | 3                    | 61.11       | 91.79            | 0              | 166.7          |
| <b>Gulls</b>       |                      |             |                  |                |                |
| Oct/95             | 3                    | 59          | 53.49            | 0              | 104.3          |
| Nov/95             | 4                    | 19.67       | 14.05            | 2.67           | 37             |
| Dec/95             | 4                    | 36.67       | 47.03            | 3              | 106.3          |
| Jan/95             | 3                    | 10.56       | 6.047            | 3.67           | 15             |
| <b>Divers</b>      |                      |             |                  |                |                |
| Oct/95             | 3                    | 1.777       | 1.954            | .33            | 4              |
| Nov/95             | 4                    | 4.165       | 3.098            | 1.33           | 8              |
| Dec/95             | 4                    | 1.418       | .9982            | .33            | 2.67           |
| Jan/95             | 3                    | 3.89        | 2.774            | 1.67           | 7              |

| <u>Date</u> | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|-------------|----------------------|-------------|------------------|----------------|----------------|
|-------------|----------------------|-------------|------------------|----------------|----------------|

***Total Birds without Shorebirds***

|        |   |       |       |       |       |
|--------|---|-------|-------|-------|-------|
| Oct/95 | 3 | 6,705 | 2,787 | 3,801 | 9,358 |
| Nov/95 | 4 | 3,973 | 676.1 | 3,464 | 4,958 |
| Dec/95 | 4 | 3,479 | 649.2 | 2,913 | 4,319 |
| Jan/95 | 3 | 2,990 | 1,126 | 1,712 | 3,838 |

***TOTAL BIRDS***

|        |   |       |       |       |       |
|--------|---|-------|-------|-------|-------|
| Oct/95 | 3 | 6,705 | 2,787 | 3,801 | 9,358 |
| Nov/95 | 4 | 3,973 | 676.1 | 3,464 | 4,958 |
| Dec/95 | 4 | 3,479 | 649.2 | 2,913 | 4,319 |
| Jan/95 | 3 | 3,051 | 1,152 | 1,729 | 3,838 |

**WESTHAM ISLAND**

***Dabbling Ducks***

|        |   |       |       |       |        |
|--------|---|-------|-------|-------|--------|
| Oct/95 | 3 | 3,188 | 1,131 | 2,475 | 4,492  |
| Nov/95 | 4 | 9,738 | 5,920 | 2,675 | 15,720 |
| Dec/95 | 4 | 9,518 | 2,480 | 7,331 | 12,996 |
| Jan/95 | 3 | 4,474 | 2,351 | 1,778 | 6,095  |

***Diving Ducks***

|        |   |        |       |      |     |
|--------|---|--------|-------|------|-----|
| Oct/95 | 3 | 11.56  | 10.75 | 1.67 | 23  |
| Nov/95 | 4 | 81.17  | 91.24 | 1    | 202 |
| Dec/95 | 4 | 81.59  | 122.3 | 1    | 261 |
| Jan/95 | 3 | 5.7767 | 6.311 | 1.33 | 13  |

***Total Ducks***

|        |   |       |       |       |        |
|--------|---|-------|-------|-------|--------|
| Oct/95 | 3 | 3,200 | 1,122 | 2,498 | 4,494  |
| Nov/95 | 4 | 9,819 | 6,000 | 2,696 | 15,922 |
| Dec/95 | 4 | 9,599 | 2,395 | 7,592 | 12,997 |
| Jan/95 | 3 | 4,480 | 2,345 | 1,791 | 6,098  |

***Snow Goose***

|        |   |       |       |       |        |
|--------|---|-------|-------|-------|--------|
| Oct/95 | 3 | 4,895 | 5,204 | 1,592 | 10,894 |
| Nov/95 | 4 | 7,695 | 1,805 | 5,700 | 10,075 |
| Dec/95 | 4 | 4,349 | 3,656 | 13.33 | 8,581  |
| Jan/95 | 3 | 0     | 0     | 0     | 0      |

***Total Geese***

|        |   |       |        |       |        |
|--------|---|-------|--------|-------|--------|
| Oct/95 | 3 | 4,899 | 5,201  | 1,602 | 10,894 |
| Nov/95 | 4 | 7,694 | 1,805  | 5,700 | 10,075 |
| Dec/95 | 4 | 4,350 | 36,581 | 13.33 | 8,588  |
| Jan/95 | 3 | 0     | 0      | 0     | 0      |

| <u>Date</u>                               | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|---|----------------------|-------------|------------------|----------------|----------------|
| <b>Total Swans</b>                        |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 1           | 1.732            | 0              | 3              |
| Nov/95                                    | 4                    | 2           | 3.567            | 0              | 7.33           |
| Dec/95                                    | 4                    | 20.42       | 22.85            | 5              | 54.33          |
| Jan/95                                    | 3                    | 141         | 178.2            | 26             | 346.3          |
| <b>Waterfowl</b>                          |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 8,100       | 4,731            | 4,701          | 13,503         |
| Nov/95                                    | 4                    | 17,515      | 6,220            | 10,029         | 23,525         |
| Dec/95                                    | 4                    | 13,970      | 5,562            | 8,346          | 21,639         |
| Jan/95                                    | 3                    | 4,621       | 2,446            | 1,842          | 6,444          |
| <b>Shorebirds</b>                         |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 5.557       | 9.629            | 0              | 16.67          |
| Nov/95                                    | 4                    | 0           | 0                | 0              | 0              |
| Dec/95                                    | 4                    | 8.333       | 16.67            | 0              | 33.33          |
| Jan/95                                    | 3                    | 101.3       | 175.5            | 0              | 304            |
| <b>Gulls</b>                              |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 71.89       | 82.48            | 2.33           | 163            |
| Nov/95                                    | 4                    | 306.3       | 449.6            | 20.67          | 972            |
| Dec/95                                    | 4                    | 78.67       | 43.07            | 41.67          | 136.7          |
| Jan/95                                    | 3                    | 41.11       | 46.81            | 5              | 94             |
| <b>Divers (loons, grebes, cormorants)</b> |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 31.67       | 17.30            | 12.33          | 45.67          |
| Nov/95                                    | 4                    | 19.67       | 6.999            | 11.33          | 28             |
| Dec/95                                    | 4                    | 10.42       | 4.411            | 6.33           | 16.67          |
| Jan/95                                    | 3                    | 8.113       | 5.501            | 2.67           | 13.67          |
| <b>Total Birds without Shorebirds</b>     |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 8,208       | 4,818            | 4,722          | 13,706         |
| Nov/95                                    | 4                    | 17,843      | 6,382            | 10,245         | 23,586         |
| Dec/95                                    | 4                    | 14,060      | 5,567            | 8,417          | 21,734         |
| Jan/95                                    | 3                    | 4,671       | 2,464            | 1,880          | 6,546          |
| <b>TOTAL BIRDS</b>                        |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 8,213       | 4,828            | 4,722          | 13,723         |
| Nov/95                                    | 4                    | 17,843      | 6,382            | 10,245         | 23,586         |
| Dec/95                                    | 4                    | 14,068      | 5,556            | 8,450          | 21,734         |
| Jan/95                                    | 3                    | 4,772       | 2,526            | 1,880          | 6,546          |



**BRUNSWICK POINT**

| <b>Date</b>                  | <b>No. of Counts</b> | <b>Mean</b> | <b>Std. Dev.</b> | <b>Minimum</b> | <b>Maximum</b> |
|------------------------------|----------------------|-------------|------------------|----------------|----------------|
| <b><i>Dabbling Ducks</i></b> |                      |             |                  |                |                |
| Oct/95                       | 3                    | 6,050       | 4,356            | 3,003          | 11,039         |
| Nov/95                       | 4                    | 3,060       | 3,688            | 21.67          | 7,567          |
| Dec/95                       | 4                    | 40,63       | 3,753            | 20             | 8,527          |
| Jan/95                       | 3                    | 1,866       | 1,927            | 336.3          | 4,031          |
| <b><i>Diving Ducks</i></b>   |                      |             |                  |                |                |
| Oct/95                       | 3                    | 4.667       | 5.923            | 0              | 11.33          |
| Nov/95                       | 4                    | 100.3       | 158.6            | 0              | 333.3          |
| Dec/95                       | 4                    | 50.25       | 64.03            | 0              | 133.7          |
| Jan/95                       | 3                    | 5.78        | 9.437            | 0              | 16.67          |
| <b><i>Total Ducks</i></b>    |                      |             |                  |                |                |
| Oct/95                       | 3                    | 6,055       | 4,355            | 3,003.3        | 11,042         |
| Nov/95                       | 4                    | 3,160       | 3,834            | 21.67          | 7,901          |
| Dec/95                       | 4                    | 4,113       | 3,759            | 20             | 8,527          |
| Jan/95                       | 3                    | 1,871       | 19,374           | 336.3          | 4,047          |
| <b><i>Snow Goose</i></b>     |                      |             |                  |                |                |
| Oct/95                       | 3                    | 1,444       | 2,502            | 0              | 4,333          |
| Nov/95                       | 4                    | 6.25        | 12.5             | 0              | 25             |
| Dec/95                       | 4                    | 375         | 750              | 0              | 1,500          |
| Jan/95                       | 3                    | 0           | 0                | 0              | 0              |
| <b><i>Total Geese</i></b>    |                      |             |                  |                |                |
| Oct/95                       | 3                    | 1,444       | 2,502            | 0              | 4,333          |
| Nov/95                       | 4                    | 6.25        | 12.5             | 0              | 25             |
| Dec/95                       | 4                    | 375         | 750              | 0              | 1,500          |
| Jan/95                       | 3                    | 0           | 0                | 0              | 0              |
| <b><i>Total Swans</i></b>    |                      |             |                  |                |                |
| Oct/95                       | 3                    | 10          | 17.32            | 0              | 30             |
| Nov/95                       | 4                    | 37.33       | 42.72            | 4.33           | 98.33          |
| Dec/95                       | 4                    | 20.75       | 41.06            | 0              | 82.33          |
| Jan/95                       | 3                    | 92.33       | 153.9            | 0              | 270            |
| <b><i>Waterfowl</i></b>      |                      |             |                  |                |                |
| Oct/95                       | 3                    | 7,509       | 6,836            | 3,003          | 15,375         |
| Nov/95                       | 4                    | 3,204       | 3,869            | 56.67          | 7,999          |
| Dec/95                       | 4                    | 4,509       | 3,586            | 20             | 8,527          |
| Jan/95                       | 3                    | 1,964       | 2,086            | 343.3          | 4,317          |

| <u>Date</u> | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|-------------|----------------------|-------------|------------------|----------------|----------------|
|-------------|----------------------|-------------|------------------|----------------|----------------|

***Shorebirds***

|        |   |        |       |       |       |
|--------|---|--------|-------|-------|-------|
| Oct/95 | 3 | 813.3  | 1,409 | 0     | 2,440 |
| Nov/95 | 4 | 946.35 | 1,422 | 18.33 | 3,067 |
| Dec/95 | 4 | 1,342  | 825.5 | 333.3 | 2,033 |
| Jan/95 | 3 | 1,356  | 135.1 | 1,233 | 1,501 |

***Gulls***

|        |   |       |       |       |       |
|--------|---|-------|-------|-------|-------|
| Oct/95 | 3 | 104.0 | 87.92 | 24.33 | 198.3 |
| Nov/95 | 4 | 52    | 34.96 | 2.33  | 84    |
| Dec/95 | 4 | 21.83 | 21.70 | 1.67  | 52.33 |
| Jan/95 | 3 | 20.78 | 10.93 | 13.33 | 33.33 |

***Divers (loons, grebes, cormorants)***

|        |   |       |       |     |      |
|--------|---|-------|-------|-----|------|
| Oct/95 | 3 | 6.223 | 8.571 | 0   | 16   |
| Nov/95 | 4 | 3.75  | 3.256 | .67 | 8.33 |
| Dec/95 | 4 | 1.333 | 1.658 | 0   | 3.67 |
| Jan/95 | 3 | .7767 | .6926 | 0   | 1.33 |

***Total Birds without Shorebirds***

|        |   |       |       |       |        |
|--------|---|-------|-------|-------|--------|
| Oct/95 | 3 | 7,624 | 6,810 | 3,219 | 15,468 |
| Nov/95 | 4 | 3,261 | 3,846 | 120   | 8,006  |
| Dec/95 | 4 | 4,532 | 3,598 | 34.67 | 8,581  |
| Jan/95 | 3 | 1,985 | 2,096 | 360.7 | 4,351  |

***TOTAL BIRDS***

|        |   |        |       |       |        |
|--------|---|--------|-------|-------|--------|
| Oct/95 | 3 | 84,379 | 6,133 | 4,184 | 15,468 |
| Nov/95 | 4 | 42,078 | 4,490 | 163   | 8,340  |
| Dec/95 | 4 | 5,874  | 4,197 | 1,036 | 10,614 |
| Jan/95 | 3 | 3,341  | 2,109 | 1,594 | 5,684  |

**ROBERTS BANK**

(B.C. Ferry causeway to navigation marker south of Roberts Bank)

***Dabbling Ducks***

|        |   |        |       |        |        |
|--------|---|--------|-------|--------|--------|
| Oct/95 | 3 | 10,689 | 2,072 | 8,371  | 12,360 |
| Nov/95 | 4 | 26,924 | 6,531 | 21,358 | 35,140 |
| Dec/95 | 4 | 16,359 | 5,992 | 8,417  | 22,676 |
| Jan/95 | 3 | 12,989 | 3,318 | 9,400  | 15,945 |

***Diving Ducks***

|        |   |       |       |       |       |
|--------|---|-------|-------|-------|-------|
| Oct/95 | 3 | 50.78 | 72.12 | 0     | 133.3 |
| Nov/95 | 4 | 299.3 | 53.05 | 250   | 372.3 |
| Dec/95 | 4 | 235.9 | 95.98 | 92.33 | 292.3 |
| Jan/95 | 3 | 322.3 | 266.8 | 67    | 599.3 |

| <u>Date</u>                               | <u>No. of Counts</u> | <u>Mean</u> | <u>Std. Dev.</u> | <u>Minimum</u> | <u>Maximum</u> |
|---|----------------------|-------------|------------------|----------------|----------------|
| <b>Total Ducks</b>                        |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 10,740      | 2,083            | 8,390          | 12,360         |
| Nov/95                                    | 4                    | 27,223      | 6,562            | 21,632         | 35,512         |
| Dec/95                                    | 4                    | 16,595      | 5,928            | 8,692          | 22,768         |
| Jan/95                                    | 3                    | 13,311      | 3,140            | 9,999          | 16,246         |
| <b>Snow Goose</b>                         |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 0           | 0                | 0              | 0              |
| Nov/95                                    | 4                    | 0           | 0                | 0              | 0              |
| Dec/95                                    | 4                    | .1675       | .335             | 0              | .67            |
| Jan/95                                    | 3                    | 0           | 0                | 0              | 0              |
| <b>Total Geese</b>                        |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 1.3333      | 2.309            | 0              | 4              |
| Nov/95                                    | 4                    | 0           | 0                | 0              | 0              |
| Dec/95                                    | 4                    | 15.00       | 24.43            | 0              | 51.33          |
| Jan/95                                    | 3                    | 16.11       | 23.71            | 0              | 43.33          |
| <b>Total Swans</b>                        |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 0           | 0                | 0              | 0              |
| Nov/95                                    | 4                    | 0           | 0                | 0              | 0              |
| Dec/95                                    | 4                    | .25         | .3203            | 0              | .67            |
| Jan/95                                    | 3                    | 0           | 0                | 0              | 0              |
| <b>Waterfowl</b>                          |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 10,741      | 2,084            | 8,390          | 12,360         |
| Nov/95                                    | 4                    | 27,223      | 6,562            | 21,632         | 35,512         |
| Dec/95                                    | 4                    | 16,610      | 5,924            | 8,700          | 22,770         |
| Jan/95                                    | 3                    | 13,327      | 3,161            | 9,999          | 16,289         |
| <b>Shorebirds</b>                         |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 23.33       | 40.41            | 0              | 70             |
| Nov/95                                    | 4                    | 21.25       | 42.5             | 0              | 85             |
| Dec/95                                    | 4                    | 175         | 328.2            | 0              | 666.7          |
| Jan/95                                    | 3                    | 1,063       | 955.5            | 200            | 2,090          |
| <b>Gulls</b>                              |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 41.11       | 38.38            | 0              | 76             |
| Nov/95                                    | 4                    | 22.34       | 25.14            | .67            | 47             |
| Dec/95                                    | 4                    | 54.84       | 81.805           | .67            | 175            |
| Jan/95                                    | 3                    | 26.33       | 26.34            | 9.33           | 56.67          |
| <b>Divers (loons, grebes, cormorants)</b> |                      |             |                  |                |                |
| Oct/95                                    | 3                    | 23.78       | 37.77            | 0              | 67.33          |
| Nov/95                                    | 4                    | 3.918       | 2.647            | .33            | 6.67           |
| Dec/95                                    | 4                    | 2.25        | 1.103            | 1              | 3.67           |
| Jan/95                                    | 3                    | 23.33       | 38.11            | .67            | 67.33          |

| <b>Date</b> | <b>No. of Counts</b> | <b>Mean</b> | <b>Std. Dev.</b> | <b>Minimum</b> | <b>Maximum</b> |
|-------------|----------------------|-------------|------------------|----------------|----------------|
|-------------|----------------------|-------------|------------------|----------------|----------------|

***Total Birds without Shorebirds***

|        |   |        |       |        |        |
|--------|---|--------|-------|--------|--------|
| Oct/95 | 3 | 10,811 | 2,133 | 8,396  | 12,438 |
| Nov/95 | 4 | 27,253 | 6,539 | 21,677 | 35,514 |
| Dec/95 | 4 | 16,668 | 5,852 | 8,876  | 22,774 |
| Jan/95 | 3 | 13,377 | 3,102 | 10,123 | 16,300 |

**TOTAL BIRDS**

|        |   |        |       |        |        |
|--------|---|--------|-------|--------|--------|
| Oct/95 | 3 | 10,834 | 2,160 | 8,396  | 12,508 |
| Nov/95 | 4 | 27,274 | 6,515 | 21,762 | 35,514 |
| Dec/95 | 4 | 16,843 | 5,953 | 8,876  | 22,807 |
| Jan/95 | 3 | 14,440 | 2,536 | 12,213 | 17,200 |

### APPENDIX 3

Z-test results of annual and monthly comparisons of dabbling ducks and gulls  
for the Fraser River foreshore and Boundary Bay, October 1995 to January 1996.

This table shows the probability of means being the same.

#### DABBLING DUCKS

| BOUNDARY BAY |         | 1966-74 | 1982-83 | 1983-84 | 1989-90 | 1992-93 |
|--------------|---------|---------|---------|---------|---------|---------|
| October      | 1982-83 | .320    |         |         |         |         |
|              | 1983-84 | .029    | .379    |         |         |         |
|              | 1989-90 | .490    | .080    | .234    |         |         |
|              | 1992-93 | <.001   | .037    | .001    | <.001   |         |
|              | 1995-96 | <.001   | <.001   | <.001   | <.001   | .008    |
| November     | 1982-83 | .873    |         |         |         |         |
|              | 1983-84 | .165    | .271    |         |         |         |
|              | 1989-90 | .017    | .044    | .139    |         |         |
|              | 1992-93 | .569    | .484    | .055    | .005    |         |
|              | 1995-96 | .006    | .005    | <.001   | <.001   | .022    |
| December     | 1982-83 | .562    |         |         |         |         |
|              | 1983-84 | .441    | .337    |         |         |         |
|              | 1989-90 | .638    | .984    | .352    |         |         |
|              | 1992-93 | .126    | .204    | .107    | .215    |         |
|              | 1995-96 | <.001   | <.001   | .007    | <.001   | .410    |
| January      | 1982-83 | .007    |         |         |         |         |
|              | 1983-84 | .030    | .857    |         |         |         |
|              | 1989-90 | .022    | .162    | .327    |         |         |
|              | 1992-93 | .342    | <.001   | .001    | <.001   |         |
|              | 1995-96 | <.001   | .258    | .653    | <.001   | <.001   |

#### FORESHORE

|          |         |       |       |       |       |       |
|----------|---------|-------|-------|-------|-------|-------|
| October  | 1982-83 | .976  |       |       |       |       |
|          | 1983-84 | <.001 | .165  |       |       |       |
|          | 1989-90 | .020  | .347  | .401  |       |       |
|          | 1992-93 | .097  | .368  | .596  | .944  |       |
|          | 1995-96 | .497  | .697  | .242  | .549  | .562  |
| November | 1982-83 | .194  |       |       |       |       |
|          | 1983-84 | .057  | .368  |       |       |       |
|          | 1989-90 | .001  | .002  | .095  |       |       |
|          | 1992-93 | .025  | .177  | .936  | <.001 |       |
|          | 1995-96 | .960  | .174  | .051  | .001  | .023  |
| December | 1982-83 | .803  |       |       |       |       |
|          | 1983-84 | .003  | .001  |       |       |       |
|          | 1989-90 | .001  | <.001 | .234  |       |       |
|          | 1992-93 | .037  | .019  | .116  | .014  |       |
|          | 1995-96 | .704  | .503  | <.001 | <.001 | .007  |
| January  | 1982-83 | .689  |       |       |       |       |
|          | 1983-84 | .936  | .516  |       |       |       |
|          | 1989-90 | .441  | .162  | .015  |       |       |
|          | 1992-93 | .562  | .230  | .046  | .165  |       |
|          | 1995-96 | .522  | .928  | .006  | <.001 | <.001 |

**GULLS**

| <b>BOUNDARY BAY</b> |         | <b>1982-83</b> | <b>1983-84</b> | <b>1989-90</b> | <b>1992-93</b> |
|---------------------|---------|----------------|----------------|----------------|----------------|
| October             | 1983-84 | .238           |                |                |                |
|                     | 1989-90 | .857           | .246           |                |                |
|                     | 1992-93 | .787           | .258           | .881           |                |
|                     | 1995-96 | .038           | .826           | .024           | .031           |
| November            | 1983-84 | .681           |                |                |                |
|                     | 1989-90 | .453           | .342           |                |                |
|                     | 1992-93 | .082           | .097           | .968           |                |
|                     | 1995-96 | .826           | .430           | .704           | .453           |
| December            | 1983-84 | .944           |                |                |                |
|                     | 1989-90 | .516           | .435           |                |                |
|                     | 1992-93 | .772           | .749           | .535           |                |
|                     | 1995-96 | .881           | .741           | .246           | .430           |
| January             | 1983-84 | .116           |                |                |                |
|                     | 1989-90 | .078           | .834           |                |                |
|                     | 1992-93 | .005           | .072           | .038           |                |
|                     | 1995-96 | .384           | .263           | .222           | .110           |
| October             | 1983-84 | <.001          |                |                |                |
|                     | 1989-90 | .033           | .215           |                |                |
|                     | 1992-93 | .003           | .920           | .390           |                |
|                     | 1995-96 | .077           | .072           | .697           | .215           |
| November            | 1983-84 | .897           |                |                |                |
|                     | 1989-90 | .430           | .038           |                |                |
|                     | 1992-93 | .234           | .097           | .010           |                |
|                     | 1995-96 | .407           | .395           | .208           | .818           |
| December            | 1983-84 | .441           |                |                |                |
|                     | 1989-90 | .162           | .219           |                |                |
|                     | 1992-93 | .465           | .936           | .509           |                |
|                     | 1995-96 | .052           | .013           | .028           | .171           |
| January             | 1983-84 | .258           |                |                |                |
|                     | 1989-90 | .327           | .976           |                |                |
|                     | 1992-93 | .968           | .080           | .211           |                |
|                     | 1995-96 | .018           | <.001          | .073           | <.001          |

Appendix 4: Summary of dabbling duck means, standard deviations and standard errors used in Tables 2 and 5 and used for calculating Z values for Table 6.

1966 to 74 from McKelvey *et al.* 1985, Table 11; in thousands.

| Month         |    | Location   |     |             |     |                |      |                 |      |                        |      |       |              |      |        |
|---------------|----|------------|-----|-------------|-----|----------------|------|-----------------|------|------------------------|------|-------|--------------|------|--------|
|               |    | Sea Island |     | Lulu Island |     | Westham Island |      | Brunswick Point |      | Fraser Foreshore Total |      |       | Boundary Bay |      |        |
|               | n  | $\bar{x}$  | sd  | $\bar{x}$   | sd  | $\bar{x}$      | sd   | $\bar{x}$       | sd   | $\bar{x}$              | sd   | se    | $\bar{x}$    | sd   | se     |
| Oct           | 13 | 7.6        | 7.4 | 5.2         | 4.8 | 7.0            | 5.7  | 8.7             | 6.1  | 28.5                   | 12.1 | 3.356 | 18.3         | 14.4 | 3.994  |
| Nov           | 11 | 7.1        | 6.6 | 3.9         | 2.5 | 20.5           | 24.0 | 8.8             | 6.9  | 40.3                   | 26.0 | 7.839 | 39.3         | 19.7 | 5.940  |
| Dec           | 8  | 5.0        | 4.7 | 3.4         | 2.0 | 17.3           | 11.8 | 9.4             | 13.0 | 35.1                   | 18.3 | 6.470 | 31.4         | 6.4  | 2.263  |
| Jan           | 6  | 2.9        | 3.5 | 2.5         | 4.8 | 9.0            | 15.5 | 2.7             | 3.5  | 17.1                   | 17.0 | 6.940 | 10.7         | 14.0 | 5.715  |
| Sum or Pooled |    |            |     |             |     |                |      |                 |      | 121.0                  |      | 9.435 | 99.7         |      | 12.757 |

Shaded areas are summed (means) or pooled (sd, se) data calculated from Table 11

1982-83, Boundary Bay, from McKelvey *et al.* 1985, Appendix A-3; in thousands.

| Month |   | Location  |       |           |       |           |       |           |       |           |       |           |       |           |       |             |       |           | Total   |        |       |
|-------|---|-----------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|-------------|-------|-----------|---------|--------|-------|
|       |   | Mud Bay   |       | 112-104   |       | 104-96    |       | 96-88     |       | 88-80     |       | 80-72     |       | 72-64     |       | Beach Grove |       | $\bar{x}$ | sd      | se     |       |
|       | n | $\bar{x}$ | sd    | $\bar{x}$ | sd    | $\bar{x}$ | sd    | $\bar{x}$ | sd    | $\bar{x}$ | sd    | $\bar{x}$ | sd    | $\bar{x}$ | sd    | $\bar{x}$   | sd    | $\bar{x}$ | sd      | se     |       |
| Oct   | 2 | 1.709     | 2.187 | 5.506     | 5.083 | 4.663     | 1.467 | 3.631     | 0.345 | 5.513     | 2.528 | 2.787     | 0.0   | 4.159     | 4.981 | 1.583       | 1.377 | 29.551    | 8.123   | 5.744  |       |
| Nov   | 5 | 6.254     | 6.971 | 6.392     | 2.824 | 5.179     | 2.867 | 4.341     | 2.195 | 4.397     | 2.969 | 1.261     | 1.455 | 5.982     | 4.255 | 4.057       | 6.215 | 37.863    | 11.716  | 5.240  |       |
| Dec   | 4 | 3.945     | 0.754 | 4.517     | 2.635 | 6.780     | 1.946 | 1.889     | 0.873 | 1.840     | 1.956 | 0.748     | 0.530 | 7.929     | 3.272 | 5.869       | 2.115 | 33.517    | 5.599   | 2.800  |       |
| Jan   | 5 | 0.655     | 0.905 | 3.278     | 2.628 | 3.406     | 1.984 | 4.045     | 1.953 | 3.231     | 2.327 | 2.645     | 1.279 | 9.785     | 7.051 | 2.892       | 4.018 | 29.937    | 9.401   | 4.204  |       |
|       |   |           |       |           |       |           |       |           |       |           |       |           |       |           |       |             |       | Sum       | 130.868 | Pooled | 9.272 |

Shaded areas are summed (means) or pooled (se, se) data calculated from Appendix A-3

1983-84, Boundary Bay, from McKelvey *et al.* 1985, Appendix A-3; in thousands.

| Month |   | Location  |       |           |       |           |       |           |       |           |       |           |       |           |       |             |       |           | Total   |        |       |
|-------|---|-----------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|-------------|-------|-----------|---------|--------|-------|
|       |   | Mud Bay   |       | 112-104   |       | 104-96    |       | 96-88     |       | 88-80     |       | 80-72     |       | 72-64     |       | Beach Grove |       | $\bar{x}$ | sd      | se     |       |
|       | n | $\bar{x}$ | sd    | $\bar{x}$ | sd    | $\bar{x}$ | sd    | $\bar{x}$ | sd    | $\bar{x}$ | sd    | $\bar{x}$ | sd    | $\bar{x}$ | sd    | $\bar{x}$   | sd    | $\bar{x}$ | sd      | se     |       |
| Oct   | 4 | 4.334     | 2.728 | 4.882     | 2.884 | 2.836     | 1.777 | 2.783     | 0.800 | 2.074     | 0.607 | 2.021     | 0.826 | 3.252     | 1.478 | 2.069       | 1.593 | 24.251    | 5.033   | 2.517  |       |
| Nov   | 5 | 2.129     | 2.897 | 2.582     | 2.720 | 4.464     | 1.906 | 3.707     | 2.217 | 3.993     | 2.456 | 2.792     | 1.167 | 7.471     | 6.459 | 2.874       | 1.098 | 30.012    | 8.640   | 3.864  |       |
| Dec   | 3 | 1.857     | 0.963 | 2.470     | 2.405 | 2.606     | 2.265 | 3.077     | 2.670 | 3.037     | 3.625 | 3.386     | 3.100 | 4.847     | 3.635 | 1.469       | 1.340 | 22.749    | 7.532   | 4.349  |       |
| Jan   | 3 | 3.357     | 5.327 | 4.806     | 1.676 | 5.882     | 5.086 | 2.251     | 2.236 | 3.444     | 3.723 | 3.051     | 2.642 | 7.354     | 6.409 | 1.402       | 2.210 | 31.547    | 11.351  | 6.554  |       |
|       |   |           |       |           |       |           |       |           |       |           |       |           |       |           |       |             |       | Sum       | 130.868 | Pooled | 9.118 |

Shaded areas are summed (means) or pooled (sd, se) data calculated from Appendix A-3

1982-83, Fraser Foreshore, from McKelvey *et al.* 1985. Appendix A-12; in thousands.

| Month | Location    |           |            |           |             |           |                |           |                 |           |              |           |       |           |        |        |
|-------|-------------|-----------|------------|-----------|-------------|-----------|----------------|-----------|-----------------|-----------|--------------|-----------|-------|-----------|--------|--------|
|       | River Mouth |           | Sea Island |           | Lulu Island |           | Westham Island |           | Brunswick Point |           | Roberts Bank |           | Total |           |        |        |
|       | n           | $\bar{x}$ | sd         | $\bar{x}$ | sd          | $\bar{x}$ | sd             | $\bar{x}$ | sd              | $\bar{x}$ | sd           | $\bar{x}$ | sd    | $\bar{x}$ | sd     | se     |
| Oct   | 2           | 0.0       | --         | 8.925     | 8.238       | 3.500     | 0.354          | 0.435     | 0.686           | 1.300     | 0.0          | 14.092    | 1.189 | 28.252    | 8.359  | 5.911  |
| Nov   | 5           | 0.160     | 0.230      | 5.605     | 5.783       | 0.225     | 0.311          | 3.996     | 3.880           | 7.121     | 8.804        | 11.575    | 7.381 | 28.682    | 9.743  | 4.357  |
| Dec   | 4           | 0.548     | 0.693      | 5.974     | 5.637       | 2.751     | 3.825          | 9.034     | 12.333          | 11.138    | 8.551        | 7.900     | 7.262 | 37.345    | 13.225 | 6.613  |
| Jan   | 5           | 0.354     | 0.359      | 2.099     | 2.726       | 1.661     | 1.951          | 4.906     | 4.582           | 4.868     | 6.124        | 7.002     | 5.268 | 20.890    | 14.571 | 6.516  |
|       |             |           |            |           |             |           |                |           |                 |           |              |           | Sum   | 115.169   | Pooled | 11.837 |

Shaded areas are summed (means) or pooled (sd, se) data calculated from Appendix A-12

1983-84, Fraser Foreshore, from McKelvey *et al.* 1985. Appendix A-12; in thousands.

| Month | Location    |           |            |           |             |           |                |           |                 |           |              |           |       |           |        |       |
|-------|-------------|-----------|------------|-----------|-------------|-----------|----------------|-----------|-----------------|-----------|--------------|-----------|-------|-----------|--------|-------|
|       | River Mouth |           | Sea Island |           | Lulu Island |           | Westham Island |           | Brunswick Point |           | Roberts Bank |           | Total |           |        |       |
|       | n           | $\bar{x}$ | sd         | $\bar{x}$ | sd          | $\bar{x}$ | sd             | $\bar{x}$ | sd              | $\bar{x}$ | sd           | $\bar{x}$ | sd    | $\bar{x}$ | sd     | se    |
| Oct   | 4           | 0.086     | 0.106      | 2.476     | 2.491       | 2.416     | 1.376          | 0.514     | 0.425           | 7.133     | 1.299        | 7.133     | 0.582 | 19.758    | 3.212  | 1.606 |
| Nov   | 5           | 0.321     | 0.558      | 2.987     | 2.656       | 1.368     | 1.495          | 1.062     | 1.755           | 3.814     | 3.541        | 13.359    | 6.511 | 22.911    | 10.849 | 4.852 |
| Dec   | 3           | 0.714     | 0.599      | 1.048     | 0.870       | 0.913     | 0.590          | 2.388     | 2.722           | 0.584     | 0.623        | 9.293     | 2.062 | 14.938    | 3.499  | 2.020 |
| Jan   | 3           | 0.085     | 0.081      | 0.543     | 7.893       | 0.088     | 0.117          | 0.319     | 0.336           | 5.283     | 2.369        | 10.223    | 2.952 | 16.542    | 2.966  | 1.712 |
|       |             |           |            |           |             |           |                |           |                 |           |              |           | Sum   | 74.149    | Pooled | 5.756 |

Shaded areas are summed (means) or pooled (sd, se,) data calculated from Appendix A-12

sd = Standard deviation

se = Standard error of the mean



1989-90, Boundary Bay and Fraser River Foreshore, from McKelvey *et al.* 1990, Appendix 2; in thousands.

| Month         |   | Location         |       |       |              |       |       |
|---------------|---|------------------|-------|-------|--------------|-------|-------|
|               |   | Fraser Foreshore |       |       | Boundary Bay |       |       |
|               | n | $\bar{x}$        | sd    | se    | $\bar{x}$    | sd    | se    |
| Oct           | 3 | 22.316           | 4.291 | 2.477 | 20.405       | 4.187 | 2.417 |
| Nov           | 6 | 14.525           | 3.758 | 1.534 | 24.744       | 4.689 | 1.914 |
| Dec           | 4 | 11.078           | 5.089 | 2.545 | 33.633       | 7.625 | 3.813 |
| Jan           | 3 | 11.669           | 1.812 | 0.866 | 23.858       | 1.557 | 0.899 |
| Sum or pooled |   | 59.588           |       | 3.964 | 102.280      |       | 4.985 |

Shaded areas are summed (means) or pooled (se) data calculated from Appendix 2

1992-93, Boundary Bay and Fraser River Foreshore, from Summers *et al.* 1994, Appendix 3; in thousands.

| Month         |   | Location         |       |       |              |        |        |
|---------------|---|------------------|-------|-------|--------------|--------|--------|
|               |   | Fraser Foreshore |       |       | Boundary Bay |        |        |
|               | n | $\bar{x}$        | sd    | se    | $\bar{x}$    | sd     | se     |
| Oct           | 3 | 22.005           | 6.557 | 3.786 | 41.934       | 7.497  | 4.328  |
| Nov           | 4 | 22.541           | 3.300 | 1.650 | 44.351       | 13.686 | 6.843  |
| Dec           | 5 | 20.305           | 6.165 | 2.757 | 45.542       | 19.874 | 8.888  |
| Jan           | 2 | 13.073           | 0.071 | 0.050 | 5.182        | 0.093  | 0.066  |
| Sum or pooled |   | 77.924           |       | 4.966 | 137.009      |        | 12.023 |

Shaded areas are summed (means) or pooled (se) data calculated from Appendix 3

1992-93, Boundary Bay and Fraser River Foreshore, from this report, Appendix 2; in thousands.

| Month         |   | Location         |        |       |              |        |        |
|---------------|---|------------------|--------|-------|--------------|--------|--------|
|               |   | Fraser Foreshore |        |       | Boundary Bay |        |        |
|               | n | $\bar{x}$        | sd     | se    | $\bar{x}$    | sd     | se     |
| Oct           | 3 | 25.370           | 7.718  | 4.456 | 56.377       | 6.372  | 3.679  |
| Nov           | 4 | 40.872           | 15.803 | 7.902 | 76.005       | 23.902 | 11.951 |
| Dec           | 4 | 32.259           | 6.949  | 3.475 | 53.272       | 5.319  | 2.660  |
| Jan           | 3 | 21.477           | 1.045  | 0.603 | 35.064       | 3.216  | 1.857  |
| Sum or pooled |   | 119.978          |        | 9.733 | 220.718      |        | 12.918 |

Shaded areas are summed (means) or pooled (se) data calculated from Appendix 2

## APPENDIX 5

### Waterfowl species composition at Boundary Bay

| Location                 | Mallard    |             | Green-winged Teal |            | American Wigeon |             | Northern Pintail |             | Scaup    |            | Other Dabblers |            | Other Divers |            | Total No.   |
|--------------------------|------------|-------------|-------------------|------------|-----------------|-------------|------------------|-------------|----------|------------|----------------|------------|--------------|------------|-------------|
|                          | No.        | %           | No.               | %          | No.             | %           | No.              | %           | No.      | %          | No.            | %          | No.          | %          |             |
| <b>17 October, 1995</b>  |            |             |                   |            |                 |             |                  |             |          |            |                |            |              |            |             |
| 12th Ave                 | not        | srvyd       |                   |            |                 |             |                  |             |          |            |                |            |              |            |             |
| 12 Ave - 64 St.          | 0          | 0.0         | 0                 | 0.0        | 339             | 62.9        | 200              | 37.1        | 0        | 0.0        | 0              | 0.0        | 0            | 0.0        | 539         |
| 64 St - 72 St            | 4          | 2.1         | 0                 | 0.0        | 183             | 95.3        | 5                | 2.6         | 0        | 0.0        | 0              | 0.0        | 0            | 0.0        | 192         |
| 72 St - 80 St            | 13         | 2.9         | 0                 | 0.0        | 252             | 55.5        | 189              | 41.6        | 0        | 0.0        | 0              | 0.0        | 0            | 0.0        | 454         |
| 80 St - 88 St            | 15         | 4.8         | 1                 | 0.3        | 127             | 40.8        | 166              | 53.4        | 0        | 0.0        | 2              | 0.6        | 0            | 0.0        | 311         |
| 88 St - 96 St            | 12         | 6.3         | 1                 | 0.5        | 57              | 29.7        | 122              | 63.5        | 0        | 0.0        | 0              | 0.0        | 0            | 0.0        | 192         |
| 96 St - 104 St           | 18         | 2.7         | 0                 | 0.0        | 238             | 36.3        | 395              | 60.3        | 0        | 0.0        | 4              | 0.6        | 0            | 0.0        | 655         |
| 104-St - 112 St          | 0          | 0.0         | 0                 | 0.0        | 0               | 0.0         | 0                | 0.0         | 0        | 0.0        | 0              | 0.0        | 0            | 0.0        | 0           |
| <b>Total</b>             | <b>62</b>  | <b>2.6</b>  | <b>2</b>          | <b>0.1</b> | <b>1196</b>     | <b>51.0</b> | <b>1077</b>      | <b>46.0</b> | <b>0</b> | <b>0.0</b> | <b>6</b>       | <b>0.3</b> | <b>0</b>     | <b>0.0</b> | <b>2343</b> |
| <b>26 October, 1995</b>  |            |             |                   |            |                 |             |                  |             |          |            |                |            |              |            |             |
| 12th Ave                 | not        | srvyd       |                   |            |                 |             |                  |             |          |            |                |            |              |            |             |
| 12 Ave - 64 St.          | birds      | too         | far               | off        | shore           |             |                  |             |          |            |                |            |              |            |             |
| 64 St - 72 St            | 3          | 0.6         | 1                 | 0.2        | 131             | 25.5        | 379              | 73.7        | 0        | 0.0        | 0              | 0.0        | 0            | 0.0        | 514         |
| 72 St - 80 St            | birds      | too         | far               | off        | shore           |             |                  |             |          |            |                |            |              |            |             |
| 80 St - 88 St            | birds      | too         | far               | off        | shore           |             |                  |             |          |            |                |            |              |            |             |
| 88 St - 96 St            | 44         | 19.8        | 0                 | 0.0        | 138             | 62.2        | 40               | 18.0        | 0        | 0.0        | 0              | 0.0        | 0            | 0.0        | 222         |
| 96 St - 104 St           | 74         | 26.6        | 0                 | 0.0        | 19              | 6.8         | 185              | 66.5        | 0        | 0.0        | 0              | 0.0        | 0            | 0.0        | 278         |
| 104-St - 112 St          | 104        | 24.9        | 1                 | 0.2        | 51              | 12.2        | 262              | 62.7        | 0        | 0.0        | 0              | 0.0        | 0            | 0.0        | 418         |
| <b>Total</b>             | <b>225</b> | <b>15.7</b> | <b>2</b>          | <b>0.1</b> | <b>339</b>      | <b>23.7</b> | <b>866</b>       | <b>60.5</b> | <b>0</b> | <b>0.0</b> | <b>0</b>       | <b>0.0</b> | <b>0</b>     | <b>0.0</b> | <b>1432</b> |
| <b>1 November, 1995</b>  |            |             |                   |            |                 |             |                  |             |          |            |                |            |              |            |             |
| 12th Ave                 | 5          | 1.0         | 0                 | 0.0        | 5               | 1.0         | 490              | 98.0        | 0        | 0.0        | 0              | 0.0        | 0            | 0.0        | 500         |
| 12 Ave - 64 St.          | 167        | 30.9        | 2                 | 0.4        | 350             | 64.8        | 19               | 3.5         | 0        | 0.0        | 1              | 0.2        | 1            | 0.2        | 540         |
| 64 St - 72 St            | birds      | too         | far               | off        | shore           |             |                  |             |          |            |                |            |              |            |             |
| 72 St - 80 St            | "          | "           | "                 | "          | "               |             |                  |             |          |            |                |            |              |            |             |
| 80 St - 88 St            | "          | "           | "                 | "          | "               |             |                  |             |          |            |                |            |              |            |             |
| 88 St - 96 St            | "          | "           | "                 | "          | "               |             |                  |             |          |            |                |            |              |            |             |
| 96 St - 104 St           | "          | "           | "                 | "          | "               |             |                  |             |          |            |                |            |              |            |             |
| 104-St - 112 St          | 8          | 6.2         | 35                | 26.9       | 29              | 22.3        | 58               | 44.6        | 0        | 0.0        | 0              | 0.0        | 0            | 0.0        | 130         |
| <b>Total</b>             | <b>180</b> | <b>15.4</b> | <b>37</b>         | <b>3.2</b> | <b>384</b>      | <b>32.8</b> | <b>567</b>       | <b>48.5</b> | <b>0</b> | <b>0.0</b> | <b>1</b>       | <b>0.1</b> | <b>1</b>     | <b>0.1</b> | <b>1170</b> |
| <b>10 November, 1995</b> |            |             |                   |            |                 |             |                  |             |          |            |                |            |              |            |             |
| 12th Ave                 | not        | srvyd       |                   |            |                 |             |                  |             |          |            |                |            |              |            |             |
| 12 Ave - 64 St.          | 0          | 0.0         | 0                 | 0.0        | 0               | 0.0         | 0                | 0.0         | 0        | 0.0        | 0              | 0.0        | 0            | 0.0        | 0           |
| 64 St - 72 St            | 41         | 21.2        | 0                 | 0.0        | 38              | 19.7        | 114              | 59.1        | 0        | 0.0        | 0              | 0.0        | 0            | 0.0        | 193         |
| 72 St - 80 St            | birds      | too         | far               | off        | shore           |             |                  |             |          |            |                |            |              |            |             |
| 80 St - 88 St            | 31         | 13.2        | 0                 | 0.0        | 105             | 44.7        | 99               | 42.1        | 0        | 0.0        | 0              | 0.0        | 0            | 0.0        | 235         |
| 88 St - 96 St            | 249        | 26.2        | 10                | 1.1        | 387             | 40.7        | 304              | 31.9        | 0        | 0.0        | 2              | 0.2        | 0            | 0.0        | 952         |
| 96 St - 104 St           | 151        | 30.3        | 0                 | 0.0        | 133             | 26.7        | 215              | 43.1        | 0        | 0.0        | 0              | 0.0        | 0            | 0.0        | 499         |
| 104-St - 112 St          | 9          | 40.9        | 3                 | 13.6       | 0               | 0.0         | 10               | 45.5        | 0        | 0.0        | 0              | 0.0        | 0            | 0.0        | 22          |
| <b>Total</b>             | <b>481</b> | <b>25.3</b> | <b>13</b>         | <b>0.7</b> | <b>663</b>      | <b>34.9</b> | <b>742</b>       | <b>39.0</b> | <b>0</b> | <b>0.0</b> | <b>2</b>       | <b>0.1</b> | <b>0</b>     | <b>0.0</b> | <b>1901</b> |

| Location                 | Mallard    |             | Green-winged Teal |            | American Wigeon |             | Northern Pintail |             | Scaup      |             | Other Dabblers |            | Other Divers |            | Total       |
|--------------------------|------------|-------------|-------------------|------------|-----------------|-------------|------------------|-------------|------------|-------------|----------------|------------|--------------|------------|-------------|
|                          | No.        | %           | No.               | %          | No.             | %           | No.              | %           | No.        | %           | No.            | %          | No.          | %          | No.         |
| <b>14 November, 1995</b> |            |             |                   |            |                 |             |                  |             |            |             |                |            |              |            |             |
| 12th Ave                 | not        | srvyd       |                   |            |                 |             |                  |             |            |             |                |            |              |            |             |
| 12 Ave - 64 St.          | 18         | 11.9        | 11                | 7.3        | 87              | 57.6        | 34               | 22.5        | 0          | 0.0         | 0              | 0.0        | 1            | 0.7        | 151         |
| 64 St - 72 St            | birds      | too         | far               | off        | shore           |             |                  |             |            |             |                |            |              |            |             |
| 72 St - 80 St            | "          | "           | "                 | "          | "               |             |                  |             |            |             |                |            |              |            |             |
| 80 St - 88 St            | "          | "           | "                 | "          | "               |             |                  |             |            |             |                |            |              |            |             |
| 88 St - 96 St            | "          | "           | "                 | "          | "               |             |                  |             |            |             |                |            |              |            |             |
| 96 St - 104 St           | 87         | 29.7        | 0                 | 0.0        | 129             | 44.0        | 77               | 26.3        | 0          | 0.0         | 0              | 0.0        | 0            | 0.0        | 293         |
| 104-St - 112 St          | 6          | 4.6         | 1                 | 0.8        | 37              | 28.2        | 87               | 66.4        | 0          | 0.0         | 0              | 0.0        | 0            | 0.0        | 131         |
| <b>Total</b>             | <b>111</b> | <b>19.3</b> | <b>12</b>         | <b>2.1</b> | <b>253</b>      | <b>44.0</b> | <b>198</b>       | <b>34.4</b> | <b>0</b>   | <b>0.0</b>  | <b>0</b>       | <b>0.0</b> | <b>1</b>     | <b>0.2</b> | <b>575</b>  |
| <b>21 November, 1995</b> |            |             |                   |            |                 |             |                  |             |            |             |                |            |              |            |             |
| 12th Ave                 | not        | srvyd       |                   |            |                 |             |                  |             |            |             |                |            |              |            |             |
| 12 Ave - 64 St.          | 14         | 4.3         | 7                 | 2.1        | 225             | 69.0        | 80               | 24.5        | 0          | 0.0         | 0              | 0.0        | 0            | 0.0        | 326         |
| 64 St - 72 St            | birds      | too         | far               | off        | shore           |             |                  |             |            |             |                |            |              |            |             |
| 72 St - 80 St            | 0          | 0.0         | 23                | 6.0        | 0               | 0.0         | 362              | 94.0        | 0          | 0.0         | 0              | 0.0        | 0            | 0.0        | 365         |
| 80 St - 88 St            | 45         | 24.1        | 0                 | 0.0        | 20              | 10.7        | 122              | 65.2        | 0          | 0.0         | 0              | 0.0        | 0            | 0.0        | 187         |
| 88 St - 96 St            | 4          | 1.4         | 0                 | 0.0        | 164             | 57.3        | 118              | 41.3        | 0          | 0.0         | 0              | 0.0        | 0            | 0.0        | 286         |
| 96 St - 104 St           | 0          | 0.0         | 0                 | 0.0        | 0               | 0.0         | 200              | 100.0       | 0          | 0.0         | 0              | 0.0        | 0            | 0.0        | 200         |
| 104-St - 112 St          | 1          | 0.7         | 0                 | 0.0        | 2               | 1.3         | 150              | 98.0        | 0          | 0.0         | 0              | 0.0        | 0            | 0.0        | 153         |
| <b>Total</b>             | <b>64</b>  | <b>4.2</b>  | <b>30</b>         | <b>2.0</b> | <b>411</b>      | <b>26.7</b> | <b>1032</b>      | <b>67.1</b> | <b>0</b>   | <b>0.0</b>  | <b>0</b>       | <b>0.0</b> | <b>0</b>     | <b>0.0</b> | <b>1537</b> |
| <b>30 November, 1995</b> |            |             |                   |            |                 |             |                  |             |            |             |                |            |              |            |             |
| 12th Ave                 | not        | srvyd       |                   |            |                 |             |                  |             |            |             |                |            |              |            |             |
| 12 Ave - 64 St.          | 5          | 2.0         | 198               | 78.6       | 37              | 14.7        | 12               | 4.8         | 0          | 0.0         | 0              | 0.0        | 0            | 0.0        | 252         |
| 64 St - 72 St            | birds      | too         | far               | off        | shore           |             |                  |             |            |             |                |            |              |            |             |
| 72 St - 80 St            | 30         | 6.3         | 0                 | 0.0        | 165             | 34.8        | 277              | 58.4        | 2          | 0.4         | 0              | 0.0        | 0            | 0.0        | 474         |
| 80 St - 88 St            | 21         | 3.6         | 0                 | 0.0        | 220             | 37.5        | 345              | 58.9        | 0          | 0.0         | 0              | 0.0        | 0            | 0.0        | 586         |
| 88 St - 96 St            | 127        | 14.4        | 0                 | 0.0        | 526             | 59.8        | 217              | 24.7        | 10         | 1.1         | 0              | 0.0        | 0            | 0.0        | 880         |
| 96 St - 104 St           | birds      | too         | far               | off        | shore           |             |                  |             |            |             |                |            |              |            |             |
| 104-St - 112 St          | "          | "           | "                 | "          | "               |             |                  |             |            |             |                |            |              |            |             |
| <b>Total</b>             | <b>183</b> | <b>8.3</b>  | <b>198</b>        | <b>9.0</b> | <b>948</b>      | <b>43.2</b> | <b>851</b>       | <b>38.8</b> | <b>12</b>  | <b>0.5</b>  | <b>0</b>       | <b>0.0</b> | <b>0</b>     | <b>0.0</b> | <b>2192</b> |
| <b>8 December, 1995</b>  |            |             |                   |            |                 |             |                  |             |            |             |                |            |              |            |             |
| 12th Ave                 | 130        | 23.6        | 64                | 11.6       | 121             | 22.0        | 120              | 21.8        | 116        | 21.1        | 0              | 0.0        | 0            | 0.0        | 551         |
| 12 Ave - 64 St.          | 21         | 42.9        | 0                 | 0.0        | 26              | 53.1        | 2                | 4.1         | 0          | 0.0         | 0              | 0.0        | 0            | 0.0        | 49          |
| 64 St - 72 St            | 35         | 70.0        | 0                 | 0.0        | 15              | 30.0        | 0                | 0.0         | 0          | 0.0         | 0              | 0.0        | 0            | 0.0        | 50          |
| 72 St - 80 St            | 24         | 80.0        | 0                 | 0.0        | 6               | 20.0        | 0                | 0.0         | 0          | 0.0         | 0              | 0.0        | 0            | 0.0        | 30          |
| 80 St - 88 St            | birds      | too         | far               | off        | shore           |             |                  |             |            |             |                |            |              |            |             |
| 88 St - 96 St            | 25         | 100.0       | 0                 | 0.0        | 0               | 0.0         | 0                | 0.0         | 0          | 0.0         | 0              | 0.0        | 0            | 0.0        | 25          |
| 96 St - 104 St           | 48         | 33.8        | 0                 | 0.0        | 19              | 13.4        | 0                | 0.0         | 75         | 52.8        | 0              | 0.0        | 0            | 0.0        | 142         |
| 104-St - 112 St          | 222        | 81.9        | 7                 | 2.6        | 28              | 10.3        | 14               | 5.2         | 0          | 0.0         | 0              | 0.0        | 0            | 0.0        | 271         |
| <b>Total</b>             | <b>505</b> | <b>45.2</b> | <b>71</b>         | <b>6.4</b> | <b>215</b>      | <b>19.2</b> | <b>136</b>       | <b>12.2</b> | <b>191</b> | <b>17.1</b> | <b>0</b>       | <b>0.0</b> | <b>0</b>     | <b>0.0</b> | <b>1118</b> |

| Location                 | Mallard     |             | Green-winged Teal |            | American Wigeon |             | Northern Pintail |             | Scaup      |            | Other Dabblers |            | Other Divers | Total      |
|--------------------------|-------------|-------------|-------------------|------------|-----------------|-------------|------------------|-------------|------------|------------|----------------|------------|--------------|------------|
|                          | No.         | %           | No.               | %          | No.             | %           | No.              | %           | No.        | %          | No.            | %          | No.          | No.        |
| <b>15 December, 1995</b> |             |             |                   |            |                 |             |                  |             |            |            |                |            |              |            |
| 12th Ave                 | not         | srvyd       |                   |            |                 |             |                  |             |            |            |                |            |              |            |
| 12 Ave - 64 St.          | 35          | 32.1        | 0                 | 0.0        | 54              | 49.5        | 0                | 0.0         | 20         | 18.3       | 0              | 0.0        | 0            | 0.0        |
| 64 St - 72 St            | 85          | 20.6        | 0                 | 0.0        | 32              | 7.8         | 295              | 71.6        | 0          | 0.0        | 0              | 0.0        | 0            | 0.0        |
| 72 St - 80 St            | 65          | 43.3        | 0                 | 0.0        | 85              | 56.7        | 0                | 0.0         | 0          | 0.0        | 0              | 0.0        | 0            | 0.0        |
| 80 St - 88 St            | 50          | 19.5        | 0                 | 0.0        | 41              | 16.0        | 165              | 64.5        | 0          | 0.0        | 0              | 0.0        | 0            | 0.0        |
| 88 St - 96 St            | 142         | 43.8        | 0                 | 0.0        | 132             | 40.7        | 48               | 14.8        | 2          | 0.6        | 0              | 0.0        | 0            | 0.0        |
| 96 St - 104 St           | 78          | 24.9        | 0                 | 0.0        | 172             | 55.0        | 25               | 8.0         | 38         | 12.1       | 0              | 0.0        | 0            | 0.0        |
| 104-St - 112 St          | 50          | 23.8        | 0                 | 0.0        | 157             | 74.8        | 3                | 1.4         | 0          | 0.0        | 0              | 0.0        | 0            | 0.0        |
| <b>Total</b>             | <b>505</b>  | <b>28.5</b> | <b>0</b>          | <b>0.0</b> | <b>673</b>      | <b>37.9</b> | <b>536</b>       | <b>30.2</b> | <b>60</b>  | <b>3.4</b> | <b>0</b>       | <b>0.0</b> | <b>0</b>     | <b>0.0</b> |
| <b>23 December, 1995</b> |             |             |                   |            |                 |             |                  |             |            |            |                |            |              |            |
| 12th Ave                 | not         | srvyd       |                   |            |                 |             |                  |             |            |            |                |            |              |            |
| 12 Ave - 64 St.          | 137         | 29.7        | 3                 | 0.6        | 194             | 42.0        | 54               | 11.7        | 74         | 16.0       | 0              | 0.0        | 0            | 0.0        |
| 64 St - 72 St            | 200         | 44.7        | 3                 | 0.7        | 124             | 27.7        | 92               | 20.6        | 28         | 6.3        | 0              | 0.0        | 0            | 0.0        |
| 72 St - 80 St            | 145         | 33.3        | 1                 | 0.2        | 219             | 50.2        | 71               | 16.3        | 0          | 0.0        | 0              | 0.0        | 0            | 0.0        |
| 80 St - 88 St            | 131         | 36.3        | 0                 | 0.0        | 145             | 40.2        | 70               | 19.4        | 15         | 4.2        | 0              | 0.0        | 0            | 0.0        |
| 88 St - 96 St            | 160         | 39.5        | 7                 | 1.7        | 178             | 44.0        | 60               | 14.8        | 0          | 0.0        | 0              | 0.0        | 0            | 0.0        |
| 96 St - 104 St           | 201         | 38.6        | 0                 | 0.0        | 185             | 35.5        | 86               | 16.5        | 49         | 9.4        | 0              | 0.0        | 0            | 0.0        |
| 104-St - 112 St          | 119         | 33.6        | 0                 | 0.0        | 93              | 26.3        | 52               | 14.7        | 90         | 25.4       | 0              | 0.0        | 0            | 0.0        |
| <b>Total</b>             | <b>1093</b> | <b>36.6</b> | <b>14</b>         | <b>0.5</b> | <b>1138</b>     | <b>38.1</b> | <b>485</b>       | <b>16.2</b> | <b>256</b> | <b>8.6</b> | <b>0</b>       | <b>0.0</b> | <b>0</b>     | <b>0.0</b> |
| <b>27 December, 1995</b> |             |             |                   |            |                 |             |                  |             |            |            |                |            |              |            |
| 12th Ave                 | not         | srvyd       |                   |            |                 |             |                  |             |            |            |                |            |              |            |
| 12 Ave - 64 St.          | 86          | 10.2        | 13                | 1.5        | 218             | 26.0        | 523              | 62.3        | 0          | 0.0        | 0              | 0.0        | 0            | 0.0        |
| 64 St - 72 St            | 60          | 17.2        | 32                | 9.2        | 165             | 47.4        | 80               | 23.0        | 11         | 3.2        | 0              | 0.0        | 0            | 0.0        |
| 72 St - 80 St            | 121         | 32.3        | 8                 | 2.1        | 209             | 55.7        | 37               | 9.9         | 0          | 0.0        | 0              | 0.0        | 0            | 0.0        |
| 80 St - 88 St            | 61          | 9.4         | 34                | 5.3        | 126             | 19.5        | 425              | 65.8        | 0          | 0.0        | 0              | 0.0        | 0            | 0.0        |
| 88 St - 96 St            | 119         | 29.2        | 9                 | 2.2        | 195             | 47.8        | 80               | 19.6        | 5          | 1.2        | 0              | 0.0        | 0            | 0.0        |
| 96 St - 104 St           | 97          | 40.4        | 0                 | 0.0        | 105             | 43.8        | 38               | 15.8        | 0          | 0.0        | 0              | 0.0        | 0            | 0.0        |
| 104-St - 112 St          | 173         | 32.1        | 14                | 2.6        | 227             | 42.1        | 125              | 23.2        | 0          | 0.0        | 0              | 0.0        | 0            | 0.0        |
| <b>Total</b>             | <b>717</b>  | <b>21.1</b> | <b>110</b>        | <b>3.2</b> | <b>1245</b>     | <b>36.7</b> | <b>1308</b>      | <b>38.5</b> | <b>16</b>  | <b>0.5</b> | <b>0</b>       | <b>0.0</b> | <b>0</b>     | <b>0.0</b> |
| <b>4 January, 1996</b>   |             |             |                   |            |                 |             |                  |             |            |            |                |            |              |            |
| 12th Ave                 | not         | srvyd       |                   |            |                 |             |                  |             |            |            |                |            |              |            |
| 12 Ave - 64 St.          | 92          | 16.2        | 11                | 1.9        | 229             | 40.3        | 210              | 37.0        | 26         | 4.6        | 0              | 0.0        | 0            | 0.0        |
| 64 St - 72 St            | 83          | 35.8        | 0                 | 0.0        | 123             | 53.0        | 12               | 5.2         | 14         | 6.0        | 0              | 0.0        | 0            | 0.0        |
| 72 St - 80 St            | 57          | 30.5        | 0                 | 0.0        | 94              | 50.3        | 27               | 14.4        | 9          | 4.8        | 0              | 0.0        | 0            | 0.0        |
| 80 St - 88 St            | 130         | 44.4        | 0                 | 0.0        | 136             | 46.4        | 27               | 9.2         | 0          | 0.0        | 0              | 0.0        | 0            | 0.0        |
| 88 St - 96 St            | 235         | 56.0        | 0                 | 0.0        | 142             | 33.8        | 22               | 5.2         | 20         | 4.8        | 1              | 0.2        | 0            | 0.0        |
| 96 St - 104 St           | 170         | 34.4        | 2                 | 0.4        | 273             | 55.3        | 46               | 9.3         | 0          | 0.0        | 3              | 0.6        | 0            | 0.0        |
| 104-St - 112 St          | 207         | 30.9        | 19                | 2.8        | 271             | 40.4        | 152              | 22.7        | 15         | 2.2        | 3              | 0.4        | 3            | 0.4        |
| <b>Total</b>             | <b>974</b>  | <b>34.0</b> | <b>32</b>         | <b>1.1</b> | <b>1268</b>     | <b>44.3</b> | <b>496</b>       | <b>17.3</b> | <b>84</b>  | <b>2.9</b> | <b>7</b>       | <b>0.2</b> | <b>3</b>     | <b>0.1</b> |

| Location | Mallard |   | Green-winged Teal |   | American Wigeon |   | Northern Pintail |   | Scaup |   | Other Dabblers |   | Other Divers |    | Total |
|----------|---------|---|-------------------|---|-----------------|---|------------------|---|-------|---|----------------|---|--------------|----|-------|
|          | No.     | % | No.               | % | No.             | % | No.              | % | No.   | % | No.            | % | No.          | %. | No.   |

**10 January, 1996**

|                 |            |             |           |            |             |             |             |             |           |            |          |            |          |            |          |             |
|-----------------|------------|-------------|-----------|------------|-------------|-------------|-------------|-------------|-----------|------------|----------|------------|----------|------------|----------|-------------|
| 12th Ave        | not        | srvyd       |           |            |             |             |             |             |           |            |          |            |          |            |          |             |
| 12 Ave - 64 St. | 87         | 32.2        | 0         | 0.0        | 150         | 55.6        | 33          | 12.2        | 0         | 0.0        | 0        | 0.0        | 0        | 0.0        | 0        | 270         |
| 64 St - 72 St   | 25         | 5.8         | 20        | 4.6        | 124         | 28.7        | 263         | 60.9        | 0         | 0.0        | 0        | 0.0        | 0        | 0.0        | 0        | 432         |
| 72 St - 80 St   | 58         | 18.3        | 0         | 0.0        | 195         | 61.5        | 64          | 20.2        | 0         | 0.0        | 0        | 0.0        | 0        | 0.0        | 0        | 317         |
| 80 St - 88 St   | 64         | 21.7        | 0         | 0.0        | 166         | 56.3        | 65          | 22.0        | 0         | 0.0        | 0        | 0.0        | 0        | 0.0        | 0        | 295         |
| 88 St - 96 St   | 90         | 11.9        | 0         | 0.0        | 188         | 24.9        | 454         | 60.1        | 23        | 3.0        | 0        | 0.0        | 0        | 0.0        | 0        | 755         |
| 96 St - 104 St  | 122        | 25.5        | 5         | 1.0        | 260         | 54.3        | 64          | 13.4        | 28        | 5.8        | 0        | 0.0        | 0        | 0.0        | 0        | 479         |
| 104-St - 112 St | 72         | 15.7        | 0         | 0.0        | 307         | 66.7        | 59          | 12.8        | 22        | 4.8        | 0        | 0.0        | 0        | 0.0        | 0        | 460         |
| <b>Total</b>    | <b>518</b> | <b>17.2</b> | <b>25</b> | <b>0.8</b> | <b>1390</b> | <b>46.2</b> | <b>1002</b> | <b>33.3</b> | <b>73</b> | <b>2.4</b> | <b>0</b> | <b>0.0</b> | <b>0</b> | <b>0.0</b> | <b>0</b> | <b>3008</b> |

**17 January, 1996**

|                 |             |             |           |            |             |             |            |             |           |            |          |            |          |            |          |             |
|-----------------|-------------|-------------|-----------|------------|-------------|-------------|------------|-------------|-----------|------------|----------|------------|----------|------------|----------|-------------|
| 12th Ave        | not         | srvyd       |           |            |             |             |            |             |           |            |          |            |          |            |          |             |
| 12 Ave - 64 St. | 285         | 48.6        | 1         | 0.2        | 200         | 34.1        | 79         | 13.5        | 22        | 3.7        | 0        | 0          | 0        | 0.0        | 0        | 587         |
| 64 St - 72 St   | 225         | 36.9        | 0         | 0.0        | 310         | 50.9        | 74         | 12.2        | 0         | 0.0        | 0        | 0          | 0        | 0.0        | 0        | 609         |
| 72 St - 80 St   | 112         | 17.3        | 5         | 0.8        | 132         | 20.4        | 397        | 61.5        | 0         | 0.0        | 0        | 0          | 0        | 0.0        | 0        | 646         |
| 80 St - 88 St   | 165         | 42.2        | 0         | 0.0        | 203         | 51.9        | 23         | 5.9         | 0         | 0.0        | 0        | 0          | 0        | 0.0        | 0        | 391         |
| 88 St - 96 St   | 270         | 61.2        | 0         | 0.0        | 156         | 35.4        | 15         | 3.4         | 0         | 0.0        | 0        | 0          | 0        | 0.0        | 0        | 441         |
| 96 St - 104 St  | 278         | 56.2        | 16        | 3.2        | 170         | 34.3        | 31         | 6.3         | 0         | 0.0        | 0        | 0          | 0        | 0.0        | 0        | 495         |
| 104-St - 112 St | 248         | 39.3        | 5         | 0.8        | 315         | 49.9        | 54         | 8.6         | 0         | 0.0        | 0        |            | 9        | 1.4        | 0        | 631         |
| <b>Total</b>    | <b>1583</b> | <b>41.7</b> | <b>27</b> | <b>0.7</b> | <b>1486</b> | <b>39.1</b> | <b>673</b> | <b>17.7</b> | <b>22</b> | <b>0.6</b> | <b>0</b> | <b>0.0</b> | <b>0</b> | <b>0.2</b> | <b>0</b> | <b>3800</b> |

## APPENDIX 6

Sum and relative abundance of dabbling duck species surveyed on Boundary Bay in 1995-96. The greatest proportion per survey is highlighted.

| Date         | Mallard     |             | Green-winged Teal |            | American Wigeon |             | Northern Pintail |             | Scaup      |            | Other Dabblers |            | Other Divers |            | Total        |
|--------------|-------------|-------------|-------------------|------------|-----------------|-------------|------------------|-------------|------------|------------|----------------|------------|--------------|------------|--------------|
|              | No.         | %           | No.               | %          | No.             | %           | No.              | %           | No.        | %          | No.            | %          | No.          | %          | No.          |
| 17 Oct. 1995 | 62          | 2.0         | 2                 | 0.1        | 1196            | <u>51.0</u> | 1077             | 46.0        | 0          | 0.0        | 6              | 0.3        | 0            | 0.0        | 2945         |
| 26 Oct.      | 225         | 15.7        | 2                 | 0.1        | 339             | 23.7        | 866              | <u>80.5</u> | 0          | 0.0        | 0              | 0.0        | 0            | 0.0        | 1432         |
| 1 Nov.       | 180         | 15.4        | 37                | 3.2        | 384             | 32.8        | 567              | <u>54.8</u> | 0          | 0.0        | 1              | 0.1        | 1            | 0.1        | 1170         |
| 10 Nov.      | 481         | 25.3        | 13                | 0.7        | 663             | 34.9        | 742              | <u>39.0</u> | 0          | 0.0        | 2              | 0.1        | 0            | 0.0        | 1901         |
| 14 Nov.      | 111         | 19.3        | 12                | 2.1        | 253             | <u>44.0</u> | 198              | 34.4        | 0          | 0.0        | 0              | 0.0        | 1            | 0.2        | 575          |
| 21 Nov.      | 64          | 4.2         | 30                | 2.0        | 411             | 26.7        | 1032             | <u>67.1</u> | 0          | 0.0        | 0              | 0.0        | 0            | 0.0        | 1537         |
| 30 Nov.      | 183         | 8.3         | 198               | 9.0        | 948             | <u>43.2</u> | 851              | 38.8        | 12         | 0.5        | 0              | 0.0        | 0            | 0.0        | 2192         |
| 8 Dec.       | 505         | <u>45.2</u> | 71                | 6.4        | 215             | 19.2        | 136              | 12.2        | 191        | 17.1       | 0              | 0.0        | 0            | 0.0        | 1118         |
| 15 Dec.      | 505         | 28.5        | 0                 | 0.0        | 673             | <u>37.9</u> | 536              | 30.2        | 60         | 3.4        | 0              | 0.0        | 0            | 0.0        | 1774         |
| 23 Dec.      | 1093        | 36.6        | 14                | 0.5        | 1138            | <u>38.1</u> | 485              | 16.2        | 256        | 8.6        | 0              | 0.0        | 0            | 0.0        | 2986         |
| 27 Dec.      | 717         | 21.1        | 110               | 3.2        | 1245            | 36.7        | 1308             | <u>38.5</u> | 16         | 0.5        | 0              | 0.0        | 0            | 0.0        | 3396         |
| 4 Jan. 1996  | 974         | 34.0        | 32                | 1.1        | 1268            | <u>44.3</u> | 496              | 17.3        | 84         | 2.9        | 7              | 0.2        | 3            | 0.1        | 2864         |
| 10 Jan.      | 518         | 17.2        | 25                | 0.8        | 1390            | <u>46.2</u> | 1002             | 33.3        | 73         | 2.4        | 0              | 0.0        | 0            | 0.0        | 3008         |
| 17 Jan.      | 1583        | <u>41.7</u> | 27                | 0.7        | 1486            | 39.1        | 673              | 17.7        | 22         | 0.6        | 0              | 0.0        | 9            | 0.2        | 3800         |
| <b>Total</b> | <b>7201</b> | <b>23.9</b> | <b>573</b>        | <b>1.9</b> | <b>11609</b>    | <b>38.6</b> | <b>9969</b>      | <b>33.1</b> | <b>714</b> | <b>2.4</b> | <b>16</b>      | <b>0.1</b> | <b>14</b>    | <b>0.0</b> | <b>30096</b> |

**APPENDIX 7**  
**Waterfowl species composition at Roberts Bank.**  
**The greatest number per survey is highlighted.**

| Date               | Mallard     |             | Green-winged Teal |             | American Wigeon |             | Northern Pintail |             | Scaup     |            | Other Dabblers |            | Other Divers |            | Total       |
|--------------------|-------------|-------------|-------------------|-------------|-----------------|-------------|------------------|-------------|-----------|------------|----------------|------------|--------------|------------|-------------|
|                    | No.         | %           | No.               | %           | No.             | %           | No.              | %           | No.       | %          | No.            | %          | No.          | %          | No.         |
| <b>Causeway SE</b> |             |             |                   |             |                 |             |                  |             |           |            |                |            |              |            |             |
| 17 Oct. 1995       | 4           | 1.3         | 0                 | 0.0         | 233             | <u>72.8</u> | 83               | 25.9        | 0         | 0.0        | 0              | 0.0        | 0            | 0.0        | 320         |
| 26 Oct.            | 3           | 0.7         | 1                 | 0.2         | 98              | 21.7        | 350              | <u>77.4</u> | 0         | 0.0        | 0              | 0.0        | 0            | 0.0        | 452         |
| 1 Nov.             | 8           | 1.3         | 11                | 1.7         | 329             | <u>51.7</u> | 287              | 45.1        | 0         | 0.0        | 1              | 0.2        | 0            | 0.0        | 636         |
| 10 Nov.            | 35          | 4.6         | 4                 | 0.5         | 222             | 29.3        | 488              | <u>64.4</u> | 0         | 0.0        | 0              | 0.0        | 9            | 1.2        | 758         |
| 14 Nov.            | 41          | 4.9         | 2                 | 0.2         | 346             | 41.1        | 453              | <u>53.8</u> | 0         | 0.0        | 0              | 0.0        | 0            | 0.0        | 842         |
| 21 Nov.            | 1           | 0.2         | 0                 | 0.0         | 89              | 16.9        | 438              | <u>83.0</u> | 0         | 0.0        | 0              | 0.0        | 0            | 0.0        | 528         |
| 30 Nov.            | 8           | 3.1         | 0                 | 0.0         | 238             | <u>91.2</u> | 0                | 0.0         | 0         | 0.0        | 0              | 0.0        | 15           | 5.7        | 261         |
| 8 Dec.             | 30          | 4.2         | 0                 | 0.0         | 172             | 24.4        | 504              | <u>71.4</u> | 0         | 0.0        | 0              | 0.0        | 0            | 0.0        | 706         |
| 15 Dec.            | 12          | 2.7         | 0                 | 0.0         | 275             | <u>62.9</u> | 113              | 25.9        | 28        | 6.4        | 0              | 0.0        | 9            | 2.1        | 437         |
| 23 Dec.            | 109         | 24.1        | 16                | 3.5         | 51              | 11.3        | 256              | <u>56.5</u> | 7         | 1.5        | 0              | 0.0        | 14           | 3.1        | 453         |
| 27 Dec.            | 148         | 30.0        | 2                 | 0.4         | 260             | <u>52.7</u> | 35               | 7.1         | 9         | 1.8        | 0              | 0.0        | 39           | 7.9        | 493         |
| 4 Jan. 1996        | 90          | 24.3        | 6                 | 1.6         | 49              | 13.2        | 212              | <u>57.1</u> | 7         | 1.9        | 0              | 0.0        | 7            | 1.9        | 371         |
| 10 Jan.            | 115         | 19.4        | 0                 | 0.0         | 360             | <u>60.7</u> | 110              | 18.5        | 4         | 0.7        | 0              | 0.0        | 4            | 0.7        | 593         |
| 17 Jan.            | 147         | 24.7        | 16                | 2.7         | 210             | <u>35.4</u> | 186              | 31.3        | 25        | 4.2        | 1              | 0.2        | 9            | 1.5        | 594         |
| <b>Total</b>       | <b>751</b>  | <b>10.1</b> | <b>58</b>         | <b>0.8</b>  | <b>2932</b>     | <b>39.4</b> | <b>3515</b>      | <b>47.2</b> | <b>80</b> | <b>1.1</b> | <b>2</b>       | <b>0.0</b> | <b>106</b>   | <b>1.4</b> | <b>7444</b> |
| <b>Causeway NW</b> |             |             |                   |             |                 |             |                  |             |           |            |                |            |              |            |             |
| 17 Oct. 1995       | 0           | 0.0         | 15                | 6.1         | 195             | <u>79.6</u> | 35               | 14.3        | 0         | 0.0        | 0              | 0.0        | 0            | 0.0        | 245         |
| 26 Oct.            | 0           | 0.0         | 339               | <u>99.7</u> | 0               | 0.0         | 1                | 0.3         | 0         | 0.0        | 0              | 0.0        | 0            | 0.0        | 340         |
| 1 Nov.             | 289         | <u>81.2</u> | 28                | 7.9         | 13              | 3.7         | 26               | 7.3         | 0         | 0.0        | 0              | 0.0        | 0            | 0.0        | 356         |
| 10 Nov.            | 0           | 0.0         | 611               | <u>92.3</u> | 45              | 6.8         | 5                | 0.8         | 0         | 0.0        | 1              | 0.2        | 0            | 0.0        | 662         |
| 14 Nov.            | 43          | 21.0        | 0                 | 0.0         | 158             | <u>77.1</u> | 4                | 2.0         | 0         | 0.0        | 0              | 0.0        | 0            | 0.0        | 205         |
| 21 Nov.            | 117         | <u>76.5</u> | 0                 | 0.0         | 22              | 14.4        | 14               | 9.2         | 0         | 0.0        | 0              | 0.0        | 0            | 0.0        | 153         |
| 30 Nov.            | 200         | 35.3        | 6                 | 1.1         | 347             | <u>61.3</u> | 13               | 2.3         | 0         | 0.0        | 0              | 0.0        | 0            | 0.0        | 566         |
| 8 Dec.             | 12          | 4.2         | 235               | <u>81.3</u> | 12              | 4.2         | 0                | 0.0         | 0         | 0.0        | 0              | 0.0        | 30           | 10.4       | 289         |
| 15 Dec.            | 164         | 32.3        | 11                | 2.2         | 277             | <u>54.6</u> | 51               | 10.1        | 0         | 0.0        | 0              | 0.0        | 4            | 0.8        | 507         |
| 23 Dec.            | 274         | <u>53.8</u> | 47                | 9.2         | 130             | 25.5        | 43               | 8.4         | 5         | 1.0        | 0              | 0.0        | 10           | 2.0        | 509         |
| 27 Dec.            | 190         | 33.2        | 69                | 12.0        | 213             | <u>37.2</u> | 101              | 17.6        | 0         | 0.0        | 0              | 0.0        | 0            | 0.0        | 573         |
| 4 Jan. 1996        | 143         | 24.1        | 82                | 13.8        | 227             | <u>38.3</u> | 140              | 23.6        | 0         | 0.0        | 1              | 0.2        | 0            | 0.0        | 593         |
| 10 Jan.            | 124         | 26.4        | 59                | 12.6        | 116             | 24.7        | 170              | <u>36.2</u> | 0         | 0.0        | 0              | 0.0        | 0            | 0.0        | 469         |
| 17 Jan.            | 66          | 26.9        | 85                | <u>34.7</u> | 57              | 23.3        | 17               | 6.9         | 0         | 0.0        | 0              | 0.0        | 20           | 8.2        | 245         |
| <b>Total</b>       | <b>1622</b> | <b>28.4</b> | <b>1587</b>       | <b>27.8</b> | <b>1812</b>     | <b>31.7</b> | <b>620</b>       | <b>10.9</b> | <b>5</b>  | <b>0.1</b> | <b>2</b>       | <b>0.0</b> | <b>64</b>    | <b>1.1</b> | <b>5712</b> |