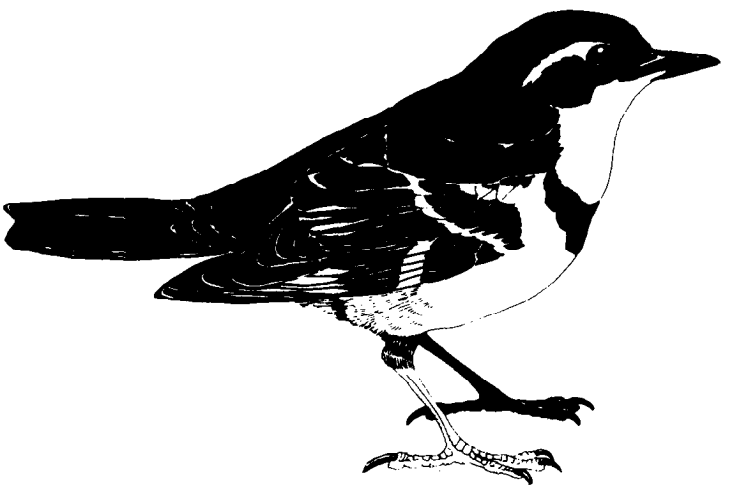
A STUDY OF THE VEGETATION, MARINE FAUNA, AND BIRDS OF THE TRENT RIVER DELTA AND ESTUARY - 1987

Members of
the Comox-Strathcona
Natural History Society

Betty Brooks, Gordon Bush,
and Norma Morton, Editors.



TECHNICAL REPORT SERIES NO. 205
Pacific and Yukon Region 1994
Canadian Wildlife Service

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Technical Report Series No. 205
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This series may be cited as:

Brooks, B., G. Bush, and N. Morton, Eds. 1994.
A study of the vegetation, marine fauna and birds
of the Trent River delta and estuary - 1987.
Technical Report Series No. 205,
Canadian Wildlife Service, Pacific and Yukon Region,
British Columbia.

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Published by Authority of the
Minister of Environment
Canadian Wildlife Service

Catalogue No. CW69-5/205E
ISBN 0-662-22351-9
ISSN 0831-6481

Copies may be obtained from:
Canadian Wildlife Service,
Pacific and Yukon Region,
P.O. Box 340,
Delta, British Columbia,
Canada V4K 3Y3

ABSTRACT

A survey of plants, marine life, and birds of the Trent River estuary and delta at Royston, B.C. was carried out during 1987 and 1988 by members of the Comox-Strathcona Natural History Society (C-SNHS). The purpose of the study was to compile a floral and faunal inventory and to identify important habitats of the Trent River estuary so that environmental assessments could be made rapidly in the event of future developments on or near the estuary.

One hundred and thirty-seven species of land plants were recorded in four terrestrial habitats. A further 21 species of salt marsh vascular plants were found in two major habitats with *Distichlis spicata* and *Salicornia virginica* prevalent in most communities. Four species of vascular plants found on the estuary, are considered rare in British Columbia: *Amsinckia, Erythronium, Cuscuta* and *Lotus.*

Intertidal sediments on the estuary were mapped and classified by particle size. While sediments ranged from fines (clay-silt-sand) to boulders, most of the study area was composed of a mixture of fines, pebbles and cobbles.

Thirty-two species of algae and 106 species of marine fauna were recorded in the intertidal zone. Quantitative studies from 30 stations at various tidal levels and substrates showed that 38 species were epifauna, 32 species were infauna down to 15cm and 23 species were infauna between 15 and 35cm. *Chthamalus, Balanus, Littorina, Tapes* and *Notomastus* were most abundant in the station samples and *Notomastus, Tapes, Hemigrapsus* and *Balanus* were most widely distributed. Several large beds of *Upogebia* were found on the northwest end of the beach and *Batillaria* snails were abundant there in the upper intertidal. The Trent is a spawning river for salmonids and herring spawn periodically on the estuary.

Weekly bird surveys were carried out to determine the number of species using each habitat throughout the year. Important habitat was determined from these data. A total of 38,593 birds were recorded and 124 species identified over the study period. A summary of one day maximum numbers showed a minimum of 7,153 birds dependent on the estuary over the course of the study. An average of 35 species used the area weekly. Intertidal (including tidal/river channels) and mixed forest/residential were the habitats most frequently used by birds during the study.

The estuary is an important wintering area for waterfowl, particularly dabbling and diving ducks. Mallard and White-winged Scoters were the most frequently recorded species. It is also a staging area for Brant in the spring. Of special interest were Marbled Murrelets during June and July, Caspian Terns in June and Northern Orioles in May and June.

RÉSUMÉ

En 1987 et 1988, la Société d'histoire naturelle de Comox-Strathcona a recensé les plantes. les orgaismes marins et les oiseaux de l'estuaire et du delta de la rivière Trent à Royston, en Columbie-Britannique. On voulait en inventorier la flore et la faune et relever les habitats i,portants, afin d'être en mesure de faire rapidement des évaluations environementales si des projects d'aménagement venaient à être envisagés pour la zone estuarienne ou à proximité.

On a relevé 137 espèces végétales terrestres, réparties dans 3 habitats terrestres. On a également recensé 21 autres plantes vascu;aires des marais salés dans deuxitats d'importance; les espèces *Disticlis spicata* et *Salicornia virginica* prédominaient dans la plu[art des communautés. Parmi les plantes vasculaires de l'estuaire, quatre espèces sont rares en Columbie-Britannique, à savoir *Amsinckia, Erythronium, Cuscuta* et *Lotus.*

On a cartographié les sédimants de la zone intertidale estuarienne at déterminé leur granulométrie. Les classes granulométriques représentées vont des sédiments fins (argile-silt-sable) aux blocs, mais dans la plus grande partie de la zone étudiée, on a trouvé un mélange de sédiments fins, de cailloux et de galets.

On a relevé 32 espèces d'algues et 106 espèces animales marines dans la zone intertidale. À l'étude quantitative d'échantillons prélevés dans 30 emplacements à diverses hauteurs de marée et dnas divers substrats, on a trouvé 38 espèces endofauniques, de la surface à 15 cm de profondeur, et 23 espèces endofauniques entre 15 et 35 cm. *Chthamalus, Balanus, Littorina, Tapes,* et *Notomastus* étaient des espèces très abondantes dans les écgantillons: *Notomastus, Tapes, Hemigrapsus,* et *Balanus* étaient les plus largement distributées. On a repéré plusieurs grandes zones de concentration d'*Upogebia* à l'extrémité nord-ouest de la plage; des escargots du genre *Batillaria* abondaient dans la haut de la zone intertidale. La rivière Trent est une frayère à saumon; en outre, des harengs viennent frayer périodiquement dans l'estuaire.

On a fait des recensements hebdomadaires des oiseaux pour déterminer combien d'espèces fréquentent chacun des habitats au cours de l'année. L'importance dees habitats a été déterminée d'après les résultats de ces recensements. En tout, on a dénombré 38 593 oiseaux et identifié 124 espèces au cours de la périod d'étude. En examinant les nombres maximum atteints en un jour, on a constaté qu'au moins 7 153 oiseaux dépendaient des ressources de l'estuaire pendant l'étude. En moyenne, 35 espèces par semaine fréquentaient les lieux. La zone intertidale (y compris les chenaux de marée et les cours d'eau) et la zone de forêt mixte et daménagement résidetiel ont été les habitats les plus souvent utilisés par les oiseaux durant l'étude.

L'estuaire est une importante aire d'hivernage pour la sauvagine, et plus particulièrement pour les canards de surface at les canards plongeurs. Le canard colvert et la macreuse à ailes blanches sont les espèces qu'on a le plus souvent signalées. L'estuaire sert également de halte migratoire à la bernache cravant au printemps. Signalons quelques espèces d'intérêt particulier : l'alque marbrée, présente en juin et juillet, la sterne caspienne, observée en juin, et l'oriole du Nord, signalé en mai et juin.

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FOREWORD

Estuaries are a valuable resource to any community or Regional District fortunate enough to have one within or near their boundaries. They are important nurseries for our Pacific salmon and act as stepping stones for millions of migratory birds that depend on them as resting and feeding areas during their annual migrations each spring and autumn.

Estuaries are also important habitats for hundreds of thousands of waterbirds that winter along the British Columbia coast. During winters with severe weather, estuaries become critical habitat as inland freshwater marshes and farmlands freeze over and become inaccessible to the birds. During these cold periods, estuaries are the only places available that have enough open water and food to support the birds.

Estuaries are also rare habitats in British Columbia: less than 3 percent of our 27,000 kilometres of coastline are estuarine in nature. Despite their rarity and their importance to a myriad of wildlife species, man has caused and continues to cause, considerable negative impacts to these systems. Many of them, for example, have been dyked, filled, and used as residential, industrial or agricultural sites.

There is a certain irony here in that most of the man-made developments on our estuaries can be placed somewhere else; but, the wildlife dependent on estuaries for their very survival cannot go elsewhere. Thus it is refreshing to work with a local organization that recognizes the importance of these systems and is prepared to do something about protecting them at the local level.

This is not the first time I have had the good fortune to work with members of the Comox Strathcona Natural History Society. They have been involved in many conservation issues important to their communities over the years. They have also been very active in assisting the Canadian Wildlife Service with bird counts of Baynes Sound and more recently with our surveys of Canada Geese in the Comox Valley and Brant along the Courtenay-Comox foreshore areas.

But this study of the Trent River estuary is their study, of their own initiative and design. Club members took time from their busy schedules and over the period of a year gathered the data. They then spent many hundreds of hours over the next few years analyzing the data, writing the report, preparing the tables, and draughting the figures.

Their self-imposed challenge to gain firsthand knowledge of an estuarine ecosystem and to provide baseline data that might, some time in the future, help protect the Trent River estuary has been met, as evidenced by this volume. Along with the estuary, the Comox-Strathcona Natural History Society is indeed a most valuable resource to the communities of which their members are a part.

Neil K. Dawe,
Canadian Wildlife Service,
Qualicum Beach, B.C.

ACKNOWLEDGEMENTS

The Comox-Strathcona Natural History Society is particularly appreciative of the time and advice given by Neil Dawe of Environment Canada, Canadian Wildlife Service (CWS) on the presentation of the data and preparation of the report, and for his critical review of the manuscript. He also conducted the computer analysis of the data and prepared the figures in the section on birds. CWS also sponsored the publication of this report.

We acknowledge the encouragement and help given by Fisheries and Oceans Canada and especially for the interest shown by Bruce Hillaby.

The Federation of British Columbia Naturalists provided a grant to the C-SNHS for their study of the Trent River delta and estuary. We appreciate this show of interest and encouragement.

Environment Canada, through the Non-Governmental Environmental Agencies program, further contributed to the cost of activities of the C-SNHS, including the Trent River study.

Staff of the Comox-Strathcona Regional District assisted in the preparation of Figure 3.

We also wish to thank residents of the study area for allowing our data-collecting teams entry to their properties and for their interest in the project.

Lastly we acknowledge the encouragement and participation of the following members of C-SNHS: Allan and Betty Brooks, Melda Buchanan, Gordon Bush, Phil Capes, Joan Cartwright, Vi Chungranes, Lena Clark, Lou Dunbar, Ian Forbes, Dulcie Hamilton, Willi Haras, Doug and Marian Innes, Harry Jackson, Fran Johnson, Betty and Jim Lunam, George and Lilian Machin, Diana Maloff, Millie Marr, Keith and Norma Morton, Isobel McLeish, Nelson McInnes, Gloria Read, Janet Robertson, Helen Ross, Jack Scott, Barbara Sedgwick, Pat Smith, and Don Woodcock.

INTRODUCTION

The Comox Strathcona Natural History Society (C-SNHS) engaged in the present study to gain first-hand knowledge and experience with the wildlife of a delta and its estuary in general, and of the Trent River estuary in particular. The C-SNHS further wished to gather baseline data on the deltaic vegetation, and the marine and bird life of the Trent River estuary in order to better estimate the impact of future, man-made developments.

The project was first considered by the C-SNHS following a discussion of estuaries at the 1986 regional meeting of the Federation of British Columbia Naturalists in Nanaimo. The Society adopted the project in November 1986, began field work on the first weekend of January 1987 and continued into the spring of 1988.

A few reports are available that include at least a portion of the Trent River estuary. Trethewey (1979) studied the Comox Harbour-Baynes Sound area as migratory bird habitat. The study area included the Trent River Delta but data specific to the delta were not provided. Burns (1976) published a survey of the uses made of the Courtenay River estuary, and included recommendations for its protection. His survey encompasses the mouth of the Trent River but also neglects to present data specific to the estuary. Morris et al. (1979), reports on the status of environmental knowledge of the Courtenay River estuary to 1978. This report includes brief chapters on the geology, climatology, hydrology, oceanography and biology of the Courtenay River estuary. This study just touched on the Trent River delta. In addition, the C-SNHS has participated in a number of other bird studies and counts over the years which included the Trent River delta area. Data from these studies can be found in the Society archives.

The scope of this study was restricted by the type and level of expertise found within the C-SNHS. Based on that expertise, we concentrated our efforts on the intertidal and terrestrial vegetation, marine invertebrates, and bird life. Except for a few sundry observations (deer, racoon and meadow voles), we made no attempt to study the mammals.

A coordinator was appointed for each of the three areas of study and field crews were assigned on a voluntary, as-needed basis. Each coordinator tabulated and analyzed the collected data and presented the findings in this report under the headings of Land Vegetation, Marine Studies, which includes estuarine marsh vegetation, and Birds.

The purpose of this study was to:

1) compile a list of algae and vascular plants that occur on the Trent River estuary.
2) determine the distribution, type and quantity of marine life on the Trent River estuary.
3) to compile an inventory of bird species using the Trent River estuary, and to record their distribution and abundance.

THE STUDY AREA

The headwaters of the Trent River lie in the Beaufort Range on Vancouver Island at an elevation of about 1000 metres. The river flows north-easterly for a distance of twenty kilometres, entering the Strait of Georgia at the Village of Royston (Figure 1). The Village of Royston rests on the upper levels of the delta and on the uplands to the west. Highway 19 passes through Royston continuing on to Courtenay, about eight kilometres farther north.

The delta of the Trent lies between Comox Harbour and Baynes Sound and is protected from severe storms by Denman Island. It is somewhat triangular in shape being about one and one-third kilometres wide at its landward base and extending, at low tide, about one-half kilometres into the sea. The area selected for study is bounded on the east by Highway 19, on the south by the east-west portion of Gartley Road, on the north by Hayward Avenue, and on the north and east by the sea.

There are several entry routes to the delta from Highway 19. At the south, Gartley Road leads to Gartley Channel from which access to the southeastern portion of the delta is gained. From Highway 19, after crossing the Trent River bridge, a right turn at Carey Place leads to the west bank of the river and to the area between the Trent River and the North Channel. A third route is available by turning right off the Highway on to Hayward Avenue, continuing to the sea, then bearing right on Marine Drive to the parking area at the end. From this location one has access to the North Channel and the northwestern part of the delta.

The delta has been built by sediment carried down the Trent River. The river transports boulders, cobbles, pebbles, sand and silt to the sea. Those sediments are augmented by sand, silt and mud carried by long-shore marine currents and by tides. In general, the coarser sediments, i.e. boulders and cobbles, are found closer to the channels and are lacking in the High Salt Marsh and the lower part of the Intertidal Zone where the dominant components are sand, silt and mud.

The Trent River is the principle source of fresh water entering the delta. Both Gartley and North Channels are former routes of the Trent River but are now tidal channels. North Channel is connected to the river at times of high runoff and at high tide levels but is cut off from the fresh water of the Trent River much of the year.

Most of the delta above tide level has been altered by man. Residences occur along Gartley Rd. and along Highway 19. A large portion of the delta is farmland which, while lying above normal high tide has been further protected by dikes and rip-rap along the Trent River channel. The rip-rap confines the river to its present course. A portion of Gartley Channel, once the route of the Trent River, has been dredged and a log-collecting pond was dug in it near the end of Gartley Road (see the air photo, Frontispiece). The residents along the beach backing on Gartley Road have dug "swimming holes" on the beach with channels to the sea. The holes have all been abandoned because of inadequate water circulation but they are still visible on the air photo as well as on the

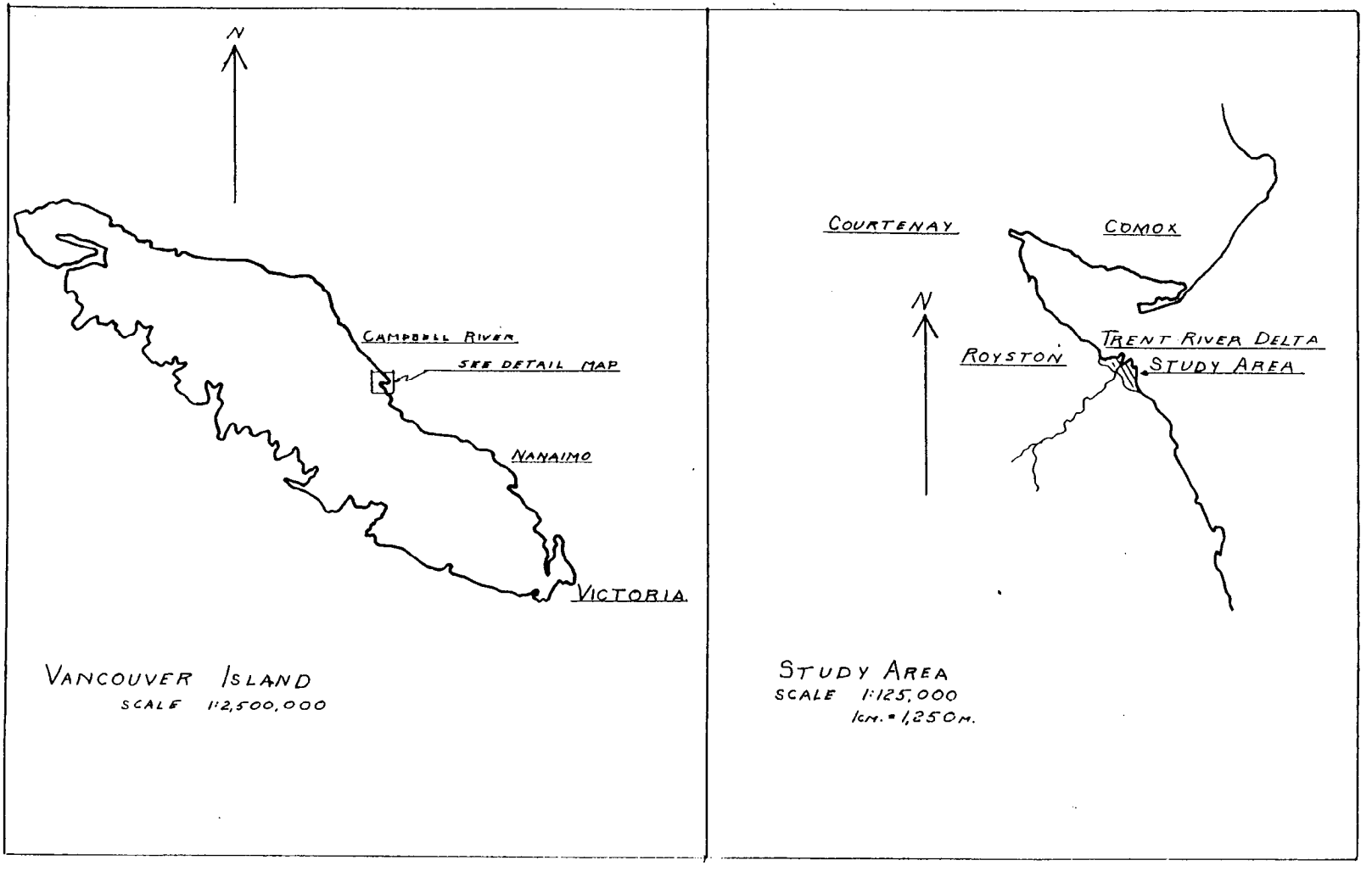

Figure 1. Location of Study Area

ground. The Trent River was polluted by coal mine effluent for many years causing salmon stocks to become severely depleted (see Appendix X). After the mines closed, salmon began increasing and now coho, chum and occasionally pink salmon spawn in the Trent River.

The Trent River is invaded by salt water to a point just upstream of the Highway 19 bridge. Conversely, the freshwater of the river affects the sea-water regime throughout the intertidal zone and the salt marshes. The area covered by these estuarine waters have been divided into three habitats, while the higher parts of the delta are further divided into four.

Habitats on the estuary were defined by their relationship to tide level (which in winter may range over seventeen feet) and by inclusive plant life. Distribution of the seven habitats are shown in Figure 2, and a brief description of each is given below.

1. Mixed Forest/Residential:

   Small wooded areas lying above high tide and commonly selected for residential sites. Trees common to this zone are Douglas-fir[3], Broadleaf Maple and Red Alder. Typical flowering plants include Tall Fringe Cup, Siberian Miner's Lettuce and Wall Lettuce.

2. Cultivated Fields:

   This habitat includes farmland and garden plots. The farmland is mostly used as pasture where grasses and clover are dominant. It also includes a field of alfalfa, and on the seaward fringe, a row of hybrid apple trees.

3. Riparian:

   This zone includes the area along the banks of the Trent River, and is frequently inundated by high tides. Plants include Snowberry, Nine Bark and Nootka Rose.

4. Upper Beach:

   The plants of this habitat are found on berms formed by tidal action and currents during the higher tides. Vegetation growing amongst the tidal debris includes Dune Grass, Gumweed, Cut-leaf Wormwood, Beach Pea, Crabapple, Black Hawthorn and Mountain Ash.

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[3] Common names have been used throughout most of the manuscript. For scientific names of organisms see the Appendices.

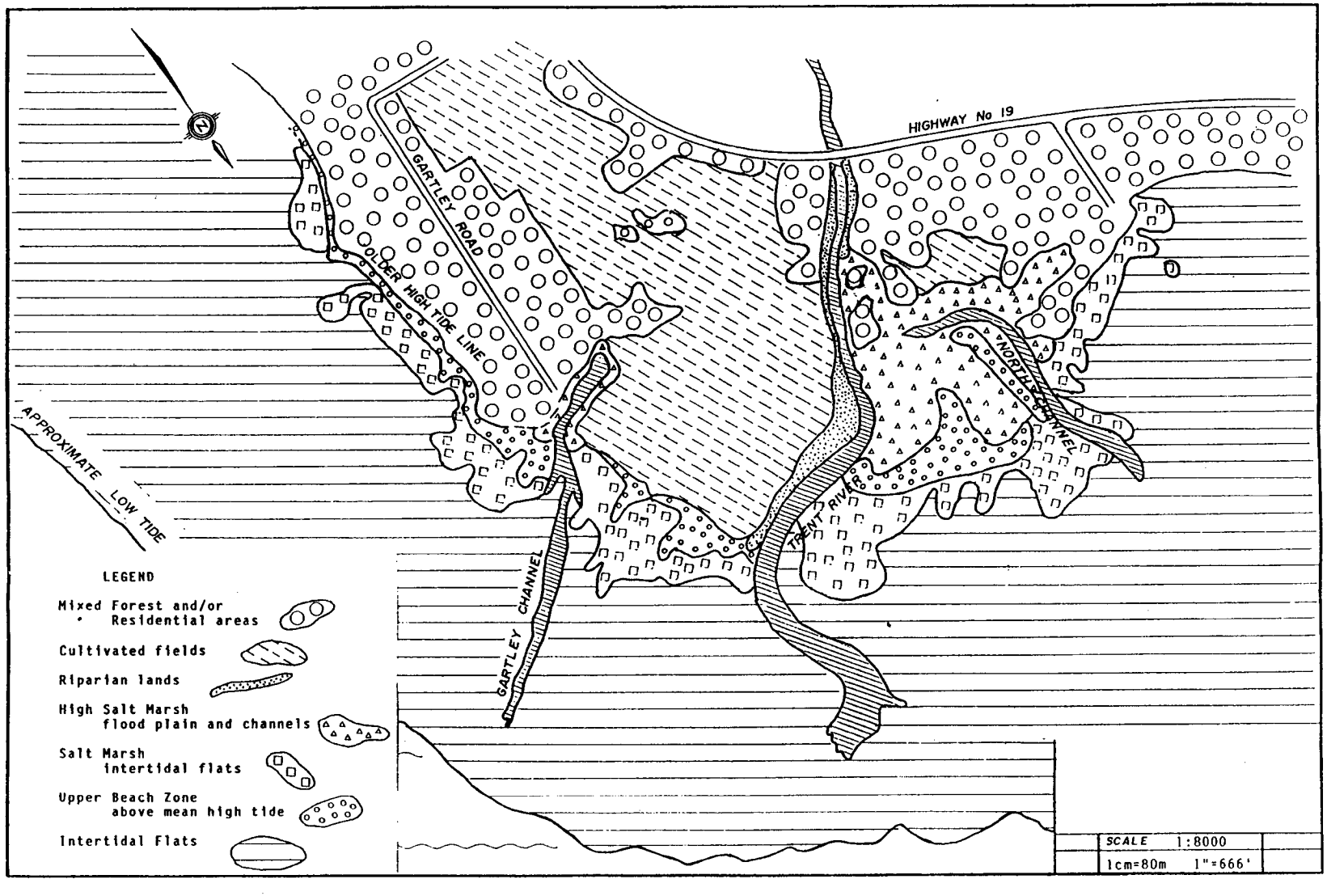

Figure 2. Habitats of the Trent River estuary

5. High Salt Marsh:

   This habitat lies above normal high tide but is periodically flooded by high river runoff and by abnormally high tides. Typical plants found in this zone include Seashore Saltgrass, Pacific Silverweed, Meadow Barley, Arctic and Gerard's Rushes and Saltbush.

6. Salt Marsh:

   This zone is inundated by high tides and to some extent by moderate tides. Some of the plants typical of this habitat are Seashore Salt Grass, Glasswort, Sea-Milkwort, Seaside Plantain and Gumweed.

7. Intertidal:

   This is by far the largest habitat of the Trent River delta and estuary, encompassing all the area between low and high tides. The seaweeds Popping Wrack and Branching Turkish Towel are common as are invertebrates such as Mud Shrimp, Barnacles, Periwinkles, Green Shore Crabs and Japanese Little Neck Clams. There are extensive Eel-grass beds at the lower elevations.

Figure 3. Aerial photograph of the Trent River delta with study grids

METHODS

All the data collected in this study were related to the habitats described above as follows. Data were associated with a grid number linked to an overlaid grid on an aerial photograph of the delta (Figure 3). A copy of the photo with the superimposed grid was carried by each field crew and all observations were recorded with the appropriate grid designation. One advantage of this method was that the birding crews did not have to recognise the various habitats in which birds were observed. The compiler used that information to determine concentrations, or rare occurrences of bird species at the end of the field studies, and was then able to identify the habitat being used.

Intertidal Sediments

Collection methods for sediments conducted by the late Gordon Bush are not known.

Terrestrial vegetation

A qualitative inventory of the terrestrial vegetation was carried out over the year of the study. Observations were made in March 1987, and on a weekly basis from April to June and once in August. Most plants were identified from field guides (Clark 1974, Lyons 1974) while walking over the various habitats. Less common plants were identified using Hitchcock and Cronquist (1969, 1976). Rare plants were determined from Straley et al. (1985). Nomenclature follows Hitchcock and Cronquist (1969, 1976). The dominant species were chosen from what appeared to be, visually, the most abundant plants in each habitat. The Upper Beach zone to the west of the Trent River was chosen for a sampling of Gramineae which, we have assumed, represents the types of grasses found throughout the study area.

Intertidal vegetation

Throughout the intertidal study area, seaweeds were observed and listed through the seasons and major seaweed beds were mapped. Identifications were based on Abbott (1977), Scagel (1967) and Waaland (1977). Seaweeds occurring in the thirty benthic samples were listed and their abundance was noted. A walk was taken up-river in September to determine the upper limit of *Enteromorpha intestinalis* growth. Since this species will tolerate slightly brackish water, (Waaland, 1977) it serves as a good indicator of the upper limit of marine influence in a river.

Plants of the salt marsh were observed between February and November and communities were identified visually. Clark (1974) and Hitchcock & Cronquist (1969-1976) were used for identifications. Dominant plants of each community were determined by estimating percent ground cover in approximately one square meter. Salt marsh communities and eel-grass beds were then mapped.

Marine Fauna

Intertidal invertebrates as well as surface sediments were surveyed and mapped by walking over the area at low tide. A quantitative study was then carried out from late March to October. Thirty stations ranging from the north-west end to the south end of the tidal flats on the Trent River delta were sampled (Figure 4). The stations were selected at random within locations chosen to represent various tidal levels, sediments and faunal associations. At each station a one meter square quadrat was marked off using a nylon rope and four wooden pegs. The following data were recorded for each quadrat:

(a) Physical: approximate tidal level and map grid; sediment range (fine sediments by sight and feel, coarser sediments by measurement using the Wentworth Scale (Levinton, 1982).

(b) Biological: Plant cover was noted (estimated % of square metre quadrat) and epifauna were listed by species and number. Any other interesting observations were noted. For the infauna, one quarter of the quadrat was dug to a depth of 15 cm. and fine sediments were sieved. A further dig to a depth of about 35cm. was made in the same place. Animals and sediment types were recorded at each level. From the rough field data, a chart was made recording the fauna for each level in the thirty quadrats.

A walk was made up-river in September to determine the upper limit of any marine invertebrates, particularly the green shore crab which tolerates brackish water and the lower limit of fresh water invertebrates such as caddis fly larvae. A night walk was made at low tide (0.0m) on 21 December 1987 to observe marine animals and a beach seine was carried out at low tide over the eel-grass beds on the north-west beach on 24 July 1987. All marine life netted were placed in a wading pool for examination and recording.

Identifications of invertebrates was based on Berens (1980), Butler (1980), Hart (1982), Kozloff (1983) and Smith (1975). No attempts were made to identify minute crustaceans. Clemens (1961) and Scott & Crossman (1985) were used to identifying fish; nomenclature was taken from Peden's list in Cannings & Harcombe (1990).

Birds

Volunteer teams of two to four Society members conducted weekly counts, using an established route to ensure complete coverage of the study area. Observations were made with 10x40 and 7x35 binoculars, and a 15-25 power spotting scope. Peterson (1961) and Robbins (1966) were used as field guides for identification. Teams recorded the number of individuals of each species seen, their location, the date and time, the tide level and weather conditions. Locations of birds were also determined by using the superimposed grid and aerial photograph of the Delta (see Figure 3). The data collected were subsequently posted on spreadsheets which showed weekly and monthly totals of each species, their length of stay and the habitats used. Nomenclature follows Cannings and Harcombe 1990.

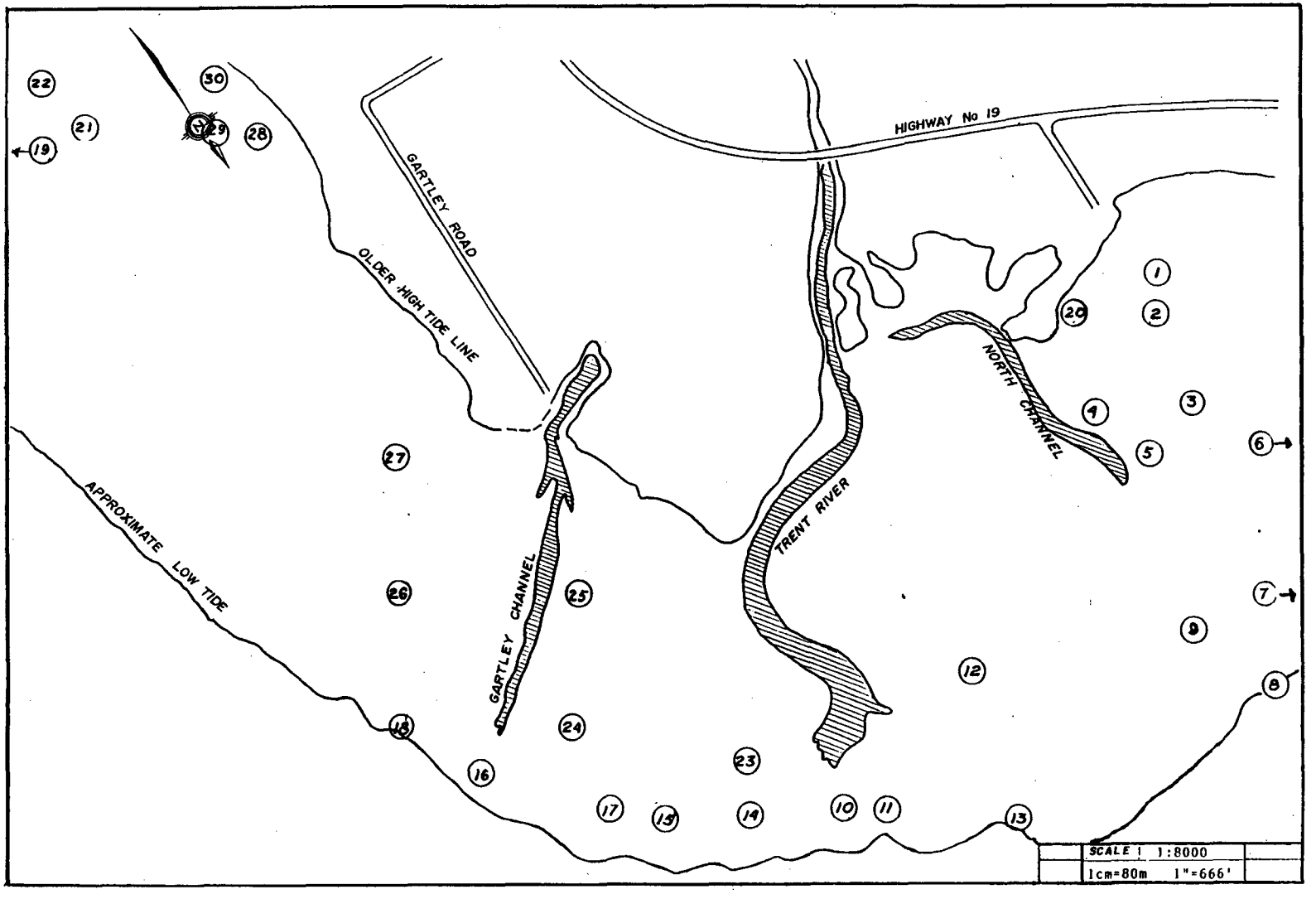

Figure 4. Intertidal Sampling Stations

After the fieldwork was completed the location of data points was converted from the aerial-photo grid system to location by habitat and was accordingly entered onto computer files in a format that would allow analysis by the Canadian Wildlife Service computer programs. The analysis was conducted for each species and species group by season for the study area and by habitat (Appendices XII and XIII).

The computer analysis generated the total number of birds by species and species groups seen for each season. In addition, the maximum and minimum numbers as well as the mean number of birds and its standard deviation is given, along with the frequency of occurrence of each species. Unlike many studies, the mean is calculated by summing the number of birds seen and dividing by the number of occurrences of the species only and not the total number of counts made. Thus the mean is the average number of birds you might see when the species actually occurs on the site. The frequency of occurrence gives the probability of seeing the bird over that same period.

For example, there was about a 90% chance of seeing a White-winged Scoter in late winter 1986, in the intertidal habitat (Appendix XIII). And if the scoter was there, about 66 birds were the average number seen; less than 9 or more than 157 birds would have been unusual.

Each grid was assigned to a particular habitat type on the estuary based on Figure 2. The conversion for computer analysis resulted in some minor distortion of data in terms of habitat use, as grids sometimes contain two or more habitats but were analyzed according to the dominant habitat only.

For a number of species, bird distribution maps were overlaid on habitat maps and areas of significant concentrations were mapped.

RESULTS

Intertidal Sediments

Intertidal sediments ranged from fines (clay-silt-sand) to boulders (Figure 5). Most of the study area was composed of a mixture of fines, pebbles and cobbles.

Terrestrial Vegetation

One hundred and thirty-seven species of land plants were recorded in four terrestrial habitats. For a list of all land plants observed during the study period, see Appendix I.

Intertidal Vegetation

Seaweeds

Thirty-three species of seaweeds were recorded (see Appendix II and V; Figure 6). Those found in the high intertidal were popping wrack, brown lettuce, green felt, bangia and green hair. The latter four were found in early spring. Brown lettuce was seen at the edge of the Gartley Channel log basin while bangia and green felt formed red and green scums on the salt marsh vegetation. Popping wrack was frequently seen growing among the lower saltmarsh plants and green hair was found on cobbles below the marsh. Link confetti occurred in freshwater seepage areas and up the river as far as the Highway 19 bridge.

In the mid-intertidal area clumps of popping wrack and branching turkish towel were common on cobbles and pebbles. Diatom scum was noted on the surface of sediments from April to June.

At the low intertidal level, sea lettuce was abundant on finer sediments while sugar wrack, Japanese seaweed and pink rock crust were found on the rocky areas of the south beach. Large beds of green string lettuce were seen around the river mouth at low tide. This species was also abundant in the river channel. Tidal pools contained sea lettuce, popping wrack, polly seaweed and hildenbrandia (on rock surfaces).

Salt Marsh Vascular Plants

Salt marsh plant communities were found on the upper tidal flats, around the log basin above Gartley Channel, along the upper part of the North Channel, the river side-channels, and the low flood plain between the river and North Channel. Salt marsh plants extended along the main river bank as far up as map grid M5. (see Figure 3)

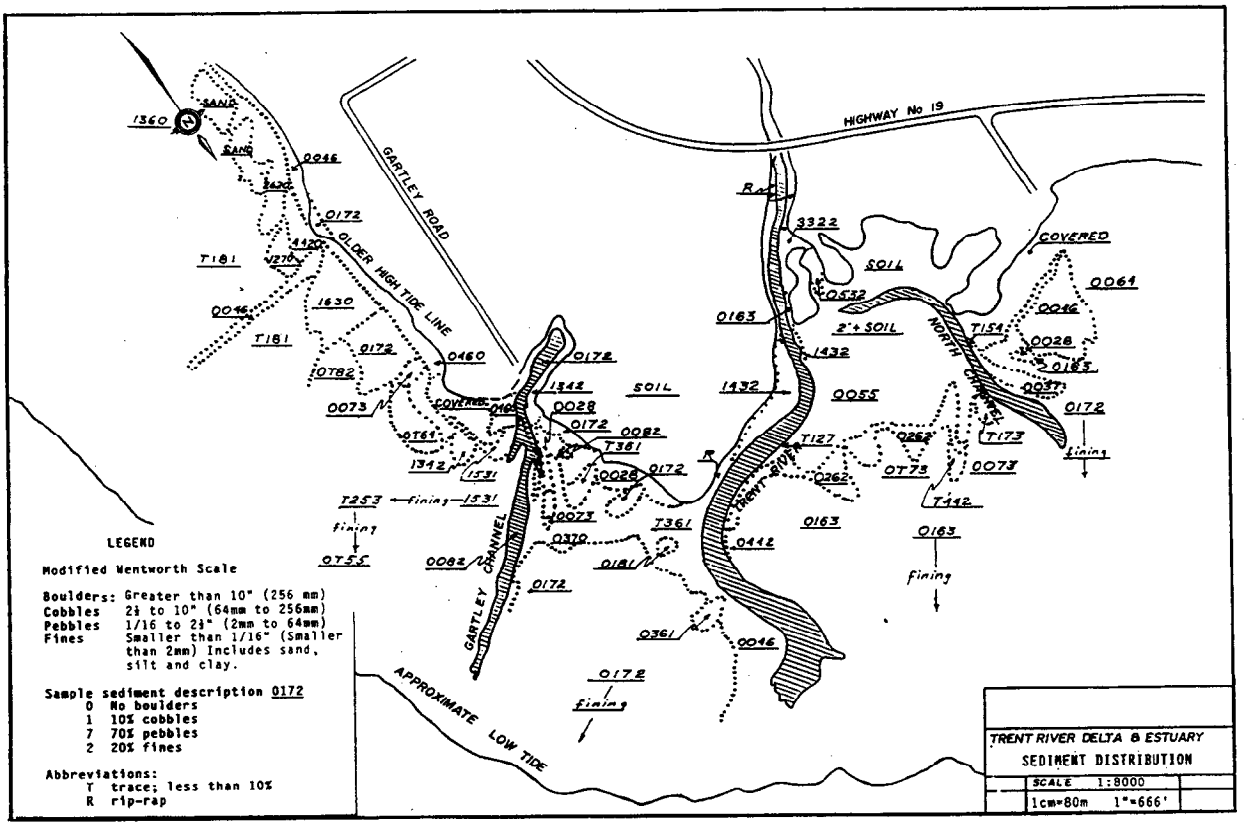

Figure 5. Intertidal sediment distribution on the Trent River delta

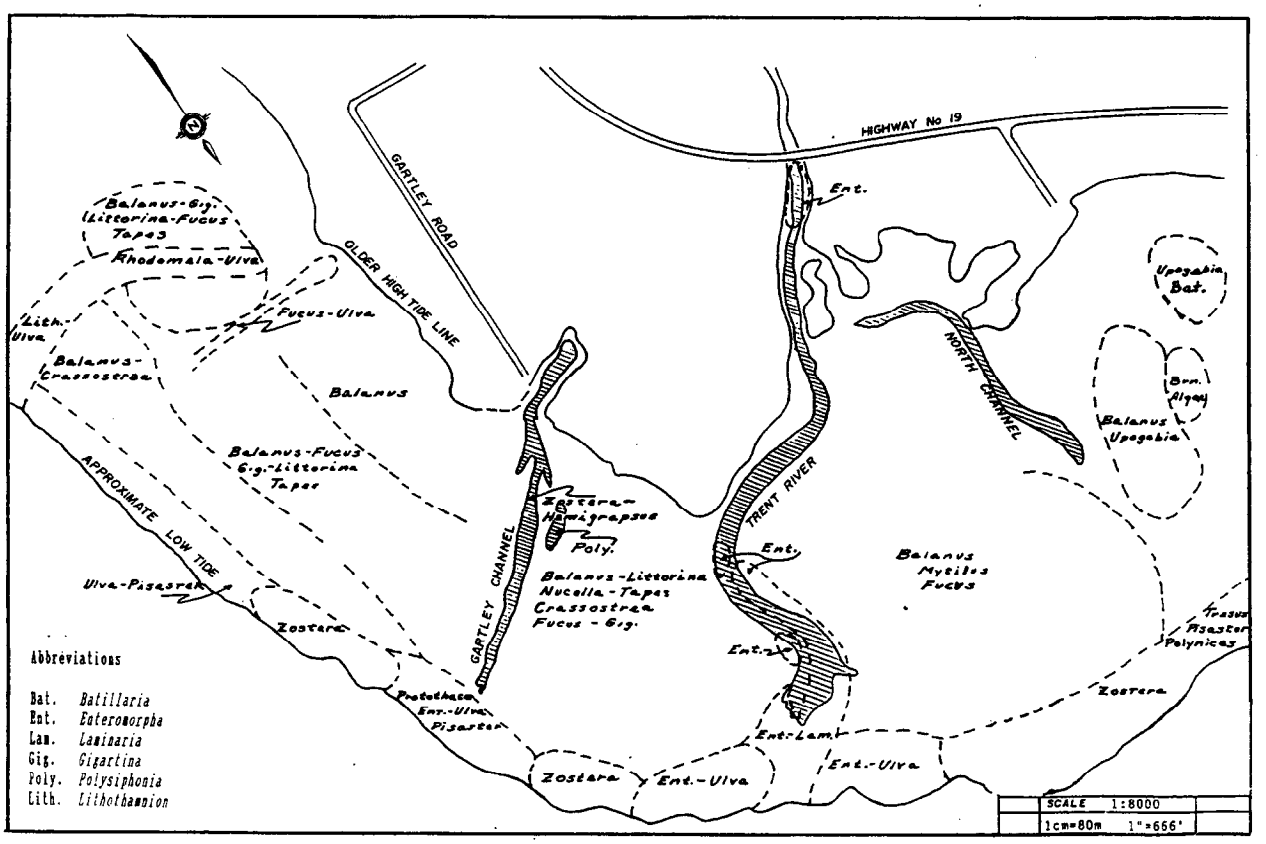

Figure 6. Invertebrate, Seaweed and Eel-grass Communtieis, Trent River delta.

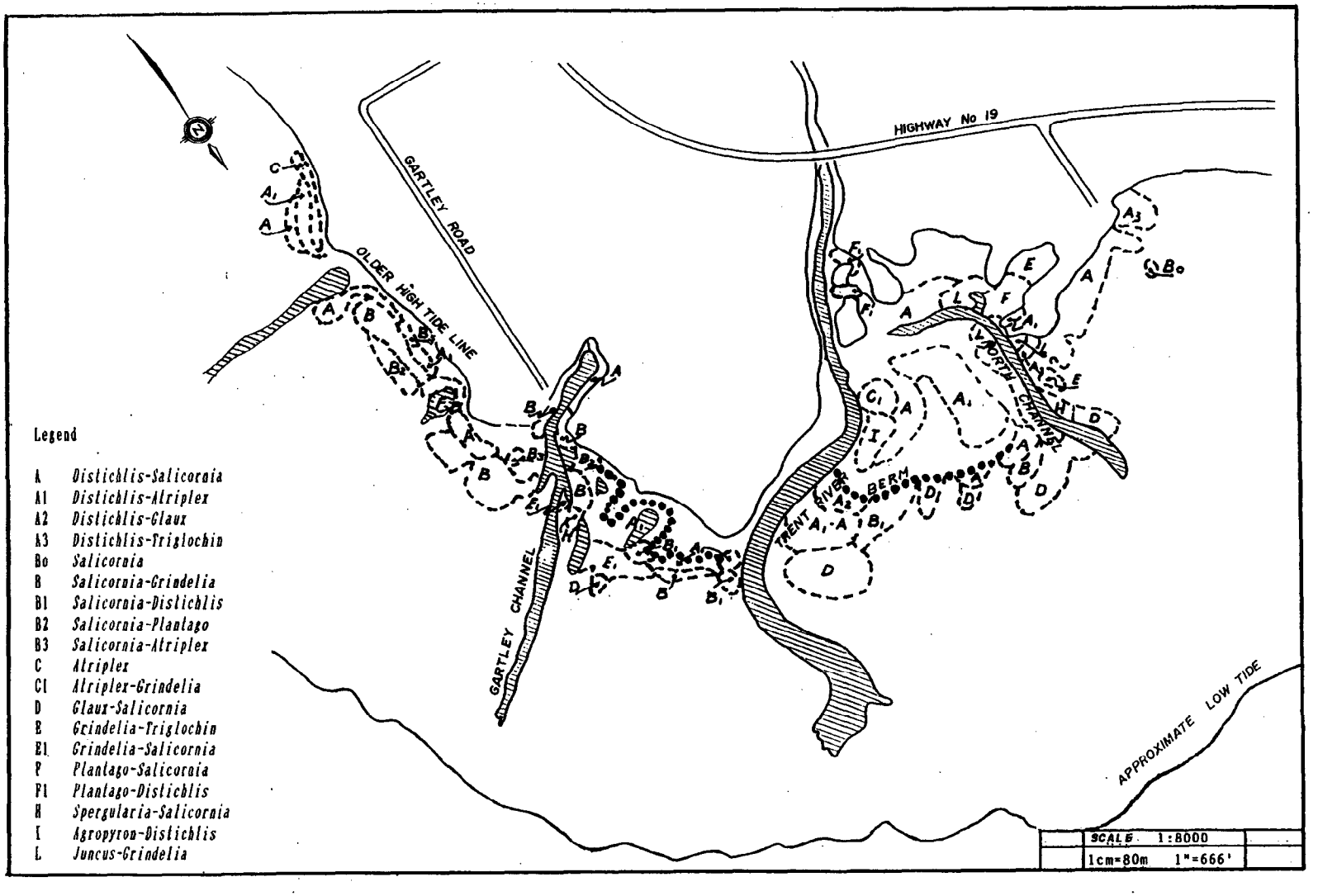

Figure 7. Salt Marsh Plant Communtiies of the Trent River estuary

Dominant plants varied throughout the salt marsh but the same species recurred in many communities (Appendix II; Figure 7). Six species were particularly abundant throughout most of the marsh - seashore saltgrass, glasswort, saltbush, sea-milkwort, gumweed and seaside plantain. Kennedy (1982) found that three-square bulrush and Lyngby's sedge dominated the Courtenay River estuary. However, no bulrush species were found in the Trent estuary and only small pockets of sedge were evident. The halophytic plants present indicate that the Trent is a saline estuary receiving considerably less fresh water during the growing season than larger river systems such as the Courtenay River.

Higher marsh areas which are only covered at very high tides, particularly when the river is in freshet, were found to contain such species as arctic and Gerard's rushes, meadow barley, couch grass, Pacific silver-weed, Lyngby's sedge, saltbush, seashore saltgrass and Fowler's knotweed. Searocket and seabeach sandwort were found on upper beach areas subjected to spray and high storm tides.

Seashore saltgrass, glasswort, sea-milkwort, seaside plantain and gumweed were the most abundant plants in the lower marsh areas. Sand spurry, sea blight, arrow-grass and dodder (rare in B.C.) were less common. (Dodder, however, was abundant in the log basin where it was parasitic on glasswort.) Marsh plants found lowest in the intertidal were glasswort and sea-milkwort. Eel-grass was found at low tide levels in fine sediments and in Gartley Channel where it is constantly in water (Figure 6). A list of the salt marsh plant species and a list of the plants in each of the plant communities mapped can be found in Appendix II.

Marine Fauna

Invertebrates

Sixty species were found in the 30 stations studied quantitatively (Appendix III & IV). Thirty-eight of these species were epifaunal, 32 infaunal to 15 cm and 23 infaunal from 15 to 35cm. The most abundant species for each level were:

Epifauna - little acorn barnacle, acorn barnacle and checkered periwinkle.
Infauna to 15cm - Japanese littleneck clam and threadworm.
Infauna to 15 to 35cm - threadworm.

Threadworms, acorn barnacles, green shore crabs and checkered periwinkles were the most widely distributed species occurring in 50-70% of the quadrats. Several species (threadworm, Japanese littleneck clam, green shore crab, acorn barnacle) were distributed from high to low intertidal while others were confined to two tidal levels (little acorn barnacle, both periwinkles, mussel, native littleneck clam) or one (butter clam, horse clam). The most abundant species found in each tidal zone are given in Table 1. The range of sediments found at each station is given in Appendix VI.

Table 1. The most abundant invertebrates found in each tidal zone during a study of the marine life of the Trent River estuary. Species are listed in decreasing order of abundance. Full species names along with the code names used in the analysis may be found in Appendix VIII.

	High (3.7 to 4.9m)	Mid (1.2 to 3.4m)	Low (-0.1 to 0.9m)
1.	Chth dall	Chth dall	Noto tenu
2.	Litt scut	Litt scut	Mya aren
3.	Bala glan	Bala glan	Maco inqu-Bala glan
4.	Litt sitk	Litt sitk	Poly unid
5.	Noto tenu	Myti edul	Spio cost
6.	Tape japo	Prot stam	Pagu spec
7.	Maco balt	Tape japo	Glyc amer
8.	Noto pers	Noto pers	Prot stam
9.	Bati attr	Hemi oreg	Saxi giga
10.	Myti edul	Noto tenu	Upog puge-Hemi oreg
11.	Maco inqu	Bati attr	Tape japo
12.	Hemi oreg	Rove Beet	Thel cris

Intertidal survey

Large beds of Japanese littleneck clams and mudshrimp were evident (shells and holes) on the tidal flats (see Figure 6). Along with mussels, they probably provide food for diving duck species. Acorn barnacles and periwinkles extended to low tide levels on the extensive tidal flats of this low gradient beach. Oysters were distributed throughout the south beach but were not plentiful. Cuming's batillaria snails were abundant on muddy sand at higher tidal levels of the northwest beach. Like the Japanese littleneck clam, this species appeared on the B.C. coast with the introduction of the Japanese oyster. Moon snails, starfish, and large clam species were evident at low tide among the eel-grass beds. The 106 species recorded from the quadrats and survey are listed in Appendix VIII and all species found are listed by tidal zone in Appendix VII.

A low tide (0.0m) walk on the north-west beach the night of 21 December revealed six giant pink stars as well as a number of wrinkled purple snails, the latter in the process of mating.

Marine invertebrates showing the most tolerance for low salinity (fresh water) were the green shore crab and bubble snail. Green shore crabs were found in the river to the level of grid M4 (a distance of approximately 600 meters upstream from the mouth). They also make their burrows in the muddy banks of the North Channel and are probably a factor in the bank erosion evident there. Bubble snails were found up-river as far as the bridge (M2). Several were also found in a pool by the fisheries' cable (M5). They had laid their eggs on the seaweed, link confetti. These snails are normally found at low tide in eel-grass beds. (The snails and seaweed appear to be indicators of the upper limit of tidal water in this estuary.) Caddis fly larvae, indicators of fresh water habitat, began to appear in the river at M3. Nine species were recorded in the seine haul of 24 July (Table 2).

Table 2. Marine fauna recorded from a seine haul taken over eel-grass beds at low tide on the Trent River estuary tidal flats 24 July 1987.

Species	No. of individuals
edible crab	2
green shore crab	1
kelp crab	2
hermit crabs	4
pipefish	1 (male)
white sea perch	1
shiner sea perch	6
staghorn sculpin	100+
nudibranch eggs noted	-

Commensalism and parasitism

The commensal scale worm was commonly encountered on the mottled star. Parasitic isopods (both male and female) were found on the ventral side of a mud shrimp and a commensal clam, the wrinkled lepton, was also found on another individual of the mud shrimp. Commensal pea crabs, both male and female, were found inside the mantle cavity of horse clams.

A gravid female mudshrimp was observed in November and young mud-shrimp were seen throughout the summer. Ghost shrimp were not encountered.

Mites and Insects

In April, red mites (species not determined) and rove beetles were observed running over muddy sediment in the area around the North Channel where there was a bed of sea-milkwort. According to Kozloff (1983), mites use their long snouts for piercing small flies and sucking out their juices and some species of rove beetle feed on sand hoppers (amphipods) in a similar way, by piercing them with their strong jaws.

While photographing gumweed on an incoming tide, one of the editors (BB) was increasingly bitten by mosquitoes as the tide rose. These, as well as other insects, had migrated up the stems of the salt marsh plants until they had become concentrated on the tops of the tallest plants, which happened to be gumweed. Apparently this was their method of escaping the flooding tide.

Fish

Fourteen species of fish have been recorded on the study area (Appendix VIII). Pacific herring were not seen. They regularly spawn in the low tide area (Trethewey 1979) but not necessarily every year. In 1987 they did not spawn on the Trent estuary but they did spawn in nearby areas (Brian Allan, DFO, personal communication). An estimated 600 coho and 125 chum salmon ran up-river during November and December of 1987 (DFO, Appendix IX). Salmon were not counted for two weeks within this period due to the fence cable breaking during a period of heavy rains. A chum salmon was seen in the North Channel near the Trent River in November. In March, a dead long-nosed skate was found on the salt marsh. It had been partly eaten, probably by a harbour seal. Sandlance were observed emerging from the sand on 24 June at the 0.9m tide level. A stranded dogfish and a buffalo sculpin were found in a tidepool in September, and young sculpin were very abundant in the North Channel in early fall. A freshwater sculpin was found in the river pool at M5. Stickleback were not seen.

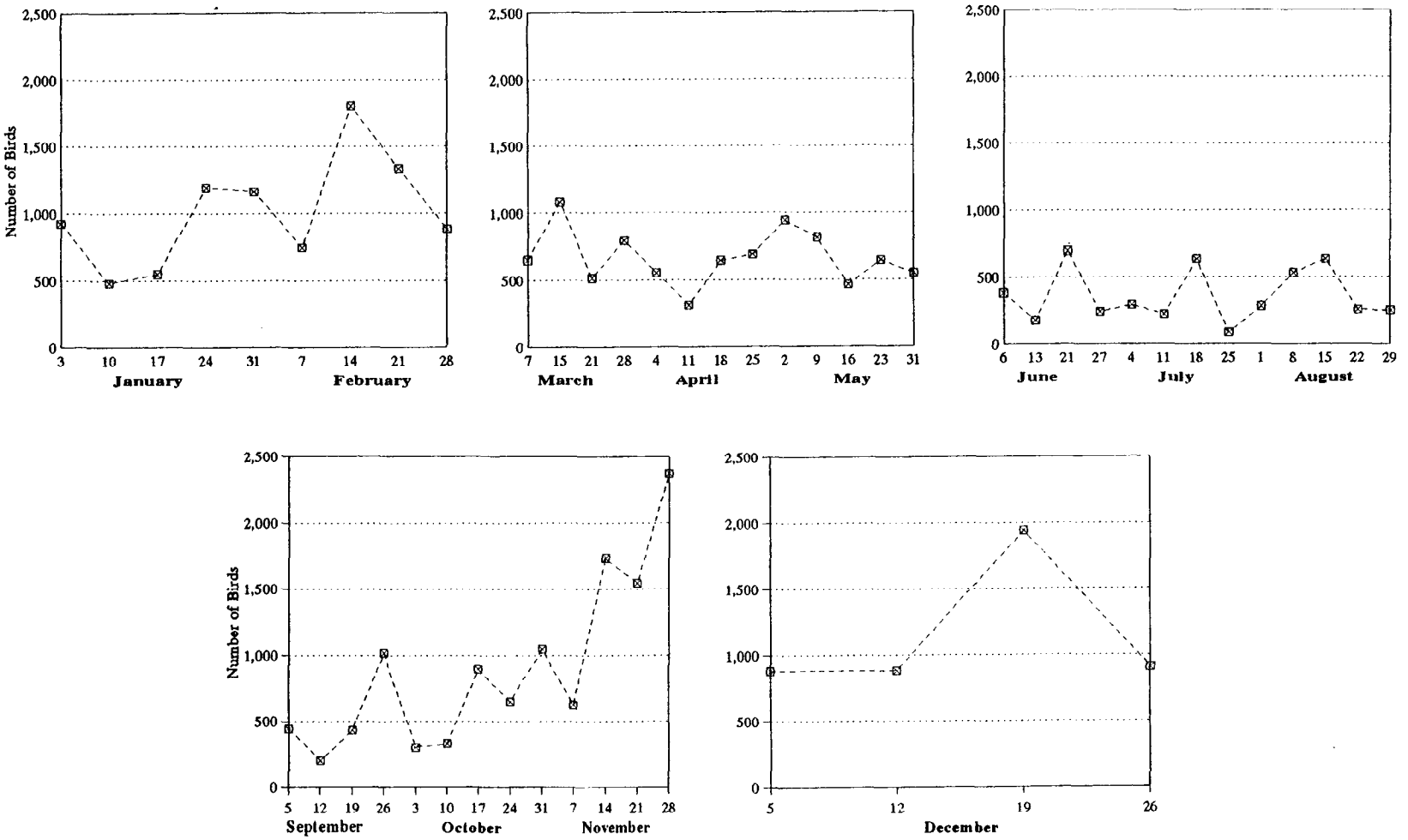

Figure 8. Seasonal Fluctuations in total bird numbers on the Trent River estuary, 1987

Birds

Over the course of the 1987 study, a total of 38,593 birds were recorded. One hundred and twenty-four species were identified, with an average of thirty-five species using the area weekly. Summing of one-day maximum numbers for each species, (which would be the minimum numbers of birds using the estuary over the year), indicates that a total of 7,153 birds were dependent on the Trent River estuary for their survival, during at least part of the year (Table 3). Seasonal fluctuations in the total number of birds using the Trent River estuary are shown in Figure 8. A complete listing and numbers of all species recorded on the Trent River estuary along with their attendant statistics can be found in Appendices XI, XII and XIII.

Habitat Use

Of the seven habitats recognized in the Trent River Delta and Estuary, the Intertidal Zone was utilized the most, with 48% of all birds recorded there (Figure 9). Within the intertidal zone the greatest numbers of birds were concentrated along the Trent River Channel, Gartley Channel, the North Channel, and to the west of the North Channel.

Mixed Forest/Residential, Salt Marsh, and High Salt Marsh followed with 14%, 13%, and 12% of the bird observations respectively. Cultivated Fields, Riparian, and Upper Beach had from 2% to 6% usage (Figure 9). To some species these zones were of great importance. The Cultivated Fields included a farm house where the surrounding garden, ornamental shrubbery and fruit trees attract resident species as well as birds in migration. Between five and ten species were often seen on a single day around the farm house.

Seasonal Fluctuations

Seasonal changes produced a wide variety of bird species. During January and February the greatest percentage of the observations were of gulls, passerines, and diving ducks (Figure 10a). Gulls were predominantly Glaucous-winged, while passerines consisted mostly of European Starling, Northwestern Crow, Red-winged Blackbird, Brewer's Blackbird and Dark-eyed Junco. All common species of winter ducks were represented, with Pintail and American Wigeon being the most numerous dabbling ducks. Diving ducks were dominated by the scoters and scaup.

In the spring migration, gulls and passerines continued to dominate the avifauna (Figure 10b). Numbers of diving ducks decreased while dabbling ducks remained constant. The migration of Brant from the south made up 14% of the spring birds seen. Upland species were of a greater variety during the spring, as swallows, thrushes, warblers, sparrows and finches replaced the high numbers of blackbirds which had dispersed to nesting territories elsewhere, and the winter juncos which had migrated to higher elevations to nest. European Starlings and Northwestern Crows remained relatively stable in numbers. Shorebirds were scarce, comprising only 3% of the spring records. Raptors included Cooper's Hawk, Turkey Vulture, and one Swainson's Hawk.

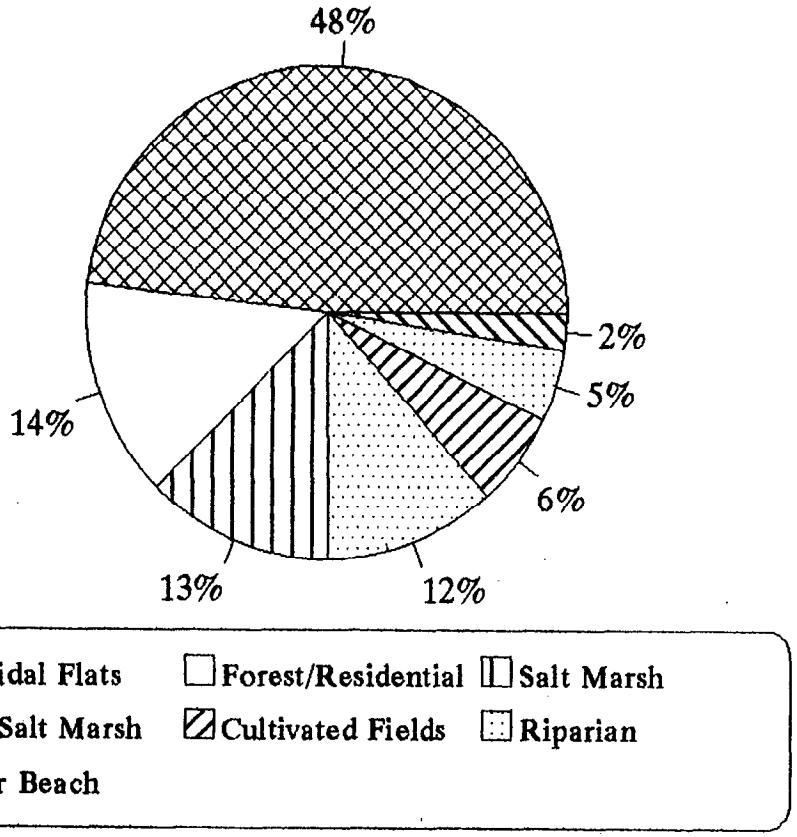

Figure 9. Bird use of habitats on the Trent River delta, 1987

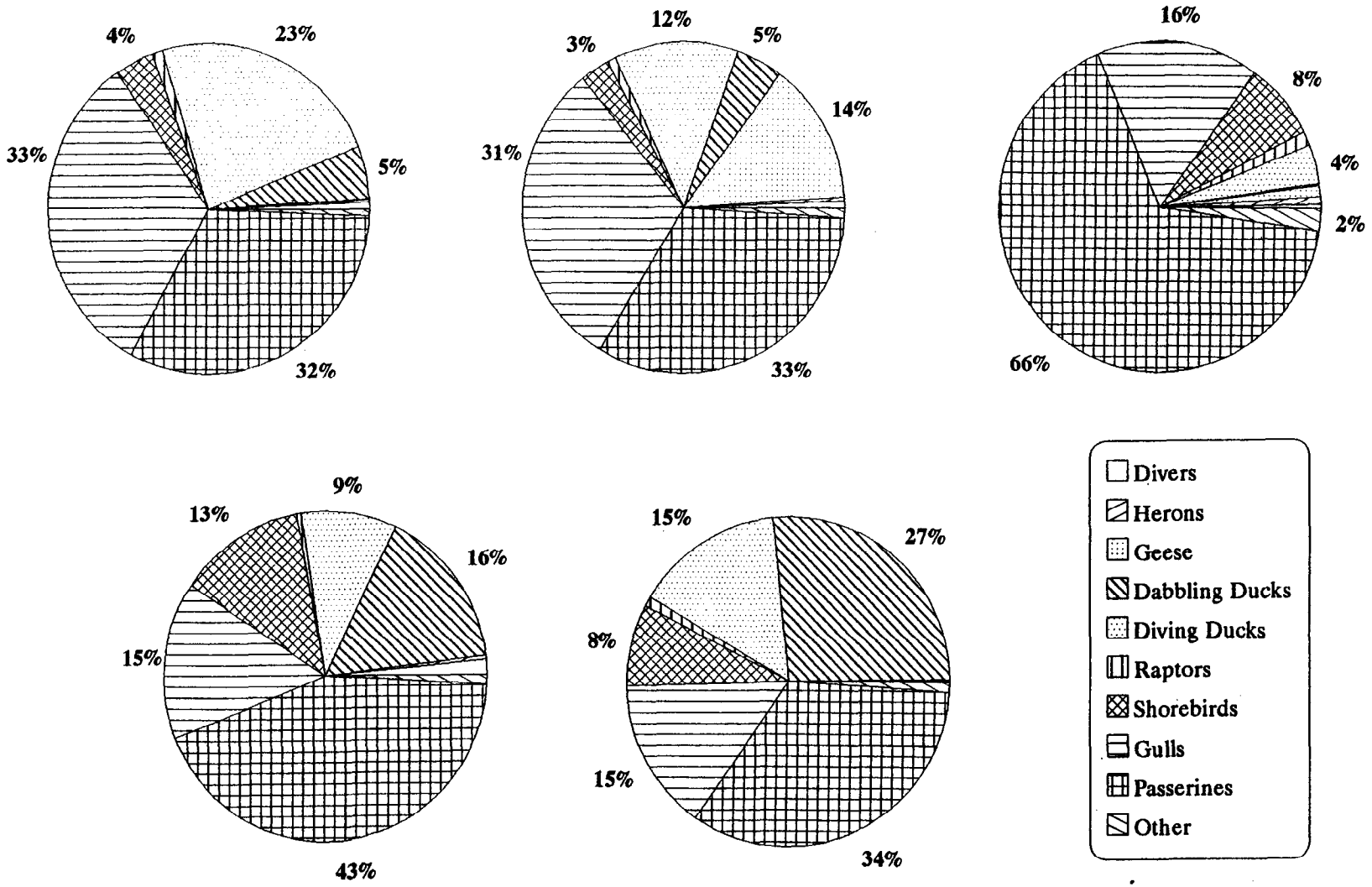

Figure 10. Proportional bird use of the Trent River estuary
a) Winter 1986-87; b) Spring 1987; c) Summer 1987;
d) Autumn 1987; e) Winter 1987

Table 3. Summing of one-day maximum numbers of each bird species observed on the Trent River estuary, 1987. Numbers in parentheses are species totals for each group.

SPECIES		NUMBER OF BIRDS
Loons (3)		19
Grebes (3)		33
Cormorants (2)		10
Swans (1)		9
Geese (2)		478
Ducks		
Dabblers (6)	779	
Divers (13)	908	
Total Ducks (19)		1687
Gulls and Terns (7)		1563
Alcids (1)		3
Herons (1)		10
Shorebirds (13)		1469
Raptors (9)		59
Woodpeckers (4)		13
Passerines (52)		1744
Others (7)		
Ring-necked Pheasant		1
Sandhill Crane		4
Rock Dove		3
Band-tailed Pigeon		22
Vaux's Swift		11
Rufous Hummingbird		9
Belted Kingfisher		6
	TOTAL	7153
TOTAL NUMBER OF SPECIES 124		

During the summer months, waterfowl numbers dropped to <6% of all birds seen while passerines increased to 66%, comprising 40 different species. Gull numbers dropped while shorebirds at 8%, announced the early migration with sandpipers moving south (Figure 10c). Osprey were regular visitors and a pair of Merlins nested.

The fall season showed an increase in the proportion of waterfowl and shorebirds while passerines decreased (Figure 10d). By September all swallows had left and their numbers were replaced by migrating Savannah and Golden-crowned sparrows. European Starlings and Northwestern Crows increased in numbers which perhaps indicated a local migration of adults and fledged young returning to their wintering areas. An influx of Song Sparrows to the Delta may also have indicated a local migration.

By December, waterfowl made up 42% of the month's totals; passerines declined further, as did shorebirds, while gull proportions remained at their fall levels during December (Figure 10e). Raptors consisted mainly of Bald Eagles. Their greatest numbers were during the winter months, but they were seen throughout the year.

Notes on Families

Loons

Of the three species recorded, the Common Loon was most abundant with birds seen every month except April; observations peaked in the fall, with 67 birds. Nine Red-throated Loons were seen during the winter and five Pacific Loons in May and June. Common Loons were seen mostly in the inshore portions of the Intertidal Zone while Pacific Loons were further offshore in that habitat. Both the Common and Red-throated Loons were recorded in the Salt Marsh zone during some high tides.

Grebes

Of the three species present, Western Grebes were the most abundant with 78 birds, Horned Grebes with 26, and Red-Necked Grebes, 14. Grebes were seen most frequently in the fall and winter, but a few were recorded most months of the year. Their numbers peaked in September during the fall migration with 46 birds seen. Their preferred habitat was the offshore waters of the Intertidal Zone. A few Western Grebes swam into the Salt Marsh zone during high tides.

Cormorants

Both Double-crested and Pelagic cormorants were seen in small numbers over the study with numbers of 14 and 22 respectively. They were most common during the spring and were most frequently recorded in the offshore waters of the Intertidal Zone, between the Trent River and Gartley Channel.

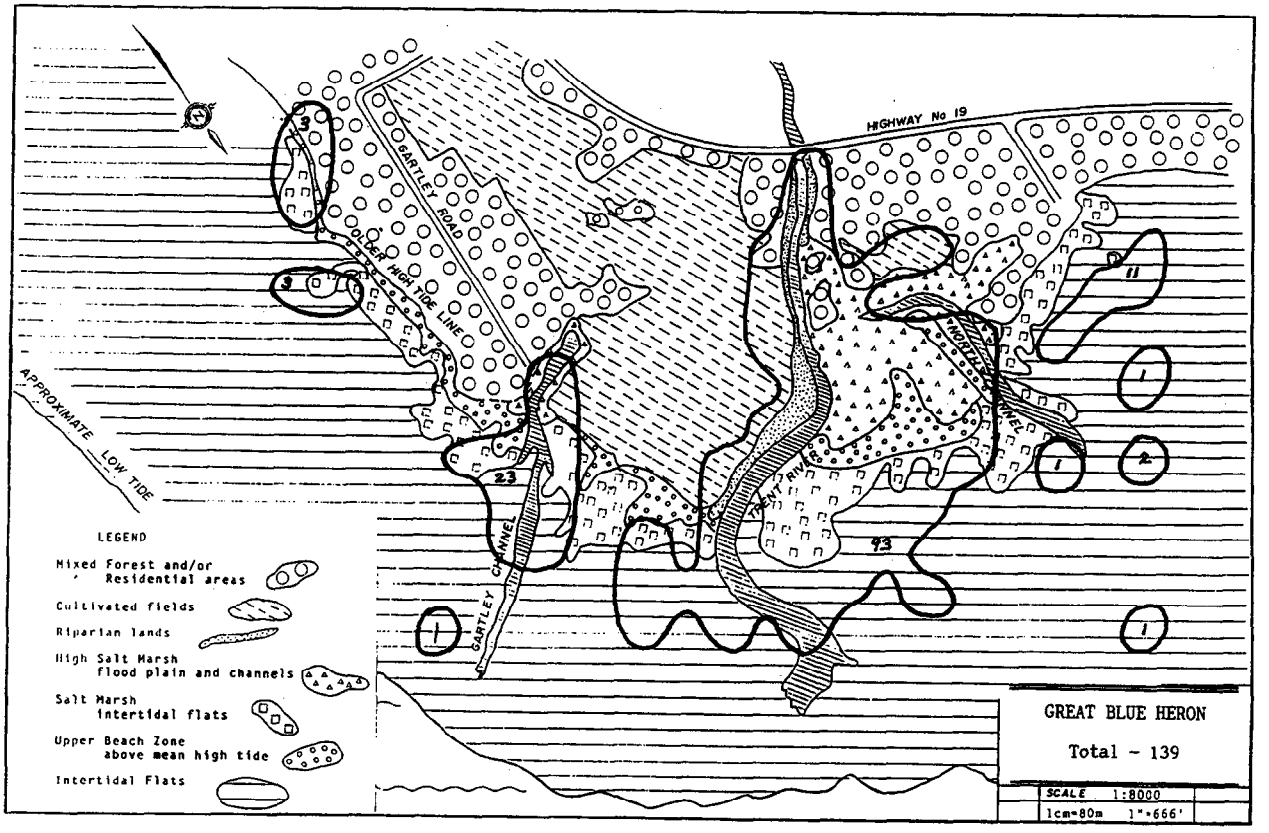

Figure 11. Distribution of the Great Blue Heron on the Trent River estuary, 1987

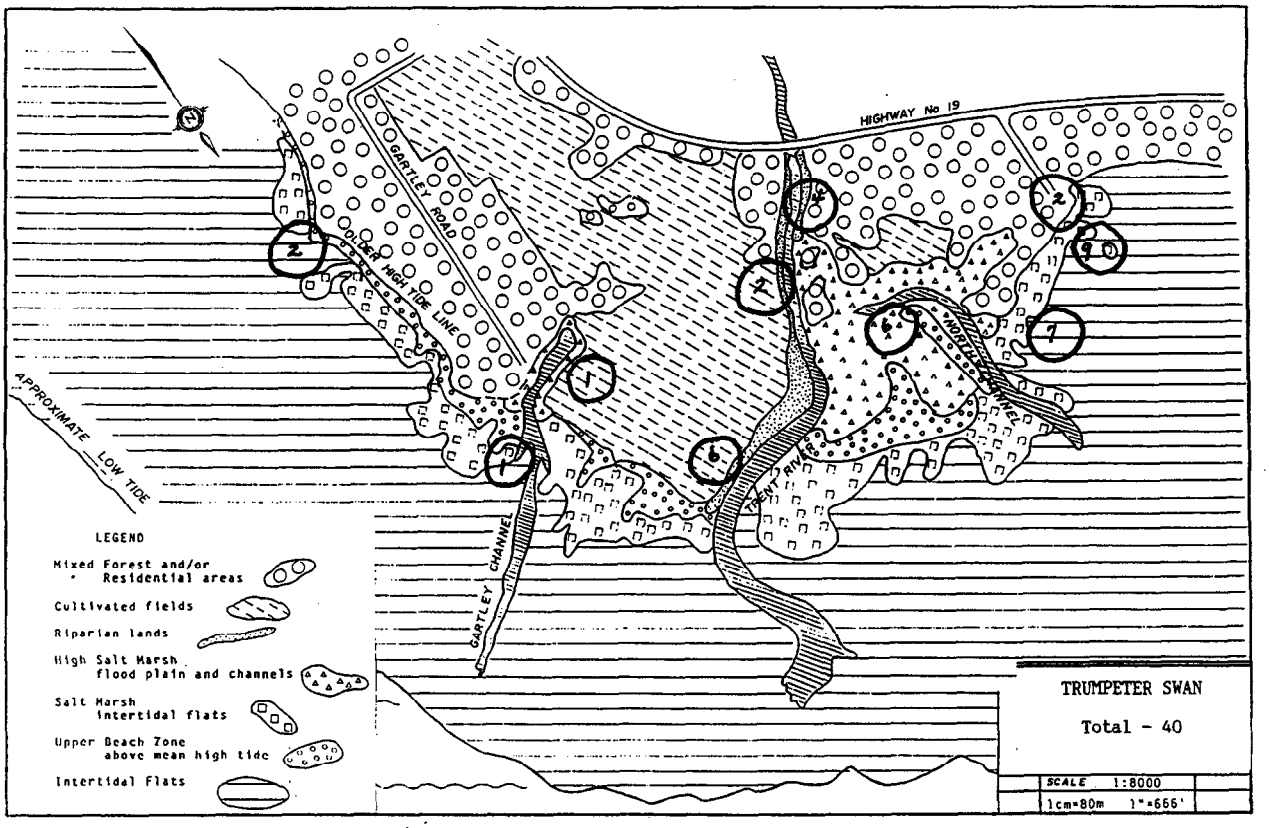

Figure 12. Distribution of the Trumpeter Swan on the Trent River estuary, 1987

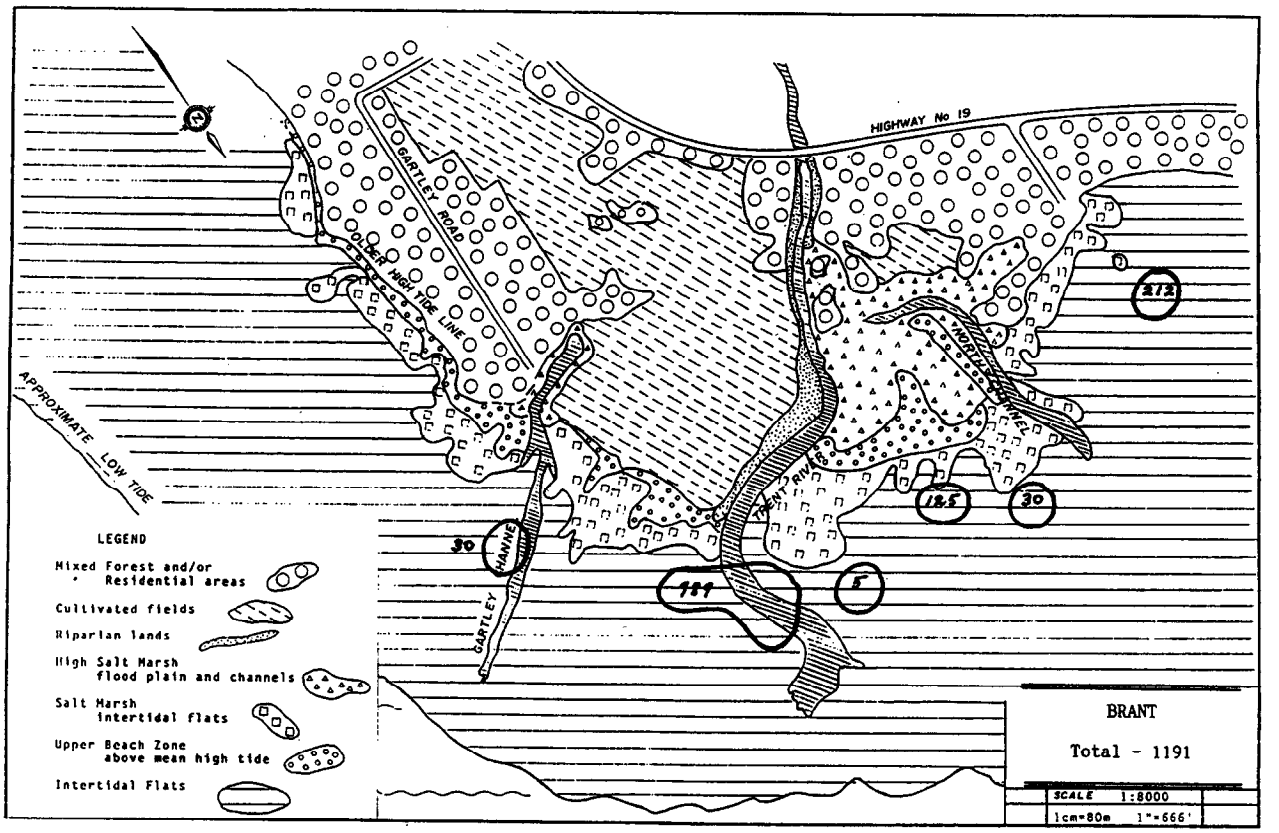

Figure 13. Distribution of Brant on the Trent River estuary, 1987

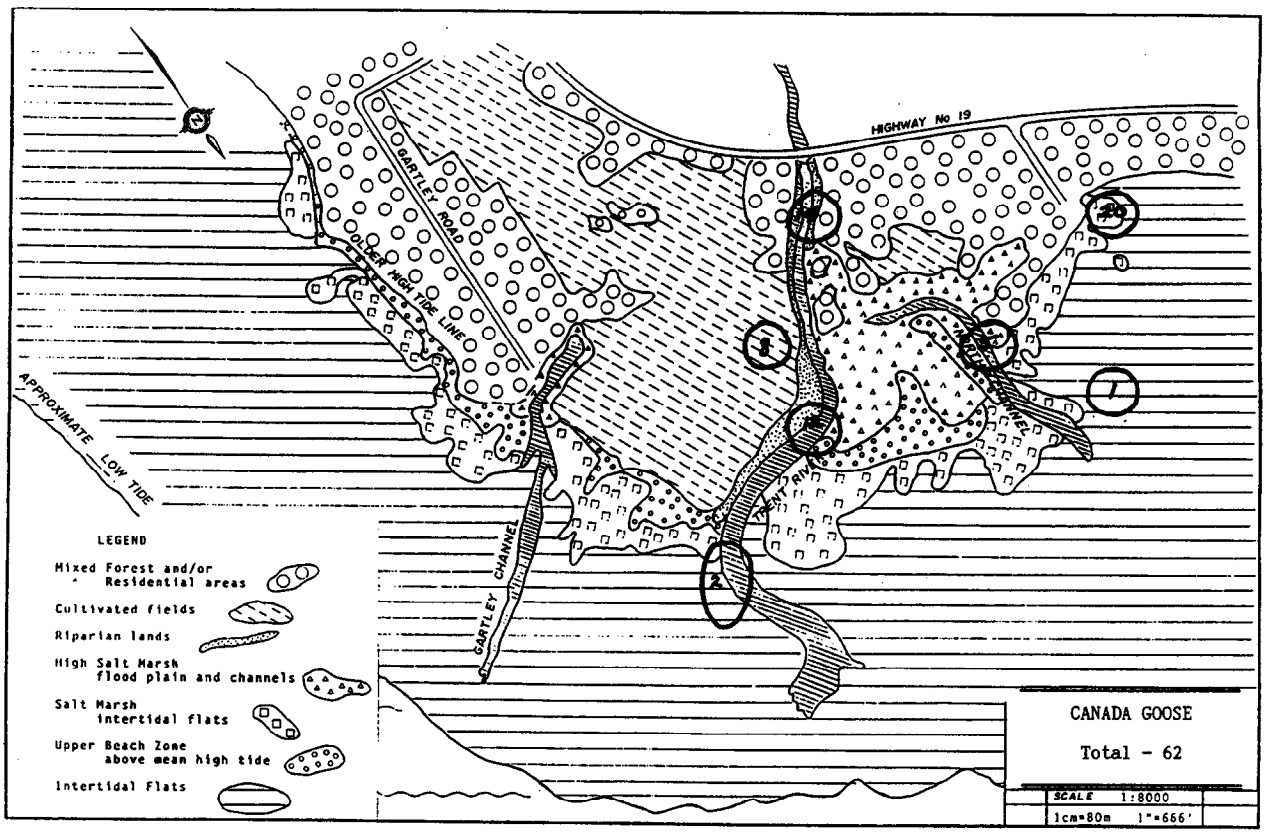

Figure 14. Distribution of the Canada Goose on the Trent River estuary, 1987

Herons

One hundred thirty-nine Great Blue Herons were seen and observations of this bird were made in all seven habitats. Forty-three percent were observed within the Intertidal Zone, most frequently near the three main channels including the High Salt Marsh and Salt Marsh habitats (Figure 11). A few were recorded in the Riparian, Cultivated Field and Mixed Forest habitats. Within the latter they were perched in Douglas Fir trees. One juvenile was recorded near a gravel bar in the Trent River. Of the 52 days of observations, Great Blue Herons were seen on 45, with an average of three present on any one day. The greatest numbers were recorded during August, September and October and the greatest number seen on any one day was 10 recorded 27 August (Appendix XII).

Swans

Trumpeter Swans were uncommon with only 40 birds recorded on eight days during the study period. Forty-five percent of all swans were seen in the Intertidal Zone and they were most numerous west of the Trent River Channel (Figure 12). Other habitats used were Cultivated Fields (23%); High Salt Marsh (15%) and Riparian (10%), with two observed flying over the Mixed Forest zone. Frequency of occurrence was 75% in December.

Geese and Ducks

Geese and ducks comprised 27% of all birds seen during the year. A total of 10,377 birds consisted of 49% diving ducks, 38% dabbling ducks and 12% geese. Two species of geese and 19 duck species were recorded. In January, hunters may have biased our results somewhat as flocks frequently took flight and dispersed when hunters were present, making counting difficult.

Geese

Brant first appeared on 4 April. On 18 April, small restless flocks settled in the Intertidal Zone of the Trent River Channel. Of the 1,191 birds observed, 794 concentrated at the river mouth (Figure 13) where they fed on the abundant *Enteromorpha* and *Ulva* there. On 2 May, numbers peaked at 450 birds. By 6 June, only 5 birds remained.

Canada Geese were most numerous during the summer months, using predominantly the Intertidal and Riparian habitats (Figure 14). Total birds noted was 62. Observations were infrequent and flocks were small. The greatest number of Canada Geese seen on one day was 15 August-28, and it was also the last date they were recorded during 1987.

Dabbling Ducks

Seasonal habitat use by dabbling ducks is shown in Figure 15 while seasonal fluctuations in their numbers are shown in Figure 16. Northern Pintail, American Wigeon and Mallard were the three most numerous dabbling ducks (62%, 21%, and 15% respectively), and Figure 17 shows the seasonal fluctuations of those species. Green-winged Teal, Northern Shoveler and Eurasian Wigeon were also

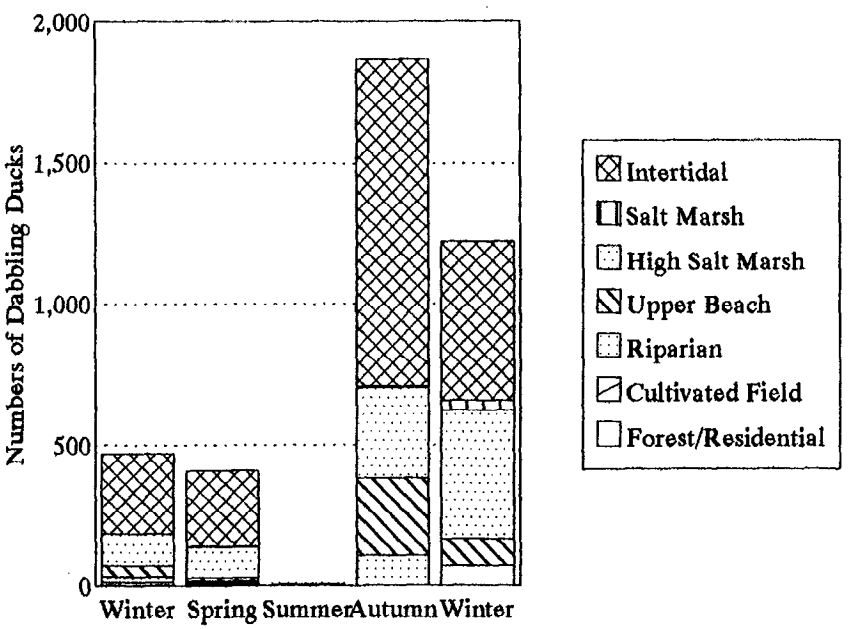

Figure 15. Seasonal habitat use by dabbling ducks on the Trent River estuary, 1987

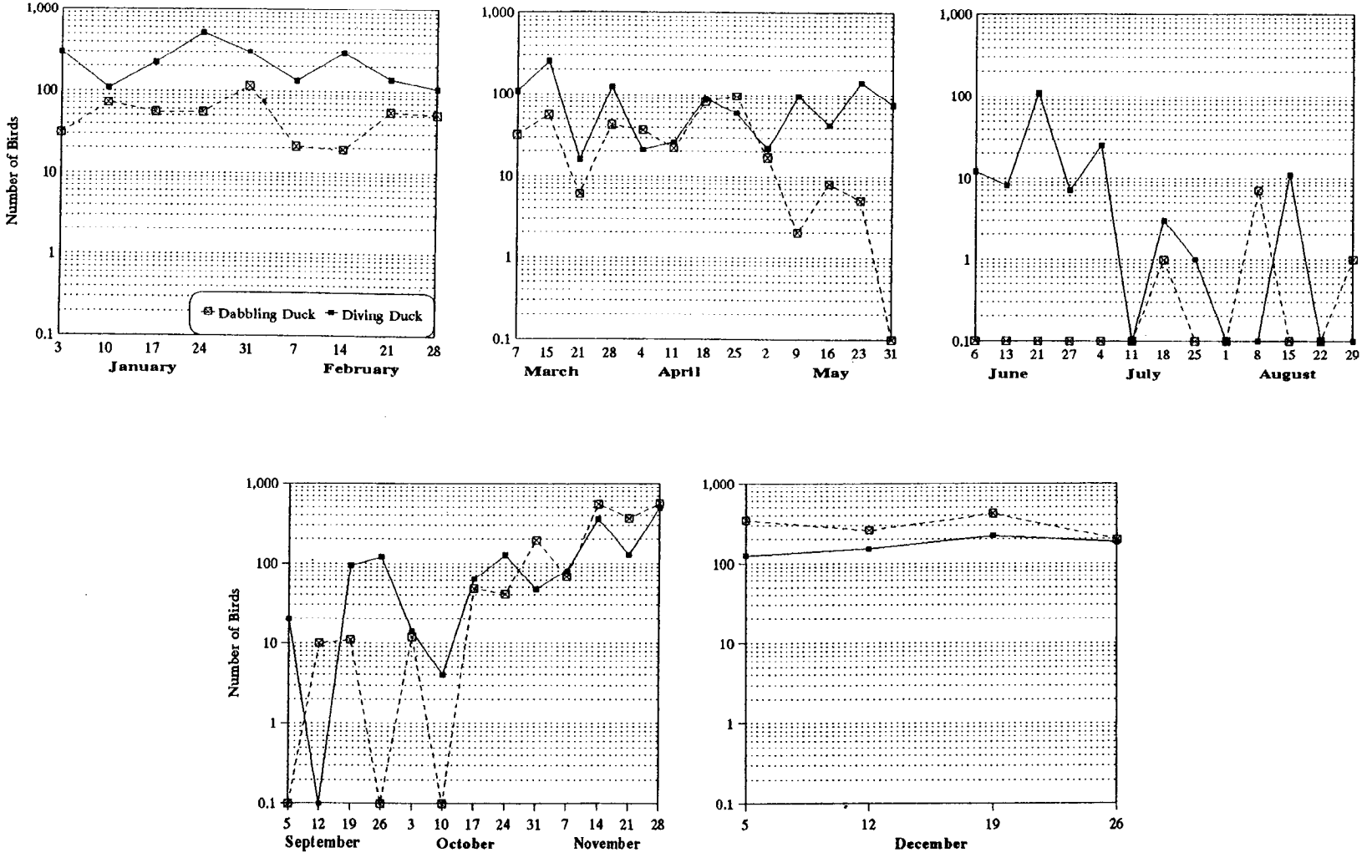

Figure 16. Seasonal fluctuations in dabbling and diving duck numbers on the Trent River estuary, 1987

recorded, but only during migration and in very small numbers. Northern Pintail had left the Trent by 21 February; Wigeon and Mallard stayed. The fall arrival of Northern Pintail began by 3 October, while Mallard and Wigeon arrived two weeks later around 17 October. Northern Pintail and Mallard numbers peaked dramatically in November at 1,204 and 206 birds respectively. American Wigeon numbers peaked both in April, with 206 birds, and again in December with 282 birds.

Frequency of occurrence and flock size varied with the three species. In the fall, Northern Pintail flocks averaged 178 birds while Mallard and American Wigeon flocks averaged 29 and 18 birds respectively. Frequency of occurrence for Mallard was 69%, Northern Pintail and American Wigeon were both seen 62% of the time.

Mallards were distributed throughout the Intertidal and Salt Marsh zones and they also used the Riparian habitat (Figure 18). Frequency of occurrence in the Riparian zone for Mallard was 41.7% during the study period. The greatest concentrations of Northern Pintail were west of the North Channel in the Intertidal Zone, where 81% of the birds were recorded (Figure 19). During the fall season and into December, Northern Pintail were more widespread and small flocks utilized the area south-east of Gartley Channel and the Trent River Channel, as well as the area west of the North Channel. American Wigeon were distributed evenly between the Trent River Channel and the area west of the North Channel (Figure 20).

Thirty-two Green-winged Teal were recorded in the High Salt Marsh and Salt Marsh habitats. Seven were recorded 2 May, the only spring record. One was seen on 17 October, the first fall record. Eighteen were noted 21 November, the greatest number seen on one day during 1987.

Diving Ducks

Seasonal habitat use by diving ducks on the Trent River estuary is shown in Figure 21; for seasonal fluctuations in their numbers see Figure 16.

Of the 13 diving duck species seen on the Trent River estuary, 62% were from the Scoter family. Scoters totalled 3,188 birds. Of the three species present, White-winged Scoters were most numerous with 1,852 birds, followed by Black Scoters with 581 and Surf Scoters with 308. Scoter numbers were greatest during the winter months and were seen between 75% and 88% of the time. Numbers for White-winged Scoters and Black Scoters peaked during the week of 24 January with 188 and 136 birds respectively.

High concentrations of Scoters were recorded in the Intertidal Zone between the main Trent Channel and Gartley Channel and also south-east of Gartley Channel. The substrate in these areas is characterized by sand, pebble and cobble which supports barnacles, periwinkles, whelks, oysters and Japanese Littleneck clams, all favoured foods of Scoters. Only the White-winged Scoter utilized the area north-east of the North Channel to any degree where the cobble substrate supports barnacles and mussels. All Scoter species were seen in the Salt Marsh Zones on some high tides, although total numbers were few. Some White-winged Scoters were present in the area throughout the year.

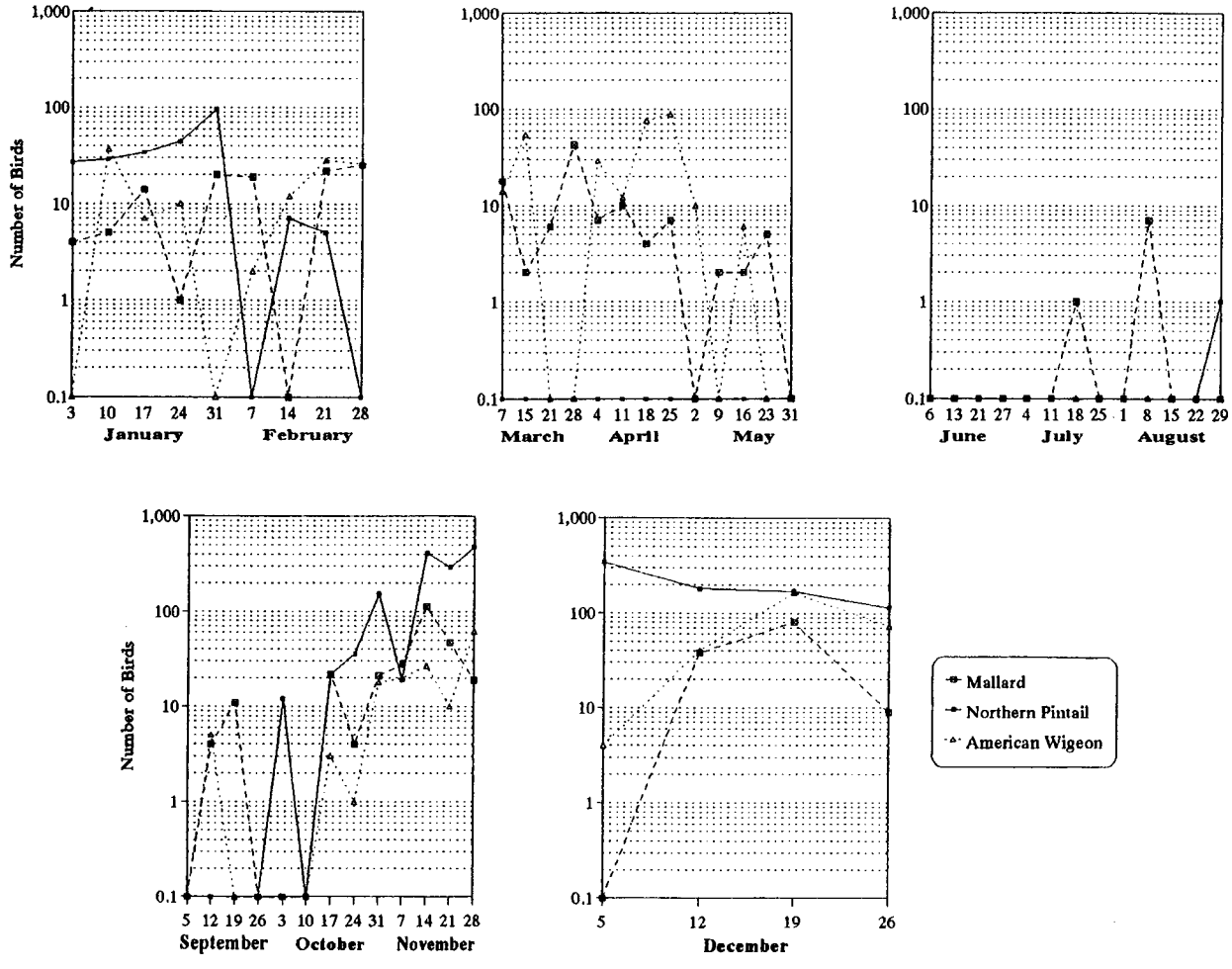

Figure 17. Seasonal fluctuations in Mallard, Northern Pintail and American Wigeon numbers on the Trent River estuary, 1987

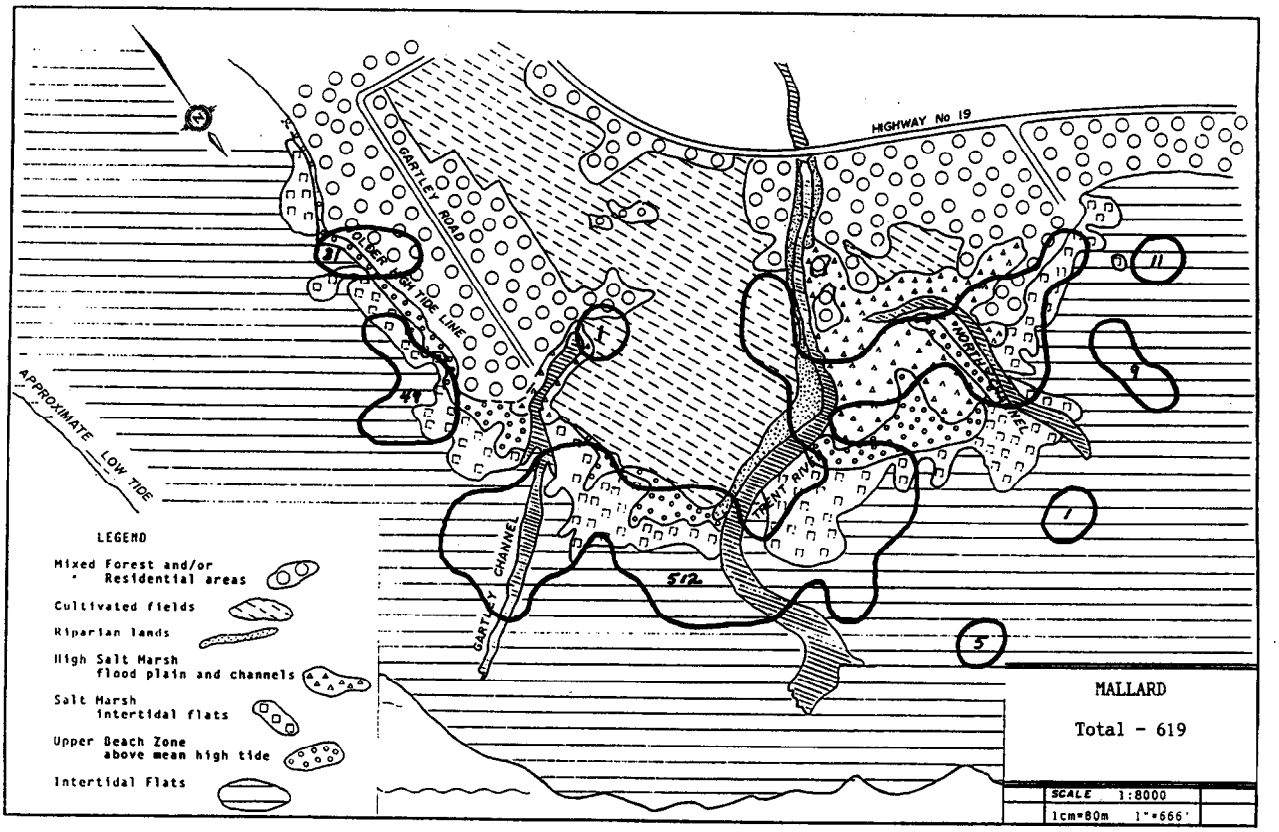

Figure 18. Distribution of the Mallard on the Trent River estuary, 1987

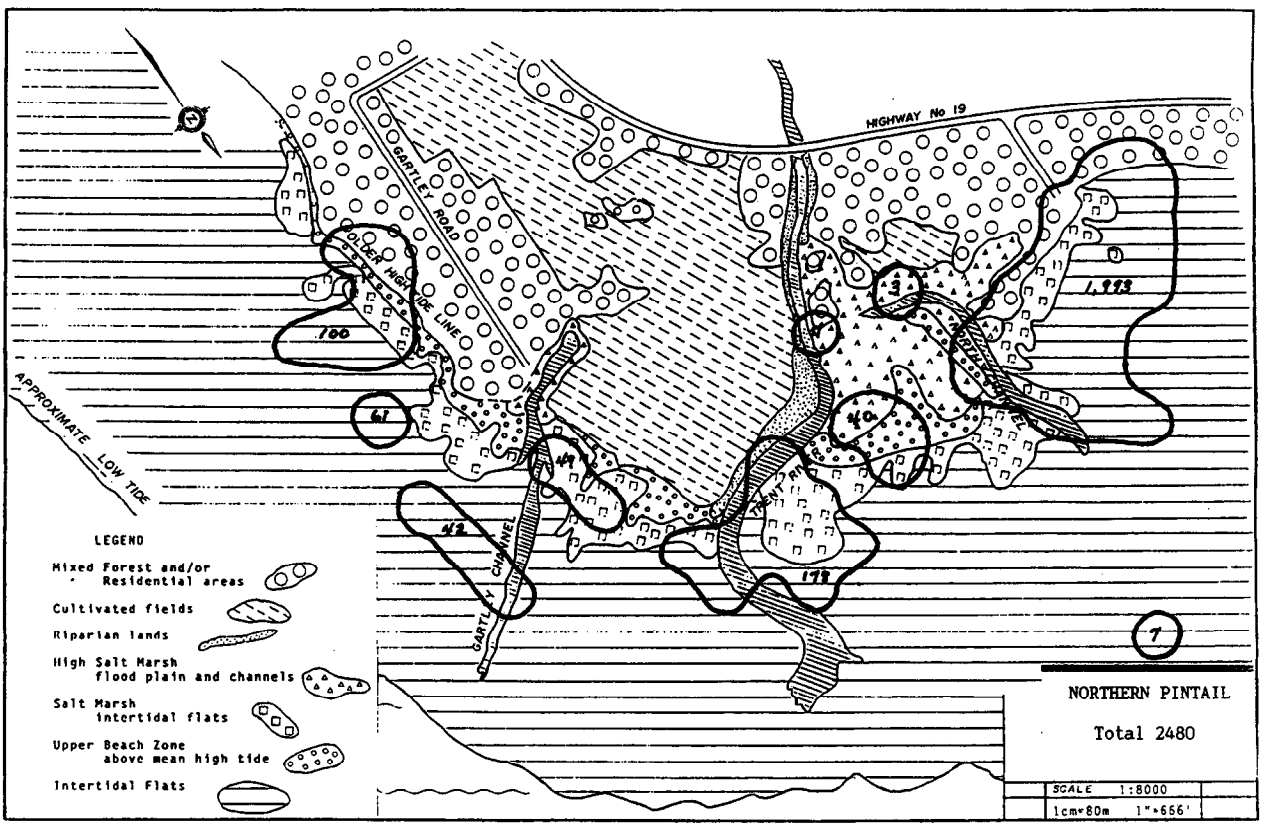

Figure 19. Distribution of the Northern Pintail on the Trent River estuary, 1987

Both Greater and Lesser Scaup were observed, however the bulk of the 635 birds were recorded as Scaup Species. Eighty-nine percent were recorded in the Intertidal Zone, while 10% used the Salt Marsh Zone. The greatest concentrations were west of the North Channel. They were most numerous in January and February when 86% of the total birds were recorded. The greatest number of birds recorded on one day was 17 January-200. During this period flocks averaged 68 birds, but after the end of February and throughout the rest of the study period, flocks averaged 2 to 8 birds. There was no apparent numerous fall migration of Scaup back to the Trent estuary. The first fall record was 24 October-2 birds. Eighteen Greater Scaup recorded 5 December was the greatest number seen since the end of the previous February, when 53 were present.

Bufflehead, Common Goldeneye and Barrow's Goldeneye were present in moderate numbers during 1987 with totals of between 300 and 400 birds per species. Approximately 70% of all birds for the three species were reported from the Intertidal Zone with about 20% using the Salt Marsh and High Salt Marsh Zones.

Bufflehead were most numerous in the vicinity of the North Channel and to the west of it, with 50% of the birds recorded there. Specifically Q7, Q8 and U5 were the most favoured spots for them. Both Goldeneye species were present in the greatest numbers around the Trent and Gartley Channels.

Bufflehead were recorded every week from January to May. The last spring record was 23 May-5 birds. They returned in the fall during the week of 7 November. The Common Goldeneye followed a similar pattern to the Bufflehead with regard to arrival and departure dates. The Barrow's Goldeneye left in mid-April and did not return until the week of 14 November. Flocks of Barrow's Goldeneye were largest during January and February with an average of 23 birds. Common Goldeneye and Bufflehead averaged 10 and 15 birds respectively.

Harlequin Ducks were present in small numbers. Of the 94 birds recorded, two were in the Salt Marsh Zone; all others were in the Intertidal Zone. Of these, 71% were concentrated at the mouth of the Trent. The balance were recorded south of the main Trent Channel off Gartley Channel and Gartley Beach. Spring flocks of Harlequin Ducks averaged two birds and they were last seen on 23 May. The fall migration started during the week of 19 September. Flocks during this period increased to an average of 11 birds.

Common Mergansers were present in the study area during all months of the year except December. The Intertidal zone produced the greatest number of birds seen at 40%, Riparian was next at 25%, followed by Salt Marsh 14% and High Salt Marsh at 9%. Frequency of occurrence was greatest during the spring with a 92% chance of seeing Common Mergansers. The most likely place to find these birds was in the Trent River Channel. The mouth of the Trent was also a favourite spot, where an adult with fourteen young was seen on 4 July.

Red-breasted Mergansers were only recorded during the spring and fall migrations with a total of 14 birds. Three were in the Riparian Zone of the Trent, which is also a favourite place of the Common Merganser. All other birds

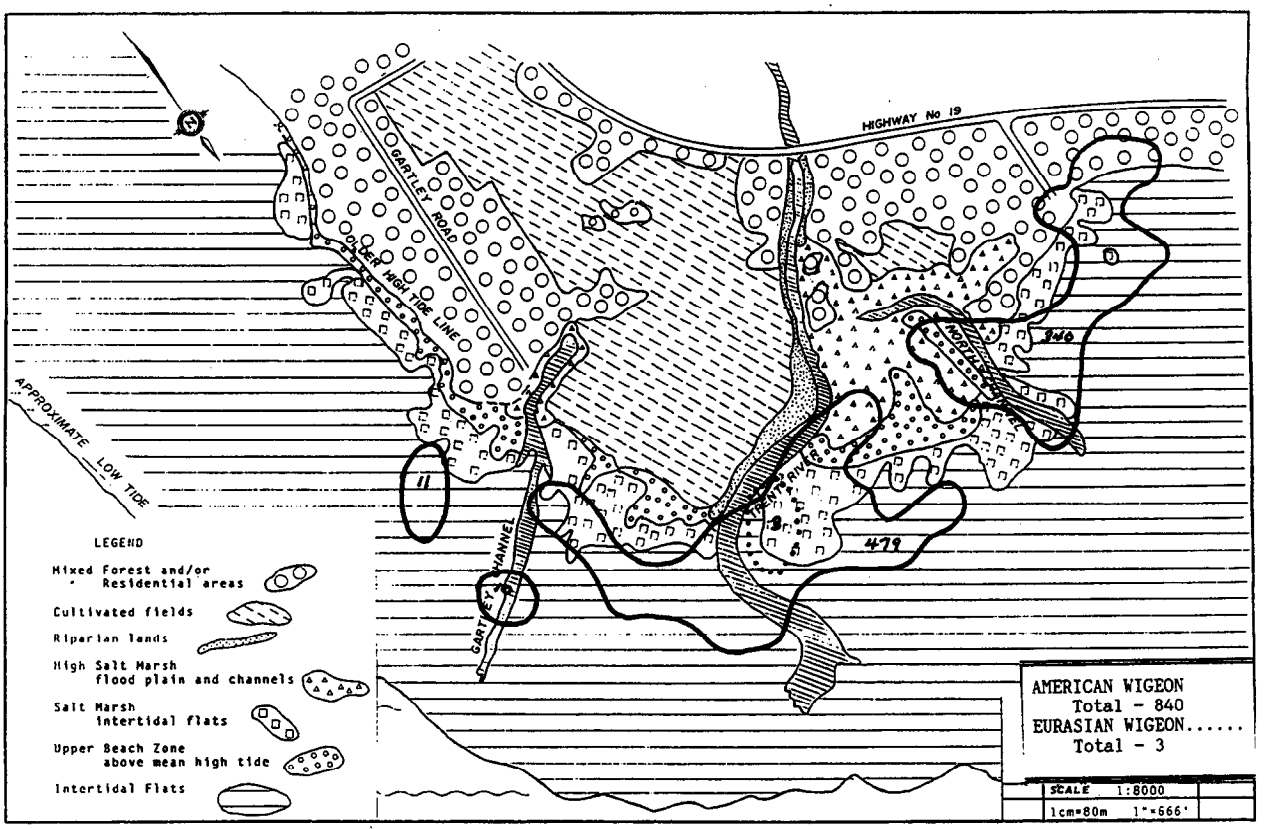

Figure 20. Distribution of the American and Eurasian wigeon on the Trent River estuary, 1987

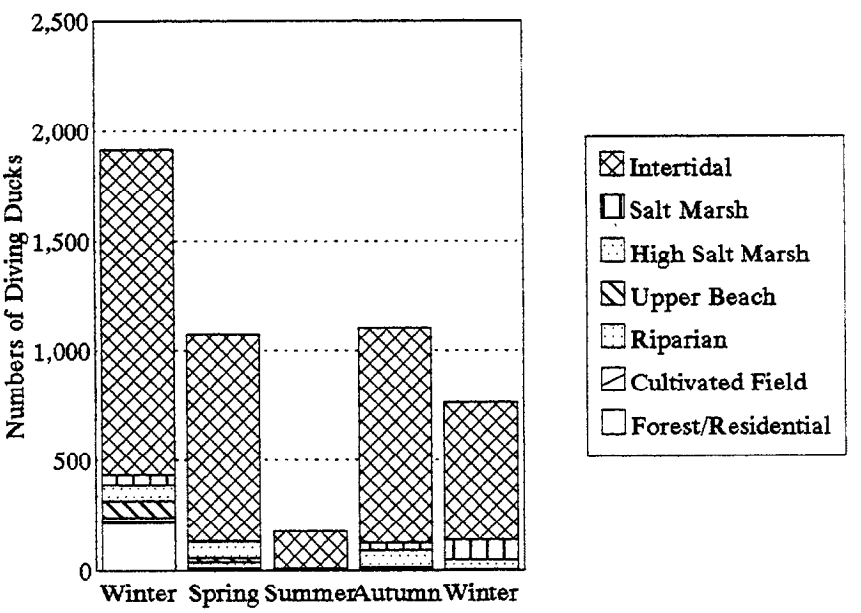

Figure 21. Seasonal habitat use by diving ducks on the Trent River estuary, 1987

were at the main Trent Channel in the Intertidal Zone. The last spring record was 2 May after which they were absent until 17 October.

One Oldsquaw appeared to use the Trent Estuary as part of its winter habitat. A single bird seen in January and February was back at the estuary on 14 November and was again recorded 5 December in the offshore waters of the Intertidal Zone near the Trent River Channel.

Raptors

Bald Eagles were the most common raptor reported over the study period. The ratio of adults to immatures was 6:4. Although Bald Eagles were recorded in virtually every habitat type, they favoured the tall spruce and Douglas fir trees alongside the river which were used regularly as observations perches. Two places in the Intertidal Zone were used for resting during low tides: one at the mouth of the North Channel, and another near the mouth of Gartley Channel. They were present in greater numbers during the winter months, but were seen every month of the year.

One Northern Harrier visited the Trent estuary regularly using the High Salt Marsh 43%, Intertidal Zone 25%, Salt Marsh and Cultivated Field zones 14% (Figure 22). During a snow storm in February it was seen flying toward Goose Spit. The Northern Harrier was seen 75% of the time during the study period.

Merlins were also resident raptors. They were seen predominantly over the Mixed Forest and High Salt Marsh Zones (Figure 22). On 21 June a nest at H6 was suspected in the tall trees. On 18 July two young Merlin were observed being fed by adult birds on a root at Hl0. A Merlin was reported chasing Western Sandpipers at Kll in August near the mouth of the river.

One Osprey was present from 18 April to 26 September. Two were recorded on 18 July. Birds were most often seen in the Intertidal and Riparian Zones.

Turkey Vulture, Sharp-shinned Hawk, Cooper's Hawk, Red-tailed Hawk and Swainson's Hawk were reported during the spring and fall migrations, but not in any significant numbers.

Cranes

One flock of four Sandhill Cranes was observed flying south over the Trent Estuary on 3 October.

Shorebirds

Seasonal habitat use by shorebirds on the Trent River estuary is shown in Figure 23; for seasonal fluctuations in their numbers see Figure 24.

Of the 13 species of shorebirds represented, Dunlin were recorded in the greatest numbers and were seen most often in the Intertidal Zone. Black-bellied Plover and Semipalmated Plover were also recorded most often in this zone. The other species were more closely associated with the Salt Marsh, High Salt Marsh and Riparian Zones.

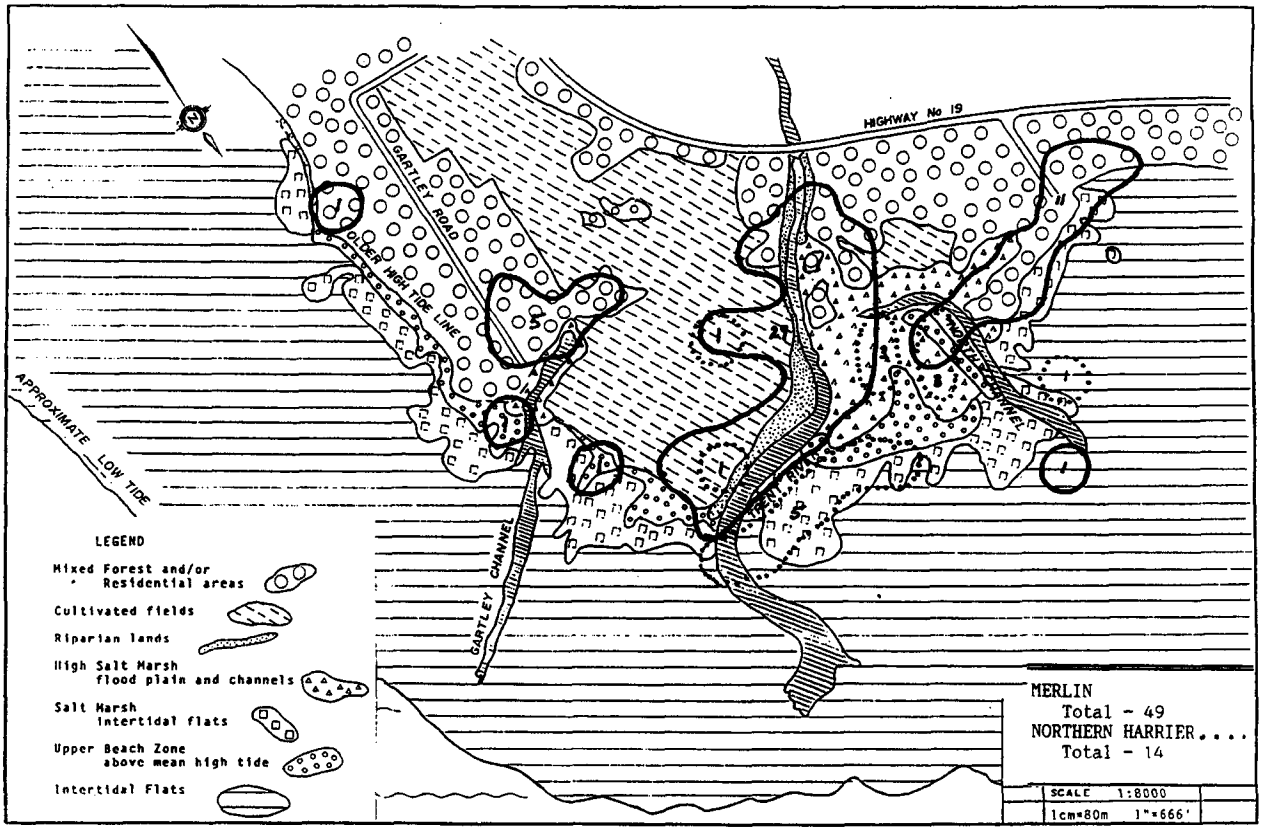

Figure 22. Distribution of the Northern Harrier and Merlin on the Trent River estuary, 1987

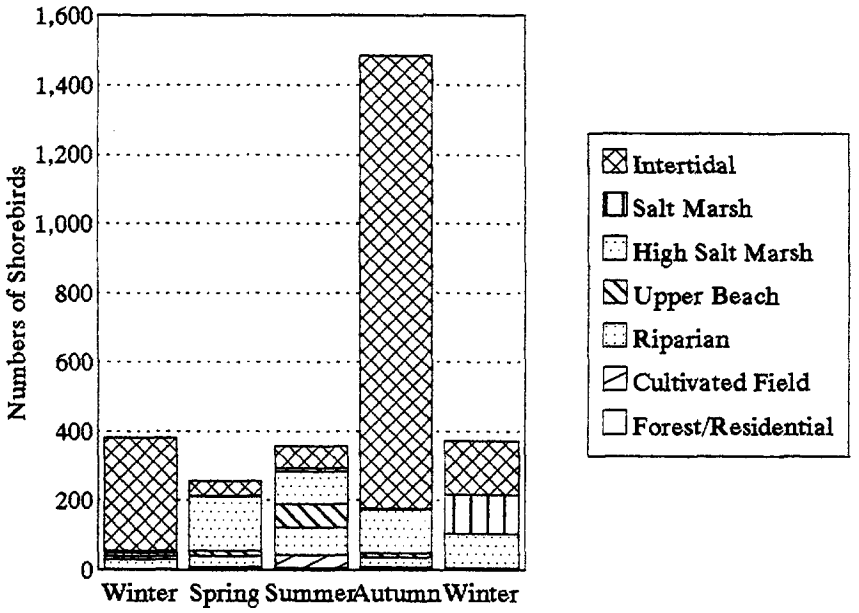

Figure 23. Seasonal habitat use by shorebirds on the Trent River estuary, 1987

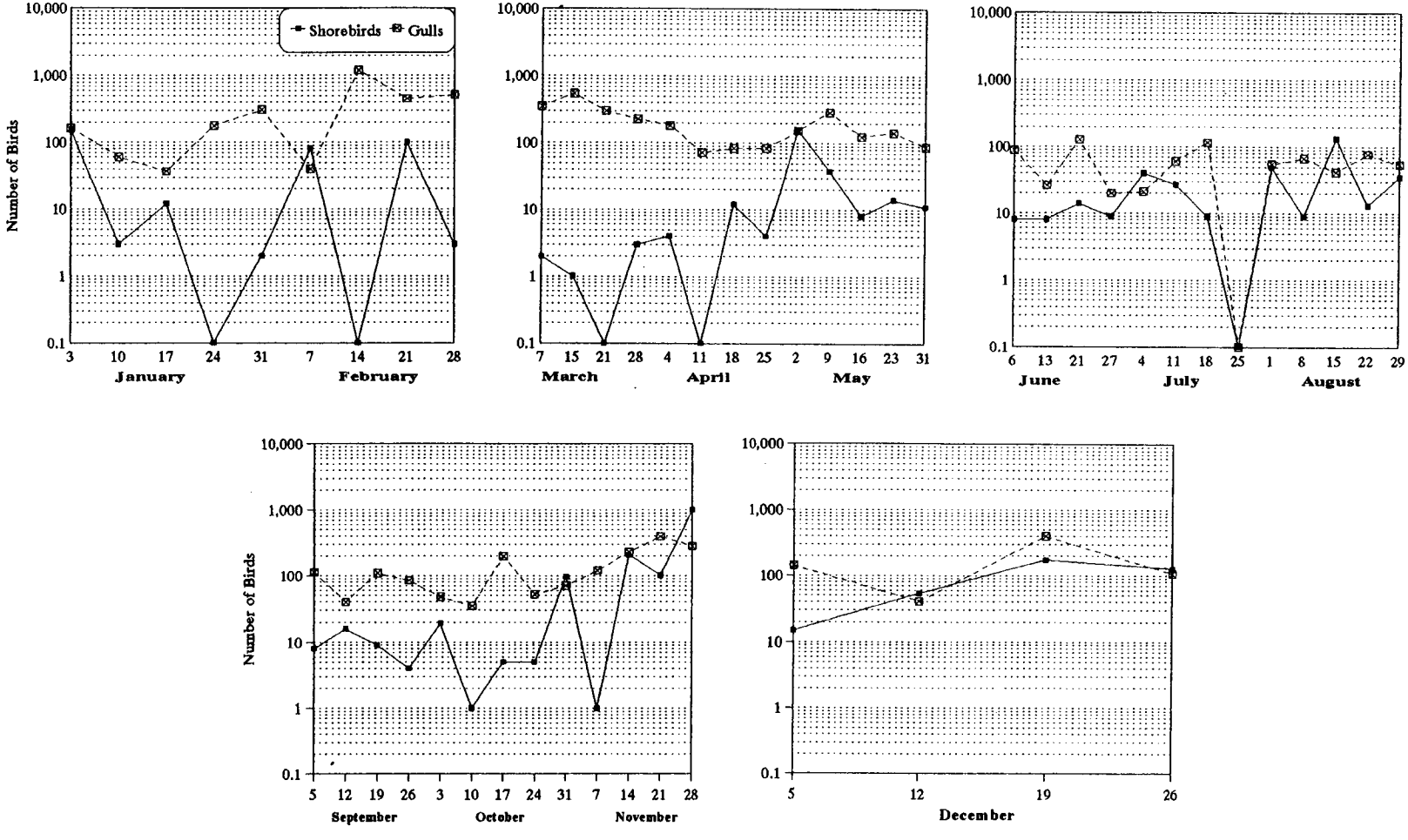

Figure 24. Seasonal fluctuations in shorebird and gull numbers on the Trent River estuary, 1987

The last spring record of Dunlin was 16 May-1 bird. The first fall record was on 31 October-81. One flock of 1,000 Dunlin recorded during the fall migration were noted as "tightly clustered, feeding along the shoreline at Grid T3." Eighty percent of the Dunlin seen were in that vicinity, i.e. west of the North Channel (Figure 25). Six Semi-palmated Plovers recorded 9 May used the same area. One hundred and twenty-five Western Sandpipers were recorded 2 May in the Salt Marsh at T4. Thirty-one Killdeer were also at T3 and T4 in December.

Observations of Black-bellied Plover and Black Turnstones were made mostly around Gartley Channel and east along Gartley Beach in the Intertidal Zone, as well as in the Salt Marsh and Upper Beach Zones in that area. Sixty-eight Black-bellied Plover were seen 15 August and were the first birds noted since 7 February. One flock of 124 Black-bellied Plover were recorded 19 December on Gartley Channel near the log pond. This was the greatest number of that species recorded on a single day. There were also 29 Black Turnstones at the same site.

Greater Yellowlegs were present during the spring and fall migrations, most commonly in the Salt Marsh Zones. Five birds were noted during the summer; 11 July-2 and 29 August-3. Lesser Yellowlegs were only recorded in late August and into the fall, mostly in the Intertidal Zone. Neither species were numerous.

Spotted Sandpipers were present from 9 May through 15 August averaging one or two birds, and they were most often recorded in the High Salt Marsh Zone.

Least Sandpipers first appeared on 15 April-8. Summer records were 15 August-8 and 29 August-20, for a total of 36 birds seen in 1987. They were seen in both the High Salt Marsh and Intertidal Zones. One Least Sandpiper was observed feeding on rove beetles on the mud flats beside the North Channel on 15 April.

Baird's Sandpiper appeared on only one day during the summer; 11 July-8 birds. They were all recorded in the Salt Marsh and High Salt Marsh Zones.

Western Sandpipers favoured the Salt Marsh and Riparian Zones (Figure 25). They were present in the greatest numbers during the spring when one flock of 125 birds was recorded at T4 in the Salt Marsh, close to the favoured spot of Dunlin and Semipalmated Plovers. They were present during the summer on seven of the eight recording days from 4 July to 29 August. Summer birds peaked 15 August at 47 birds. A flock of 32 Western Sandpipers were being chased by a Merlin on 15 August at K11, near the mouth of the Trent River.

Out of a total of 6 Whimbrel seen, one was recorded on 9 May. The other five were seen on 23 May. The Short-billed Dowitcher was recorded on two occasions; 11 July-3 and 26 September-1. Both of these species were using only the Salt Marsh Zones.

Killdeer were widespread and resident on the study area but were never recorded very far east of Gartley Channel. They were seen in the Salt Marsh

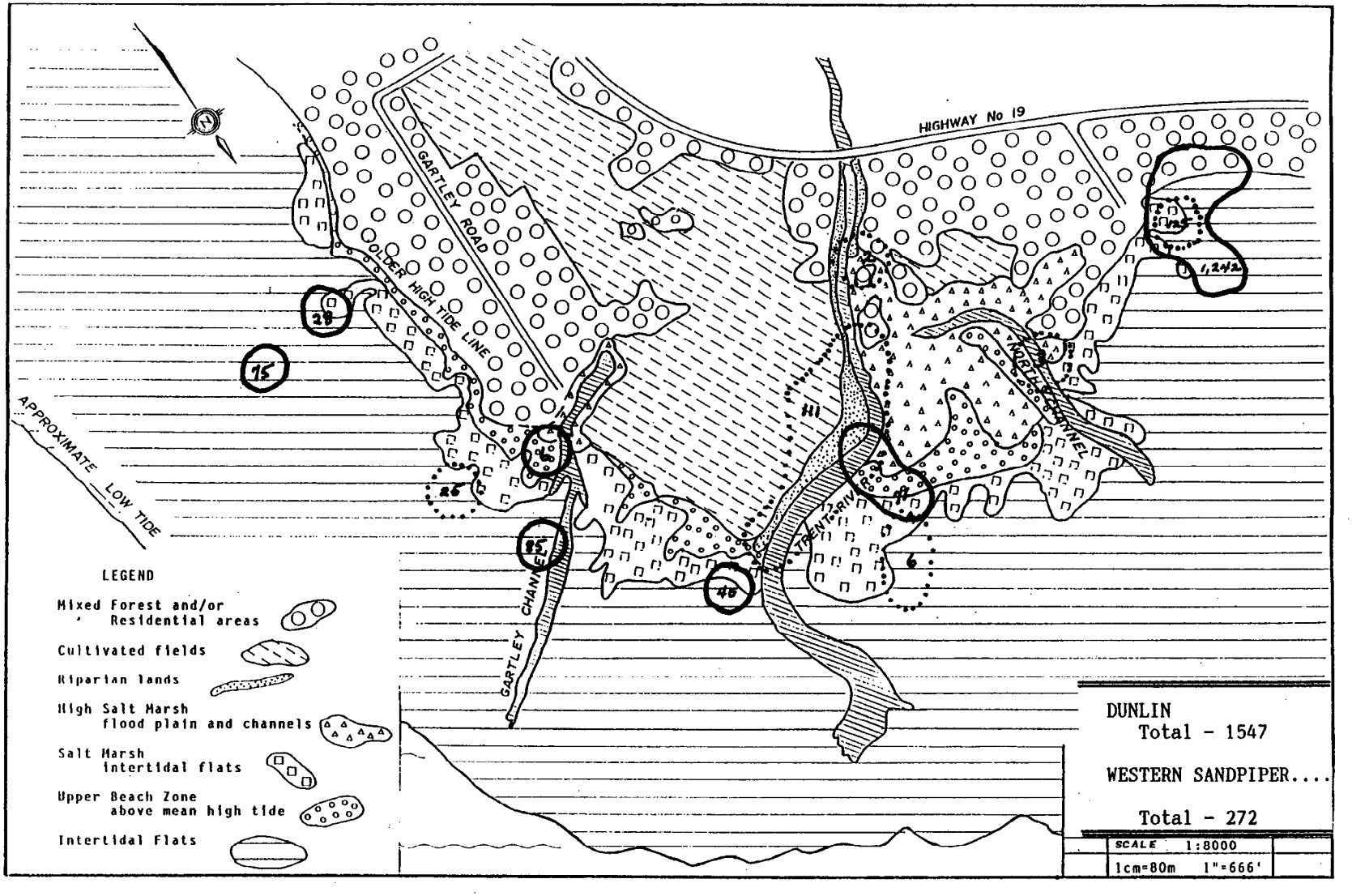

Figure 25. Distribution of the Dunlin and Western Sandpiper on the Trent River estuary, 1987

Zone 35%, Riparian Zone 20%, and High Salt Marsh Zone 14% of the time. In the fall, birds averaged eight per recording day. Two adults and one chick recorded at R6 on 18 April denoted a successful nest. Five adults and one immature were also noted at L11 on 4 July.

Gulls and Terns

Six species of gulls and one tern were recorded. Seasonal habitat use by gulls on the Trent River estuary is shown in Figure 26; for seasonal fluctuations in their numbers see Figure 24. The most important area used by gulls was along the gravel shoulders at the mouth of the Trent River. Over 50% of all gulls were observed there.

Glaucous-winged Gulls were the most common species with total birds numbering 7,045. Flocks of between 300 and 500 birds were concentrated in the area around the mouth of the Trent during the herring spawning season from mid-February to mid-March. The gulls were mainly loafing, preening and bathing in the river shallows on the low and receding tides. They were also seen at low tide pecking out young cockles which were close to the surface. Birds were seen 100% of the time except during the summer months when the percentage dropped slightly to 92%. Summer birds would likely have been non-breeders. Many were also recorded in transit over the Intertidal Zone flying to and from the upper reaches of the Courtenay River estuary.

Mew Gulls were recorded in greater numbers during the fall, but were seen throughout the study period with a total of 917 birds. They also took advantage of the river to bathe, "stomp" in the river sediments, and loaf on the gravel bars.

One flock of 50+ Thayer's Gulls was recorded in spring and another in the fall, with one or two birds present during the winter months.

A Glaucous Gull coming into 2nd year plumage was reported "resting, preening and washing" northwest of the North Channel on 14 February.

Bonaparte's Gulls were first seen on 25 April and were present throughout the spring, summer and fall seasons, the last bird was seen on 1 November. Total birds numbered 420. The largest flocks were recorded at the mouth of the Trent River. The greatest number recorded was on 18 July-84. Very few Bonaparte's Gulls occurred east of the main Trent Channel. Eighty percent of the birds were in the Intertidal zone and they were present 69% of the time during June, July, and August.

Four Caspian Terns were recorded on 13 June. They were resting on the gravel bar, and diving off the Trent River mouth at M14. One other bird was seen on 27 June at N11 in the Salt Marsh Zone.

Alcids

Marbled Murrelets were recorded in June and July in the Intertidal Zone; two on 13 June and three on 18 July near the mouth of the river.

Doves and Pigeons

Rock Doves were recorded on two occasions in the Mixed Forest habitat west of the North Channel: 18 July-2; and 5 September-3.

Band-tailed Pigeons were first seen on 2 May when a flock of 22 birds were noted. This comprised 66% of all the Band-tailed Pigeons seen. The habitat was the Mixed Forest zone. Four birds were recorded on 26 September, the only fall record.

Nighthawks and Swifts

Of the 23 Vaux's Swifts recorded, 55% were seen over the Cultivated Fields bordering the Trent River. The first spring record was 2 May-11, followed by 21 June-10. The last summer record was noted 29 August-2. Swarms of insects emerging around the barns attracted ten of them on 2 May, (see also remarks under swallows).

Hummingbirds

Rufous Hummingbirds were present from 18 April through 27 June with a total of 21 birds recorded. Numbers peaked on 21 June with 9 birds--43% of the birds recorded. They were most often seen in the Cultivated Field, Riparian, and Salt Marsh zones in the central portion of the Delta.

Belted Kingfisher

At least one pair was resident. They were most often recorded in the High Salt Marsh (39%), Mixed Forest (17%) and Riparian Zone (14%). Birds were less prevalent during the spring. The greatest number seen on one day was 6: 14 February,15 August, 26 September, and 24 October. Favourite perches were at G9 on Gartley Channel and M4 in the Trent River. The vicinity of Q6 on the North Channel was a fishing spot where they were often seen hovering and diving.

Woodpeckers

Four species used habitat on the Trent delta. The Northern Flicker was most common with a total of 120 birds noted over the study period. They were seen predominantly in the High Salt Marsh and Mixed Forest Zones. One pair may have been resident as they were seen on 45 recording days. Downy, Hairy, and Pileated Woodpeckers were scarce, with only sporadic observations of these species.

Passerines

Seasonal habitat use by songbirds on the Trent River estuary is shown in Figure 27; for seasonal fluctuations in their numbers see Figure 28.

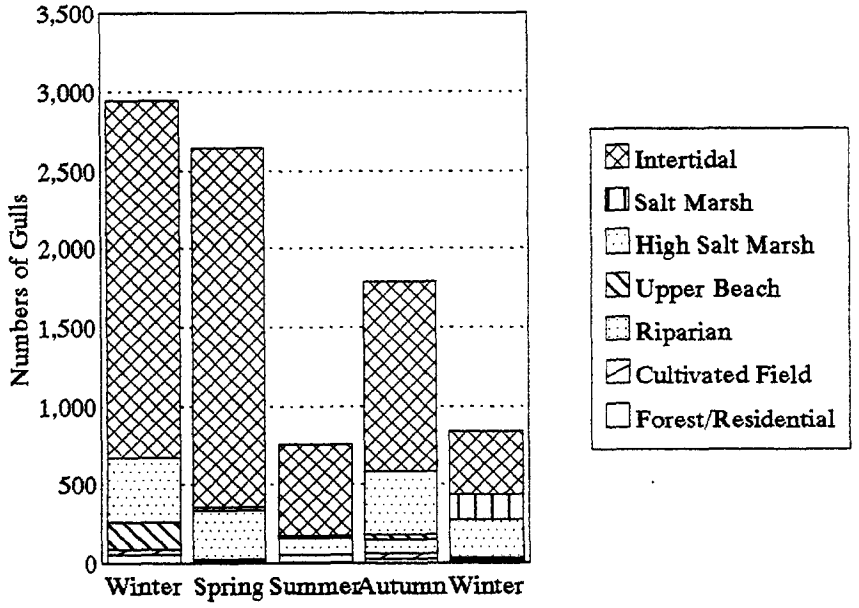

Figure 26. Seasonal habitat use by gulls on the Trent River estuary, 1987

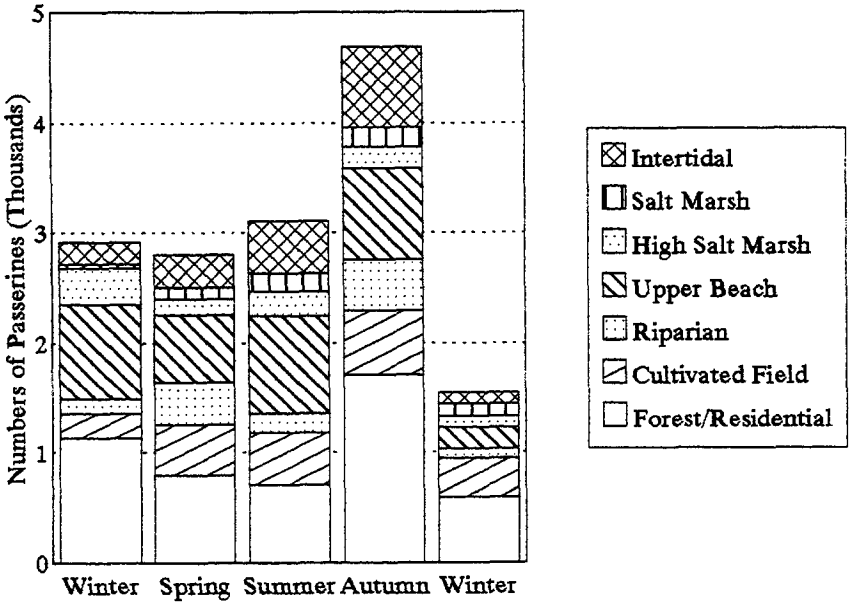

Figure 27. Seasonal habitat use by passerines on the Trent River estuary, 1987

Flycatchers

Of the seven Pacific-slope Flycatchers recorded, six were seen during the summer months. The only spring record was 16 May-1. The last summer record was of two birds on 8 August. They were recorded predominantly in the Cultivated Field and Salt Marsh zones, near the main Trent River.

Willow Flycatchers were present at N7 and N8 42% of the time from 31 May to 5 September. Although this habitat is registered as High Salt Marsh, they were actually perched at the top of a tall Sitka spruce tree adjacent to the High Salt Marsh. Out of 23 birds noted, 11 were seen at this site, where observers were attracted by their distinctive call. They were also noted in Riparian and Mixed Forest habitats. The last fall record was of two birds noted on 24 October.

Swallows

Of the five swallow species recorded during the spring and summer months, Barn Swallows outnumbered all other species with 468 occurrences. An average of twenty-five Barn Swallows were seen any day of the study from May through August. Although this species arrived around 25 April, five weeks after the first Violet-green and Tree Swallows appeared, (21 March and 28 March respectively), it occupied much the same territory. All of these species favour the cultivated fields and farm buildings on the east side of the Trent and extending west of the river into a small area of mixed forest. To the west of the North Channel there are open fields and private dwellings with nest boxes, all of which attract the various Swallow species.

A pair of Cliff Swallows were noted along the North Channel. Groups of four and five in July and August were recorded over the Cultivated Fields. The first spring record was 23 May-3 and they were not recorded after 15 August-5. The Northern Rough-winged Swallow was seen only during migration on 9 and 23 May-2 and 8 August-5, generally near the main Trent River Channel.

On 2 May, Barn Swallows were observed mingling with Vaux's Swifts circling the farm buildings; all were feeding on a swarm of insects.

Numbers peaked 21 June for Violet-green Swallows (52) and Tree Swallows (29). The greatest number of Barn Swallows were recorded 15 August-60. Violet-green Swallows were not seen after 25 July-8. Tree Swallows stayed one week longer: 1 August-2. Barn Swallows remained in the area until 29 August-16 birds.

Jays and Crows

Fifty-seven percent of the Steller's Jays were observed in the Mixed Forest Zone. The High Salt Marsh was also frequented (20%), with Riparian to a lesser degree (13%). Jays were most numerous in the central portion of the Delta. They were recorded on every study day from January to the end of April, when they likely moved to nesting territories away from the Trent. The week of 22 August they returned and remained for the duration of the study. Bird feeders at M4 attracted many passerines including the Steller's Jay.

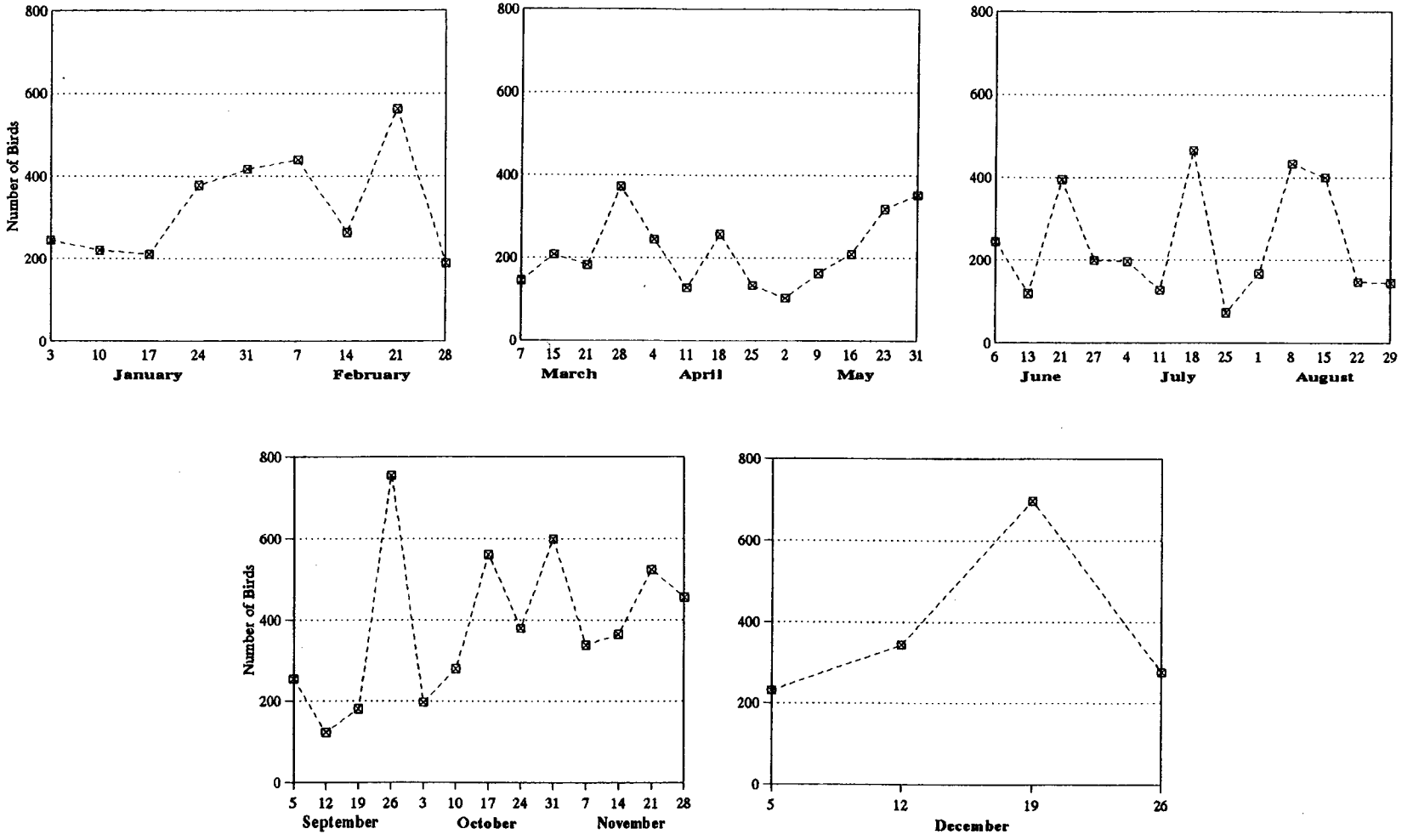

Figure 28. Seasonal fluctuations in passerine numbers on the Trent River estuary, 1987

The Northwestern Crow was a common resident utilizing the Intertidal and Mixed Forest Zones 100% of the time, alternating between the two zones depending on the tides. They were present in the greatest numbers during the winter months when flocks averaged from 40 to 50 birds.

Chickadees and Bushtits

Chestnut-backed Chickadees were resident on the Trent River estuary; they were recorded every month of the year. Forty-eight of the 133 birds were in the Mixed Forest habitat, followed by Riparian 14%, Salt Marsh 11% and High Salt Marsh 10%. Numbers peaked 24 October with 58 birds recorded. Flocks averaged 12 birds during the fall season.

Thirty-eight Bushtits were noted during the summer months of June and July. Habitats used were 58% High Salt Marsh, 21% each Mixed Forest and Upper Beach zones. The first flock was seen 21 June-8 birds, while 25 July-10 birds, was the last record for 1987. Flocks averaged approximately 10 birds.

Nuthatches

One Red-breasted Nuthatch was recorded in the High Salt Marsh zone 12 September. As in the case of the Willow Flycatcher, Grid M7 also contains tall spruce trees directly adjacent to the High Salt Marsh, where this bird was located.

Creepers

An observation on 18 July of a family of five Brown Creepers at E7, in the Mixed Forest/Residential area of Gartley road, suggested that a pair nested on the Delta.

Wrens

Bewick's Wren was the most common species in this family, with 41 birds recorded. The first spring record was 7 March-2 birds, and they were recorded every month during 1987 except the winter months of January and February. They were seen mostly in the Mixed Forest habitat (27%), High Salt Marsh (27%) and Riparian (20%). Frequency of occurrence was 69% during the spring and summer seasons. A family of two adults and four young were recorded 21 June at M4 in the Trent River Riparian Zone.

Winter Wrens were seen only during the fall and winter months mostly in the Mixed Forest habitat. The total of seven records were of a single bird, except on 21 November when two were noted.

Kinglets

Golden-crowned Kinglets were recorded every month except February with a total of 166 birds noted. Fifty-four percent were recorded in the Mixed Forest habitat, with Cultivated Fields at 25%. This forest bird was also seen during the summer, fall and winter in the Salt Marsh, High Salt Marsh and Upper Beach zones. The greatest number recorded was on 28 March-17 birds. Flocks averaged

8 birds during the spring and fall.

Four Ruby-crowned Kinglets were recorded on 4 April in the High Salt Marsh zone. They were not recorded again until 31 October. They were most numerous during the fall season when 18 birds were seen, mostly in the Cultivated Field Zone around the farm house. Riparian, Mixed Forest and Upper Beach zones produced 3 - 4 birds each.

Thrushes

American Robins were present throughout the study period. The spring migration through March and April peaked on 18 April with 56 noted on that day. The most used zones were Mixed Forest (40%), Cultivated Fields (23%), and High Salt Marsh (16%). A few were seen with the most regularity around the farm house at L7, and at M4 in the Riparian Zone. Numbers of birds fluctuated rather widely, averaging between 4 to 22 robins spread throughout the area, with fewest during the winter months.

Swainson's Thrush was recorded during the spring and summer months with a total of 20 birds. Habitats used were High Salt Marsh (30%); Riparian, Cultivated Field and Mixed Forest Zones (20% each), and Salt Marsh (10%). These data probably represented one pair as the average was about 2 birds during the summer months. They first appeared 23 May and were last seen 4 August.

Four Varied Thrushes were noted during the spring; three on 25 April in the Mixed Forest zone and one on 16 May in the Upper Beach Zone.

Waxwings

Of the 50 Cedar Waxwings seen, 37 birds were recorded 23 May suggesting the spring migration. Summer records numbered 13. Spring migrants were seen in the High Salt Marsh and Cultivated Field habitats. Birds during the summer were from the Mixed Forest zone. The last summer record was of one bird seen 22 August.

Shrikes

One Northern Shrike was recorded in the High Salt Marsh zone on 24 October near the main channel of the Trent River.

Starlings

European Starlings were ubiquitous and numerous, using all zones uniformly except the Upper Beach and Riparian Zones where they were not as plentiful. However they were seen there (60%) of the time. A flock of 25 European Starlings was reported "swooping on a Red-tailed hawk" at L5 on 3 October.

Warblers

Eight species of warblers were seen on the Delta. Only the Orange-crowned and Common Yellowthroat were seen with regularity from the end of March to the end of September, with a total of 50 Orange-crowned Warblers and 39 Common Yellowthroats recorded. Orange-crowned Warblers arrived around 28 March-2 birds, and were last seen 26 September-2. Forty-five percent of the Orange-crowned Warblers were seen in the High Salt Marsh, and to a lesser extent in the Mixed Forest (26%) and Cultivated Field habitat (14%; Figure 29). Thirty percent of the Common Yellowthroats were in the Cultivated Field habitat; (25%) in the High Salt Marsh and (15%) in the Upper Beach Zone (Figure 30). They did not arrive until one month after the Orange-crowned Warbler (25 April-2) and were last seen 12 September-4 birds. The greatest number recorded for the Orange-crowned Warbler and Common Yellowthroat on a single day was 6 birds each on 1 August and 8 August respectively. Although both species were present throughout the breeding season, evidence of nesting was not observed. The Cultivated Field habitat includes a farm house, garden and fruit trees which attracted all eight Warbler species.

Yellow-rumped Warblers were present in the greatest numbers during the fall migration in late September and early October, most often (80%) in the Mixed Forest habitat (Figure 31). Total records numbered 45. The greatest numbers were seen 26 September-18 and 3 October-12, which was also the last fall record. On 18 July a family of five were observed at E7 in the Mixed Forest zone near Gartley Beach. One, of the Myrtle race, was seen feeding on insects along the eaves of a home 12 December at N5.

A few Yellow Warblers were present every month from 25 April to 29 August, but the greatest influx was on 23 May during the spring migration, when 11 birds were seen. The preferred habitat of the Yellow Warbler appeared to be the High Salt Marsh with (38%) and Mixed Forest Zone with (27%) of the birds recorded.

All habitats were used by some Warbler species, however High Salt Marsh, Cultivated Field and Mixed Forest habitats were the zones where one would see most of the Warblers on the Delta.

The four other warblers recorded were Black-throated Gray (from 9 May to 26 September), Townsend's (from 9 May to 1 August), MacGillivray's (from 31 May to 11 July), and Wilson's Warbler (from 2 May to 13 June). Six birds or less were noted for each of these species.

Grosbeaks, Buntings and Sparrows

The Dark-eyed Junco was the most abundant passerine in this group with a total of 1,334 birds recorded. They were most numerous in the Mixed Forest Zone (34%), High Salt Marsh (32%), and Cultivated Field and Riparian Zones at (14%) each. They were most common during the winter months. Their spring departure date was around 18 April when 12 birds were noted. The fall migration

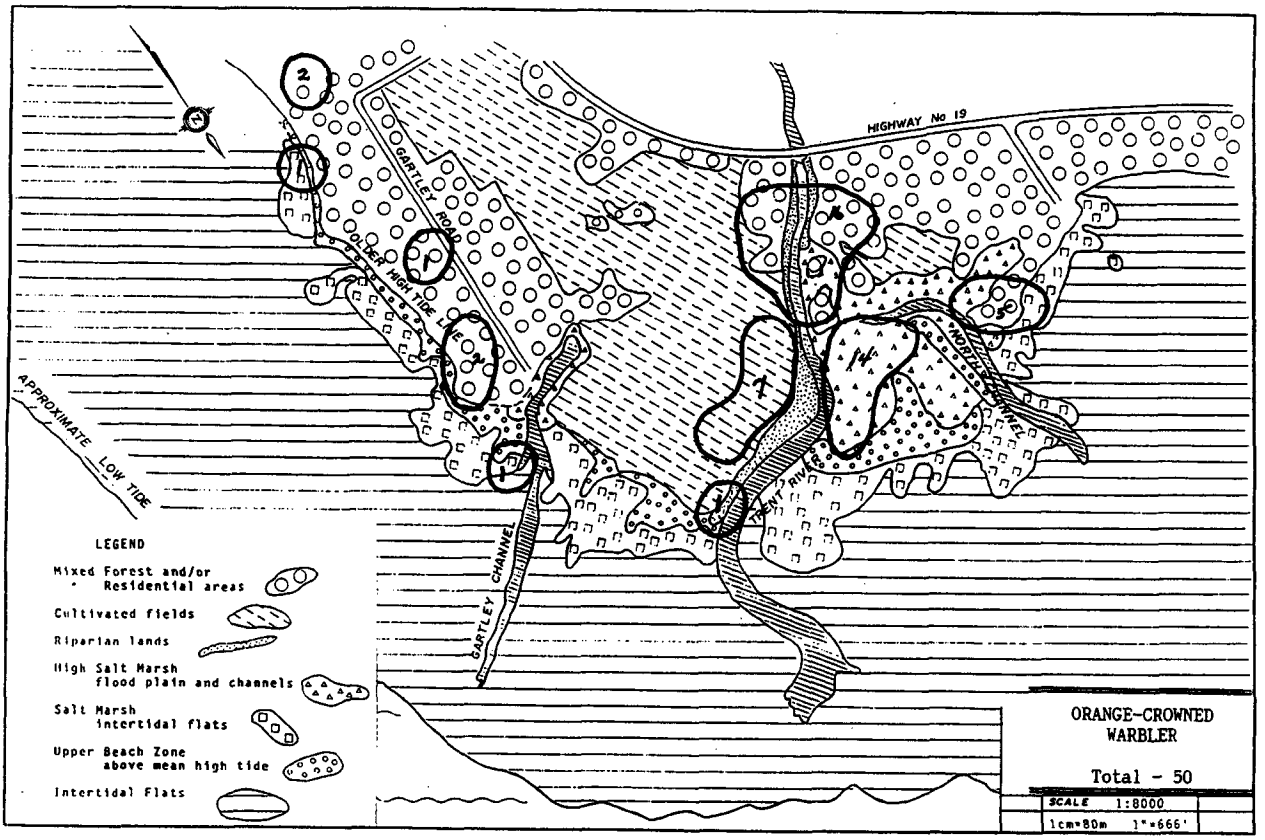

Figure 29. Distribution of the Orange Crowned Warbler on the Trent River estuary, 1987

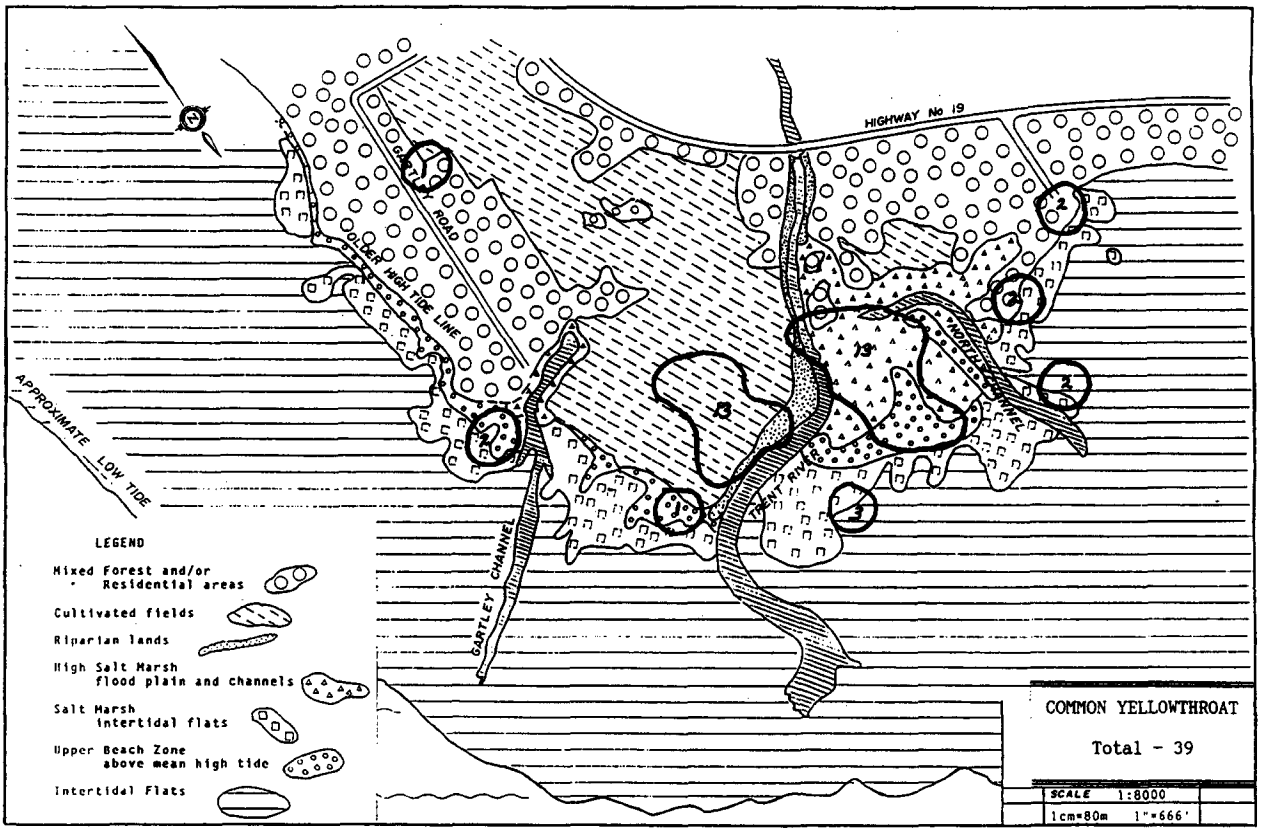

Figure 30. Distribution of the Common Yellowthroat on the Trent River estuary, 1987

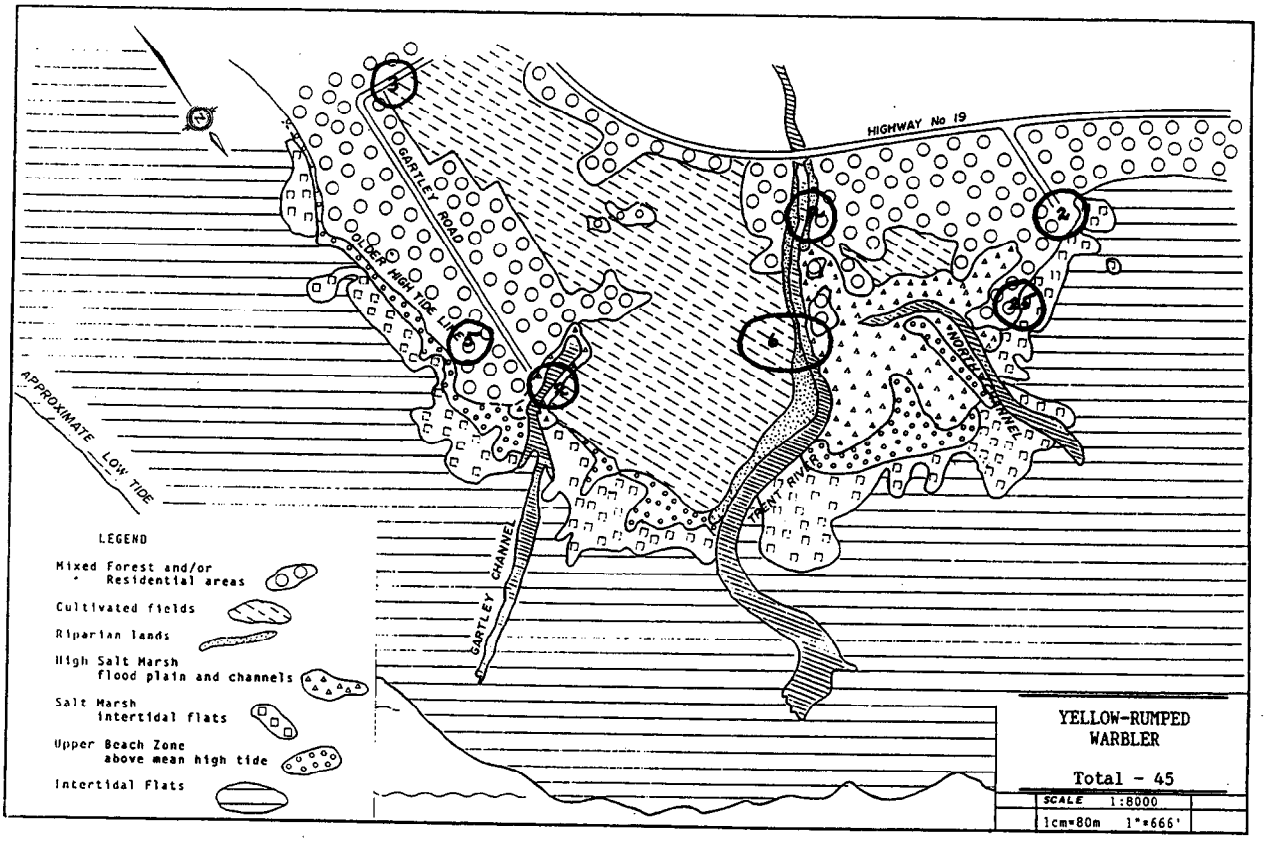

Figure 31. Distribution of the Yellow-rumped Warbler on the Trent River estuary, 1987

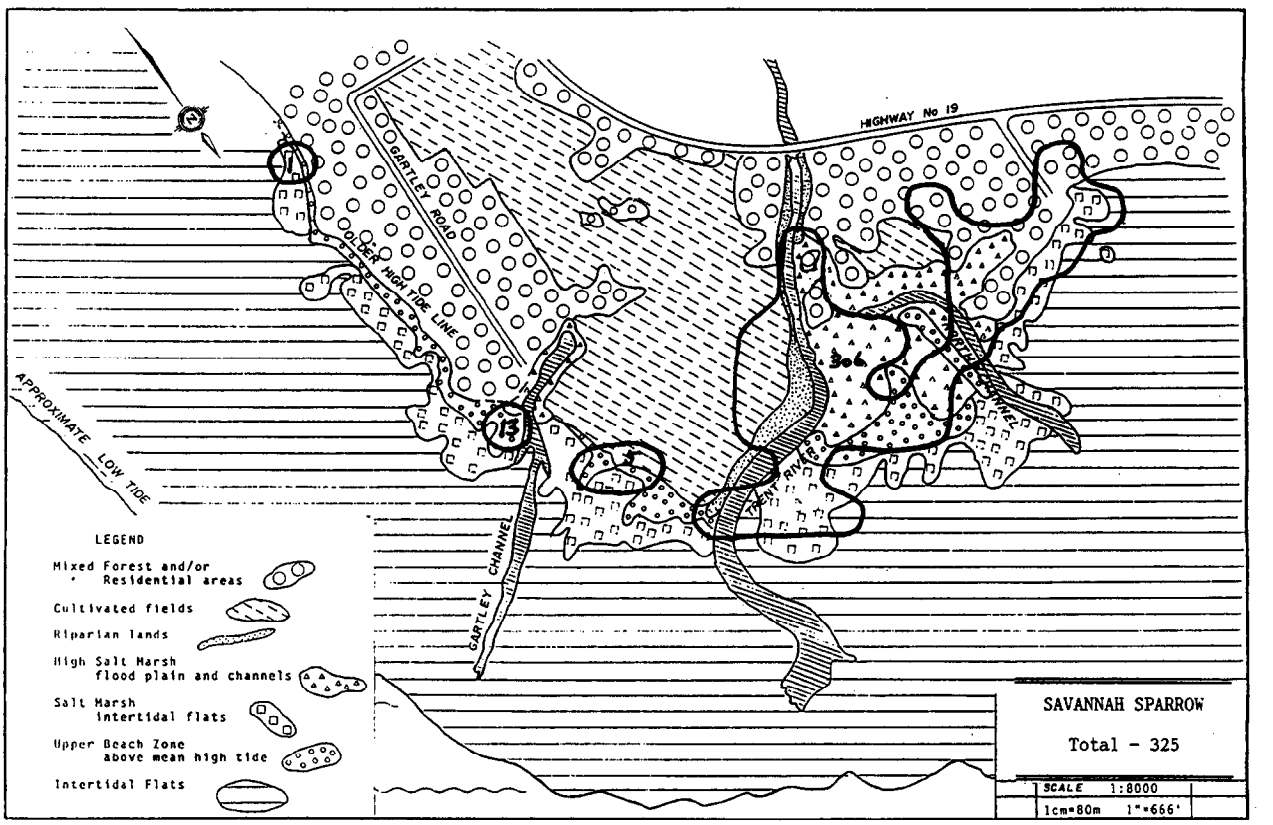

Figure 32. Distribution of the Savannah Sparrow on the Trent River estuary, 1987

to the delta started around 26 September when 9 Dark-eyed Juncos were recorded. One hundred and thirty birds noted 21 November, was the greatest number seen on any one day in 1987. They were most common during the winter months with frequency of occurrence at 100% during the winter season.

Song Sparrows were recorded on every observation day, for a total of 433 birds seen. Savannah and Golden-crowned sparrow numbers totalled 325 and 229 respectively, and were the other two most common sparrows on the Delta. Figures 32 and 33 show the distribution of these two sparrows on the estuary.

The spring migration of these two sparrows was rather sparse. Eighty-four percent of the records for the Savannah and 90% for the Golden-crowned Sparrow were made during the fall migration. On 26 September 92 Savannahs were seen, which was the peak of their fall migration ending in late October, but it was only the starting date for the migration of other birds in this group. Song Sparrow and Towhee numbers doubled from the previous week. Prior to 26 September Golden-crowned Sparrows and Dark-eyed Juncos had not been seen since the spring. A few Golden-crowned Sparrows wintered on the Delta. The last spring record was 9 May-1 bird. Savannah Sparrows were first seen in the spring on 4 April-1. Seventeen noted on 25 April marked the peak of the spring Savannah Sparrows. A total of nine summer birds were noted; 18 July-4 and 22 August-5.

Although Song Sparrows and Towhees appeared to be resident, evidence of nesting or of juveniles was not observed. The High Salt Marsh, was frequented by almost 30% of the Song Sparrows and 25% of the Savannah Sparrows. These species were also seen in the Mixed Forest and Cultivated Field habitats, especially around the farm house and fruit tree areas. Golden-crowned Sparrow habitat was predominantly the Mixed Forest (38%) and Cultivated Fields (27%).

The White-crowned Sparrow was recorded in small numbers during every month except January and October. It was present most often during the spring and summer. Frequency of occurrence during this period was between 45-55% of the time. The Mixed Forest habitat was utilized the most at (48%), followed by Upper Beach, Cultivated Field and Riparian zones. One Chipping Sparrow was seen 25 April, the only record of this sparrow.

A few Fox Sparrows were recorded in the Cultivated Field habitat (44%), and Riparian zone (22%) during the fall and winter months, mostly near the farmhouse. There was one summer record of two birds on 21 June.

Six Lincoln Sparrows were seen in the fall; 12 September-5 and 24 October-1, the only two records of this shy bird. Four were seen in the Cultivated Field habitat near the farmhouse, the other two were in the Salt Marsh zone.

Meadowlarks, Blackbirds and Orioles

All the common species in this group were recorded on the Trent River estuary. One Western Meadowlark was seen in the Upper Beach Zone on 28

November at 09 "walking amongst the dead grasses". The population of this bird has vastly diminished in the Comox District since the 1940's when it was a common spring songster and summer resident, (pers. observ. N. Morton).

Both the Red-winged and Brewer's blackbirds readily utilized the Trent estuary's Mixed Forest and High Salt Marsh Zones. Flocks of both species were largest in January and February with Red-winged Blackbird flocks averaging 77 birds. Brewer's Blackbird flocks were smaller averaging 46 birds. Numbers had diminished considerably by 7 March. Average spring flocks were 15 and 9 birds respectively. The peak of the fall migration for Red-winged Blackbirds was 17 October-75 birds. The greatest number recorded for Brewer's Blackbird during the fall season was not until 21 November-96. The two species were often intermingled with the occasional Brown-headed Cowbird around the horse barns at P5 where a large platform feeder attracted them. Both species of blackbirds were also observed in the Intertidal Zone during the low tides, while cowbirds were more commonly amongst the cattle in the Cultivated Field Zone. Total Red-winged Blackbirds, Brewer's Black-birds and Brown-headed Cowbirds numbered 1,357, 1,322 and 23 respectively.

Six records of Northern Orioles from 9 May to 27 June, mostly in the High Salt Marsh zone, suggest increased numbers of this species to the Comox District. At least two nesting sites have been recorded in the Comox Valley over the past five years.

Finches

Five species of Finches were recorded. House Finches were the most numerous and were resident. Mixed Forest (43%), High Salt Marsh, (22%), and Cultivated Fields (14%), were used extensively, especially around the farm house at L7 and where feeders existed at M4 on the main Trent Channel, Q6 on the North Channel and S4 where several feeders attracted them. They were rather sparse in the Mixed Forest Zone south of Gartley Channel. The annual total numbered 666. Flocks in December averaged 42 birds.

American Goldfinches first appeared 16 May and were not seen after 26 September. The fall migration accounted for (60%) of the birds which peaked 15 August with incredible groups moving back and forth. On that date 79 birds were seen. Ninety percent of all birds were seen west of the Trent River Channel on the Salt Marsh flats and extending into that habitat west of the North Channel.

Purple Finch habitat was similar to the House Finch with the greatest concentrations around the farm house and feeders at M4 in the Trent River Channel. Very few were seen east of Gartley Channel. Total birds numbered 96. They were present every month except December.

Evening Grosbeaks were seen on two recording days in the spring; 4 April-14 and 18 April-2. The total of 16 birds were observed in the Mixed Forest habitat at the same grid site S4, where a large broad-leaved maple tree grows.

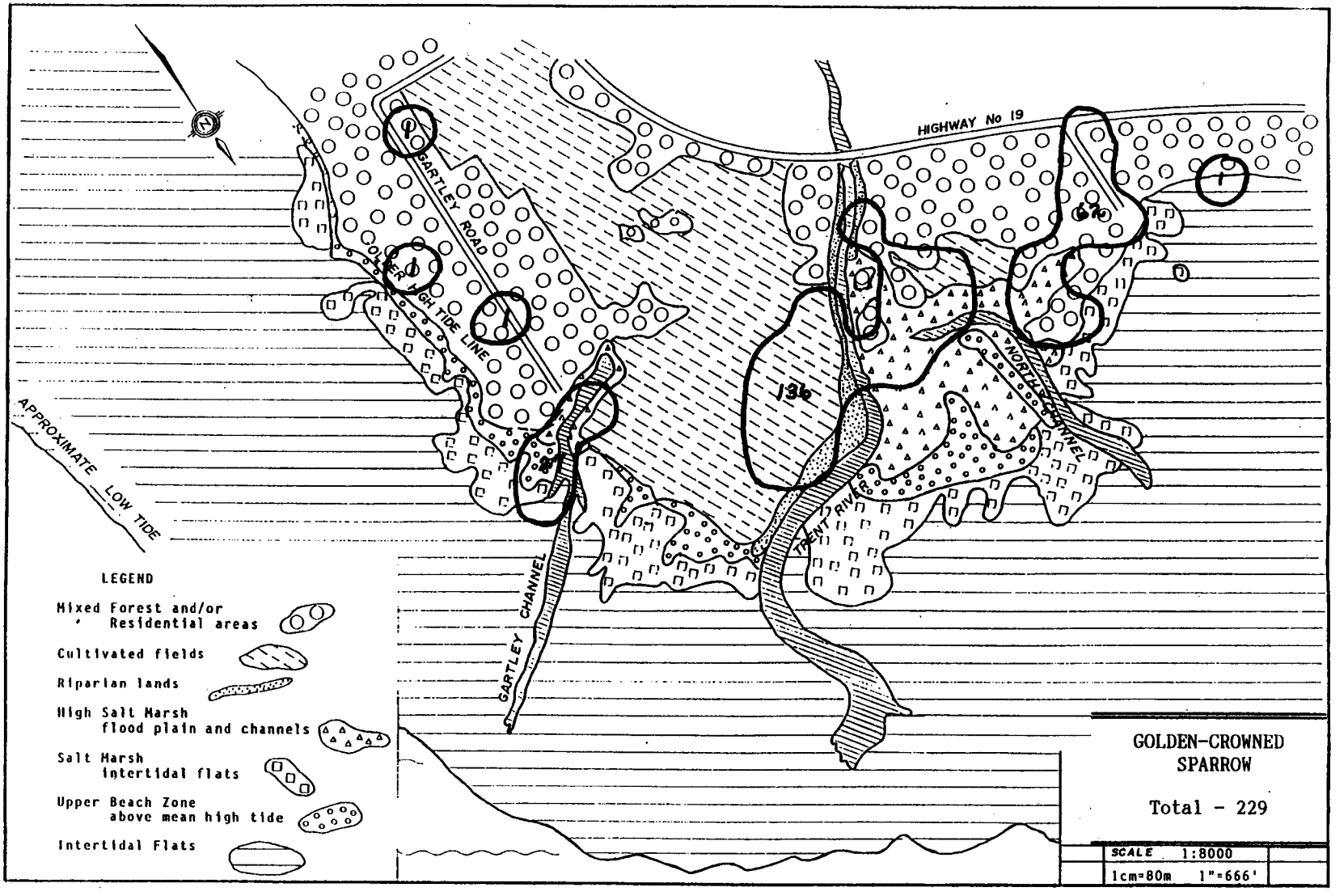

Figure 33. Distribution of the Golden Crowned Sparrow on the Trent River estuary, 1987

COMMENTS

Grid System and Habitat Zonation

The Grid System was helpful to novices who were not able to recognize the various habitat zones easily. The varied topography, with many obvious landmarks made recording by the aerial photograph and its superimposed grids fairly accurate (see Figure 3). In cases where the topography was less diversified, accurate locations on the grid were more difficult.

The compiler was able to make a fairly accurate assessment, using the Grid System, of areas of concentration for each species seen. The frequency of occurrence of a species on each grid was also readily recorded from observers field notes.

Recording by Habitat Zone is not always accurate if recorders are unable to recognize the vegetation zones, and for a project of this nature the vegetation study would have had to be done prior to the bird study to establish the zonation beforehand.

The Habitat System allows assessment of the important habitats but does not provide site specific information. Being able to record by grid allows the observer to pinpoint a specific location; e.g. feeding area, roost, nesting tree or observation post. A combination of the two systems has perhaps, in this case, made a more comprehensive report.

Habitat Use by Birds

The Trent River Delta and Estuary has a diversity of habitats which accommodated 124 species of birds in 34 families. The presence of an extensive intertidal zone as well as several slight land elevations allows a great variety of species utilization in a fairly small area. Tall trees in close proximity to the intertidal zone provided observation perches for raptors, and also supported one nesting pair of raptors, suggesting the area held adequate prey species to raise a brood of two young.

The area west of the North Channel was important for migrating shorebirds and winter dabblers. The High Salt Marshes were used by 82 of the 124 species recorded, second only to the Intertidal Zone in numbers of species using that area in 1987. However on a percentage basis by total birds tabulated, the Mixed Forest habitat was second.

The greatest concentrations of birds were in the vicinity of the fresh water channels and west of the North Channel. Gravel bars at the mouth of the Trent provided important bathing, loafing and preening areas.

There are a few small areas where certain species were present on many occasions, raising the question of their special interest. Bufflehead and Belted Kingfisher frequented Q7, on the North Channel, Common and Red-breasted Mergansers M4 and M5 in the Trent River, and several species of shorebirds utilized T3 and vicinity. Further research could be undertaken to assess these specific sites for their significance.

The High Salt Marsh and Salt Marsh Zones could be critical habitat for raptors such as the Northern Harrier during inclement weather, i.e. snowstorms, when fields further inland would not have a food supply available.

The area of least use by birds was that east of Gartley Channel, which is lacking in fresh water run-off. It was used to some extent by plovers, which rested on the cobble, and by some dabblers which fed in the abandoned wading pools. Scattered numbers of diving ducks were also recorded offshore.

Cribbing and backfill along the waterfront homes at Gartley Beach has changed the Upper Beach Zone with unknown impact on the shoreline habitat. This practice is also being done in the vicinity of Millard's Creek, farther up the Courtenay River estuary, and has definitely destroyed Salt Marsh habitat.

The water quality of the Trent River should be monitored and attempts made to mitigate threats to that quality from non-point discharges such as agricultural fields, septic fields, sewage effluent, and commercial activities. For example, the effluent from a commercial laundry facility in Cumberland eventually flows into the Trent River from the Cumberland sewage lagoon (Scott, 1991).

Wetlands throughout the Comox Valley should be conserved for those birds who must leave the Trent River estuary to establish nesting territories elsewhere, e.g. Mallards, Red-winged Blackbirds.

Commercial harvesting of shellfish on this estuary should be monitored as heavy and frequent harvesting of such organisms might affect the natural food supply for waterbirds that are dependent on the intertidal zone for their survival.

Salmonid enhancement programmes and other projects which might modify the intertidal zone should take into account the importance of non-commercial fish and other organisms, many of which are an important food source for waterbirds.

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APPENDICES

APPENDIX I

VASCULAR LAND PLANTS OF THE TRENT RIVER ESTUARY - MARCH TO AUGUST 1987

This list is alphabetical by family, then by species.

ACERACEAE	MAPLE FAMILY
Acer macrophyllum	broadleaf maple
APOCYNACEAE	DOGBANE FAMILY
Vinca major (escapee)	periwinkle
BERBERIDACEAE	BARBERRY FAMILY
Berberis aquifolium	tall Oregon-grape
BETULACEAE	BIRCH FAMILY
Alnus rubra	red alder
Fagus sp. (seedling escapee)	beech
BORAGINACEAE	BORAGE FAMILY
**Amsinckia spectabilis* R2	seaside amsinckia
CAPRIFOLIACEAE	HONEYSUCKLE FAMILY
Lonicera ciliosa	orange honeysuckle
Lonicera involucrata	twinberry
Sambucus racemosa	red-berry elder
Symphoricarpos albus	waxberry, snowberry
CARYOPHYLLACEAE	PINK FAMILY
Cerastium arvense	field chickweed
Honkenya peploides	seabeach sandwort
Stellaria media	common chickweed
CHENOPODIACEAE	GOOSEFOOT FAMILY
Atriplex patula	common orache, saltbush
COMPOSITAE	DAISY FAMILY
Achillea millefolium	yarrow, milfoil
Agoseris glauca	smooth agoseris
Ambrosia chamissonis	silver burweed

Anaphalis margaritacea	pearly everlasting
Anthemis arvensis	field chamomile
Arctium minus	burdock
Artemesia campestris	cut-leaf wormwood
Aster subspicatus	Douglas' aster
Centaurea cyanus (escapee)	cornflower
Chrysanthemum leucanthemum	oxeye daisy
Cirsium arvense	Canada thistle
Cirsium vulgare	Scotch (bull) thistle
Grindelia integrifolia	gumweed
Matricaria matricarioides	pineapple weed
Senecio vulgaris	common groundsel
Sonchus arvensis	perennial sow-thistle
Sonchus oleraceus	annual sow-thistle
Tanacetum vulgare	tansy
Taraxacum officinale	dandelion
CONVOLVULACEAE	MORNING GLORY FAMILY
Convolvulus arvensis	field bindweed
CRUCIFERAE	MUSTARD FAMILY
Barbarea orthoceros	winter cress
Brassica juncea	Indian mustard
Cakile edentula	searocket
Capsella bursa-pastoris	shepherd's purse
Cardamine pulcherrima	toothwort
Hesperis matronalis (escapee)	sweet dame's rocket
Lepidium campestre	field peppergrass
Sisymbrium officinale	hedge mustard
CUPRESSACEAE	CYPRESS FAMILY
Thuja plicata	red cedar
EQUISETACEAE	HORSETAIL FAMILY
Equisetum arvense	horsetail
Equisetum hymale	scouring rush
GERANIACEAE	GERANIUM FAMILY
Geranium molle	dove's foot cranesbill
Geranium robertianum	herb robert
GRAMINEAE	GRASS FAMILY
Agropyron repens	couch grass
Agrostis sp.	bentgrass
Anthoxanthium odoratum	sweet vernal grass
Bromus sp.	brome-grass

Dactylis glomerata		orchard grass
Deschampsia cespitosa		tufted hair grass
Elymus mollis		dune grass
Fescue sp.		fescue
Holcus lanatus		common velvet grass
Hordeum brachyantherum		meadow barley
Lolium perenne		perennial rye grass
GROSSULARIACEAE		CURRANT or GOOSEBERRY FAMILY
Ribes divaricatum		wild gooseberry
Ribes sanguineum		red-flowering currant
HYPERICACEAE		ST. JOHN'S WORT FAMILY
Hypericum perforatum		St. John's wort
JUNCACEAE		RUSH FAMILY
Juncus arcticus		arctic rush
LABIATAE		MINT FAMILY
Mentha spicata		spearmint
Prunella vulgaris		self-heal
Stachys cooleyae		hedge nettle
LEGUMINOSAE		PEA FAMILY
Cytisus scoparius		Scotch broom
Lathyrus japonicus		beach pea
Lotus corniculatus		bird's foot trefoil
**Lotus micranthus*	R4	small-flowered lotus
Medicago sp.		alphalfa
Melilotus alba		white sweet clover
Trifolium dubium		small hop clover
Trifolium repens		white clover
Trifolium pratense		red clover
Vicia americana		American vetch
Vicia gigantea		giant vetch
Vicia hirsuta		hairy vetch
Vicia sativa		common vetch
LILIACEAE		LILY FAMILY
Allium sp.		wild onion
Asparagus officinalis (escapee)		asparagus
Disporum hookeri		Hooker's fairybells
**Erythronium oregonum*	R4	white fawn lily
Fritillaria camschatcensis		chocolate lily

Lilium columbianum	tiger lily
Maianthemum dilatatum	wild lily-of-the-valley
MALVACEAE	MALLOW FAMILY
Malva moschata	musk mallow
ONAGRACEAE	EVENING PRIMROSE FAMILY
Epilobium angustifolium	fireweed
PAPAVERACEAE	POPPY FAMILY
Papaver orientale (escapee)	Oriental poppy
PINACEAE	PINE FAMILY
Abies grandis	grand fir
Pseudotsuga menziesii	Douglas fir
Picea sitchensis	sitka spruce
Tsuga heterophylla	western hemlock
PLANTAGINACEAE	PLANTAIN FAMILY
Plantago lanceolata	narrow-leaved plantain, ribwort
Plantago major	broad-leaved plantain
POLYGONACEAE	BUCKWHEAT FAMILY
Polygonum aviculare	common knotweed
Polygonum hydropiper	green smartweed
Polygonum persicaria	lady's thumb
Rumex acetosella	sheep sorrel
Rumex crispus	curled dock
Rumex maritimus	golden dock
Rumex occidentalis	western dock
POLYPODIACEAE	COMMON FERN FAMILY
Athyrium filix-femina	lady fern
Polystichum munitum	sword fern
Pteridium aquilinum	bracken
PORTULACACEAE	PURSLANE FAMILY
Montia parvifolia	miner's lettuce
Montia sibirica	Siberian miner's lettuce
PRIMULACEAE	PRIMROSE FAMILY
Trientalis latifolia	broad-leaved starflower

RANUNCULACEAE	BUTTERCUP FAMILY
Aquilegia formosa	columbine
Ranunculus repens	creeping buttercup
Thalictrum occidentale	meadow rue
Trautvettaria caroliniensis	false bugbane
RHAMNACEAE	BUCKTHORN FAMILY
Rhamnus purshiana	cascara
ROSACEAE	ROSE FAMILY
Amelanchier alnifolia	Saskatoon, service-berry
Crataegus douglasii	black hawthorn
Holodiscus discolor	ocean spray
Malus fusca	Pacific crabapple
Malus type	hybrid apple
Potentilla pacifica	Pacific silverweed
Physocarpus capitatus	ninebark
Prunus emarginata	bitter cherry
Prunus type	hybrid cherry
Rosa gymnocarpa	woodland rose
Rosa nutkana	Nootka rose
Rubus discolor	Himalayan blackberry
Rubus laciniatus	evergreen blackberry
Rubus parviflorus	thimbleberry
Rubus spectabilis	salmonberry
Rubus ursinus	trailing blackberry
Sorbus sitchensis	mountain ash
RUBIACEAE	MADDER FAMILY
Galium aparine	bedstraw, cleavers
Galium boreale	northern bedstraw
SAXIFRAGACEAE	SAXIFRAGE FAMILY
Bergenia delavayi (escapee)	pig's ear
Tellima grandiflora	tall fringecup
SCROPHULARIACEAE	FIGWORT FAMILY
Veronica americana	American brooklime
Veronica chamaedrys	Germander speedwell
Veronica serpyllifolia	thyme-leaved speedwell
UMBELLIFERAE	PARSLEY FAMILY
Daucus carota	Queen Anne's lace
Osmorhiza chilensis	sweet cicely

URTICACEAE	NETTLE FAMILY
Urtica dioica	stinging nettle

* Rare status in B.C. (Straley et al. 1985)

R2 = few to several populations with a relatively large population in each
R4 = restricted in distribution but can be large numbers

APPENDIX II

INTERTIDAL PLANTS: ALGAE, VASCULAR PLANTS & SALT MARSH PLANT COMMUNITIES OF THE TRENT RIVER ESTUARY

1. ALGAE (SEAWEEDS)

CHRYSOPHYTA	YELLOW-BROWN ALGAE
Vaucheria sp.	green felt
CHLOROPHYTA	GREEN ALGAE
Cladophora trichotoma	cushion seaweed
Enteromorpha linza	green string lettuce
Enteromorpha intestinalis	link confetti
Enteromorpha prolifera	branched confetti
Monostroma zostericola	green fringe (epiphyte on eel-grass)
Ulva expansa	large sea lettuce
Ulva lactuca	sea lettuce
Urospora mirabilis	green hair
PHAEOPHYTA	BROWN ALGAE
Colpomenia sinuosa	oyster thief
Fucus sp.	popping wrack
Laminaria saccharina	sugar wrack
Nereocystis luetkeana	bull kelp
Punctaria expansa	brown lettuce
Punctaria hesperia	brown fringe (epiphyte on eel-grass)
Sargassum muticum	Japanese seaweed
Scytosiphon lomentaria	whip tube
RHODOPHYTA	RED ALGAE
Agardhiella tenera	fleshy seaweed
Bangia fuscopurpurea	bangia
Ceramium californicum	pottery seaweed (epiphyte on *Prionitis*)
Endocladia muricata	nail brush
Gigartina cristata	split Turkish towel
Gigartina exasperata	Turkish Towel
Gigartina papillata	branching Turkish towel
Grateloupia sp.	lynx seaweed
Hildenbrandia sp.	Hildenbrandia
Lithothamnion pacificum	pink rock crust
Polysiphonia sp.	polly seaweed
Porphyra lanceolata	red jabot laver
Prionitis lanceolata	iodine seaweed
Rhodomela larix	black larch
Rhodymenia palmata	red kale
Smithora naiadum	red fringe (epiphyte on eel-grass)

2. VASCULAR PLANTS

CARYOPHYLLACEAE		PINK FAMILY
Honkenya peploides		seabeach sandwort
Spergularia canadensis		sand spurry
CHENOPODIACEAE		GOOSEFOOT FAMILY
Atriplex patula		saltbush
Salicornia virginica		glasswort
Suaeda maritima		sea blight
COMPOSITAE		DAISY FAMILY
Grindelia integrifolia		gumweed
CRUCIFERAE		MUSTARD FAMILY
Cakile edulenta		searocket
CUSCUTACEAE		DODDER FAMILY
**Cuscuta salina*	R4	salt marsh dodder (parasite on glasswort)
CYPERACEAE		SEDGE FAMILY
Carex lyngbyei		Lyngby's sedge
GRAMINAE		GRASS FAMILY
Agroperon repens		couch grass
Agrostis sp.		bentgrass
Distichlis spicata		seashore saltgrass
Hordeum brachyantherum		meadow barley
JUNCACEAE		RUSH FAMILY
Juncus arcticus		arctic rush
Juncus gerardii		Gerard's rush
JUNCAGINACEAE		ARROW-GRASS FAMILY
Triglochin maritimum		seaside arrow-grass
PLANTAGINACEAE		PLANTAIN FAMILY
Plantago maritima		seaside plantain

POLYGONACEAE	BUCKWHEAT FAMILY
Polygonum fowleri	Fowler's knotweed
PRIMULACEAE	PRIMROSE FAMILY
Glaux maritima	sea milkwort
ROSACEAE	ROSE FAMILY
Potentilla pacifica	Pacific silverweed (cinquefoil)
ZOSTERACEAE	EEL-GRASS FAMILY
Zostera marina	eel-grass

* Listed as rare in B.C. (Straley et. al., 1985)

3. VASCULAR PLANT COMMUNITIES

(dominant plants followed by others in decreasing order of abundance, as in A.)

A *Distichlis - Salicornia* (dominant)

2. *Atriplex*
3. *Grindelia*
4. *Plantago*
5. *Glaux*
6. *Agropyron*
7. *Spergularia*
8. *Triglochin*
9. *Suaeda*
10. *Hordeum*

A1 *Distichlis - Atriplex*

Salicornia
Grindelia
Glaux
Potentilla
Hordeum
Plantago
Spergularia
Triglochin
Suaeda
Juncus gerardii

A2 *Distichlis - Glaux*

Salicornia
Triglochin

A3 *Distichlis - Triglochin*

Hordeum
Carex
Grindelia
Salicornia
Agropyron
Juncus arcticus
Plantago
Potentilla
Glaux
Spergularia

B0 *Salicornia*

B	*Salicornia - Grindelia*	
	Plantago	*Suaeda*
	Atriplex	*Glaux*
	Agropyron	*Cuscuta*
	Distichlis	*Polygonum*
B1	*Salicornia - Distichlis*	
	Grindelia	*Plantago*
	Atriplex	*Hordeum*
	Agrostis	*Glaux*
B2	*Salicornia - Plantago*	
	Suaeda	*Grindelia*
B3	*Salicornia - Atriplex*	
C	*Atriplex*	
C1	*Atriplex - Grindelia*	
	Agropyron	*Juncus gerardii*
	Distichlis	*Salicornia*
D	*Glaux - Salicornia*	
	Distichlis	*Plantago*
	Grindelia	
E	*Grindelia - Triglochin*	
	Salicornia	*Plantago*
	Distichlis	*Glaux*
E1	*Grindelia - Salicornia*	
	Plantago	*Atriplex*
F	*Plantago - Salicornia*	
	Juncus gerardii	*Distichlis*
	Grindelia	*Carex lyngbyei*
	Atriplex	*Glaux*
F1	*Plantago - Distichlis*	
	Salicornia	*Juncus arcticus*
	Grindelia	
H.	*Spergularia - Salicornia*	
	Distichlis	
I.	*Agropyron - Distichlis*	
	Distichlis	*Juncus arcticus*
	Atriplex	
L.	*Juncus arcticus - Grindelia*	
	Triglochin	*Agropyron*
	Potentilla	

APPENDIX III

EPIFAUNA - TRENT RIVER ESTUARY

Tide level	H	H	M	H	M	M	L	L	M	L	L	M	L	L	L
Station	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Poly unid								16							
Bala glan	5	600	500	100	8	1000		6	4000		25	500			
Chth dall	7	4800	1200	800		2000			4000			1600			
Idot wosn							1	1							
Upog puge												1			
Crag alas													1		
Pagu spec		1					3								
Hemi oreg		4	2			3	6					6			
Red mite	2														
Rove beet		14													
Amph spec											6	2	1		
Noto pers		6			1	1			29			6			
Coll inst							1								
Litt scut	12	600		1	25	1			4			25			
Litt sitk	5	200	3	1		3			3						
Lacu vari													1		
Poli lewi										1					
Bitt esch	1														
Bati attr		15	6			10						1			
Myti edul	4	11			1				250			44			
Cras giga		1													
Tape japo						1			1						
Maco balt						1									
Mela diom							1								
Ammo hexa															1
Phol orna													1		

APPENDIX III (Cont'd)

EPIFAUNA - TRENT RIVER ESTUARY

Tide Level	L	L	L	L	H	M	M	M	M	M	M	H	H	H	H
Station	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Utri cori		1	1												
Empl grac							1								
Spio cost				3											
Serp verm				1											
Bala glan	25	12				6500	7500	2000	500	100	1500	200		4000	
Chth dall						4000	8000	400	400	2000	400	2000		32000	
Pagu spec	9	1	5	5			2								
Hemi oreg	2			4		1	3	10	2	1	6				
Puge prod		1													
Puge grac				1											
Amph spec			1									1			
Noto pers	1						10	20	40	1	20			12	
Litt scut						6000	4500	3000	1800	600	4500	3000		3000	
Litt sitk								200	200	200	400			1000	
Lacu vari				1											
Noto scut											3				
Nuce emar												2			
Alia goul			8	6											
Nass mend				1											
Myti edul							188		1		2				
Cras giga							11				2			1	
Mya aren													3		
Mopa lign	1														
Pisa ochr	1	1	1												

APPENDIX IV

INFAUNA I (0-15cm) - TRENT RIVER ESTUARY

Tide level	H	H	M	H	M	M	L	L	M	L	L	M	L	L	L	L	L	L	L	H	M	M	M	M	M	M	H	H	H	H
Station	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Anth arte								1																						
Para pere											3																	1	1	
Thel cris																5		4												
Noto tenu	10	10	6			1	4	3	3	2	13	11	14		2	3	60	32	14				3	1				6		2
Hemi bore													5	1			1						1							
Glyc amer							1	7		3	4	2	4	1				1	2											
Spio cost								5								1		4	5											
Nere bran							1	1																						
Anai will													1																	
Poly unid								1			4		3		1			2	3		1									
Bala glan								2				10																		
Chth dall												8																		
Upog puge							6		5			1				3							1	1						
Pagu spec								1					1				7						6							
Hemi oreg		2	1	1		1	1		1			6					2		5		1		5				1			
Amph spce											2								1											
Litt sitk												1																		
Nuce emar																	1													
Nass mand																			1											
Myti edul												10																		
Clin nutt								3									2	2												
Tres capa											1																			
Mya aren							1								63															
Saxi giga																		2	1											
Prot stam							4			1						1			3											
Tape japo		15	8		1	63	10		3	1		2						1			32		30	14		21				
Cryp cali							10																							
Maco balt			3							1		1																10		12
Maco inqu		3				1	50	1			3		4					1								1				
Amph occi																		2	1											
Pori nota													1																	

APPENDIX IV (Cont'd)

INFAUNA II (15-30cm) - TRENT RIVER ESTUARY

Station	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Tide level	H	H	M	H	M	M	L	L	M	L	L	M	L	L	L	L	L	L	L	H	M	M	M	M	M	M	H	H	H	H
Anth arte								1																						
Thel cris																			4											
Noto tenu	8	8	3			12	35			1	2	12	13	1				6	15				4							
Hemi bore						3							1										1							
Glyc amer										1	4	1					2	1												
Spio cost								11											4											
Nere proc																		1												1
Poly unid											3				1			1						1						
Phyl abdo																1			2											
Upog puge		2					14									1			2				2	2						
Pinn faba											4																			
Hemi oreg		1	2			1						2				1							9	2						
Myti edul												1																		
Clin nutt								2											1											
Tres capa											4																			
Mya aren						1	2								15				1											
Saxi giga							3	5			7					2	3		3											
Prot stam																6	3	4	5											
Tape japo		16				5	6			2		1											18							
Orob rugi							1																							
Maco balt										2																				
Maco inqu		10									1		1				1						1							
Amph occi																			1											
Pori nota													1																	

APPENDIX V

NOTES ON FLORA IN SAMPLING STATIONS
TRENT RIVER ESTUARY

Date	Station No.	Algae	Vascular Plants
31 March	1.	*Bangia* 30% cover(film) *Fucus* 5% " *Vaucheria sp.*	*Distichlis* 40% cover *Salicornia* 10% *Glaux* 30% *Grindelia* 1 clump *Plantago* 7 plants
"	2.	Phaeophytes (branching)	Leaf debris, *Zostera*
15 April	3.	Diatom scum	
"	4.	"	" "
"	5.		*Glaux* 70% *Salicornia* 20%
29 April	6.	Diatom scum *Punctaria* - 1 plant	
"	7.	*Enteromorpha intestinalis* & *E. linza* - both abundant *Punctaria* - several *Porphyra* sp. " *Scytosiphon* *Cladophera* 2	*Zostera* 75% cover
13 May	8.	*Porphyra sp.* 4 plants *Enteromorpha* 10% Phaeophytes - filamentous	*Zostera* 25% cover
"	9.	*Ulva lactuca* 1 plant	
27 May	10.	*Enteromorpha linza* 2 plants	
"	11.	" " 20% cover *Enteromorpha prolifera* (matted) Diatoms	
11 June	12.	*Enteromorpha linza* 11 plants	
"	13.	" " 25% cover *Punctaria hesperia* on *Zostera*	*Zostera* 70%
24 June	14.	*Enteromorpha prolifera* 5 mats	
"	15.	" " 5% cover	
26 June	16.	" " & *linza* 75% " *Ulva lactuca* 15% " Diatom scum *Gigartina sp.* 4 plants *Hildenbrandia* on 2 rocks	
"	17.	Diatom scum *Hildenbrandia* on pebbles	*Zostera* 90%
10 July	18.	*Laminaria saccharina* 1 plant *Colpomenia sinuosa* 5% cover *Ulva sp.* 5% " *Enteromorpha prolifera* 5% *Gigartina sp.* 2 plants Phaeophytes 10%	" 70%
11 July	19.	*Enteromorpha sp.* 5% *Ulva perforata* 2% *Laminaria sac* 1 plant Phaeophytes (branching) 3%	
15 July	20.	*Salicornia* 20%	*Distichlis spicata* 60% *Grindelia integ.* 10% *Plantago maritima* 3% *Glaux maritima* 2%
23 September	21.	*Gigartina papillata* 4 clumps	

3 October	22.	"	"	1	"		
		Rhodophytes	2% cover				
5 October	23.	*Fucus sp.*	3 plants				
		Phaeophytes	25%				
"	24.	*Gigartina papillata*	3 plants				
	25.			*Salicornia*	1		
7 October	26.	*Fucus sp.*	10%				
		Gigartina papillata	2 plants				
		Hildenbrandia	on pebbles				
7-21 October	27-30.	no flora					

APPENDIX VI

SEDIMENT RANGE IN SAMPLING STATIONS
TRENT RIVER ESTUARY

Station No.	Tide Level (m)	Grid	Sediment Range
1	4.3	T5	sandy mud, shell, small pebble
2	4.0	T6	muddy sand to small pebble
3	3.0	U8	muddy sand to med. shale pebble, black under 15cm.
4	4.0	S8	mud & silt, small to very l.pebbles
5	3.0	T9	silt to small cobble, silt 15cm.
6	2.1	X9	sand to large pebble
7 ZE	0.1	X12	sand to large pebble
8 ZE	0.5	W14	muddy sand to small pebble
9	1.8	U13	silty sand to vl. pebble, cobble 15cm
10	0.6	M17	coarse sand & shell to vl. pebble, finer 15cm.
11 E	0.6	N17	sand to small cobble, finer 15cm.
12 E	2.4	P14	muddy sand to small pebble, med. pebble 15cm.
13 ZE	0.0	Q17	muddy sand to small cobble
14	0.6	K17	muddy sand to small cobble, black streaks 15cm.
15	0.9	I17	muddy sand to very large pebble
16 E	0.6	E16	sand to large cobble
17 Z	0.6	H17	muddy sand to large pebble
18 ZE	0.0	C15	sand, small cobble under 15cm.
19 E	-0.1	I13	sand to small cobble, large cobble under 15cm.
20	4.6	R6	sandy mud & shell to small pebble
21	2.1	EE2	sand-shell to small cobble
22	2.1	FF1	1 large boulder
23	1.8	K16	sand to large pebble, large cobble beneath
24	2.1	G15	sand-shell to small cobble
25	3.0	G12	small pebble to large cobble, finer beneath
26	2.3	C12	muddy sand-shell to large cobble
27	3.7	C9	small pebble-shell to large cobble, finer 15cm

28	4.3	AA2	muddy sand, large cobble beneath
29	4.3	BB2	1 boulder
30	4.3	BB1	muddy sand to small pebble, small cobble 15cm.

Z = *Zostera* bed
E = *Enteromorpha* bed
Larger sediments (pebble, cobble, boulder) determined by Wentworth Scale.

APPENDIX VII

DISTRIBUTION OF MARINE FAUNA BY TIDAL ZONE
TRENT RIVER ESTUARY

High intertidal (3.7 to 4.9m)

wandering ribbon worm
thread worm
little sandworm
barnacles (both sp.)
mud shrimp
green shore crab
red mite
rove beetle
amphipods & isopods
periwinkles (both sp.)
Cuming's battilaria
edible mussel
oyster
mud clam
inconspicuous macoma
polluted macoma
Japanese littleneck clam
mask limpet

Mid Intertidal (1.2 to 3.4m)

thread worm
coil worm
proboscis worm
polychaete sp.
barnacles (both sp.)
mud shrimp
hermit crab
green shore crab
amphipods etc.
mask limpet
periwinkles (both sp.)
plate limpet
Cuming's battilaria
edible mussel
oyster
mud clam
inconspicuous macoma
polluted macoma
Japanese littleneck clam

Low Intertidal (-0.1 to 0.9m)

Fine sediments & eel-grass beds:

burrowing anemone
wandering ribbon worm
giant sand worm
little sandworm
thread worm
coil worm
jointed tube worm
paddle worm
green isopod
mud shrimp
pea crab
green shore crab
amphipods, etc.
mud snail
unstable limpet
moon snail
chink snail
dove shell
polluted macoma
inconspicuous macoma
false mya
butter clam
horse clam
native littleneck clam
cockle
wrinkled lepton
mud clam
burrowing cucumber
long-rayed brittlestar
giant pink star
sunflower star
sand dollar
proboscis worm
bubble snail

Cobble and boulder:

sponges
red anemone
spiral tube worm
calcareous tube worm
shellbinder worm
hermit crab
red rock crab
edible crab
kelp crab
black clawed crab
porcelain crab
short-spired limpet
chiton
nudibranch
lean dog whelk
woody chiton
lined chiton
nudibranchs
northern slipper shell
wrinkled purple snail
rock oyster
purple star
mottled star
white sea cucumber
red sea cucumber
red sea squirt (chordate)
sea squirt sp. (chordate)

APPENDIX VIII

MARINE INVERTEBRATES AND FISH
TRENT RIVER ESTUARY

PHYLUM PORIFERA		SPONGES
Haliclona sp.		Purple Sponge
Heptacarpus sp.		Yellow Encrusting Sponge
PHYLUM CNIDARIA		JELLYFISH, ANEMONES
Aquorea aquorea		Water Jellyfish
Anthopleura artemesia	Anth arte	Burrowing Anemone
Urticina coreacea	Urti core	Red Anemone
PHYLUM PLATYHELMINTHES		FLATWORMS
Freemania litoricola		Little Leaf Worm
PHYLUM NEMERTEA		RIBBON WORMS
Emplectonema gracile	Empl grac	Green Ribbon Worm
Paranemertes peregrina	Para pere	Wandering Ribbon Worm
Tubulanus polymorphus		Red Ribbon Worm
PHYLUM ANNELIDA		SEGMENTED WORMS
Anaitides williamsii (?)	Anai will	Paddle Worm
Arctonoe fragilis		Commensal Scale Worm
Glycera americana	Glyc amer	Proboscis or Corregated Worm
Hemipodus borealis	Hemi bore	Coil Worm
Notomastus tenuis	Noto tenu	Thread Worm
Nereis brandti	Nere bran	Giant Sandworm
Nereis procera	Nere proc	Little Sandworm
Polychaetes unidentified	Poly unid	
Serpula vermicularis	Serp verm	Calcareous Tube Worm
Spiochaetopterus costarum	Spio cost	Jointed Tube Worm
Spirorbis sp.		Spiral Tube Worm
Thelepsus crispus	Thel cris	Shell Binder
PHYLUM ARTHROPODA		JOINTED LIMBED ANIMALS
Amphipoda sp.	Amph spec	Amphipods
Balanus glandula	Bala glan	Acorn Barnacle
**Balanus rostratus alaskensis*		Ribbed Barnacle
Chthamalus dalli	Chth dall	Little Acorn Barnacle
Cancer magister		Edible Crab
Cancer productus		Red rock Crab
Crangon alaskensis	Crag alas	Northern Crangon Shrimp
Hemigrapsus nudus		Purple Shore Crab
Hemigrapsus oregonensis	Hemi oreg	Green Shore Crab
Heptacarpus sp.		Broken-back shrimp
Idotea wosnesenskii	Idot wosn	Green Isopod
Lophopanopeus bellus bellus		Black-clawed Crab
Pagurus sp.	Pagu spec	Hermit Crab
Petrolisthes eriomerus		Porcelain Crab
Pinnixa faba	Pinn faba	Pea Crab
Pugettia gracilis	Puge grac	Graceful Crab
Pugettia producta	Puge prod	Kelp Crab
Phyllodurus abdominalis	Phyl abdo	Parasitic Isopod
	Red mite	Red Mite
	Rove beet	Rove Beetle
Upogebia pugettensis	Upog puge	Blue Mud Shrimp
**Telmessus cheirogonus*		Helmet Crab

PHYLUM MOLLUSCA		SHELLFISH
Alia gouldi	Alia goul	Dove shell
Anisodoris nobilis		Speckled Sea Lemon
Batillaria attramentaria	Bati attr	Cuming's Batillaria
Bittium eschrichtii	Bitt esch	Eschricht's Bittium
Clinocardium nuttallii	Clin nutt	Cockle
Collisella instabilis	Coll inst	Unstable Limpet
Collisella pelta		Sheild Limpet
Crassostrea gigas	Crass giga	Japanese Oyster
Crepidula nummaria		Northern Slipper Shell
Cryptomya californica	Cryp cali	False Mya
**Diplodonta orbellus*		Round Diplodon
Haminoea vesicula		Bubble Snail
Lacuna variegata	Lacu vari	Chink Snail
Littorina scutulata	Litt scut	Checkered Periwinkle
Littorina sitkana	Litt sitk	Sitka Periwinkle
Macoma balthica	Maco balt	Inconspicuous Macoma
Macoma inquinata	Maco inqu	Polluted Macoma
**Macoma nasuta*		Bent-nosed Clam
Melanochamys diomedia	Mela diom	Diomede's Mud snail
**Modiolus rectus*		Horse Mussel
Mopalis lignosa	Mopa lign	Woody Chiton
Mya arenaria	Mya aren	Mud Clam
Mytilus edulis	Myti edul	Edible blue Mussel
Nassarius mendicus	Nass mend	Lean Dog Whelk
Notoacmaea persona	Noto pers	Mask Limpet
Notoacmaea scutum	Noto scut	Plate Limpet
Nucella emarginata		Short-spired Limpet
Nucella lamellosa		Wrinkled Purple Snail
Orbitella rugifera	Orbi rugi	Wrinkled Lepton
Pododesmus cepio		Jingle Shell, Rock Oyster
Polinices lewisii	Poli lewi	Moon Snail
Protothaca staminea	Prot stam	Native Littleneck
**Searlesia dira*		Dire Whelk
Saxidomas gigantea	Saxi giga	Butter Clam
**Semele rubropicta*		Rose Petal Semele
**Solen sicarius*		Jacknife Clam
Tapes japonica	Tape japo	Japanese Littleneck clam
Tonicella lineata		Lined Chiton
Trinchesia concina		Neat Aolid Nudibranch
Tresus capax	Tres capa	Horse Clam
**Tresus nuttallii*		Giant Horse Clam
PHYLUM ECHINODERMATA		STARFISH GROUP
Dendraster excentricus		Sand Dollar
Amphiodia occidentalis	Amph occi	Long-rayed Brittlestar
Cucumaria miniata		Red Sea Cucumber
Evasterias troschelii		Mottle Star
Eupentacta quinquesemita		White Sea Cucumber
Leptosynapta clarki	Lept clar	Burrowing Sea Cucumber
Pisaster brevispinus		Giant Pink Star
Pisaster ochraceous	Pisa ochr	Purple Star
Pycnopodia helianthoides		Sunflower Star
PHYLUM CHORDATA		CHORDATES
Pyura haustor		Red Sea Squirt
FISH		
Ammodytes hexapterus	Ammo hexa	Pacific Sand Lance
Citharichthys stigmaeus		Speckled Sandab
Cottus asper		Prickly Sculpin
Cymatogaster aggregata		Shiner Perch
Enophrys bison		Buffalo Sculpin
Leptocottus armatus		Staghorn Sculpin

Oncorhynchus gorbuscha		Pink Salmon
Oncorhynchus keta		Chum Salmon
Oncorhynchus kisutch		Coho Salmon
Phanerodon furcatus		White Seaperch
Pholis ornata	Phol orna	Saddleback Gunnel
Porichthys notatus	Pori nota	Plainfin Midshipman
Raja rhina		Longnose Skate
Squalus acanthias		Spiny dogfish
Syngnathus leptorhynchus		Bay Pipefish

* = shell only

APPENDIX IX

DFO ANNUAL REPORT OF SALMON STREAMS
AND SPAWNING POPULATIONS - TRENT RIVER ESTUARY, 1987

DEPARTMENT OF FISHERIES AND OCEANS

ANNUAL REPORT OF SALMON STREAMS AND SPAWNING POPULATIONS

STREAM IDENTIFICATION

Watershed code: 92 - 2900
Gazetted name (mapname): Trent River
First local name: Trent River
Second local name:
Flows into: Comox Harbour/ Baynes Sound

Year: 1987
District No.: 03
Subdistrict No.: 14N
Statistical Area: 14 - 14
Subdistrict Name: Comox

DATES OF INSPECTION

Month	Day	Month	Day
Sept	29		
Nov	15		
Nov	17		
Nov	19		
Nov	24		

SPAWNING RUN TIMING AND ESTIMATED NUMBER (instructions on flip side)

1 SPECIES	2 ARRIVAL IN STREAM Month	Day	3 DATES OF DURATION OF SPAWNING START Month	Day	PEAK Month	Day	END Month	Day	4 NO. OF OBSER.	5 METHODS	6 RELIA-BILITY	7 EST. TOT. NO. ON GROUNDS	8 OPTIMUM ESCAPEMENT
SOCKEYE 1													
SOCKEYE 2													
COHO 1	Nov	A	Nov	B	Nov	B	Dec	C	1	fence / walk	3	600+	
COHO 2													
PINK 1													
PINK 2													
CHUM 1	Nov	B	Nov	B	Nov	C	Dec	A	1	fence / walk	4	125	
CHUM 2													
CHINOOK 1													
CHINOOK 2													

UNUSUAL CONDITIONS

MARK BOX FOR UNUSUAL CONDITIONS

- ☐ (A) Enhancement or intense biological activities.
- ☐ (b) Unusual mortalities.
- ☐ (C) Obstructions or changes in habitat with recommendations.
- ☐ (D) Large variations in sex ratio or unusual number of jacks.
- ☐ (E) Unusually high or low water flow level during spawning period.

ADDITIONAL COMMENTS

PHYSICAL CONDITION OF SPAWNING GROUNDS

(A) Evidence of erosion and silting. Give extent or percent of stream bed affected .....

(B) Particulars of scouring of spawning beds or change in course of stream .....

(C) Water levels flow, normal, high, abnormal. If abnormal, details should be given water level this summer dropped to no perceptable flow and did not come up until Nov. 12.

COMMENTS ON ANY OTHER CONDITIONS AFFECTING THIS STREAM

(K) This system is prone to severe fluctuations in water flow as a result the fence is occasionally laid flat and during this time there is no fish being counted. The fence main cable broke on Nov. 24-25 and will not be fixed this winter.
NOTE: Fence was repaired and in service in early December.

B. T. Kate
Signature

Fisher Officer / Person Preparing Report

APPENDIX X

DFO ESCAPEMENT RECORDS FOR TRENT RIVER

NAME OF STREAM TRENT RIVER RAB No. 92-2900

CONSERVATION DISTRICT 3 STATISTICAL AREA 14

LOCATION OF MOUTH Flows NE. into Comox Harbour, Nelson Dist.

POSITION 49 124 NW.

LENGTH 9 km WIDTH 16 m DRAINAGE ____ km²

COMPOSITION: BEDROCK 45 BOULDER 45 COARSE 5 FINE 5

SILT & SAND ____ UNCLASSIFIED ____

PERCENT GRADIENT	
0.00 - 0.25	
0.25 - 0.50	
0.50 - 0.75	
0.75 - 1.00	--
>1.00	

WETTED AREA ____ m² SPAWNING AREA ____ m²

DISCHARGE (m^3/s) MAX 11.9 Apl. 18, 1971 MIN 0 Sept. 4, 1974

TEMPERATURE (°C) ____

BARRIERS OR POINTS OF DIFFICULT ASCENT Impassable vertical drop falls 18 m high 9 km from mouth

large log wing dams first 1.2km decelerate flows — do not impede migrating salmon.

SPAWNING DISTRIBUTION

SPECIES	SECTION OF STREAM USED
SOCKEYE	
CHINOOK	
COHO	- throughout
CHUM	- in lower km
PINK (ODD YEAR)	- in lower km
PINK (EVEN YEAR)	- " "
STEELHEAD	

Physical conditions:
Seasonal fluctuations in water levels. Usually very low in summer rising rapidly to near flood during fall and winter freshets. Some gravel shifting. 1983 Reported severe erosion and silting throughout. Normally light to moderate scouring.
1962/63 This stream was polluted by coal mine effluent many years ago which practically wiped out the salmon runs. However small runs of coho, chum and steelhead are gradually building up in recent years.

GENERAL REMARKS 1966 Chum seeding subject to heavy scouring.
1970 A most unusual heavy run of coho and an extremely late arrival of chum.
1980 Considerable reduction commercial fishing time in Johnson Straits. First recording of pinks in this system on the even year cycle.
1983 This years chum escapement is the highest return in 5 years and the second largest in the past 20 years.

APPENDIX XI

BIRDS OF THE TRENT RIVER ESTUARY

RTLO	Red-throated Loon	*Gavia stellata*
PALO	Pacific Loon	*Gavia pacifica*
COLO	Common Loon	*Gavia immer*
HOGR	Horned Grebe	*Podiceps auritus*
RNGR	Red-necked Grebe	*Podiceps grisegena*
WEGR	Western Grebe	*Aechmophorus occidentalis*
DCCO	Double-crested Cormorant	*Phalacrocorax auritus*
PECO	Pelagic Cormorant	*Phalacrocorax pelagicus*
GBHE	Great Blue Heron	*Ardea herodias*
TRUS	Trumpeter Swan	*Cygnus buccinator*
BRAN	Brant	*Branta bernicula*
CAGO	Canada Goose	*Branta canadensis*
GWTE	Green-winged Teal	*Anas crecca*
MALL	Mallard	*Anas platyrhyncos*
NOPI	Northern Pintail	*Anas acuta*
NOSL	Northern Shoveler	*Anas clypeata*
EUWI	Eurasian Wigeon	*Anas penelope*
AMWI	American Wigeon	*Anas americana*
GRSC	Greater Scaup	*Aythya marila*
LESC	Lesser Scaup	*Aythya affinis*
HADU	Harlequin Duck	*Histrionicus histrionicus*
OLDS	Oldsquaw	*Clangula hyemalis*
BLSC	Black Scoter	*Melanitta nigra*
SUSC	Surf Scoter	*Melanitta perspicillata*
WWSC	White-winged Scoter	*Melanitta fusca*
COGO	Common Goldeneye	*Bucephala clangula*
BAGO	Barrow's Goldeneye	*Bucephala islandica*
BUFF	Bufflehead	*Bucephala albeola*
HOME	Hooded Merganser	*Lophodytes cucullatus*
COME	Common Merganser	*Mergus merganser*
RBME	Red-breasted Merganser	*Mergus serrator*
TUVU	Turkey Vulture	*Cathartes aura*
OSPR	Osprey	*Pandion haliaetus*
BAEA	Bald Eagle	*Haliaeetus leucocephalus*
NOHA	Northern Harrier	*Circus cyaneus*
SSHA	Sharp-shinned Hawk	*Accipter striatus*
COHA	Cooper's Hawk	*Accipter cooperii*
SWHA	Swainson's Hawk	*Buteo swainsoni*
RTHA	Red-tailed Hawk	*Buteo jamaicensis*
MERL	Merlin	*Falco columbarius*
RNPH	Ring-necked Pheasant	*Phasianus colchicus*
SACR	Sandhill Crane	*Grus canadensis*
BBPL	Black-bellied Plover	*Pluvialus squatarola*
SEPL	Semipalmated Plover	*Charadrius semipalmatus*
KILL	Killdeer	*Charadrius vociferus*
GRYE	Greater Yellowlegs	*Tringa melanoleuca*
LEYE	Lesser Yellowlegs	*Tringa flavipes*
SDSA	Spotted Sandpiper	*Actitis macularia*
WHIM	Whimbrel	*Numenius phaeopus*
BLTU	Black Turnstone	*Arenaria melanocephala*
WESA	Western Sandpiper	*Calidris mauri*
LESA	Least Sandpiper	*Calidris minutilla*
BASA	Baird's Sandpiper	*Calidris bairdii*
DUNL	Dunlin	*Calidris alpina*
SBDO	Short-billed Dowitcher	*Limnodromus griseus*
BOGU	Bonaparte's Gull	*Larus philadelphia*
MEGU	Mew Gull	*Larus canus*
HEGU	Herring Gull	*Larus argentatus*
THGU	Thayer's Gull	*Larus thayeri*
GWGU	Glaucous-winged Gull	*Larus glaucescens*
GLGU	Glaucous Gull	*Larus hyperboreus*
CATE	Caspian Tern	*Sterna caspia*

MAMU	Marblet Murrelet	*Brachyrampus marmoratus*
RODO	Rock Dove	*Columba livia*
BTPI	Band-tailed Pigeon	*Columba fasciata*
VASW	Vaux's Swift	*Chaetura vauxi*
RUHU	Rufous Hummingbird	*Selasphorus rufous*
BEKI	Belted Kingfisher	*Ceryle alcyon*
DOWO	Downy Woodpecker	*Picoides pubescens*
HAWO	Hairy Woodpecker	*Picoides villosus*
NOFL	Northern Flicker	*Colaptes auratus*
PIWO	Pileated Woodpecker	*Dryocopus pileatus*
WIFL	Willow Flycatcher	*Epidonax traillii*
PSFL	Pacific-slope Flycatcher	*Epidonax difficilis*
TRSW	Tree Swallow	*Tachycineta bicolor*
VGSW	Violet-green Swallow	*Tachycineta thalassina*
NRSW	N. Rough-winged Swallow	*Stelgidopteryx serripennis*
CLSW	Cliff Swallow	*Hirundo pyrrhonota*
BASW	Barn Swallow	*Hirundo rustica*
STJA	Steller's Jay	*Cyanocitta stelleri*
NOCR	Northwestern Crow	*Corvus caurinus*
CORA	Common Raven	*Corvus corax*
CBCH	Chestnut-backed Chickadee	*Parus rufescens*
BUSH	Bushtit	*Psaltriparus minimus*
RBNU	Red-breasted Nuthatch	*Sitta canadensis*
BRCR	Brown Creeper	*Certhia americana*
BEWR	Bewick's Wren	*Thryomanes bewickii*
WIWR	Winter Wren	*Troglodytes troglodytes*
GCKI	Golden-crowned Kinglet	*Regulus satrapa*
RCKI	Ruby-crowned Kinglet	*Regulus calendula*
SWTH	Swainson's Thrush	*Catharus ustulatus*
AMRO	American Robin	*Turdus migratorius*
VATH	Varied Thrush	*Ixoreus naevius*
CEWA	Cedar Waxwing	*Bombycilla cedrorum*
NOSH	Northern Shrike	*Lanius excubitor*
EUST	European Starling	*Sturnus vulgarus*
OCWA	Orange-crowned Warbler	*Vermivora celata*
YEWA	Yellow Warbler	*Dendroica petechia*
YRWA	Yellow-rumped Warbler	*Dendroica coronata*
BTGR	Black-throated Gray Warbler	*Dendroica nigrescens*
TOWA	Townsend's Warbler	*Dendroica townsendi*
MGWA	MacGillivray's Warbler	*Oporornis tolmiei*
COYE	Common Yellowthroat	*Geothlypis trichas*
WIWA	Wilson's Warbler	*Wilsonia pusilla*
RSTO	Rufous-sided Towhee	*Pipilo erythrophthalmus*
CHSP	Chipping Sparrow	*Spizella passerina*
SAVS	Savannah Sparrow	*Passerculus sandwichensis*
FOSP	Fox Sparrow	*Passerella iliaca*
SOSP	Song Sparrow	*Melospiza melodia*
LISP	Lincoln's Sparrow	*Melospiza lincolnii*
GCSP	Golden-crowned Sparrow	*Zonotrichia atricapilla*
WCSP	White-crowned Sparrow	*Zonotrichia leucophrys*
DEJU	Dark-eyed Junco	*Junco hyemalis*
RWBL	Red-winged Blackbird	*Agelaius phoeniceus*
WEME	Western Meadowlark	*Sturnella neglecta*
BRBL	Brewer's Blackbird	*Euphagus cyanocephalus*
BHCO	Brown-headed Cowbird	*Molothrus ater*
NOOR	Northern Oriole	*Icterus galbula*
PUFI	Purple Finch	*Carpodacus purpureus*
HOFI	House Finch	*Carpodacus mexicanus*
PISI	Pine Siskin	*Carduelis pinus*
AMGO	American Goldfinch	*Carduelis tristis*
EVGR	Evening Grosbeak	*Coccothraustes vespertinus*
HOSP	House Sparrow	*Passer domesticus*

APPENDIX XII

SEASONAL BIRD NUMBERS ON THE TRENT RIVER ESTUARY - 1987

Refer to Appendix XI for species codes used in this appendix.

Bird use of the Trent River estuary for Winter 86

Date	03Jan	10Jan	17Jan	24Jan	31Jan	07Feb	14Feb	21Feb	28Feb	Total	Max	Min	Mean	SD	%Freq
#LOO	4	1	2	5	1	5	6	0	0	24	6	1	3.4	2.1	77.8
RTLO	3	0	0	3	0	0	2	0	0	8	3	2	2.7	0.6	33.3
COLO	1	1	2	2	1	5	4	0	0	16	5	1	2.3	1.6	77.8
#GRE	13	2	0	4	4	0	3	1	0	27	13	1	4.5	4.3	66.7
HOGR	0	0	0	0	2	0	0	1	0	3	2	1	1.5	0.7	22.2
RNGR	1	0	0	1	0	0	1	0	0	3	1	1	1.0	0.0	33.3
WEGR	12	2	0	3	2	0	2	0	0	21	12	2	4.2	4.4	55.6
#COR	4	0	1	0	0	0	0	1	0	6	4	1	2.0	1.7	33.3
PECO	4	0	1	0	0	0	0	1	0	6	4	1	2.0	1.7	33.3
#HER	1	2	0	0	1	8	1	9	5	27	9	1	3.9	3.5	77.8
GBHE	1	2	0	0	1	8	1	9	5	27	9	1	3.9	3.5	77.8
#SWA	0	0	0	0	0	0	0	9	0	9	9	9	9.0	0.0	11.1
TRUS	0	0	0	0	0	0	0	9	0	9	9	9	9.0	0.0	11.1
#GEE	0	0	0	6	0	0	0	0	0	6	6	6	6.0	0.0	11.1
CAGO	0	0	0	6	0	0	0	0	0	6	6	6	6.0	0.0	11.1
#DAB	31	71	55	55	115	21	19	55	51	473	115	19	52.6	29.3	100.0
MALL	4	5	14	1	20	19	0	22	25	110	25	1	13.8	9.2	88.9
NOPI	27	29	34	44	95	0	7	5	0	241	95	5	34.4	30.2	77.8
AMWI	0	37	7	10	0	2	12	28	26	122	37	2	17.4	12.9	77.8
#DIV	299	108	222	517	302	134	294	139	107	2122	517	107	235.8	134.0	100.0
SCAU	23	45	200	80	33	0	66	42	53	542	200	23	67.8	56.4	88.9
LESC	0	0	0	4	0	0	0	0	0	4	4	4	4.0	0.0	11.1
HADU	0	0	0	1	2	0	0	2	3	8	3	1	2.0	0.8	44.4
OLDS	0	0	0	1	0	1	0	0	1	3	1	1	1.0	0.0	33.3
BLSC	49	4	0	136	52	41	54	0	4	340	136	4	48.6	44.2	77.8
SUSC	17	3	0	32	16	10	8	16	1	103	32	1	12.9	9.8	88.9
WWSC	169	19	0	188	143	57	94	9	10	689	188	9	86.1	73.3	88.9
COGO	4	2	8	31	0	4	16	8	3	76	31	2	9.5	9.8	88.9
BAGO	30	14	7	13	42	2	30	44	26	208	44	2	23.1	14.9	100.0
BUFF	7	19	6	31	14	19	21	12	6	135	31	6	15.0	8.4	100.0
COME	0	2	1	0	0	0	5	6	0	14	6	1	3.5	2.4	44.4
#RAP	7	7	5	44	5	6	15	4	4	97	44	4	10.8	12.9	100.0
BAEA	7	7	4	43	2	4	13	3	3	86	43	2	9.6	13.0	100.0
NOHA	0	0	1	0	0	1	0	1	1	4	1	1	1.0	0.0	44.4
MERL	0	0	0	1	3	1	2	0	0	7	3	1	1.8	1.0	44.4
#SHO	152	3	12	0	2	82	0	100	3	354	152	2	50.6	60.7	77.8
BBPL	83	0	0	0	0	5	0	0	0	88	83	5	44.0	55.2	22.2
KILL	0	3	12	0	2	2	0	0	3	22	12	2	4.4	4.3	55.6
BLTU	4	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	11.1
WESA	25	0	0	0	0	0	0	0	0	25	25	25	25.0	0.0	11.1
DUNL	40	0	0	0	0	75	0	0	0	115	75	40	57.5	24.7	22.2
SHOR	0	0	0	0	0	0	0	100	0	100	100	100	100.0	0.0	11.1
#GUL	163	61	37	179	307	40	1194	452	518	2951	1194	37	327.9	369.2	100.0
GULL	100	0	0	0	0	0	0	0	0	100	100	100	100.0	0.0	11.1
MEGU	9	53	4	13	3	0	44	8	17	151	53	3	18.9	19.0	88.9
HEGU	1	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	11.1
THGU	3	0	0	0	0	0	2	1	10	16	10	1	4.0	4.1	44.4
GWGU	50	8	33	166	304	40	1147	443	491	2682	1147	8	298.0	367.2	100.0
GLGU	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	11.1
BEKI	2	3	4	5	4	4	6	2	2	32	6	2	3.6	1.4	100.0

Date	03Jan	10Jan	17Jan	24Jan	31Jan	07Feb	14Feb	21Feb	28Feb	Total	Max	Min	Mean	SD	%Freq
#WOO	3	3	2	1	6	3	0	1	1	20	6	1	2.5	1.7	88.9
DOWO	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	11.1
NOFL	1	3	2	1	5	3	0	1	1	17	5	1	2.1	1.5	88.9
PIWO	2	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	11.1
#PAS	244	219	210	377	416	439	263	562	188	2918	562	188	324.2	129.3	100.0
STJA	5	2	5	4	2	2	8	2	1	31	8	1	3.4	2.2	100.0
NOCR	63	11	57	18	40	50	31	74	12	356	74	11	39.6	23.1	100.0
CORA	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	11.1
CBCH	0	0	2	5	4	0	0	6	0	17	6	2	4.3	1.7	44.4
WIWR	0	1	0	0	1	0	0	0	0	2	1	1	1.0	0.0	22.2
GCKI	8	0	0	0	14	0	0	0	0	22	14	8	11.0	4.2	22.2
RCKI	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	11.1
AMRO	1	0	10	0	2	0	2	2	9	26	10	1	4.3	4.0	66.7
EUST	5	10	0	62	94	150	36	370	21	748	370	5	93.5	121.9	88.9
RSTO	4	2	1	3	7	4	7	3	1	32	7	1	3.6	2.2	100.0
FOSP	1	0	0	1	1	0	0	0	0	3	1	1	1.0	0.0	33.3
SOSP	7	4	4	9	10	11	8	9	3	65	11	3	7.2	2.9	100.0
GCSP	6	0	0	6	0	0	0	0	1	13	6	1	4.3	2.9	33.3
WCSP	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	11.1
DEJU	14	87	51	61	68	30	54	15	47	427	87	14	47.4	24.2	100.0
RWBL	100	60	30	134	126	111	71	42	19	693	134	19	77.0	42.5	100.0
BRBL	30	40	50	72	37	67	23	30	70	419	72	23	46.6	18.9	100.0
BHCO	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	11.1
PUFI	0	0	0	0	4	6	0	0	2	12	6	2	4.0	2.0	33.3
HOFI	0	2	0	2	5	8	23	7	1	48	23	1	6.9	7.6	77.8
#TOT	923	480	550	1193	1163	742	1801	1335	879	9066	1801	480	1007.3	414.9	100.0

Bird use of the Trent River estuary for Spring 87

Date	07Mar	15Mar	21Mar	28Mar	04Apr	11Apr	18Apr	25Apr	02May	09May	16May	23May	31May	Total	Max	Min	Mean	SD	%Freq
#LOO	1	2	0	2	0	0	0	0	0	0	8	4	0	17	8	1	3.4	2.8	38.5
PALO	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4	4	4.0	0.0	7.7
COLO	1	2	0	2	0	0	0	0	0	0	8	0	0	13	8	1	3.3	3.2	30.8
#GRE	2	0	0	1	0	0	2	0	0	0	12	2	0	19	12	1	3.8	4.6	38.5
HOGR	2	0	0	1	0	0	0	0	0	0	0	0	0	3	2	1	1.5	0.7	15.4
RNGR	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
WEGR	0	0	0	0	0	0	1	0	0	0	12	2	0	15	12	1	5.0	6.1	23.1
#COR	0	0	0	2	4	0	4	0	0	0	6	3	1	20	6	1	3.3	1.8	46.2
CORM	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
DCCO	0	0	0	1	0	0	4	0	0	0	1	3	0	9	4	1	2.3	1.5	30.8
PECO	0	0	0	0	4	0	0	0	0	0	5	0	1	10	5	1	3.3	2.1	23.1
#HER	2	3	5	6	5	2	2	3	0	3	2	0	1	34	6	1	3.1	1.6	84.6
GBHE	2	3	5	6	5	2	2	3	0	3	2	0	1	34	6	1	3.1	1.6	84.6
#SWA	0	2	0	0	1	0	0	0	0	0	0	0	0	3	2	1	1.5	0.7	15.4
TRUS	0	2	0	0	1	0	0	0	0	0	0	0	0	3	2	1	1.5	0.7	15.4
#GEE	0	6	0	0	41	60	96	300	451	212	25	3	0	1194	451	3	132.7	156.2	69.2
BRAN	0	0	0	0	40	60	96	300	450	212	25	3	0	1186	450	3	148.3	158.9	61.5
CAGO	0	6	0	0	1	0	0	0	1	0	0	0	0	8	6	1	2.7	2.9	23.1
#DAB	32	56	6	43	37	22	82	96	17	2	8	5	0	406	96	2	33.8	30.9	92.3
GWTE	0	0	0	0	0	0	0	0	7	0	0	0	0	7	7	7	7.0	0.0	7.7
MALL	18	2	6	43	7	10	4	7	0	2	2	5	0	106	43	2	9.6	12.0	84.6
EUWI	0	0	0	0	1	0	2	0	0	0	0	0	0	3	2	1	1.5	0.7	15.4
AMWI	14	54	0	0	29	12	76	89	10	0	6	0	0	290	89	6	36.3	32.6	61.5
#DIV	108	252	16	124	21	26	89	60	22	96	43	140	75	1072	252	16	82.5	65.7	100.0
SCAU	8	10	8	0	0	0	0	8	0	0	0	0	0	34	10	8	8.5	1.0	30.8
HADU	0	0	0	0	0	0	0	2	0	0	0	2	0	4	2	2	2.0	0.0	15.4
SCOT	0	0	2	0	0	0	0	0	0	90	0	0	70	162	90	2	54.0	46.1	23.1
BLSC	4	25	0	0	0	0	0	0	0	0	0	0	0	29	25	4	14.5	14.8	15.4
SUSC	1	0	0	10	0	0	0	33	0	0	6	12	0	62	33	1	12.4	12.3	38.5
WWSC	44	123	0	61	0	7	43	0	0	0	21	117	4	420	123	4	52.5	46.0	61.5
COGO	1	33	0	12	17	13	11	5	4	3	4	5	0	108	33	1	9.8	9.2	84.6
BAGO	33	8	0	2	0	0	2	0	0	0	0	0	0	45	33	2	11.3	14.8	30.8
BUFF	11	29	6	28	2	2	27	7	7	0	5	0	0	124	29	2	12.4	11.1	76.9
COME	6	20	0	11	2	4	4	5	9	3	7	4	1	76	20	1	6.3	5.2	92.3
RBME	0	4	0	0	0	0	2	0	2	0	0	0	0	8	4	2	2.7	1.2	23.1
#RAP	2	3	4	7	8	4	12	7	4	5	9	5	5	75	12	2	5.8	2.7	100.0
OSPR	0	0	0	0	0	0	1	1	1	0	0	1	0	4	1	1	1.0	0.0	30.8
HAWK	0	0	0	1	0	1	0	0	0	0	0	0	0	2	1	1	1.0	0.0	15.4
BAEA	2	2	2	5	7	3	9	6	1	5	9	4	5	60	9	1	4.6	2.6	100.0
NOHA	0	1	1	0	1	0	1	0	1	0	0	0	0	5	1	1	1.0	0.0	38.5
COHA	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
SWHA	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
MERL	0	0	0	1	0	0	0	0	1	0	0	0	0	2	1	1	1.0	0.0	15.4
#SHO	2	1	0	3	4	0	12	4	158	38	8	14	11	255	158	1	23.2	45.9	84.6
SEPL	0	0	0	0	0	0	0	0	0	6	0	0	0	6	6	6	6.0	0.0	7.7
KILL	2	1	0	3	1	0	4	1	6	5	4	6	8	41	8	1	3.7	2.4	84.6
GRYE	0	0	0	0	3	0	0	1	1	0	0	0	0	5	3	1	1.7	1.2	23.1
SDSA	0	0	0	0	0	0	0	0	0	1	1	3	3	8	3	1	2.0	1.2	30.8
WHIM	0	0	0	0	0	0	0	0	0	1	0	5	0	6	5	1	3.0	2.8	15.4
WESA	0	0	0	0	0	0	0	2	145	0	2	0	0	149	145	2	49.7	82.6	23.1

Date	07Mar	15Mar	21Mar	28Mar	04Apr	11Apr	18Apr	25Apr	02May	09May	16May	23May	31May	Total	Max	Min	Mean	SD	%Freq
LESA	0	0	0	0	0	0	8	0	0	0	0	0	0	8	8	8	8.0	0.0	7.7
DUNL	0	0	0	0	0	0	0	0	6	25	1	0	0	32	25	1	10.7	12.7	23.1
#GUL	353	544	300	227	183	72	84	84	154	289	126	144	88	2648	544	72	203.7	137.6	100.0
GULL	0	0	0	0	0	0	0	0	0	200	0	0	0	200	200	200	200.0	0.0	7.7
BOGU	0	0	0	0	0	0	0	6	29	71	18	0	0	124	71	6	31.0	28.3	30.8
MEGU	10	13	0	19	46	1	11	14	0	12	15	9	9	159	46	1	14.5	11.4	84.6
HEGU	0	0	0	0	0	2	2	0	0	0	0	0	0	4	2	2	2.0	0.0	15.4
THGU	0	0	0	1	0	0	0	0	58	0	0	0	0	59	58	1	29.5	40.3	15.4
GWGU	343	531	300	207	137	69	71	64	67	6	93	135	79	2102	531	6	161.7	148.0	100.0
BTPI	0	0	0	0	0	0	0	0	22	0	0	0	5	27	22	5	13.5	12.0	15.4
VASW	0	0	0	0	0	0	0	0	11	0	0	0	0	11	11	11	11.0	0.0	7.7
RUHU	0	0	0	0	0	0	1	0	0	0	0	0	5	6	5	1	3.0	2.8	15.4
BEKI	3	2	4	2	0	2	0	0	1	1	4	1	2	22	4	1	2.2	1.1	76.9
#WOO	1	2	0	3	3	0	0	1	1	0	3	4	1	19	4	1	2.1	1.2	69.2
HAWO	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
NOFL	1	2	0	3	2	0	0	1	1	0	2	4	1	17	4	1	1.9	1.1	69.2
PIWO	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	7.7
#PAS	144	207	181	372	244	126	257	132	102	162	209	318	352	2806	372	102	215.8	88.2	100.0
WIFL	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	0.0	7.7
WEFL	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	7.7
TRSW	0	0	0	2	0	0	26	1	0	3	0	0	0	32	26	1	8.0	12.0	30.8
VGSW	0	0	1	5	10	0	5	12	17	17	14	24	35	140	35	1	14.0	10.1	76.9
NRWS	0	0	0	0	0	0	0	0	0	2	0	2	0	4	2	2	2.0	0.0	15.4
CLSW	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3	3	3.0	0.0	7.7
BASW	0	0	0	0	0	0	0	1	18	8	25	20	13	85	25	1	14.2	8.7	46.2
STJA	2	2	3	9	1	2	0	1	0	0	0	0	0	20	9	1	2.9	2.8	53.8
NOCR	26	41	16	81	34	28	37	16	15	31	31	56	23	435	81	15	33.5	18.2	100.0
CORA	0	1	0	1	0	0	0	0	0	2	0	0	1	5	2	1	1.3	0.5	30.8
CBCH	2	0	0	19	2	3	4	3	0	0	2	1	3	39	19	1	4.3	5.6	69.2
BEWR	2	3	0	0	2	0	1	1	1	1	2	0	0	13	3	1	1.6	0.7	61.5
GCKI	2	0	0	17	4	0	0	2	0	0	0	15	0	40	17	2	8.0	7.4	38.5
RCKI	0	0	0	0	4	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
SWTH	0	0	0	0	0	0	0	0	0	0	0	1	2	3	2	1	1.5	0.7	15.4
AMRO	2	23	12	54	22	8	56	20	10	12	31	16	15	281	56	2	21.6	16.6	100.0
VATH	0	0	0	0	0	0	0	3	0	0	1	0	0	4	3	1	2.0	1.4	15.4
CEWA	0	0	0	0	0	0	0	0	0	0	0	37	0	37	37	37	37.0	0.0	7.7
EUST	47	79	117	76	86	58	42	8	8	17	49	68	153	808	153	8	62.2	41.9	100.0
OCWA	0	0	0	2	0	2	2	2	2	3	5	5	3	26	5	2	2.9	1.3	69.2
YEWA	0	0	0	0	0	0	0	1	0	2	2	11	3	19	11	1	3.8	4.1	38.5
YRWA	0	0	0	0	5	0	0	2	1	1	0	0	0	9	5	1	2.3	1.9	30.8
BTGW	0	0	0	0	0	0	0	0	0	2	1	0	0	3	2	1	1.5	0.7	15.4
TOWA	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	7.7
MGWA	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
COYE	0	0	0	0	0	0	0	2	1	3	1	1	1	9	3	1	1.5	0.8	46.2
WIWA	0	0	0	0	0	0	0	0	1	0	0	2	0	3	2	1	1.5	0.7	15.4
RSTO	3	3	2	3	2	4	2	3	2	7	1	1	4	37	7	1	2.8	1.6	100.0
CHSP	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	7.7
SAVS	0	0	0	0	1	0	2	17	10	16	1	2	0	49	17	1	7.0	7.2	53.8
SOSP	5	11	5	11	10	7	14	3	3	3	6	5	2	85	14	2	6.5	3.8	100.0
GCSP	0	2	0	7	0	0	0	9	1	1	0	0	0	20	9	1	4.0	3.7	38.5
WCSP	0	0	0	0	3	0	5	3	0	0	1	1	3	16	5	1	2.7	1.5	46.2

Date	07Mar	15Mar	21Mar	28Mar	04Apr	11Apr	18Apr	25Apr	02May	09May	16May	23May	31May	Total	Max	Min	Mean	SD	%Freq
DEJU	24	6	7	29	16	5	12	0	0	0	0	0	0	99	29	5	14.1	9.4	53.8
RWBL	5	21	1	34	16	2	30	10	7	11	15	25	14	191	34	1	14.7	10.4	100.0
BRBL	18	2	2	2	0	3	6	2	2	7	6	4	51	105	51	2	8.8	14.1	92.3
BHCO	1	0	0	0	0	0	0	0	0	5	2	0	0	8	5	1	2.7	2.1	23.1
NOOR	0	0	0	0	0	0	0	0	0	2	0	0	1	3	2	1	1.5	0.7	15.4
PUFI	0	0	15	2	2	3	0	1	1	3	0	0	1	28	15	1	3.5	4.7	61.5
HOFI	5	13	0	18	10	1	11	8	2	2	5	13	11	99	18	1	8.3	5.3	92.3
PISI	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4.0	0.0	7.7
AMGO	0	0	0	0	0	0	0	0	0	0	7	4	6	17	7	4	5.7	1.5	23.1
EVGR	0	0	0	0	14	0	2	0	0	0	0	0	0	16	14	2	8.0	8.5	15.4
HOSP	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	7.7
#TOT	650	1080	516	792	551	314	641	687	943	808	463	643	546	8634	1080	314	664.2	204.4	100.0

Bird use of the Trent River estuary for Summer 87

Date	06Jun	13Jun	21Jun	27Jun	04Jul	11Jul	18Jul	25Jul	01Aug	08Aug	15Aug	22Aug	29Aug	Total	Max	Min	Mean	SD	%Freq
#LOO	0	2	0	0	1	0	2	1	0	0	2	3	2	13	3	1	1.9	0.7	53.8
PALO	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
COLO	0	1	0	0	1	0	2	1	0	0	2	3	2	12	3	1	1.7	0.8	53.8
#GRE	0	0	2	0	0	0	0	0	0	0	1	0	0	3	2	1	1.5	0.7	15.4
RNGR	0	0	1	0	0	0	0	0	0	0	1	0	0	2	1	1	1.0	0.0	15.4
WEGR	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#COR	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
PECO	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#HER	2	2	1	1	1	0	2	0	3	5	1	10	6	34	10	1	3.1	2.8	84.6
GBHE	2	2	1	1	1	0	2	0	3	5	1	10	6	34	10	1	3.1	2.8	84.6
#GEE	17	0	0	0	0	0	8	0	0	0	28	0	0	53	28	8	17.7	10.0	23.1
BRAN	5	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5.0	0.0	7.7
CAGO	12	0	0	0	0	0	8	0	0	0	28	0	0	48	28	8	16.0	10.6	23.1
#DAB	0	0	0	0	0	0	1	0	0	7	0	0	1	9	7	1	3.0	3.5	23.1
MALL	0	0	0	0	0	0	1	0	0	7	0	0	0	8	7	1	4.0	4.2	15.4
NOPI	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
#DIV	12	8	110	7	25	0	3	1	0	0	11	0	0	177	110	1	22.1	36.2	61.5
SCAU	0	0	0	0	4	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
BLSC	0	3	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3.0	0.0	7.7
SUSC	0	0	0	7	0	0	1	0	0	0	0	0	0	8	7	1	4.0	4.2	15.4
WWSC	10	0	108	0	6	0	0	0	0	0	8	0	0	132	108	6	33.0	50.0	30.8
COGO	0	2	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
COME	2	3	2	0	15	0	2	1	0	0	3	0	0	28	15	1	4.0	4.9	53.8
#RAP	8	0	15	2	3	4	10	6	2	5	8	1	1	65	15	1	5.4	4.2	92.3
TUVU	4	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
OSPR	0	0	0	1	0	0	2	0	0	0	1	0	0	4	2	1	1.3	0.6	23.1
BAEA	4	0	12	0	2	1	4	2	2	1	3	1	0	32	12	1	3.2	3.3	76.9
NOHA	0	0	0	0	0	0	0	1	0	1	1	0	0	3	1	1	1.0	0.0	23.1
MERL	0	0	3	1	1	3	4	3	0	3	3	0	1	22	4	1	2.4	1.1	69.2
#SHO	8	8	14	9	40	27	9	0	49	9	134	13	35	355	134	8	29.6	35.9	92.3
BBPL	0	0	0	0	0	0	0	0	0	0	68	0	0	68	68	68	68.0	0.0	7.7
KILL	8	5	12	8	18	11	5	0	7	8	9	5	9	105	18	5	8.8	3.7	92.3
GRYE	0	0	0	0	0	2	0	0	0	0	0	0	3	5	3	2	2.5	0.7	15.4
LEYE	0	0	0	0	0	0	0	0	0	0	0	2	1	3	2	1	1.5	0.7	15.4
SDSA	0	3	2	1	1	0	0	0	0	1	2	0	0	10	3	1	1.7	0.8	46.2
WESA	0	0	0	0	21	3	4	0	12	0	47	6	2	95	47	2	13.6	16.2	53.8
LESA	0	0	0	0	0	0	0	0	0	0	8	0	20	28	20	8	14.0	8.5	15.4
BASA	0	0	0	0	0	8	0	0	0	0	0	0	0	8	8	8	8.0	0.0	7.7
SBDO	0	0	0	0	0	3	0	0	0	0	0	0	0	3	3	3	3.0	0.0	7.7
SHOR	0	0	0	0	0	0	0	0	30	0	0	0	0	30	30	30	30.0	0.0	7.7
#GUL	88	26	129	20	21	61	116	0	55	68	42	78	54	758	129	20	63.2	35.2	92.3
BOGU	0	0	33	5	7	8	84	0	23	0	14	35	1	210	84	1	23.3	25.8	69.2
MEGU	0	0	41	5	4	29	30	0	21	52	8	4	39	233	52	4	23.3	17.6	76.9
GWGU	88	26	55	10	10	24	2	0	11	16	20	39	14	315	88	2	26.3	24.2	92.3
CATE	0	4	0	1	0	0	0	0	0	0	0	0	0	5	4	1	2.5	2.1	15.4
#ALC	0	2	0	0	0	0	3	0	0	0	0	0	0	5	3	2	2.5	0.7	15.4
MAMU	0	2	0	0	0	0	3	0	0	0	0	0	0	5	3	2	2.5	0.7	15.4
RODO	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
BTPI	1	0	0	0	0	0	1	0	0	0	0	0	0	2	1	1	1.0	0.0	15.4
VASW	0	0	10	0	0	0	0	0	0	0	0	0	2	12	10	2	6.0	5.7	15.4

Date	06Jun	13Jun	21Jun	27Jun	04Jul	11Jul	18Jul	25Jul	01Aug	08Aug	15Aug	22Aug	29Aug	Total	Max	Min	Mean	SD	%Freq
RUHU	0	5	9	1	0	0	0	0	0	0	0	0	0	15	9	1	5.0	4.0	23.1
BEKI	0	1	1	1	3	3	5	3	3	2	6	2	4	34	6	1	2.8	1.6	92.3
#WOO	1	1	7	2	5	2	5	0	3	1	2	4	1	34	7	1	2.8	2.0	92.3
DOWO	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	2	2.0	0.0	7.7
NOFL	1	1	7	2	4	2	5	0	3	1	2	2	1	31	7	1	2.6	1.9	92.3
PIWO	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#PAS	244	118	394	199	196	126	465	72	167	433	399	146	144	3103	465	72	238.7	135.4	100.0
WIFL	3	0	3	2	2	1	1	0	4	1	0	0	0	17	4	1	2.1	1.1	61.5
WEFL	0	1	1	0	2	0	0	0	2	0	0	0	0	6	2	1	1.5	0.6	30.8
TRSW	1	2	29	2	14	0	0	0	2	0	0	0	0	50	29	1	8.3	11.3	46.2
VGSW	10	10	52	14	10	5	5	8	0	0	0	0	0	114	52	5	14.3	15.5	61.5
NRWS	0	0	0	0	0	0	0	0	0	5	0	0	0	5	5	5	5.0	0.0	7.7
CLSW	0	0	1	0	0	0	4	0	0	0	5	0	0	10	5	1	3.3	2.1	23.1
BASW	24	10	49	20	44	18	50	7	19	48	60	18	16	383	60	7	29.5	17.9	100.0
STJA	0	0	0	0	0	0	0	0	0	0	0	2	11	13	11	2	6.5	6.4	15.4
NOCR	26	5	37	18	13	6	77	5	26	1	27	13	3	257	77	1	19.8	20.5	100.0
CORA	1	0	0	0	0	0	0	0	0	0	2	0	0	3	2	1	1.5	0.7	15.4
CBCH	6	3	16	7	2	0	16	10	8	0	38	7	0	113	38	2	11.3	10.5	76.9
BUSH	0	0	8	0	0	12	8	10	0	0	0	0	0	38	12	8	9.5	1.9	30.8
BRCR	0	0	0	0	0	0	5	1	0	0	0	0	0	6	5	1	3.0	2.8	15.4
BEWR	1	1	6	4	0	0	1	1	0	2	0	1	1	18	6	1	2.0	1.8	69.2
GCKI	0	0	6	6	2	0	6	0	12	0	8	0	0	40	12	2	6.7	3.3	46.2
SWTH	3	0	2	2	4	0	2	0	4	0	0	0	0	17	4	2	2.8	1.0	46.2
AMRO	8	3	42	5	10	5	38	7	19	7	1	16	4	165	42	1	12.7	13.1	100.0
CEWA	0	0	0	2	0	0	10	0	0	0	0	1	0	13	10	1	4.3	4.9	23.1
EUST	39	36	38	55	54	18	106	8	13	320	77	26	75	865	320	8	66.5	81.2	100.0
OCWA	2	1	4	0	0	0	1	2	6	1	0	0	1	18	6	1	2.3	1.8	61.5
YEWA	2	0	0	0	0	0	0	2	2	0	0	0	1	7	2	1	1.8	0.5	30.8
YRWA	0	0	0	0	0	0	5	0	0	0	0	0	0	5	5	5	5.0	0.0	7.7
BTGW	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	7.7
TOWA	0	1	0	0	0	0	0	0	2	0	0	0	0	3	2	1	1.5	0.7	15.4
MGWA	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
COYE	2	0	4	3	2	2	0	2	1	6	0	0	4	26	6	1	2.9	1.5	69.2
WIWA	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
RSTO	6	3	7	3	0	2	2	2	6	0	2	2	2	37	7	2	3.4	2.0	84.6
SAVS	0	0	0	0	0	0	4	0	0	0	0	5	15	24	15	4	8.0	6.1	23.1
FOSP	0	0	2	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
SOSP	6	5	6	4	2	2	2	1	4	7	1	1	6	47	7	1	3.6	2.2	100.0
WCSP	0	1	1	4	2	2	4	0	4	0	0	0	0	18	4	1	2.6	1.4	53.8
RWBL	31	18	44	17	18	37	39	1	0	2	8	0	0	215	44	1	21.5	15.5	76.9
BRBL	52	5	10	2	5	4	66	0	2	0	58	24	0	228	66	2	22.8	25.8	76.9
BHCO	2	0	1	5	2	0	0	0	0	2	1	1	0	14	5	1	2.0	1.4	53.8
NOOR	0	1	0	2	0	0	0	0	0	0	0	0	0	3	2	1	1.5	0.7	15.4
PUFI	1	0	4	0	2	0	2	5	4	0	9	0	0	27	9	1	3.9	2.7	53.8
HOFI	13	1	16	21	4	7	8	0	22	17	5	8	1	123	22	1	10.3	7.4	92.3
PISI	3	8	0	0	0	0	0	0	0	0	18	0	0	29	18	3	9.7	7.6	23.1
AMGO	2	2	5	1	2	4	3	0	4	14	79	21	4	141	79	1	11.8	22.0	92.3
#TOT	382	177	692	243	295	223	632	83	282	530	634	257	250	4680	692	83	360.0	196.7	100.0

Bird use of the Trent River estuary for Autumn 87

Date	05Sep	12Sep	19Sep	26Sep	030ct	100ct	170ct	240ct	310ct	07Nov	14Nov	21Nov	28Nov	Total	Max	Min	Mean	SD	%Freq
#LOO	10	4	11	10	0	0	2	12	12	1	4	0	2	68	12	1	6.8	4.6	76.9
RTLO	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
COLO	10	4	11	10	0	0	2	12	12	1	4	0	1	67	12	1	6.7	4.7	76.9
#GRE	20	2	3	21	0	0	4	12	4	0	0	0	0	66	21	2	9.4	8.2	53.8
HOGR	0	0	2	8	0	0	2	3	3	0	0	0	0	18	8	2	3.6	2.5	38.5
RNGR	0	1	0	5	0	0	2	0	0	0	0	0	0	8	5	1	2.7	2.1	23.1
WEGR	20	1	1	8	0	0	0	9	1	0	0	0	0	40	20	1	6.7	7.5	46.2
#GOR	0	0	1	1	0	0	2	0	2	4	0	0	0	10	4	1	2.0	1.2	38.5
DCCO	0	0	1	0	0	0	2	0	2	0	0	0	0	5	2	1	1.7	0.6	23.1
PECO	0	0	0	1	0	0	0	0	0	4	0	0	0	5	4	1	2.5	2.1	15.4
#HER	5	3	4	4	3	1	6	3	8	0	1	2	3	43	8	1	3.6	2.0	92.3
GBHE	5	3	4	4	3	1	6	3	8	0	1	2	3	43	8	1	3.6	2.0	92.3
#SWA	0	0	0	0	0	0	0	0	0	0	6	7	0	13	7	6	6.5	0.7	15.4
TRUS	0	0	0	0	0	0	0	0	0	0	6	7	0	13	7	6	6.5	0.7	15.4
#DAB	0	10	11	0	12	0	48	41	193	67	553	367	562	1864	562	10	186.4	224.8	76.9
GWTE	0	0	0	0	0	0	1	0	0	0	2	18	0	21	18	1	7.0	9.5	23.1
MALL	0	4	11	0	0	0	22	4	21	28	112	47	19	268	112	4	29.8	33.5	69.2
NOPI	0	0	0	0	12	0	22	36	154	19	412	292	481	1428	481	12	178.5	191.8	61.5
NOSL	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
AMWI	0	5	0	0	0	0	3	1	18	20	27	10	62	146	62	1	18.3	19.9	61.5
#DIV	20	0	94	120	14	4	63	125	47	80	359	127	49	1102	359	4	91.8	94.5	92.3
SCAU	0	0	0	0	0	0	0	2	0	0	10	5	7	24	10	2	6.0	3.4	30.8
HADU	0	0	2	19	6	0	13	10	7	0	20	0	0	77	20	2	11.0	6.7	53.8
OLDS	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	7.7
SCOT	0	0	87	0	0	0	38	0	0	60	0	0	0	185	87	38	61.7	24.5	23.1
BLSC	0	0	0	14	0	4	2	34	0	0	47	0	0	101	47	2	20.2	19.6	38.5
SUSC	0	0	0	4	0	0	0	33	2	0	45	0	0	84	45	2	21.0	21.4	30.8
WWSC	20	0	5	59	8	0	2	42	38	0	115	93	0	382	115	2	42.4	40.1	69.2
COGO	0	0	0	0	0	0	0	0	0	10	16	12	13	51	16	10	12.8	2.5	30.8
BAGO	0	0	0	0	0	0	0	0	0	0	20	0	8	28	20	8	14.0	8.5	15.4
BUFF	0	0	0	0	0	0	0	0	0	10	77	16	21	124	77	10	31.0	31.0	30.8
COME	0	0	0	24	0	0	2	4	0	0	8	1	0	39	24	1	7.8	9.4	38.5
RBME	0	0	0	0	0	0	6	0	0	0	0	0	0	6	6	6	6.0	0.0	7.7
#RAP	2	1	3	3	5	1	2	10	6	4	3	10	2	52	10	1	4.0	3.0	100.0
OSPR	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
BAEA	1	0	2	0	2	0	1	8	5	4	1	6	1	31	8	1	3.1	2.5	76.9
NOHA	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
SSHA	0	1	0	1	0	0	0	0	0	0	0	0	0	2	1	1	1.0	0.0	15.4
RTHA	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
MERL	1	0	0	1	2	1	1	2	1	0	2	4	1	16	4	1	1.6	1.0	76.9
RNPH	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#RAI	0	0	0	0	4	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
SACR	0	0	0	0	4	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
#SHO	8	16	9	4	19	1	5	5	98	1	209	103	1008	1486	1008	1	114.3	275.5	100.0
BBPL	0	0	0	0	8	0	0	0	0	0	0	0	0	8	8	8	8.0	0.0	7.7
SEPL	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
KILL	5	15	5	2	5	1	4	5	16	1	9	7	8	83	16	1	6.4	4.7	100.0
GRYE	0	0	2	1	1	0	1	0	1	0	0	0	0	6	2	1	1.2	0.4	38.5
LEYE	0	1	1	0	5	0	0	0	0	0	0	0	0	7	5	1	2.3	2.3	23.1
BLTU	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3	3	3.0	0.0	7.7

Date	05Sep	12Sep	19Sep	26Sep	030ct	100ct	170ct	240ct	310ct	07Nov	14Nov	21Nov	28Nov	Total	Max	Min	Mean	SD	%Freq
WESA	2	0	1	0	0	0	0	0	0	0	0	0	0	3	2	1	1.5	0.7	15.4
DUNL	0	0	0	0	0	0	0	0	81	0	200	0	1000	1281	1000	81	427.0	499.8	23.1
SBDO	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
SHOR	0	0	0	0	0	0	0	0	0	0	0	93	0	93	93	93	93.0	0.0	7.7
#GUL	114	40	110	85	48	35	198	53	71	122	231	397	284	1788	397	35	137.5	110.0	100.0
BOGU	24	12	10	23	0	4	10	2	0	1	0	0	0	86	24	1	10.8	8.8	61.5
MEGU	30	20	1	24	44	18	37	18	3	15	2	76	10	298	76	1	22.9	20.6	100.0
HEGU	0	0	0	6	0	0	0	0	0	0	0	0	3	9	6	3	4.5	2.1	15.4
THGU	0	0	0	0	0	0	0	0	0	0	50	0	0	50	50	50	50.0	0.0	7.7
GWGU	60	8	99	32	4	13	151	33	68	106	179	321	271	1345	321	4	103.5	101.6	100.0
RODO	3	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3.0	0.0	7.7
BTPI	0	0	0	4	0	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
BEKI	4	3	2	6	2	4	2	6	3	3	1	4	2	42	6	1	3.2	1.5	100.0
#WOO	2	2	4	2	0	4	3	3	3	7	3	6	4	43	7	2	3.6	1.6	92.3
DOWO	0	0	0	0	0	0	0	0	1	1	0	0	0	2	1	1	1.0	0.0	15.4
NOFL	2	2	1	2	0	4	3	3	1	6	3	6	3	36	6	1	3.0	1.7	92.3
PIWO	0	0	3	0	0	0	0	0	1	0	0	0	1	5	3	1	1.7	1.2	23.1
#PAS	254	124	181	756	197	280	560	380	599	339	365	523	455	5013	756	124	385.6	185.7	100.0
WIFL	2	0	0	0	0	0	0	2	0	0	0	0	0	4	2	2	2.0	0.0	15.4
STJA	13	0	3	8	5	2	2	4	2	1	8	4	1	53	13	1	4.4	3.6	92.3
NOCR	12	2	36	26	3	11	49	12	42	121	38	67	44	463	121	2	35.6	32.4	100.0
CORA	4	0	0	0	0	0	0	2	0	0	0	0	0	6	4	2	3.0	1.4	15.4
CBCH	8	4	10	8	0	1	0	58	10	9	0	3	0	111	58	1	12.3	17.4	69.2
RBNU	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
BRCR	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	2	2.0	0.0	7.7
BEWR	1	0	1	2	0	0	0	1	0	2	2	0	0	9	2	1	1.5	0.5	46.2
WIWR	0	0	0	0	0	0	0	0	0	0	0	2	1	3	2	1	1.5	0.7	15.4
GCKI	6	0	10	0	0	1	0	12	0	0	12	0	0	41	12	1	8.2	4.7	38.5
RCKI	0	0	0	0	0	0	0	0	9	1	8	0	0	18	9	1	6.0	4.4	23.1
AMRO	2	1	0	32	18	30	16	12	26	5	0	0	4	146	32	1	14.6	11.7	76.9
NOSH	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	7.7
EUST	127	12	80	425	36	145	217	54	204	73	170	190	251	1984	425	12	152.6	111.0	100.0
WARB	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	7.7
OCWA	4	0	0	2	0	0	0	0	0	0	0	0	0	6	4	2	3.0	1.4	15.4
YRWA	0	0	0	18	12	0	0	0	0	0	0	0	0	30	18	12	15.0	4.2	15.4
BTGW	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
COYE	0	4	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
RSTO	0	2	4	9	6	8	7	5	11	7	10	7	6	82	11	2	6.8	2.5	92.3
SAVS	9	24	12	92	26	0	87	2	0	0	0	0	0	252	92	2	36.0	37.5	53.8
FOSP	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
SOSP	8	5	10	23	7	14	29	22	22	10	9	6	9	174	29	5	13.4	7.9	100.0
LISP	0	5	0	0	0	0	0	1	0	0	0	0	0	6	5	1	3.0	2.8	15.4
GCSP	0	0	0	23	3	24	18	11	29	9	11	4	11	143	29	3	14.3	8.8	76.9
WCSP	0	0	0	15	0	0	0	0	0	1	0	8	3	27	15	1	6.8	6.2	30.8
DEJU	0	0	0	9	3	22	15	104	105	47	40	130	44	519	130	3	51.9	45.2	76.9
RWBL	8	0	0	12	16	8	75	26	59	0	8	2	5	219	75	2	21.9	25.0	76.9
WEME	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
BRBL	30	51	3	14	40	4	27	36	44	0	26	96	21	392	96	3	32.7	24.9	92.3
PUFI	0	4	0	15	3	0	0	0	4	0	0	0	3	29	15	3	5.8	5.2	38.5
HOFI	10	9	12	12	15	10	18	9	7	52	19	4	51	228	52	4	17.5	15.6	100.0
PISI	0	0	0	0	4	0	0	6	25	0	2	0	0	37	25	2	9.3	10.6	30.8

Date	05Sep	12Sep	19Sep	26Sep	030ct	100ct	170ct	240ct	310ct	07Nov	14Nov	21Nov	28Nov	Total	Max	Min	Mean	SD	%Freq
AMGO	8	0	0	9	0	0	0	0	0	0	0	0	0	17	9	8	8.5	0.7	15.4
#TOT	442	205	433	1016	304	330	895	651	1046	628	1735	1546	2371	11602	2371	205	892.5	648.0	100.0

Bird use of the Trent River estuary for Winter 87

Date	05Dec	12Dec	19Dec	26Dec	Total	Max	Min	Mean	SD	%Freq
#LOO	0	0	1	1	2	1	1	1.0	0.0	50.0
COLO	0	0	1	1	2	1	1	1.0	0.0	50.0
#GRE	1	0	2	0	3	2	1	1.5	0.7	50.0
HOGR	0	0	2	0	2	2	2	2.0	0.0	25.0
WEGR	1	0	0	0	1	1	1	1.0	0.0	25.0
#HER	1	3	1	1	6	3	1	1.5	1.0	100.0
GBHE	1	3	1	1	6	3	1	1.5	1.0	100.0
#SWA	0	9	4	2	15	9	2	5.0	3.6	75.0
TRUS	0	9	4	2	15	9	2	5.0	3.6	75.0
#DAB	346	260	420	197	1223	420	197	305.8	97.6	100.0
GWTE	0	0	4	0	4	4	4	4.0	0.0	25.0
MALL	0	38	80	9	127	80	9	42.3	35.7	75.0
NOPI	342	182	171	115	810	342	115	202.5	97.5	100.0
AMWI	4	40	165	73	282	165	4	70.5	69.0	100.0
#DIV	124	152	220	181	677	220	124	169.3	41.1	100.0
SCAU	0	0	2	0	2	2	2	2.0	0.0	25.0
GRSC	18	7	0	0	25	18	7	12.5	7.8	50.0
HADU	0	4	1	0	5	4	1	2.5	2.1	50.0
OLDS	0	1	0	0	1	1	1	1.0	0.0	25.0
SCOT	100	0	0	0	100	100	100	100.0	0.0	25.0
BLSC	0	1	10	97	108	97	1	36.0	53.0	75.0
SUSC	0	28	11	12	51	28	11	17.0	9.5	75.0
WWSC	0	35	157	37	229	157	35	76.3	69.9	75.0
COGO	1	44	27	13	85	44	1	21.3	18.5	100.0
BAGO	0	2	1	13	16	13	1	5.3	6.7	75.0
BUFF	5	30	10	9	54	30	5	13.5	11.2	100.0
HOME	0	0	1	0	1	1	1	1.0	0.0	25.0
#RAP	12	15	14	3	44	15	3	11.0	5.5	100.0
BAEA	10	15	13	2	40	15	2	10.0	5.7	100.0
NOHA	1	0	0	0	1	1	1	1.0	0.0	25.0
COHA	0	0	1	0	1	1	1	1.0	0.0	25.0
MERL	1	0	0	1	2	1	1	1.0	0.0	50.0
#SHO	15	54	175	128	372	175	15	93.0	72.0	100.0
BBPL	14	8	124	28	174	124	8	43.5	54.3	100.0
KILL	1	17	16	3	37	17	1	9.3	8.4	100.0
GRYE	0	1	0	0	1	1	1	1.0	0.0	25.0
BLTU	0	0	29	12	41	29	12	20.5	12.0	50.0
DUNL	0	28	6	85	119	85	6	39.7	40.8	75.0
#GUL	143	41	398	108	690	398	41	172.5	156.2	100.0
MEGU	70	2	4	0	76	70	2	25.3	38.7	75.0
HEGU	0	0	3	4	7	4	3	3.5	0.7	50.0
THGU	5	1	0	0	6	5	1	3.0	2.8	50.0
GWGU	68	38	391	104	601	391	38	150.3	162.8	100.0
BEKI	2	3	3	2	10	3	2	2.5	0.6	100.0
#WOO	5	3	4	8	20	8	3	5.0	2.2	100.0
NOFL	5	3	4	7	19	7	3	4.8	1.7	100.0
PIWO	0	0	0	1	1	1	1	1.0	0.0	25.0
#PAS	231	344	698	276	1549	698	231	387.3	212.3	100.0
STJA	3	3	3	3	12	3	3	3.0	0.0	100.0
NOCR	66	55	69	22	212	69	22	53.0	21.5	100.0

Date	05Dec	12Dec	19Dec	26Dec	Total	Max	Min	Mean	SD	%Freq
CORA	0	0	1	0	1	1	1	1.0	0.0	25.0
CBCH	0	4	0	0	4	4	4	4.0	0.0	25.0
BEWR	0	0	0	1	1	1	1	1.0	0.0	25.0
WIWR	1	0	0	1	2	1	1	1.0	0.0	50.0
GCKI	0	15	8	0	23	15	8	11.5	4.9	50.0
RCKI	0	1	1	0	2	1	1	1.0	0.0	50.0
AMRO	3	4	4	2	13	4	2	3.3	1.0	100.0
EUST	8	54	257	99	418	257	8	104.5	108.2	100.0
YRWA	0	1	0	0	1	1	1	1.0	0.0	25.0
RSTO	3	5	14	13	35	14	3	8.8	5.6	100.0
FOSP	1	0	1	0	2	1	1	1.0	0.0	50.0
SOSP	5	17	31	9	62	31	5	15.5	11.5	100.0
GCSP	28	4	19	2	53	28	2	13.3	12.4	100.0
WCSP	2	0	0	0	2	2	2	2.0	0.0	25.0
DEJU	42	96	107	44	289	107	42	72.3	34.1	100.0
RWBL	15	4	0	20	39	20	4	13.0	8.2	75.0
BRBL	15	45	77	41	178	77	15	44.5	25.4	100.0
HOFI	39	36	74	19	168	74	19	42.0	23.1	100.0
PISI	0	0	32	0	32	32	32	32.0	0.0	25.0
#TOT	880	884	1940	907	4611	1940	880	1152.8	525.0	100.0

APPENDIX XIII

SEASONAL BIRD NUMBERS BY HABITAT ON THE TRENT RIVER ESTUARY - 1987

This appendix is a breakdown of Appendix XII by habitats on the Trent River estuary.

For a complete description of these habitats, refer to pages 4 through 6.
A list of the species codes can be found in Appendix XI.

Bird use of intertidal habitat for Winter 86

Date	03Jan	10Jan	17Jan	24Jan	31Jan	07Feb	14Feb	21Feb	28Feb	Total	Max	Min	Mean	SD	%Freq
#LOO	2	1	0	2	1	5	6	0	0	17	6	1	2.8	2.1	66.7
RTLO	1	0	0	2	0	0	2	0	0	5	2	1	1.7	0.6	33.3
COLO	1	1	0	0	1	5	4	0	0	12	5	1	2.4	1.9	55.6
#GRE	13	1	0	4	2	0	3	1	0	24	13	1	4.0	4.6	66.7
HOGR	0	0	0	0	2	0	0	1	0	3	2	1	1.5	0.7	22.2
RNGR	1	0	0	1	0	0	1	0	0	3	1	1	1.0	0.0	33.3
WEGR	12	1	0	3	0	0	2	0	0	18	12	1	4.5	5.1	44.4
#COR	4	0	1	0	0	0	0	1	0	6	4	1	2.0	1.7	33.3
PECO	4	0	1	0	0	0	0	1	0	6	4	1	2.0	1.7	33.3
#HER	0	0	0	0	0	5	0	0	4	9	5	4	4.5	0.7	22.2
GBHE	0	0	0	0	0	5	0	0	4	9	5	4	4.5	0.7	22.2
#SWA	0	0	0	0	0	0	0	9	0	9	9	9	9.0	0.0	11.1
TRUS	0	0	0	0	0	0	0	9	0	9	9	9	9.0	0.0	11.1
#DAB	30	70	1	54	68	10	10	6	35	284	70	1	31.6	27.0	100.0
MALL	3	4	0	0	0	8	0	0	9	24	9	3	6.0	2.9	44.4
NOPI	27	29	0	44	68	0	7	0	0	175	68	7	35.0	22.7	55.6
AMWI	0	37	1	10	0	2	3	6	26	85	37	1	12.1	13.9	77.8
#DIV	265	93	2	370	166	124	289	70	105	1484	370	2	164.9	119.1	100.0
SCAU	19	45	0	76	17	0	66	41	53	317	76	17	45.3	22.1	77.8
HADU	0	0	0	1	0	0	0	2	3	6	3	1	2.0	1.0	33.3
OLDS	0	0	0	1	0	1	0	0	1	3	1	1	1.0	0.0	33.3
BLSC	49	4	0	136	37	35	54	0	4	319	136	4	45.6	44.5	77.8
SUSC	17	3	0	3	16	10	8	12	1	70	17	1	8.8	6.1	88.9
WWSC	157	19	0	119	65	57	94	9	10	530	157	9	66.3	54.2	88.9
COGO	0	1	0	11	0	3	14	6	3	38	14	1	6.3	5.1	66.7
BAGO	22	13	0	5	24	2	30	0	26	122	30	2	17.4	10.9	77.8
BUFF	1	8	2	18	7	16	18	0	4	74	18	1	9.3	7.1	88.9
COME	0	0	0	0	0	0	5	0	0	5	5	5	5.0	0.0	11.1
#RAP	0	0	0	8	0	2	7	0	3	20	8	2	5.0	2.9	44.4
BAEA	0	0	0	8	0	2	7	0	3	20	8	2	5.0	2.9	44.4
#SHO	149	0	0	0	0	80	0	100	0	329	149	80	109.7	35.5	33.3
BBPL	83	0	0	0	0	5	0	0	0	88	83	5	44.0	55.2	22.2
BLTU	1	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	11.1
WESA	25	0	0	0	0	0	0	0	0	25	25	25	25.0	0.0	11.1
DUNL	40	0	0	0	0	75	0	0	0	115	75	40	57.5	24.7	22.2
SHOR	0	0	0	0	0	0	0	100	0	100	100	100	100.0	0.0	11.1
#GUL	148	0	0	51	52	7	1194	308	518	2278	1194	7	325.4	423.2	77.8
GULL	100	0	0	0	0	0	0	0	0	100	100	100	100.0	0.0	11.1
MEGU	5	0	0	11	1	0	44	0	17	78	44	1	15.6	17.0	55.6
HEGU	1	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	11.1
THGU	3	0	0	0	0	0	2	1	10	16	10	1	4.0	4.1	44.4
GWGU	39	0	0	40	51	7	1147	307	491	2082	1147	7	297.4	415.8	77.8
GLGU	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	11.1
BEKI	0	0	0	0	1	0	2	0	0	3	2	1	1.5	0.7	22.2
#PAS	0	9	0	0	9	20	122	30	16	206	122	9	34.3	43.7	66.7
NOCR	0	9	0	0	9	18	25	30	12	103	30	9	17.2	8.8	66.7
SOSP	0	0	0	0	0	0	1	0	1	2	1	1	1.0	0.0	22.2
DEJU	0	0	0	0	0	2	0	0	3	5	3	2	2.5	0.7	22.2
RWBL	0	0	0	0	0	0	70	0	0	70	70	70	70.0	0.0	11.1
BRBL	0	0	0	0	0	0	23	0	0	23	23	23	23.0	0.0	11.1

Date	03Jan	10Jan	17Jan	24Jan	31Jan	07Feb	14Feb	21Feb	28Feb	Total	Max	Min	Mean	SD	%Freq
HOFI	0	0	0	0	0	0	3	0	0	3	3	3	3.0	0.0	11.1
#TOT	611	174	4	489	299	253	1633	525	681	4669	1633	4	518.8	471.7	100.0

Bird use of intertidal habitat for Spring 87

Date	07Mar	15Mar	21Mar	28Mar	04Apr	11Apr	18Apr	25Apr	02May	09May	16May	23May	31May	Total	Max	Min	Mean	SD	%Freq
#LOO	1	2	0	2	0	0	0	0	0	0	8	4	0	17	8	1	3.4	2.8	38.5
PALO	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4	4	4.0	0.0	7.7
COLO	1	2	0	2	0	0	0	0	0	0	8	0	0	13	8	1	3.3	3.2	30.8
#GRE	2	0	0	1	0	0	2	0	0	0	12	2	0	19	12	1	3.8	4.6	38.5
HOGR	2	0	0	1	0	0	0	0	0	0	0	0	0	3	2	1	1.5	0.7	15.4
RNGR	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
WEGR	0	0	0	0	0	0	1	0	0	0	12	2	0	15	12	1	5.0	6.1	23.1
#COR	0	0	0	2	4	0	4	0	0	0	6	3	1	20	6	1	3.3	1.8	46.2
CORM	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
DCCO	0	0	0	1	0	0	4	0	0	0	1	3	0	9	4	1	2.3	1.5	30.8
PECO	0	0	0	0	4	0	0	0	0	0	5	0	1	10	5	1	3.3	2.1	23.1
#HER	2	1	3	0	2	1	0	1	0	2	2	0	0	14	3	1	1.8	0.7	61.5
GBHE	2	1	3	0	2	1	0	1	0	2	2	0	0	14	3	1	1.8	0.7	61.5
#SWA	0	2	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
TRUS	0	2	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
#GEE	0	1	0	0	41	60	96	300	451	212	25	3	0	1189	451	1	132.1	156.7	69.2
BRAN	0	0	0	0	40	60	96	300	450	212	25	3	0	1186	450	3	148.3	158.9	61.5
CAGO	0	1	0	0	1	0	0	0	1	0	0	0	0	3	1	1	1.0	0.0	23.1
#DAB	32	54	0	35	30	8	2	89	10	0	5	2	0	267	89	2	26.7	28.0	76.9
MALL	18	0	0	35	0	8	2	0	0	0	2	2	0	67	35	2	11.2	13.2	46.2
EUWI	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
AMWI	14	54	0	0	29	0	0	89	10	0	3	0	0	199	89	3	33.2	32.8	46.2
#DIV	99	239	12	103	19	11	82	55	12	95	34	138	39	938	239	11	72.2	65.3	100.0
SCAU	8	1	8	0	0	0	0	8	0	0	0	0	0	25	8	1	6.3	3.5	30.8
HADU	0	0	0	0	0	0	0	2	0	0	0	2	0	4	2	2	2.0	0.0	15.4
SCOT	0	0	2	0	0	0	0	0	0	90	0	0	35	127	90	2	42.3	44.5	23.1
BLSC	4	25	0	0	0	0	0	0	0	0	0	0	0	29	25	4	14.5	14.8	15.4
SUSC	1	0	0	10	0	0	0	33	0	0	6	12	0	62	33	1	12.4	12.3	38.5
WWSC	44	123	0	61	0	0	42	0	0	0	21	117	4	412	123	4	58.9	45.5	53.8
COGO	1	33	0	4	17	9	11	5	4	3	1	5	0	93	33	1	8.5	9.4	84.6
BAGO	33	8	0	2	0	0	2	0	0	0	0	0	0	45	33	2	11.3	14.8	30.8
BUFF	8	29	2	20	2	0	25	7	6	0	5	0	0	104	29	2	11.6	10.3	69.2
COME	0	19	0	6	0	2	0	0	0	2	1	2	0	32	19	1	5.3	6.9	46.2
RBME	0	1	0	0	0	0	2	0	2	0	0	0	0	5	2	1	1.7	0.6	23.1
#RAP	0	0	0	1	0	2	2	3	1	3	6	3	2	23	6	1	2.6	1.5	69.2
BAEA	0	0	0	1	0	2	1	3	0	3	6	3	2	21	6	1	2.6	1.6	61.5
NOHA	0	0	0	0	0	0	1	0	1	0	0	0	0	2	1	1	1.0	0.0	15.4
#SHO	0	0	0	0	0	0	8	1	0	31	2	0	0	42	31	1	10.5	14.0	30.8
SEPL	0	0	0	0	0	0	0	0	0	6	0	0	0	6	6	6	6.0	0.0	7.7
KILL	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	2	2.0	0.0	7.7
GRYE	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	7.7
LESA	0	0	0	0	0	0	8	0	0	0	0	0	0	8	8	8	8.0	0.0	7.7
DUNL	0	0	0	0	0	0	0	0	0	25	0	0	0	25	25	25	25.0	0.0	7.7
#GUL	352	534	300	110	177	10	73	82	144	288	36	135	56	2297	534	10	176.7	151.4	100.0
GULL	0	0	0	0	0	0	0	0	0	200	0	0	0	200	200	200	200.0	0.0	7.7
BOGU	0	0	0	0	0	0	0	6	26	70	18	0	0	120	70	6	30.0	27.9	30.8
MEGU	10	3	0	0	46	1	11	14	0	12	0	0	0	97	46	1	13.9	15.0	53.8
HEGU	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
THGU	0	0	0	0	0	0	0	0	58	0	0	0	0	58	58	58	58.0	0.0	7.7
GWGU	342	531	300	110	131	9	60	62	60	6	18	135	56	1820	531	6	140.0	157.1	100.0

Date	07Mar	15Mar	21Mar	28Mar	04Apr	11Apr	18Apr	25Apr	02May	09May	16May	23May	31May	Total	Max	Min	Mean	SD	%Freq
RUHU	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	0.0	7.7
BEKI	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#WOO	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	7.7
PIWO	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	7.7
#PAS	15	47	3	51	17	10	11	0	8	33	32	50	25	302	51	3	25.2	17.2	92.3
TRSW	0	0	0	0	0	0	6	0	0	0	0	0	0	6	6	6	6.0	0.0	7.7
VGSW	0	0	0	0	0	0	0	0	0	6	5	2	0	13	6	2	4.3	2.1	23.1
NRWS	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	2	2.0	0.0	7.7
NOCR	15	34	3	39	16	10	3	0	7	25	2	39	0	193	39	2	17.5	14.5	84.6
AMRO	0	0	0	0	0	0	2	0	0	0	2	1	0	5	2	1	1.7	0.6	23.1
EUST	0	11	0	10	0	0	0	0	1	0	22	5	25	74	25	1	12.3	9.4	46.2
BTGW	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	7.7
TOWA	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	7.7
WCSP	0	0	0	0	1	0	0	0	0	0	0	1	0	2	1	1	1.0	0.0	15.4
PUFI	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
HOFI	0	2	0	0	0	0	0	0	0	0	1	0	0	3	2	1	1.5	0.7	15.4
#TOT	503	880	319	305	290	102	280	531	626	664	169	340	125	5134	880	102	394.9	231.3	100.0

Bird use of intertidal habitat for Summer 87

Date	06Jun	13Jun	21Jun	27Jun	04Jul	11Jul	18Jul	25Jul	01Aug	08Aug	15Aug	22Aug	29Aug	Total	Max	Min	Mean	SD	%Freq
#LOO	0	2	0	0	1	0	2	1	0	0	2	3	2	13	3	1	1.9	0.7	53.8
PALO	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
COLO	0	1	0	0	1	0	2	1	0	0	2	3	2	12	3	1	1.7	0.8	53.8
#GRE	0	0	2	0	0	0	0	0	0	0	1	0	0	3	2	1	1.5	0.7	15.4
RNGR	0	0	1	0	0	0	0	0	0	0	1	0	0	2	1	1	1.0	0.0	15.4
WEGR	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#COR	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
PECO	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#HER	1	2	0	0	0	0	0	0	1	4	0	5	2	15	5	1	2.5	1.6	46.2
GBHE	1	2	0	0	0	0	0	0	1	4	0	5	2	15	5	1	2.5	1.6	46.2
#GEE	5	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5.0	0.0	7.7
BRAN	5	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5.0	0.0	7.7
#DAB	0	0	0	0	0	0	0	0	0	6	0	0	1	7	6	1	3.5	3.5	15.4
MALL	0	0	0	0	0	0	0	0	0	6	0	0	0	6	6	6	6.0	0.0	7.7
NOPI	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
#DIV	10	8	108	7	25	0	3	0	0	0	8	0	0	169	108	3	24.1	37.6	53.8
SCAU	0	0	0	0	4	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
BLSC	0	3	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3.0	0.0	7.7
SUSC	0	0	0	7	0	0	1	0	0	0	0	0	0	8	7	1	4.0	4.2	15.4
WWSC	10	0	108	0	6	0	0	0	0	0	8	0	0	132	108	6	33.0	50.0	30.8
COGO	0	2	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
COME	0	3	0	0	15	0	2	0	0	0	0	0	0	20	15	2	6.7	7.2	23.1
#RAP	0	0	4	0	2	0	3	2	1	2	1	0	0	15	4	1	2.1	1.1	53.8
OSPR	0	0	0	0	0	0	1	0	0	0	1	0	0	2	1	1	1.0	0.0	15.4
BAEA	0	0	3	0	2	0	2	2	1	1	0	0	0	11	3	1	1.8	0.8	46.2
NOHA	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	7.7
MERL	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#SHO	0	8	0	0	4	1	5	0	32	2	12	0	0	64	32	1	9.1	10.7	53.8
BBPL	0	0	0	0	0	0	0	0	0	0	12	0	0	12	12	12	12.0	0.0	7.7
KILL	0	5	0	0	4	1	1	0	2	2	0	0	0	15	5	1	2.5	1.6	46.2
SDSA	0	3	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3.0	0.0	7.7
WESA	0	0	0	0	0	0	4	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
SHOR	0	0	0	0	0	0	0	0	30	0	0	0	0	30	30	30	30.0	0.0	7.7
#GUL	88	4	118	12	21	61	75	0	39	54	10	63	40	585	118	4	48.8	34.6	92.3
BOGU	0	0	28	2	7	8	54	0	15	0	2	20	1	137	54	1	15.2	17.2	69.2
MEGU	0	0	41	0	4	29	21	0	21	52	4	4	37	213	52	4	23.7	17.6	69.2
GWGU	88	4	49	10	10	24	0	0	3	2	4	39	2	235	88	2	21.4	27.3	84.6
CATE	0	4	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
#ALC	0	2	0	0	0	0	3	0	0	0	0	0	0	5	3	2	2.5	0.7	15.4
MAMU	0	2	0	0	0	0	3	0	0	0	0	0	0	5	3	2	2.5	0.7	15.4
BEKI	0	1	0	0	0	0	1	1	0	0	0	1	2	6	2	1	1.2	0.4	38.5
#PAS	6	76	40	6	46	1	67	8	38	39	137	11	0	475	137	1	39.6	39.5	92.3
WEFL	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
TRSW	0	0	0	0	2	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
VGSW	2	10	12	0	4	0	0	0	0	0	0	0	0	28	12	2	7.0	4.8	30.8
BASW	0	10	0	0	12	0	0	1	0	7	6	0	0	36	12	1	7.2	4.2	38.5
NOCR	4	5	15	6	11	0	43	2	15	0	19	7	0	127	43	2	12.7	12.0	76.9
CBCH	0	0	0	0	0	0	0	1	0	0	0	4	0	5	4	1	2.5	2.1	15.4
BRCR	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	7.7
BEWR	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	7.7

Date	06Jun	13Jun	21Jun	27Jun	04Jul	11Jul	18Jul	25Jul	01Aug	08Aug	15Aug	22Aug	29Aug	Total	Max	Min	Mean	SD	%Freq
GCKI	0	0	0	0	0	0	0	0	6	0	0	0	0	6	6	6	6.0	0.0	7.7
AMRO	0	2	5	0	0	0	1	0	2	0	0	0	0	10	5	1	2.5	1.7	30.8
EUST	0	17	6	0	12	1	0	0	11	20	41	0	0	108	41	1	15.4	12.9	53.8
COYE	0	0	0	0	0	0	0	2	0	0	0	0	0	2	2	2	2.0	0.0	7.7
RSTO	0	2	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
FOSP	0	0	2	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
SOSP	0	0	0	0	0	0	0	0	2	1	0	0	0	3	2	1	1.5	0.7	15.4
WCSP	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	2	2.0	0.0	7.7
RWBL	0	18	0	0	0	0	2	1	0	2	0	0	0	23	18	1	5.8	8.2	30.8
BRBL	0	2	0	0	5	0	18	0	0	0	54	0	0	79	54	2	19.8	23.9	30.8
NOOR	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
HOFI	0	0	0	0	0	0	3	0	0	6	0	0	0	9	6	3	4.5	2.1	15.4
PISI	0	8	0	0	0	0	0	0	0	0	0	0	0	8	8	8	8.0	0.0	7.7
AMGO	0	0	0	0	0	0	0	0	0	2	17	0	0	19	17	2	9.5	10.6	15.4
#TOT	111	107	272	25	99	63	159	12	111	107	171	83	47	1367	272	12	105.2	68.3	100.0

Bird use of intertidal habitat for Autumn 87

Date	05Sep	12Sep	19Sep	26Sep	03Oct	10Oct	17Oct	24Oct	31Oct	07Nov	14Nov	21Nov	28Nov	Total	Max	Min	Mean	SD	%Freq
#LOO	10	4	11	10	0	0	2	12	10	1	2	0	1	63	12	1	6.3	4.6	76.9
RTLO	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
COLO	10	4	11	10	0	0	2	12	10	1	2	0	0	62	12	1	6.9	4.5	69.2
#GRE	20	2	3	21	0	0	4	12	4	0	0	0	0	66	21	2	9.4	8.2	53.8
HOGR	0	0	2	8	0	0	2	3	3	0	0	0	0	18	8	2	3.6	2.5	38.5
RNGR	0	1	0	5	0	0	2	0	0	0	0	0	0	8	5	1	2.7	2.1	23.1
WEGR	20	1	1	8	0	0	0	9	1	0	0	0	0	40	20	1	6.7	7.5	46.2
#COR	0	0	1	1	0	0	2	0	2	4	0	0	0	10	4	1	2.0	1.2	38.5
DCCO	0	0	1	0	0	0	2	0	2	0	0	0	0	5	2	1	1.7	0.6	23.1
PECO	0	0	0	1	0	0	0	0	0	4	0	0	0	5	4	1	2.5	2.1	15.4
#HER	3	1	3	1	2	1	4	0	6	0	0	0	1	22	6	1	2.4	1.7	69.2
GBHE	3	1	3	1	2	1	4	0	6	0	0	0	1	22	6	1	2.4	1.7	69.2
#DAB	0	0	11	0	7	0	47	41	150	5	343	309	247	1160	343	5	128.9	137.5	69.2
MALL	0	0	11	0	0	0	22	4	0	5	4	30	18	94	30	4	13.4	10.2	53.8
NOPI	0	0	0	0	7	0	22	36	138	0	312	279	167	961	312	7	137.3	123.8	53.8
AMWI	0	0	0	0	0	0	3	1	12	0	27	0	62	105	62	1	21.0	25.1	38.5
#DIV	20	0	94	96	14	4	61	125	47	66	297	125	32	981	297	4	81.8	79.3	92.3
SCAU	0	0	0	0	0	0	0	2	0	0	0	5	0	7	5	2	3.5	2.1	15.4
HADU	0	0	2	19	6	0	13	10	7	0	20	0	0	77	20	2	11.0	6.7	53.8
OLDS	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	7.7
SCOT	0	0	87	0	0	0	38	0	0	60	0	0	0	185	87	38	61.7	24.5	23.1
BLSC	0	0	0	14	0	4	2	34	0	0	35	0	0	89	35	2	17.8	15.9	38.5
SUSC	0	0	0	4	0	0	0	33	2	0	35	0	0	74	35	2	18.5	17.9	30.8
WWSC	20	0	5	59	8	0	2	42	38	0	115	93	0	382	115	2	42.4	40.1	69.2
COGO	0	0	0	0	0	0	0	0	0	0	0	12	12	24	12	12	12.0	0.0	15.4
BAGO	0	0	0	0	0	0	0	0	0	0	18	0	2	20	18	2	10.0	11.3	15.4
BUFF	0	0	0	0	0	0	0	0	0	6	73	14	18	111	73	6	27.8	30.6	30.8
COME	0	0	0	0	0	0	0	4	0	0	0	1	0	5	4	1	2.5	2.1	15.4
RBME	0	0	0	0	0	0	6	0	0	0	0	0	0	6	6	6	6.0	0.0	7.7
#RAP	0	0	0	1	0	1	0	4	5	1	1	1	0	14	5	1	2.0	1.7	53.8
OSPR	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
BAEA	0	0	0	0	0	0	0	4	5	1	1	1	0	12	5	1	2.4	1.9	38.5
MERL	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#SHO	0	0	0	1	15	0	2	3	12	0	200	76	1000	1309	1000	1	163.6	344.8	61.5
BBPL	0	0	0	0	8	0	0	0	0	0	0	0	0	8	8	8	8.0	0.0	7.7
KILL	0	0	0	0	2	0	1	3	0	0	0	0	0	6	3	1	2.0	1.0	23.1
GRYE	0	0	0	1	1	0	1	0	1	0	0	0	0	4	1	1	1.0	0.0	30.8
LEYE	0	0	0	0	4	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
BLTU	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3	3	3.0	0.0	7.7
DUNL	0	0	0	0	0	0	0	0	11	0	200	0	1000	1211	1000	11	403.7	525.0	23.1
SHOR	0	0	0	0	0	0	0	0	0	0	0	73	0	73	73	73	73.0	0.0	7.7
#GUL	114	36	91	62	46	28	198	33	40	40	181	139	200	1208	200	28	92.9	66.2	100.0
BOGU	24	10	10	21	0	4	10	0	0	0	0	0	0	79	24	4	13.2	7.7	46.2
MEGU	30	20	1	16	43	18	37	10	3	8	2	18	0	206	43	1	17.2	13.7	92.3
HEGU	0	0	0	6	0	0	0	0	0	0	0	0	0	6	6	6	6.0	0.0	7.7
THGU	0	0	0	0	0	0	0	0	0	0	50	0	0	50	50	50	50.0	0.0	7.7
GWGU	60	6	80	19	3	6	151	23	37	32	129	121	200	867	200	3	66.7	64.3	100.0
BTPI	0	0	0	4	0	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
#WOO	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3	3	3.0	0.0	7.7
NOFL	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3	3	3.0	0.0	7.7

Date	05Sep	12Sep	19Sep	26Sep	03Oct	10Oct	17Oct	24Oct	31Oct	07Nov	14Nov	21Nov	28Nov	Total	Max	Min	Mean	SD	%Freq
#PAS	103	0	22	307	0	63	87	14	28	3	4	97	0	728	307	3	72.8	90.9	76.9
STJA	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
NOCR	0	0	22	0	0	5	12	12	28	3	4	17	0	103	28	3	12.9	9.0	61.5
CBCH	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
WIWR	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	7.7
AMRO	0	0	0	3	0	1	0	0	0	0	0	0	0	4	3	1	2.0	1.4	15.4
EUST	103	0	0	304	0	30	75	0	0	0	0	75	0	587	304	30	117.4	107.5	38.5
RSTO	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
SOSP	0	0	0	0	0	2	0	2	0	0	0	3	0	7	3	2	2.3	0.6	23.1
GCSP	0	0	0	0	0	11	0	0	0	0	0	0	0	11	11	11	11.0	0.0	7.7
DEJU	0	0	0	0	0	1	0	0	0	0	0	1	0	2	1	1	1.0	0.0	15.4
HOFI	0	0	0	0	0	9	0	0	0	0	0	0	0	9	9	9	9.0	0.0	7.7
#TOT	270	43	236	504	84	97	407	244	304	120	1028	750	1481	5568	1481	43	428.3	424.3	100.0

Bird use of intertidal habitat for Winter 87

Date	05Dec	12Dec	19Dec	26Dec	Total	Max	Min	Mean	SD	%Freq
#LOO	0	0	1	1	2	1	1	1.0	0.0	50.0
COLO	0	0	1	1	2	1	1	1.0	0.0	50.0
#GRE	1	0	2	0	3	2	1	1.5	0.7	50.0
HOGR	0	0	2	0	2	2	2	2.0	0.0	25.0
WEGR	1	0	0	0	1	1	1	1.0	0.0	25.0
#HER	0	1	0	1	2	1	1	1.0	0.0	50.0
GBHE	0	1	0	1	2	1	1	1.0	0.0	50.0
#SWA	0	7	0	0	7	7	7	7.0	0.0	25.0
TRUS	0	7	0	0	7	7	7	7.0	0.0	25.0
#DAB	170	0	259	141	570	259	141	190.0	61.5	75.0
MALL	0	0	43	9	52	43	9	26.0	24.0	50.0
NOPI	170	0	99	59	328	170	59	109.3	56.2	75.0
AMWI	0	0	117	73	190	117	73	95.0	31.1	50.0
#DIV	104	127	214	176	621	214	104	155.3	49.4	100.0
SCAU	0	0	2	0	2	2	2	2.0	0.0	25.0
GRSC	0	7	0	0	7	7	7	7.0	0.0	25.0
HADU	0	4	1	0	5	4	1	2.5	2.1	50.0
OLDS	0	1	0	0	1	1	1	1.0	0.0	25.0
SCOT	100	0	0	0	100	100	100	100.0	0.0	25.0
BLSC	0	1	7	97	105	97	1	35.0	53.8	75.0
SUSC	0	28	11	12	51	28	11	17.0	9.5	75.0
WWSC	0	35	157	37	229	157	35	76.3	69.9	75.0
COGO	1	33	25	9	68	33	1	17.0	14.6	100.0
BAGO	0	2	1	13	16	13	1	5.3	6.7	75.0
BUFF	3	16	9	8	36	16	3	9.0	5.4	100.0
HOME	0	0	1	0	1	1	1	1.0	0.0	25.0
#RAP	0	0	0	1	1	1	1	1.0	0.0	25.0
BAEA	0	0	0	1	1	1	1	1.0	0.0	25.0
#SHO	14	0	16	125	155	125	14	51.7	63.5	75.0
BBPL	14	0	0	28	42	28	14	21.0	9.9	50.0
KILL	0	0	16	0	16	16	16	16.0	0.0	25.0
BLTU	0	0	0	12	12	12	12	12.0	0.0	25.0
DUNL	0	0	0	85	85	85	85	85.0	0.0	25.0
#GUL	143	28	158	75	404	158	28	101.0	60.6	100.0
MEGU	70	1	3	0	74	70	1	24.7	39.3	75.0
HEGU	0	0	3	4	7	4	3	3.5	0.7	50.0
THGU	5	0	0	0	5	5	5	5.0	0.0	25.0
GWGU	68	27	152	71	318	152	27	79.5	52.3	100.0
BEKI	0	1	0	0	1	1	1	1.0	0.0	25.0
#WOO	0	0	1	0	1	1	1	1.0	0.0	25.0
NOFL	0	0	1	0	1	1	1	1.0	0.0	25.0
#PAS	19	6	77	2	104	77	2	26.0	34.8	100.0
NOCR	16	3	3	2	24	16	2	6.0	6.7	100.0
EUST	0	0	36	0	36	36	36	36.0	0.0	25.0
RSTO	2	0	2	0	4	2	2	2.0	0.0	50.0
SOSP	1	2	0	0	3	2	1	1.5	0.7	50.0
GCSP	0	1	0	0	1	1	1	1.0	0.0	25.0
BRBL	0	0	36	0	36	36	36	36.0	0.0	25.0
#TOT	451	170	728	522	1871	728	170	467.8	230.7	100.0

Bird use of Salt Marsh habitat for Winter 86

Date	03Jan	10Jan	17Jan	24Jan	31Jan	07Feb	14Feb	21Feb	28Feb	Total	Max	Min	Mean	SD	%Freq
#LOO	0	0	0	2	0	0	0	0	0	2	2	2	2.0	0.0	11.1
COLO	0	0	0	2	0	0	0	0	0	2	2	2	2.0	0.0	11.1
#DIV	0	0	0	45	0	0	3	0	0	48	45	3	24.0	29.7	22.2
SUSC	0	0	0	28	0	0	0	0	0	28	28	28	28.0	0.0	11.1
COGO	0	0	0	9	0	0	0	0	0	9	9	9	9.0	0.0	11.1
BAGO	0	0	0	8	0	0	0	0	0	8	8	8	8.0	0.0	11.1
BUFF	0	0	0	0	0	0	3	0	0	3	3	3	3.0	0.0	11.1
#RAP	0	0	1	1	0	0	0	0	0	2	1	1	1.0	0.0	22.2
BAEA	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	11.1
NOHA	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	11.1
BEKI	0	0	0	0	0	0	2	0	0	2	2	2	2.0	0.0	11.1
#PAS	1	1	0	0	19	0	11	3	1	36	19	1	6.0	7.5	66.7
RSTO	0	0	0	0	1	0	1	0	1	3	1	1	1.0	0.0	33.3
SOSP	1	1	0	0	2	0	0	3	0	7	3	1	1.8	1.0	44.4
DEJU	0	0	0	0	16	0	10	0	0	26	16	10	13.0	4.2	22.2
#TOT	1	1	1	48	19	0	16	3	1	90	48	1	11.3	16.6	88.9

Bird use of Salt Marsh habitat for Spring 87

Date	07Mar	15Mar	21Mar	28Mar	04Apr	11Apr	18Apr	25Apr	02May	09May	16May	23May	Total	Max	Min	Mean	SD	%Freq
#DAB	0	0	0	0	0	0	3	0	0	0	0	0	3	3	3	3.0	0.0	8.3
MALL	0	0	0	0	0	0	3	0	0	0	0	0	3	3	3	3.0	0.0	8.3
#DIV	0	0	0	4	0	2	0	0	0	0	0	0	6	4	2	3.0	1.4	16.7
COGO	0	0	0	4	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	8.3
COME	0	0	0	0	0	2	0	0	0	0	0	0	2	2	2	2.0	0.0	8.3
#RAP	0	0	0	0	0	0	2	0	0	0	0	0	2	2	2	2.0	0.0	8.3
OSPR	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	8.3
BAEA	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	8.3
#SHO	0	0	0	0	0	0	0	0	0	2	2	0	4	2	2	2.0	0.0	16.7
KILL	0	0	0	0	0	0	0	0	0	2	2	0	4	2	2	2.0	0.0	16.7
#GUL	0	0	0	15	0	0	0	0	0	0	0	2	17	15	2	8.5	9.2	16.7
MEGU	0	0	0	15	0	0	0	0	0	0	0	0	15	15	15	15.0	0.0	8.3
GWGU	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	0.0	8.3
#PAS	2	3	0	0	2	20	7	0	1	18	10	37	100	37	1	11.1	12.0	75.0
TRSW	0	0	0	0	0	6	0	0	0	0	0	0	6	6	6	6.0	0.0	8.3
VGSW	0	0	0	0	2	1	0	0	0	2	0	0	5	2	1	1.7	0.6	25.0
NOCR	0	0	0	0	0	2	2	0	0	0	2	4	10	4	2	2.5	1.0	33.3
CBCH	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	8.3
BEWR	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	8.3
AMRO	0	0	0	0	0	4	0	0	0	0	0	0	4	4	4	4.0	0.0	8.3
VATH	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	8.3
EUST	0	2	0	0	0	4	0	0	0	12	7	30	55	30	2	11.0	11.3	41.7
BTGW	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	8.3
COYE	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	8.3
CHSP	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	8.3
SAVS	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	8.3
SOSP	2	0	0	0	0	2	0	0	0	0	0	0	4	2	2	2.0	0.0	16.7
GCSP	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	8.3
WCSP	0	0	0	0	0	0	1	0	0	1	0	0	2	1	1	1.0	0.0	16.7
DEJU	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	8.3
HOFI	0	0	0	0	0	0	1	0	0	0	0	2	3	2	1	1.5	0.7	16.7
AMGO	0	0	0	0	0	0	0	0	0	2	0	0	2	2	2	2.0	0.0	8.3
#TOT	2	3	0	19	2	22	12	0	1	20	12	39	132	39	1	13.2	12.2	83.3

Bird use of Salt Marsh habitat for Summer 87

Date	06Jun	13Jun	21Jun	27Jun	04Jul	11Jul	18Jul	25Jul	01Aug	08Aug	15Aug	22Aug	29Aug	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
GBHE	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#RAP	1	0	1	0	1	1	0	0	0	0	0	0	0	4	1	1	1.0	0.0	30.8
BAEA	1	0	1	0	0	1	0	0	0	0	0	0	0	3	1	1	1.0	0.0	23.1
MERL	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#SHO	4	0	1	0	0	0	0	0	0	0	2	0	0	7	4	1	2.3	1.5	23.1
KILL	4	0	1	0	0	0	0	0	0	0	2	0	0	7	4	1	2.3	1.5	23.1
#GUL	0	0	0	5	0	0	0	0	0	0	9	0	0	14	9	5	7.0	2.8	15.4
BOGU	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	7.7
MEGU	0	0	0	5	0	0	0	0	0	0	0	0	0	5	5	5	5.0	0.0	7.7
GWGU	0	0	0	0	0	0	0	0	0	0	8	0	0	8	8	8	8.0	0.0	7.7
BEKI	0	0	0	0	0	0	0	1	1	0	0	0	0	2	1	1	1.0	0.0	15.4
#PAS	2	2	21	3	4	10	81	7	5	2	0	0	26	163	81	2	14.8	23.4	84.6
NOCR	2	0	7	0	0	0	0	3	5	0	0	0	0	17	7	2	4.3	2.2	30.8
CBCH	0	0	8	0	0	0	6	0	0	0	0	0	0	14	8	6	7.0	1.4	15.4
BUSH	0	0	0	0	0	0	8	0	0	0	0	0	0	8	8	8	8.0	0.0	7.7
BEWR	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	7.7
AMRO	0	1	0	0	0	0	5	2	0	0	0	0	0	8	5	1	2.7	2.1	23.1
EUST	0	0	0	0	0	3	60	0	0	0	0	0	20	83	60	3	27.7	29.3	23.1
COYE	0	0	1	0	0	1	0	0	0	2	0	0	1	5	2	1	1.3	0.5	30.8
RSTO	0	0	0	0	0	1	0	1	0	0	0	0	0	2	1	1	1.0	0.0	15.4
SAVS	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3.0	0.0	7.7
SOSP	0	0	0	0	2	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
WCSP	0	0	0	2	2	1	0	0	0	0	0	0	0	5	2	1	1.7	0.6	23.1
RWBL	0	0	5	0	0	4	2	0	0	0	0	0	0	11	5	2	3.7	1.5	23.1
BRBL	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
HOFI	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
AMGO	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	0.0	7.7
#TOT	7	2	23	9	5	11	81	8	6	2	11	0	26	191	81	2	15.9	21.8	92.3

Bird use of Salt Marsh habitat for Autumn 87

Date	05Sep	12Sep	19Sep	26Sep	030ct	100ct	170ct	240ct	310ct	07Nov	14Nov	21Nov	28Nov	Total	Max	Min	Mean	SD	%Freq
#DAB	0	0	0	0	0	0	0	0	0	5	0	0	0	5	5	5	5.0	0.0	7.7
MALL	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	7.7
NOPI	0	0	0	0	0	0	0	0	0	4	0	0	0	4	4	4	4.0	0.0	7.7
#DIV	0	0	0	0	0	0	0	0	0	0	30	0	0	30	30	30	30.0	0.0	7.7
SCAU	0	0	0	0	0	0	0	0	0	0	4	0	0	4	4	4	4.0	0.0	7.7
COGO	0	0	0	0	0	0	0	0	0	0	16	0	0	16	16	16	16.0	0.0	7.7
BAGO	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	2	2.0	0.0	7.7
COME	0	0	0	0	0	0	0	0	0	0	8	0	0	8	8	8	8.0	0.0	7.7
#SHO	0	0	0	0	3	0	0	0	0	0	0	0	0	3	3	3	3.0	0.0	7.7
KILL	0	0	0	0	3	0	0	0	0	0	0	0	0	3	3	3	3.0	0.0	7.7
#GUL	0	0	0	0	0	0	0	0	0	1	0	0	1	2	1	1	1.0	0.0	15.4
BOGU	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	7.7
GWGU	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
#PAS	8	2	5	26	8	0	17	4	23	33	0	30	19	175	33	2	15.9	11.1	84.6
NOCR	2	0	0	5	0	0	0	0	0	19	0	0	3	29	19	2	7.3	7.9	30.8
CBCH	6	0	0	4	0	0	0	0	0	0	0	0	0	10	6	4	5.0	1.4	15.4
RCKI	0	0	0	0	0	0	0	0	3	1	0	0	0	4	3	1	2.0	1.4	15.4
AMRO	0	0	0	0	0	0	0	0	3	0	0	0	0	3	3	3	3.0	0.0	7.7
EUST	0	0	0	0	0	0	0	0	0	0	0	30	0	30	30	30	30.0	0.0	7.7
RSTO	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	7.7
SAVS	0	2	4	15	8	0	2	0	0	0	0	0	0	31	15	2	6.2	5.5	38.5
SOSP	0	0	1	2	0	0	14	4	0	0	0	0	0	21	14	1	5.3	6.0	30.8
GCSP	0	0	0	0	0	0	0	0	3	0	0	0	0	3	3	3	3.0	0.0	7.7
DEJU	0	0	0	0	0	0	0	0	12	12	0	0	0	24	12	12	12.0	0.0	15.4
WEME	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
BRBL	0	0	0	0	0	0	0	0	0	0	0	0	15	15	15	15	15.0	0.0	7.7
HOFI	0	0	0	0	0	0	1	0	2	0	0	0	0	3	2	1	1.5	0.7	15.4
#TOT	8	2	5	26	11	0	17	4	23	39	30	30	20	215	39	2	17.9	12.0	92.3

Bird use of Salt Marsh habitat for Winter 87

Date	05Dec	12Dec	19Dec	26Dec	Total	Max	Min	Mean	SD	%Freq
#DAB	0	32	0	0	32	32	32	32.0	0.0	25.0
MALL	0	16	0	0	16	16	16	16.0	0.0	25.0
NOPI	0	16	0	0	16	16	16	16.0	0.0	25.0
#DIV	0	9	0	0	9	9	9	9.0	0.0	25.0
COGO	0	1	0	0	1	1	1	1.0	0.0	25.0
BUFF	0	8	0	0	8	8	8	8.0	0.0	25.0
#RAP	0	1	0	0	1	1	1	1.0	0.0	25.0
BAEA	0	1	0	0	1	1	1	1.0	0.0	25.0
#SHO	0	36	78	0	114	78	36	57.0	29.7	50.0
BBPL	0	8	63	0	71	63	8	35.5	38.9	50.0
BLTU	0	0	9	0	9	9	9	9.0	0.0	25.0
DUNL	0	28	6	0	34	28	6	17.0	15.6	50.0
#GUL	0	6	8	2	16	8	2	5.3	3.1	75.0
MEGU	0	1	0	0	1	1	1	1.0	0.0	25.0
THGU	0	1	0	0	1	1	1	1.0	0.0	25.0
GWGU	0	4	8	2	14	8	2	4.7	3.1	75.0
BEKI	0	1	0	0	1	1	1	1.0	0.0	25.0
#PAS	2	20	20	75	117	75	2	29.3	31.7	100.0
GCKI	0	6	8	0	14	8	6	7.0	1.4	50.0
EUST	0	0	0	75	75	75	75	75.0	0.0	25.0
RSTO	0	0	1	0	1	1	1	1.0	0.0	25.0
SOSP	2	4	8	0	14	8	2	4.7	3.1	75.0
GCSP	0	0	3	0	3	3	3	3.0	0.0	25.0
DEJU	0	10	0	0	10	10	10	10.0	0.0	25.0
#TOT	2	105	106	77	290	106	2	72.5	48.9	100.0

Bird use of High Salt Marsh habitat for Winter 86

Date	03Jan	10Jan	17Jan	24Jan	31Jan	07Feb	14Feb	21Feb	28Feb	Total	Max	Min	Mean	SD	%Freq
#LOO	2	0	2	1	0	0	0	0	0	5	2	1	1.7	0.6	33.3
RTLO	2	0	0	1	0	0	0	0	0	3	2	1	1.5	0.7	22.2
COLO	0	0	2	0	0	0	0	0	0	2	2	2	2.0	0.0	11.1
#GRE	0	1	0	0	2	0	0	0	0	3	2	1	1.5	0.7	22.2
WEGR	0	1	0	0	2	0	0	0	0	3	2	1	1.5	0.7	22.2
#HER	0	0	0	0	0	1	1	0	1	3	1	1	1.0	0.0	33.3
GBHE	0	0	0	0	0	1	1	0	1	3	1	1	1.0	0.0	33.3
#DAB	1	0	38	0	25	11	0	41	0	116	41	1	23.2	17.2	55.6
MALL	1	0	14	0	5	11	0	19	0	50	19	1	10.0	7.1	55.6
NOPI	0	0	24	0	20	0	0	0	0	44	24	20	22.0	2.8	22.2
AMWI	0	0	0	0	0	0	0	22	0	22	22	22	22.0	0.0	11.1
#DIV	22	0	12	59	124	3	0	54	0	274	124	3	45.7	44.5	66.7
SCAU	4	0	0	4	16	0	0	1	0	25	16	1	6.3	6.7	44.4
HADU	0	0	0	0	2	0	0	0	0	2	2	2	2.0	0.0	11.1
BLSC	0	0	0	0	15	0	0	0	0	15	15	15	15.0	0.0	11.1
SUSC	0	0	0	0	0	0	0	4	0	4	4	4	4.0	0.0	11.1
WWSC	12	0	0	43	78	0	0	0	0	133	78	12	44.3	33.0	33.3
COGO	0	0	8	10	0	0	0	0	0	18	10	8	9.0	1.4	22.2
BAGO	4	0	2	0	10	0	0	44	0	60	44	2	15.0	19.6	44.4
BUFF	2	0	1	2	3	3	0	5	0	16	5	1	2.7	1.4	66.7
COME	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	11.1
#RAP	0	0	0	10	0	0	0	0	0	10	10	10	10.0	0.0	11.1
BAEA	0	0	0	10	0	0	0	0	0	10	10	10	10.0	0.0	11.1
#SHO	3	0	7	0	0	1	0	0	0	11	7	1	3.7	3.1	33.3
KILL	0	0	7	0	0	1	0	0	0	8	7	1	4.0	4.2	22.2
BLTU	3	0	0	0	0	0	0	0	0	3	3	3	3.0	0.0	11.1
#GUL	11	61	27	47	188	0	0	80	0	414	188	11	69.0	63.2	66.7
MEGU	0	53	0	2	0	0	0	8	0	63	53	2	21.0	27.9	33.3
GWGU	11	8	27	45	188	0	0	72	0	351	188	8	58.5	67.7	66.7
BEKI	0	0	2	0	2	0	0	1	0	5	2	1	1.7	0.6	33.3
#WOO	0	1	0	0	2	3	0	0	0	6	3	1	2.0	1.0	33.3
NOFL	0	1	0	0	2	3	0	0	0	6	3	1	2.0	1.0	33.3
#PAS	6	0	52	92	109	50	7	9	0	325	109	6	46.4	42.1	77.8
NOCR	3	0	0	9	5	0	3	8	0	28	9	3	5.6	2.8	55.6
CORA	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	11.1
EUST	0	0	0	0	90	50	0	0	0	140	90	50	70.0	28.3	22.2
SOSP	3	0	2	3	0	0	2	0	0	10	3	2	2.5	0.6	44.4
RWBL	0	0	0	20	2	0	0	0	0	22	20	2	11.0	12.7	22.2
BRBL	0	0	50	60	12	0	0	0	0	122	60	12	40.7	25.3	33.3
HOFI	0	0	0	0	0	0	2	0	0	2	2	2	2.0	0.0	11.1
#TOT	45	63	140	209	452	69	8	185	1	1172	452	1	130.2	141.4	100.0

Bird use of High Salt Marsh habitat for Spring 87

Date	07Mar	15Mar	21Mar	28Mar	04Apr	11Apr	18Apr	25Apr	02May	09May	16May	23May	31May	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	0	2	0	1	2	0	0	1	0	0	0	6	2	1	1.5	0.6	30.8
GBHE	0	0	0	2	0	1	2	0	0	1	0	0	0	6	2	1	1.5	0.6	30.8
#DAB	0	0	4	6	5	12	78	4	0	0	3	0	0	112	78	3	16.0	27.5	53.8
MALL	0	0	4	6	5	0	0	4	0	0	0	0	0	19	6	4	4.8	1.0	30.8
EUWI	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
AMWI	0	0	0	0	0	12	76	0	0	0	3	0	0	91	76	3	30.3	39.8	23.1
#DIV	1	9	3	8	0	13	0	0	0	0	3	0	35	72	35	1	10.3	11.7	53.8
SCAU	0	9	0	0	0	0	0	0	0	0	0	0	0	9	9	9	9.0	0.0	7.7
SCOT	0	0	0	0	0	0	0	0	0	0	0	0	35	35	35	35	35.0	0.0	7.7
WWSC	0	0	0	0	0	7	0	0	0	0	0	0	0	7	7	7	7.0	0.0	7.7
COGO	0	0	0	4	0	4	0	0	0	0	3	0	0	11	4	3	3.7	0.6	23.1
BUFF	1	0	3	4	0	2	0	0	0	0	0	0	0	10	4	1	2.5	1.3	30.8
#RAP	0	0	1	0	1	0	0	0	1	0	0	1	0	4	1	1	1.0	0.0	30.8
BAEA	0	0	0	0	1	0	0	0	1	0	0	1	0	3	1	1	1.0	0.0	23.1
NOHA	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#SHO	2	0	0	1	3	0	0	0	133	2	3	8	4	156	133	1	19.5	45.9	61.5
KILL	2	0	0	1	0	0	0	0	1	1	0	3	4	12	4	1	2.0	1.3	46.2
GRYE	0	0	0	0	3	0	0	0	1	0	0	0	0	4	3	1	2.0	1.4	15.4
WHIM	0	0	0	0	0	0	0	0	0	1	0	5	0	6	5	1	3.0	2.8	15.4
WESA	0	0	0	0	0	0	0	0	125	0	2	0	0	127	125	2	63.5	87.0	15.4
DUNL	0	0	0	0	0	0	0	0	6	0	1	0	0	7	6	1	3.5	3.5	15.4
#GUL	0	10	0	102	0	62	0	2	10	0	90	9	27	312	102	2	39.0	40.0	61.5
BOGU	0	0	0	0	0	0	0	0	3	0	0	0	0	3	3	3	3.0	0.0	7.7
MEGU	0	10	0	4	0	0	0	0	0	0	15	9	9	47	15	4	9.4	3.9	38.5
HEGU	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
THGU	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
GWGU	0	0	0	97	0	60	0	2	7	0	75	0	18	259	97	2	43.2	39.6	46.2
RUHU	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
BEKI	0	1	0	0	0	1	0	0	0	0	0	0	0	2	1	1	1.0	0.0	15.4
#PAS	7	1	6	28	0	11	1	0	19	1	24	10	39	147	39	1	13.4	12.6	84.6
TRSW	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
VGSW	0	0	0	0	0	0	0	0	2	0	7	0	6	15	7	2	5.0	2.6	23.1
BASW	0	0	0	0	0	0	0	0	10	0	0	0	4	14	10	4	7.0	4.2	15.4
NOCR	5	0	0	5	0	10	0	0	2	0	13	8	2	45	13	2	6.4	4.1	53.8
CBCH	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
BEWR	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
AMRO	0	0	1	0	0	0	0	0	2	0	2	0	1	6	2	1	1.5	0.6	30.8
EUST	0	0	0	16	0	0	0	0	1	0	0	0	26	43	26	1	14.3	12.6	23.1
YEWA	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	2	2.0	0.0	7.7
COYE	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	7.7
SAVS	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	7.7
SOSP	1	1	0	1	0	0	1	0	0	0	0	0	0	4	1	1	1.0	0.0	30.8
RWBL	0	0	0	4	0	0	0	0	0	1	1	0	0	6	4	1	2.0	1.7	23.1
PUFI	0	0	5	0	0	0	0	0	0	0	0	0	0	5	5	5	5.0	0.0	7.7
HOFI	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	7.7
#TOT	10	21	14	147	9	100	82	6	163	4	123	28	105	812	163	4	62.5	59.2	100.0

Bird use of High Salt Marsh habitat for Summer 87

Date	06Jun	13Jun	21Jun	27Jun	04Jul	11Jul	18Jul	25Jul	01Aug	08Aug	15Aug	22Aug	29Aug	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	1	0	0	0	2	0	0	0	0	3	0	6	3	1	2.0	1.0	23.1
GBHE	0	0	1	0	0	0	2	0	0	0	0	3	0	6	3	1	2.0	1.0	23.1
#DIV	0	0	0	0	0	0	0	1	0	0	1	0	0	2	1	1	1.0	0.0	15.4
COME	0	0	0	0	0	0	0	1	0	0	1	0	0	2	1	1	1.0	0.0	15.4
#RAP	1	0	1	0	0	0	1	1	1	0	1	0	0	6	1	1	1.0	0.0	46.2
OSPR	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
BAEA	1	0	1	0	0	0	0	0	1	0	0	0	0	3	1	1	1.0	0.0	23.1
NOHA	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	7.7
MERL	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	7.7
#SHO	1	0	0	5	6	14	2	0	3	0	63	2	0	96	63	1	12.0	21.0	61.5
BBPL	0	0	0	0	0	0	0	0	0	0	56	0	0	56	56	56	56.0	0.0	7.7
KILL	1	0	0	5	6	4	2	0	3	0	7	0	0	28	7	1	4.0	2.2	53.8
GRYE	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
LEYE	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	2	2.0	0.0	7.7
BASA	0	0	0	0	0	6	0	0	0	0	0	0	0	6	6	6	6.0	0.0	7.7
SBDO	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
#GUL	0	22	11	3	0	0	9	0	16	0	20	15	10	106	22	3	13.3	6.2	61.5
BOGU	0	0	5	3	0	0	0	0	8	0	11	15	0	42	15	3	8.4	4.8	38.5
MEGU	0	0	0	0	0	0	9	0	0	0	4	0	0	13	9	4	6.5	3.5	15.4
GWGU	0	22	6	0	0	0	0	0	8	0	5	0	10	51	22	5	10.2	6.9	38.5
CATE	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
VASW	0	0	2	0	0	0	0	0	0	0	0	0	2	4	2	2	2.0	0.0	15.4
RUHU	0	3	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3.0	0.0	7.7
BEKI	0	0	0	0	0	1	1	1	0	0	0	0	0	3	1	1	1.0	0.0	23.1
#WOO	1	0	0	0	0	0	2	0	0	0	0	0	0	3	2	1	1.5	0.7	15.4
NOFL	1	0	0	0	0	0	2	0	0	0	0	0	0	3	2	1	1.5	0.7	15.4
#PAS	3	26	53	1	16	10	40	6	16	9	29	0	12	221	53	1	18.4	15.8	92.3
WEFL	0	0	0	0	2	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
TRSW	0	2	12	0	0	0	0	0	0	0	0	0	0	14	12	2	7.0	7.1	15.4
VGSW	0	0	10	0	0	0	1	0	0	0	0	0	0	11	10	1	5.5	6.4	15.4
BASW	0	0	10	0	0	0	5	0	2	6	1	0	3	27	10	1	4.5	3.3	46.2
NOCR	0	0	5	0	0	4	14	0	0	0	0	0	0	23	14	4	7.7	5.5	23.1
CORA	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
CBCH	0	3	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3.0	0.0	7.7
BEWR	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
GCKI	0	0	6	0	0	0	0	0	0	0	0	0	0	6	6	6	6.0	0.0	7.7
SWTH	0	0	0	0	2	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
AMRO	0	0	0	0	0	0	8	0	0	0	0	0	0	8	8	8	8.0	0.0	7.7
EUST	0	12	4	1	12	1	0	0	0	0	28	0	7	65	28	1	9.3	9.4	53.8
OCWA	0	1	1	0	0	0	0	0	0	0	0	0	0	2	1	1	1.0	0.0	15.4
TOWA	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
COYE	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	2	2.0	0.0	7.7
RSTO	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	7.7
SOSP	0	2	1	0	0	0	0	0	0	1	0	0	1	5	2	1	1.3	0.5	30.8
WCSP	0	1	1	0	0	0	0	0	0	0	0	0	0	2	1	1	1.0	0.0	15.4
RWBL	0	0	0	0	0	0	12	0	0	0	0	0	0	12	12	12	12.0	0.0	7.7
BRBL	0	2	0	0	0	0	0	0	2	0	0	0	0	4	2	2	2.0	0.0	15.4
PUFI	0	0	0	0	0	0	0	5	0	0	0	0	0	5	5	5	5.0	0.0	7.7
HOFI	0	1	3	0	0	5	0	0	12	0	0	0	1	22	12	1	4.4	4.6	38.5
AMGO	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7

Date	06Jun	13Jun	21Jun	27Jun	04Jul	11Jul	18Jul	25Jul	01Aug	08Aug	15Aug	22Aug	29Aug	Total	Max	Min	Mean	SD	%Freq
#TOT	6	51	68	10	22	25	57	9	36	9	114	20	24	451	114	6	34.7	31.0	100.0

Bird use of High Salt Marsh habitat for Autumn 87

Date	05Sep	12Sep	19Sep	26Sep	030ct	100ct	170ct	240ct	310ct	07Nov	14Nov	21Nov	28Nov	Total	Max	Min	Mean	SD	%Freq
#LOO	0	0	0	0	0	0	0	0	2	0	2	0	1	5	2	1	1.7	0.6	23.1
COLO	0	0	0	0	0	0	0	0	2	0	2	0	1	5	2	1	1.7	0.6	23.1
#HER	0	2	0	1	1	0	0	0	1	0	0	1	1	7	2	1	1.2	0.4	46.2
GBHE	0	2	0	1	1	0	0	0	1	0	0	1	1	7	2	1	1.2	0.4	46.2
#SWA	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	7.7
TRUS	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	7.7
#DAB	0	10	0	0	5	0	1	0	43	12	0	58	190	319	190	1	45.6	67.1	53.8
GWTE	0	0	0	0	0	0	1	0	0	0	0	18	0	19	18	1	9.5	12.0	15.4
MALL	0	4	0	0	0	0	0	0	21	12	0	17	1	55	21	1	11.0	8.5	38.5
NOPI	0	0	0	0	5	0	0	0	16	0	0	13	189	223	189	5	55.8	89.0	30.8
NOSL	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
AMWI	0	5	0	0	0	0	0	0	6	0	0	10	0	21	10	5	7.0	2.6	23.1
#DIV	0	0	0	19	0	0	0	0	0	14	32	1	14	80	32	1	16.0	11.2	38.5
SCAU	0	0	0	0	0	0	0	0	0	0	6	0	7	13	7	6	6.5	0.7	15.4
BLSC	0	0	0	0	0	0	0	0	0	0	12	0	0	12	12	12	12.0	0.0	7.7
SUSC	0	0	0	0	0	0	0	0	0	0	10	0	0	10	10	10	10.0	0.0	7.7
COGO	0	0	0	0	0	0	0	0	0	10	0	0	1	11	10	1	5.5	6.4	15.4
BAGO	0	0	0	0	0	0	0	0	0	0	0	0	6	6	6	6	6.0	0.0	7.7
BUFF	0	0	0	0	0	0	0	0	0	4	4	1	0	9	4	1	3.0	1.7	23.1
COME	0	0	0	19	0	0	0	0	0	0	0	0	0	19	19	19	19.0	0.0	7.7
#RAP	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	7.7
BAEA	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	7.7
#RAI	0	0	0	0	4	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
SACR	0	0	0	0	4	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
#SHO	0	15	0	1	0	0	3	0	85	1	0	20	2	127	85	1	18.1	30.4	53.8
KILL	0	15	0	0	0	0	3	0	15	1	0	0	2	36	15	1	7.2	7.2	38.5
DUNL	0	0	0	0	0	0	0	0	70	0	0	0	0	70	70	70	70.0	0.0	7.7
SBDO	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
SHOR	0	0	0	0	0	0	0	0	0	0	0	20	0	20	20	20	20.0	0.0	7.7
#GUL	0	4	0	8	2	0	0	20	31	24	50	258	0	397	258	2	49.6	85.7	61.5
BOGU	0	2	0	0	0	0	0	2	0	0	0	0	0	4	2	2	2.0	0.0	15.4
MEGU	0	0	0	8	1	0	0	8	0	7	0	58	0	82	58	1	16.4	23.4	38.5
GWGU	0	2	0	0	1	0	0	10	31	17	50	200	0	311	200	1	44.4	70.8	53.8
BEKI	0	0	0	1	1	0	1	0	0	1	0	0	1	5	1	1	1.0	0.0	38.5
#WOO	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
NOFL	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#PAS	0	17	0	23	18	9	23	28	85	93	0	26	202	524	202	9	52.4	60.0	76.9
STJA	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
NOCR	0	0	0	0	3	0	13	0	9	53	0	26	0	104	53	3	20.8	19.9	38.5
CBCH	0	0	0	0	0	0	0	28	0	0	0	0	0	28	28	28	28.0	0.0	7.7
EUST	0	0	0	0	0	0	0	0	75	40	0	0	200	315	200	40	105.0	84.1	23.1
RSTO	0	0	0	0	0	0	1	0	1	0	0	0	0	2	1	1	1.0	0.0	15.4
SAVS	0	12	0	21	7	0	6	0	0	0	0	0	0	46	21	6	11.5	6.9	30.8
SOSP	0	0	0	2	0	4	0	0	0	0	0	0	0	6	4	2	3.0	1.4	15.4
LISP	0	2	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
GCSP	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
WCSP	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	0.0	7.7
DEJU	0	0	0	0	0	3	0	0	0	0	0	0	0	3	3	3	3.0	0.0	7.7
HOFI	0	3	0	0	7	0	3	0	0	0	0	0	0	13	7	3	4.3	2.3	23.1
#TOT	0	48	0	53	31	10	28	48	247	145	84	366	411	1471	411	10	133.7	143.0	84.6

Bird use of High Salt Marsh habitat for Winter 87

Date	05Dec	12Dec	19Dec	26Dec	Total	Max	Min	Mean	SD	%Freq
#DAB	176	176	75	33	460	176	33	115.0	72.5	100.0
MALL	0	0	19	0	19	19	19	19.0	0.0	25.0
NOPI	172	156	25	33	386	172	25	96.5	78.3	100.0
AMWI	4	20	31	0	55	31	4	18.3	13.6	75.0
#DIV	18	16	5	3	42	18	3	10.5	7.6	100.0
GRSC	18	0	0	0	18	18	18	18.0	0.0	25.0
BLSC	0	0	3	0	3	3	3	3.0	0.0	25.0
COGO	0	10	2	2	14	10	2	4.7	4.6	75.0
BUFF	0	6	0	1	7	6	1	3.5	3.5	50.0
#RAP	1	0	2	1	4	2	1	1.3	0.6	75.0
BAEA	1	0	2	1	4	2	1	1.3	0.6	75.0
#SHO	1	15	81	1	98	81	1	24.5	38.2	100.0
BBPL	0	0	61	0	61	61	61	61.0	0.0	25.0
KILL	1	15	0	1	17	15	1	5.7	8.1	75.0
BLTU	0	0	20	0	20	20	20	20.0	0.0	25.0
#GUL	0	0	220	16	236	220	16	118.0	144.2	50.0
MEGU	0	0	1	0	1	1	1	1.0	0.0	25.0
GWGU	0	0	219	16	235	219	16	117.5	143.5	50.0
BEKI	1	0	1	0	2	1	1	1.0	0.0	50.0
#WOO	4	1	0	0	5	4	1	2.5	2.1	50.0
NOFL	4	1	0	0	5	4	1	2.5	2.1	50.0
#PAS	21	51	27	6	105	51	6	26.3	18.7	100.0
NOCR	0	2	27	2	31	27	2	10.3	14.4	75.0
EUST	0	10	0	0	10	10	10	10.0	0.0	25.0
RSTO	0	1	0	1	2	1	1	1.0	0.0	50.0
FOSP	1	0	0	0	1	1	1	1.0	0.0	25.0
SOSP	0	1	0	2	3	2	1	1.5	0.7	50.0
GCSP	2	0	0	0	2	2	2	2.0	0.0	25.0
DEJU	0	0	0	1	1	1	1	1.0	0.0	25.0
BRBL	0	35	0	0	35	35	35	35.0	0.0	25.0
HOFI	18	2	0	0	20	18	2	10.0	11.3	50.0
#TOT	222	259	411	60	952	411	60	238.0	144.1	100.0

Bird use of Upper Beach habitat for Winter 86

Date	03Jan	10Jan	17Jan	24Jan	31Jan	07Feb	14Feb	21Feb	28Feb	Total	Max	Min	Mean	SD	%Freq
#HER	1	2	0	0	1	2	0	8	0	14	8	1	2.8	2.9	55.6
GBHE	1	2	0	0	1	2	0	8	0	14	8	1	2.8	2.9	55.6
#DAB	0	0	6	0	22	0	9	3	0	40	22	3	10.0	8.4	44.4
MALL	0	0	0	0	15	0	0	3	0	18	15	3	9.0	8.5	22.2
NOPI	0	0	0	0	7	0	0	0	0	7	7	7	7.0	0.0	11.1
AMWI	0	0	6	0	0	0	9	0	0	15	9	6	7.5	2.1	22.2
#DIV	9	7	8	37	2	7	1	4	1	76	37	1	8.4	11.1	100.0
LESC	0	0	0	4	0	0	0	0	0	4	4	4	4.0	0.0	11.1
BLSC	0	0	0	0	0	6	0	0	0	6	6	6	6.0	0.0	11.1
SUSC	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	11.1
WWSC	0	0	0	26	0	0	0	0	0	26	26	26	26.0	0.0	11.1
COGO	4	0	0	0	0	1	1	0	0	6	4	1	2.0	1.7	33.3
BAGO	4	1	5	0	0	0	0	0	0	10	5	1	3.3	2.1	33.3
BUFF	1	6	3	6	2	0	0	4	1	23	6	1	3.3	2.1	77.8
#RAP	3	4	3	5	0	3	1	1	1	21	5	1	2.6	1.5	88.9
BAEA	3	4	3	4	0	2	0	0	0	16	4	2	3.2	0.8	55.6
NOHA	0	0	0	0	0	1	0	1	1	3	1	1	1.0	0.0	33.3
MERL	0	0	0	1	0	0	1	0	0	2	1	1	1.0	0.0	22.2
#SHO	0	0	5	0	0	1	0	0	3	9	5	1	3.0	2.0	33.3
KILL	0	0	5	0	0	1	0	0	3	9	5	1	3.0	2.0	33.3
#GUL	4	0	10	62	27	21	0	50	0	174	62	4	29.0	22.7	66.7
MEGU	4	0	4	0	0	0	0	0	0	8	4	4	4.0	0.0	22.2
GWGU	0	0	6	62	27	21	0	50	0	166	62	6	33.2	22.6	55.6
BEKI	1	3	2	1	1	2	2	0	1	13	3	1	1.6	0.7	88.9
#WOO	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	11.1
NOFL	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	11.1
#PAS	135	40	104	77	122	220	5	141	10	854	220	5	94.9	69.7	100.0
STJA	0	0	1	0	1	0	0	0	0	2	1	1	1.0	0.0	22.2
NOCR	0	0	49	1	12	20	3	6	0	91	49	1	15.2	17.9	66.7
CBCH	0	0	1	0	4	0	0	2	0	7	4	1	2.3	1.5	33.3
RCKI	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	11.1
EUST	5	0	0	0	0	100	0	120	0	225	120	5	75.0	61.4	33.3
RSTO	0	0	1	2	3	0	0	1	0	7	3	1	1.8	1.0	44.4
SOSP	0	2	2	2	0	7	2	4	0	19	7	2	3.2	2.0	66.7
DEJU	0	38	50	60	42	20	0	2	10	222	60	2	31.7	21.5	77.8
RWBL	100	0	0	0	55	36	0	6	0	197	100	6	49.3	39.4	44.4
BRBL	30	0	0	12	0	37	0	0	0	79	37	12	26.3	12.9	33.3
HOFI	0	0	0	0	4	0	0	0	0	4	4	4	4.0	0.0	11.1
#TOT	153	56	139	182	175	256	18	207	16	1202	256	16	133.6	85.2	100.0

Bird use of Upper Beach habitat for Spring 87

Date	07Mar	15Mar	21Mar	28Mar	04Apr	11Apr	18Apr	25Apr	02May	09May	16May	23May	31May	Total	Max	Min	Mean	SD	%Freq
#HER	0	2	1	0	0	0	0	0	0	0	0	0	1	4	2	1	1.3	0.6	23.1
GBHE	0	2	1	0	0	0	0	0	0	0	0	0	1	4	2	1	1.3	0.6	23.1
#GEE	0	5	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5.0	0.0	7.7
CAGO	0	5	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5.0	0.0	7.7
#DAB	0	2	0	0	0	2	0	0	7	0	0	0	0	11	7	2	3.7	2.9	23.1
GWTE	0	0	0	0	0	0	0	0	7	0	0	0	0	7	7	7	7.0	0.0	7.7
MALL	0	2	0	0	0	2	0	0	0	0	0	0	0	4	2	2	2.0	0.0	15.4
#DIV	2	0	1	3	2	2	3	2	1	1	0	0	0	17	3	1	1.9	0.8	69.2
WWSC	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
BUFF	2	0	1	0	0	0	2	0	1	0	0	0	0	6	2	1	1.5	0.6	30.8
COME	0	0	0	3	2	2	0	2	0	1	0	0	0	10	3	1	2.0	0.7	38.5
#RAP	2	2	0	1	5	0	4	0	0	1	0	0	3	18	5	1	2.6	1.5	53.8
HAWK	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
BAEA	2	1	0	0	4	0	4	0	0	1	0	0	3	15	4	1	2.5	1.4	46.2
NOHA	0	1	0	0	1	0	0	0	0	0	0	0	0	2	1	1	1.0	0.0	15.4
#SHO	0	0	0	0	0	0	0	1	5	0	1	1	5	13	5	1	2.6	2.2	38.5
KILL	0	0	0	0	0	0	0	1	5	0	0	0	2	8	5	1	2.7	2.1	23.1
SDSA	0	0	0	0	0	0	0	0	0	0	1	1	3	5	3	1	1.7	1.2	23.1
#GUL	1	0	0	0	6	0	3	0	0	0	0	0	3	13	6	1	3.3	2.1	30.8
GWGU	1	0	0	0	6	0	3	0	0	0	0	0	3	13	6	1	3.3	2.1	30.8
RUHU	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
BEKI	1	0	0	0	0	1	0	0	0	0	2	0	1	5	2	1	1.3	0.5	30.8
#WOO	0	1	0	2	2	0	0	0	1	0	1	1	0	8	2	1	1.3	0.5	46.2
HAWO	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
NOFL	0	1	0	2	1	0	0	0	1	0	1	1	0	7	2	1	1.2	0.4	46.2
#PAS	3	93	42	40	43	23	30	29	14	34	47	92	122	612	122	3	47.1	34.4	100.0
WIFL	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	0.0	7.7
TRSW	0	0	0	0	0	0	2	0	0	3	0	0	0	5	3	2	2.5	0.7	15.4
VGSW	0	0	0	0	6	0	2	3	0	4	0	2	0	17	6	2	3.4	1.7	38.5
CLSW	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	2	2.0	0.0	7.7
BASW	0	0	0	0	0	0	0	0	0	1	2	4	2	9	4	1	2.3	1.3	30.8
STJA	0	2	0	0	0	2	0	0	0	0	0	0	0	4	2	2	2.0	0.0	15.4
NOCR	0	2	0	10	8	0	0	4	0	0	10	1	9	44	10	1	6.3	3.9	53.8
CBCH	0	0	0	0	0	2	4	0	0	0	0	0	1	7	4	1	2.3	1.5	23.1
BEWR	0	1	0	0	1	0	0	0	1	1	0	0	0	4	1	1	1.0	0.0	30.8
RCKI	0	0	0	0	4	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
SWTH	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
AMRO	1	11	0	0	6	0	0	0	1	0	0	0	5	24	11	1	4.8	4.1	38.5
CEWA	0	0	0	0	0	0	0	0	0	0	0	27	0	27	27	27	27.0	0.0	7.7
EUST	0	50	40	0	0	8	0	1	1	2	15	22	36	175	50	1	19.4	18.6	69.2
OCWA	0	0	0	2	0	0	2	0	0	0	3	2	0	9	3	2	2.3	0.5	30.8
YEWA	0	0	0	0	0	0	0	1	0	1	1	2	2	7	2	1	1.4	0.5	38.5
YRWA	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	7.7
BTGW	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	7.7
COYE	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	2	2.0	0.0	7.7
WIWA	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	2	2.0	0.0	7.7
RSTO	0	3	0	0	2	2	0	2	0	1	0	0	1	11	3	1	1.8	0.8	46.2
SAVS	0	0	0	0	0	0	0	5	3	1	0	1	0	10	5	1	2.5	1.9	30.8
SOSP	2	8	0	0	3	1	3	1	1	1	3	1	1	25	8	1	2.3	2.1	84.6
GCSP	0	0	0	4	0	0	0	2	0	0	0	0	0	6	4	2	3.0	1.4	15.4

Date	07Mar	15Mar	21Mar	28Mar	04Apr	11Apr	18Apr	25Apr	02May	09May	16May	23May	31May	Total	Max	Min	Mean	SD	%Freq
WCSP	0	0	0	0	2	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
DEJU	0	3	1	12	4	0	0	0	0	0	0	0	0	20	12	1	5.0	4.8	30.8
RWBL	0	6	1	12	6	2	14	7	3	10	12	24	12	109	24	1	9.1	6.4	92.3
BRBL	0	0	0	0	0	2	0	0	0	1	0	0	46	49	46	1	16.3	25.7	23.1
BHCO	0	0	0	0	0	0	0	0	0	4	0	0	0	4	4	4	4.0	0.0	7.7
NOOR	0	0	0	0	0	0	0	0	0	2	0	0	1	3	2	1	1.5	0.7	15.4
PUFI	0	0	0	0	0	3	0	0	1	0	0	0	1	5	3	1	1.7	1.2	23.1
HOFI	0	7	0	0	1	1	3	3	2	0	0	2	1	20	7	1	2.5	2.0	61.5
AMGO	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
#TOT	9	105	44	46	58	28	40	32	28	36	51	94	136	707	136	9	54.4	35.9	100.0

Bird use of Upper Beach habitat for Summer 87

Date	06Jun	13Jun	21Jun	27Jun	04Jul	11Jul	18Jul	25Jul	01Aug	08Aug	15Aug	22Aug	29Aug	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	0	0	0	0	0	0	1	0	0	2	0	3	2	1	1.5	0.7	15.4
GBHE	0	0	0	0	0	0	0	0	1	0	0	2	0	3	2	1	1.5	0.7	15.4
#DAB	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	7.7
MALL	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	7.7
#DIV	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
COME	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
#RAP	1	0	0	1	0	2	4	0	0	1	1	1	1	12	4	1	1.5	1.1	61.5
OSPR	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
BAEA	1	0	0	0	0	0	0	0	0	0	0	1	0	2	1	1	1.0	0.0	15.4
MERL	0	0	0	0	0	2	4	0	0	1	1	0	1	9	4	1	1.8	1.3	38.5
#SHO	0	0	2	1	5	5	0	0	0	7	23	0	25	68	25	1	9.7	10.0	53.8
KILL	0	0	2	1	4	0	0	0	0	6	0	0	0	13	6	1	3.3	2.2	30.8
GRYE	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	0.0	7.7
LEYE	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
SDSA	0	0	0	0	1	0	0	0	0	1	1	0	0	3	1	1	1.0	0.0	23.1
WESA	0	0	0	0	0	3	0	0	0	0	14	0	2	19	14	2	6.3	6.7	23.1
LESA	0	0	0	0	0	0	0	0	0	0	8	0	20	28	20	8	14.0	8.5	15.4
BASA	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
#GUL	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	2	2.0	0.0	7.7
GWGU	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	2	2.0	0.0	7.7
BTPI	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
VASW	0	0	2	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
RUHU	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
BEKI	0	0	1	1	3	0	2	0	1	2	5	0	0	15	5	1	2.1	1.5	53.8
#WOO	0	0	1	0	1	1	0	0	1	1	0	3	1	9	3	1	1.3	0.8	53.8
DOWO	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	2	2.0	0.0	7.7
NOFL	0	0	1	0	1	1	0	0	1	1	0	1	1	7	1	1	1.0	0.0	53.8
#PAS	72	0	51	67	94	56	29	36	40	254	77	53	52	881	254	29	73.4	59.7	92.3
WIFL	3	0	1	0	2	0	0	0	4	1	0	0	0	11	4	1	2.2	1.3	38.5
TRSW	0	0	0	0	12	0	0	0	0	0	0	0	0	12	12	12	12.0	0.0	7.7
VGSW	3	0	12	4	6	0	0	8	0	0	0	0	0	33	12	3	6.6	3.6	38.5
NRWS	0	0	0	0	0	0	0	0	0	5	0	0	0	5	5	5	5.0	0.0	7.7
CLSW	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
BASW	2	0	0	5	18	0	7	0	7	10	18	4	3	74	18	2	8.2	6.0	69.2
STJA	0	0	0	0	0	0	0	0	0	0	0	1	1	2	1	1	1.0	0.0	15.4
NOCR	6	0	4	8	0	1	0	0	0	0	0	0	0	19	8	1	4.8	3.0	30.8
CBCH	0	0	0	0	2	0	0	0	8	0	12	3	0	25	12	2	6.3	4.6	30.8
BUSH	0	0	0	0	0	12	0	10	0	0	0	0	0	22	12	10	11.0	1.4	15.4
BEWR	0	0	0	2	0	0	0	0	0	1	0	0	1	4	2	1	1.3	0.6	23.1
GCKI	0	0	0	0	2	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
SWTH	3	0	0	0	0	0	0	0	2	0	0	0	0	5	3	2	2.5	0.7	15.4
AMRO	4	0	0	1	8	1	2	5	5	7	1	14	1	49	14	1	4.5	4.1	84.6
EUST	0	0	0	18	30	2	0	8	0	200	0	6	30	294	200	2	42.0	70.6	53.8
OCWA	0	0	0	0	0	0	0	2	6	0	0	0	1	9	6	1	3.0	2.6	23.1
YEWA	0	0	0	0	0	0	0	2	0	0	0	0	1	3	2	1	1.5	0.7	15.4
MGWA	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
COYE	1	0	0	3	0	1	0	0	0	2	0	0	0	7	3	1	1.8	1.0	30.8
RSTO	1	0	2	0	0	1	2	0	0	0	1	2	0	9	2	1	1.5	0.5	46.2
SAVS	0	0	0	0	0	0	3	0	0	0	0	4	11	18	11	3	6.0	4.4	23.1
SOSP	6	0	1	4	0	0	1	1	2	3	1	1	1	21	6	1	2.1	1.7	76.9

Date	06Jun	13Jun	21Jun	27Jun	04Jul	11Jul	18Jul	25Jul	01Aug	08Aug	15Aug	22Aug	29Aug	Total	Max	Min	Mean	SD	%Freq
RWBL	18	0	28	16	14	33	13	0	0	0	4	0	0	126	33	4	18.0	9.7	53.8
BRBL	23	0	0	0	0	4	0	0	0	0	0	0	0	27	23	4	13.5	13.4	15.4
BHCO	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	2	2.0	0.0	7.7
NOOR	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
PUFI	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	2	2.0	0.0	7.7
HOFI	2	0	2	5	0	0	1	0	4	11	2	0	0	27	11	1	3.9	3.4	53.8
AMGO	0	0	0	0	0	0	0	0	0	12	38	18	2	70	38	2	17.5	15.2	30.8
#TOT	76	0	57	71	103	64	35	36	43	266	108	59	79	997	266	35	83.1	62.1	92.3

Bird use of Upper Beach habitat for Autumn 87

Date	05Sep	12Sep	19Sep	26Sep	030ct	100ct	170ct	240ct	310ct	07Nov	14Nov	21Nov	28Nov	Total	Max	Min	Mean	SD	%Freq
#HER	2	0	1	1	0	0	1	2	1	0	1	1	1	11	2	1	1.2	0.4	69.2
GBHE	2	0	1	1	0	0	1	2	1	0	1	1	1	11	2	1	1.2	0.4	69.2
#SWA	0	0	0	0	0	0	0	0	0	0	6	0	0	6	6	6	6.0	0.0	7.7
TRUS	0	0	0	0	0	0	0	0	0	0	6	0	0	6	6	6	6.0	0.0	7.7
#DAB	0	0	0	0	0	0	0	0	0	40	110	0	125	275	125	40	91.7	45.4	23.1
GWTE	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	2	2.0	0.0	7.7
MALL	0	0	0	0	0	0	0	0	0	10	8	0	0	18	10	8	9.0	1.4	15.4
NOPI	0	0	0	0	0	0	0	0	0	10	100	0	125	235	125	10	78.3	60.5	23.1
AMWI	0	0	0	0	0	0	0	0	0	20	0	0	0	20	20	20	20.0	0.0	7.7
#DIV	0	0	0	0	0	0	2	0	0	0	0	1	0	3	2	1	1.5	0.7	15.4
BUFF	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	7.7
COME	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
#RAP	1	1	1	0	1	0	0	1	0	1	1	3	0	10	3	1	1.3	0.7	61.5
BAEA	1	0	1	0	0	0	0	0	0	1	0	2	0	5	2	1	1.3	0.5	30.8
SSHA	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
MERL	0	0	0	0	1	0	0	1	0	0	1	1	0	4	1	1	1.0	0.0	30.8
RNPH	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#SHO	0	0	2	0	1	0	0	0	0	0	2	0	6	11	6	1	2.8	2.2	30.8
KILL	0	0	0	0	0	0	0	0	0	0	2	0	6	8	6	2	4.0	2.8	15.4
GRYE	0	0	2	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
LEYE	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#GUL	0	0	0	6	0	0	0	0	0	29	0	0	0	35	29	6	17.5	16.3	15.4
GWGU	0	0	0	6	0	0	0	0	0	29	0	0	0	35	29	6	17.5	16.3	15.4
BEKI	2	1	2	2	0	2	0	4	2	1	1	0	1	18	4	1	1.8	0.9	76.9
#WOO	2	0	0	0	0	2	2	1	0	5	3	3	1	19	5	1	2.4	1.3	61.5
DOWO	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	7.7
NOFL	2	0	0	0	0	2	2	1	0	4	3	3	1	18	4	1	2.3	1.0	61.5
#PAS	71	59	41	67	18	49	38	113	26	66	147	19	114	828	147	18	63.7	39.7	100.0
WIFL	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
STJA	10	0	3	0	1	1	1	0	1	0	2	0	0	19	10	1	2.7	3.3	53.8
NOCR	0	0	0	0	0	4	2	0	0	0	0	0	20	26	20	2	8.7	9.9	23.1
CORA	0	0	0	0	0	0	0	2	0	0	0	0	0	2	2	2	2.0	0.0	7.7
RBNU	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
BEWR	1	0	0	2	0	0	0	0	0	0	0	0	0	3	2	1	1.5	0.7	15.4
GCKI	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
AMRO	0	0	0	4	1	17	4	0	0	0	0	0	0	26	17	1	6.5	7.1	30.8
NOSH	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	7.7
EUST	24	0	22	15	1	3	0	28	8	6	120	0	27	254	120	1	25.4	34.7	76.9
OCWA	4	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
COYE	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
RSTO	0	0	4	0	1	3	1	5	0	1	4	0	0	19	5	1	2.7	1.7	53.8
SAVS	7	5	2	9	2	0	18	0	0	0	0	0	0	43	18	2	7.2	6.0	46.2
SOSP	4	2	6	4	4	5	5	6	2	4	2	1	3	48	6	1	3.7	1.6	100.0
GCSP	0	0	0	0	0	0	0	6	0	0	8	0	6	20	8	6	6.7	1.2	23.1
WCSP	0	0	0	6	0	0	0	0	0	0	0	0	0	6	6	6	6.0	0.0	7.7
DEJU	0	0	0	0	3	9	5	44	15	30	0	0	33	139	44	3	19.9	15.8	53.8
RWBL	4	0	0	0	0	2	0	0	0	0	0	2	5	13	5	2	3.3	1.5	30.8
BRBL	0	50	3	9	0	4	0	12	0	0	6	16	0	100	50	3	14.3	16.4	53.8

Date	05Sep	12Sep	19Sep	26Sep	030ct	100ct	170ct	240ct	310ct	07Nov	14Nov	21Nov	28Nov	Total	Max	Min	Mean	SD	%Freq
PUFI	0	0	0	4	0	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
HOFI	7	0	1	5	1	0	2	3	0	25	5	0	20	69	25	1	7.7	8.7	69.2
PISI	0	0	0	0	4	0	0	6	0	0	0	0	0	10	6	4	5.0	1.4	15.4
AMGO	8	0	0	9	0	0	0	0	0	0	0	0	0	17	9	8	8.5	0.7	15.4
#TOT	78	61	47	76	20	53	43	122	29	142	271	27	248	1217	271	20	93.6	81.9	100.0

Bird use of Upper Beach habitat for Winter 87

Date	05Dec	12Dec	19Dec	26Dec	Total	Max	Min	Mean	SD	%Freq
#HER	1	2	1	0	4	2	1	1.3	0.6	75.0
GBHE	1	2	1	0	4	2	1	1.3	0.6	75.0
#DAB	0	52	18	23	93	52	18	31.0	18.4	75.0
MALL	0	22	18	0	40	22	18	20.0	2.8	50.0
NOPI	0	10	0	23	33	23	10	16.5	9.2	50.0
AMWI	0	20	0	0	20	20	20	20.0	0.0	25.0
#DIV	2	0	1	2	5	2	1	1.7	0.6	75.0
COGO	0	0	0	2	2	2	2	2.0	0.0	25.0
BUFF	2	0	1	0	3	2	1	1.5	0.7	50.0
#RAP	4	8	3	0	15	8	3	5.0	2.6	75.0
BAEA	3	8	2	0	13	8	2	4.3	3.2	75.0
NOHA	1	0	0	0	1	1	1	1.0	0.0	25.0
COHA	0	0	1	0	1	1	1	1.0	0.0	25.0
#GUL	0	7	4	6	17	7	4	5.7	1.5	75.0
GWGU	0	7	4	6	17	7	4	5.7	1.5	75.0
BEKI	1	1	1	1	4	1	1	1.0	0.0	100.0
#WOO	0	2	2	5	9	5	2	3.0	1.7	75.0
NOFL	0	2	2	4	8	4	2	2.7	1.2	75.0
PIWO	0	0	0	1	1	1	1	1.0	0.0	25.0
#PAS	31	88	66	10	195	88	10	48.8	34.9	100.0
STJA	0	1	0	0	1	1	1	1.0	0.0	25.0
NOCR	0	5	0	0	5	5	5	5.0	0.0	25.0
CORA	0	0	1	0	1	1	1	1.0	0.0	25.0
CBCH	0	3	0	0	3	3	3	3.0	0.0	25.0
GCKI	0	6	0	0	6	6	6	6.0	0.0	25.0
AMRO	0	1	0	0	1	1	1	1.0	0.0	25.0
EUST	0	14	0	0	14	14	14	14.0	0.0	25.0
RSTO	0	0	3	2	5	3	2	2.5	0.7	50.0
SOSP	1	3	13	2	19	13	1	4.8	5.6	100.0
GCSP	0	3	0	0	3	3	3	3.0	0.0	25.0
DEJU	0	36	0	6	42	36	6	21.0	21.2	50.0
RWBL	15	4	0	0	19	15	4	9.5	7.8	50.0
BRBL	15	10	0	0	25	15	10	12.5	3.5	50.0
HOFI	0	2	22	0	24	22	2	12.0	14.1	50.0
PISI	0	0	27	0	27	27	27	27.0	0.0	25.0
#TOT	39	160	96	47	342	160	39	85.5	55.7	100.0

Bird use of Riparian habitat for Winter 86

Date	03Jan	10Jan	17Jan	24Jan	31Jan	07Feb	14Feb	21Feb	28Feb	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	11.1
GBHE	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	11.1
#GEE	0	0	0	6	0	0	0	0	0	6	6	6	6.0	0.0	11.1
CAGO	0	0	0	6	0	0	0	0	0	6	6	6	6.0	0.0	11.1
#DAB	0	0	0	0	0	0	0	0	16	16	16	16	16.0	0.0	11.1
MALL	0	0	0	0	0	0	0	0	16	16	16	16	16.0	0.0	11.1
#DIV	0	3	0	0	8	0	1	7	0	19	8	1	4.8	3.3	44.4
COGO	0	1	0	0	0	0	1	1	0	3	1	1	1.0	0.0	33.3
BAGO	0	0	0	0	8	0	0	0	0	8	8	8	8.0	0.0	11.1
COME	0	2	0	0	0	0	0	6	0	8	6	2	4.0	2.8	22.2
#RAP	2	1	0	0	1	1	0	0	0	5	2	1	1.3	0.5	44.4
BAEA	2	1	0	0	1	0	0	0	0	4	2	1	1.3	0.6	33.3
MERL	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	11.1
#SHO	0	2	0	0	0	0	0	0	0	2	2	2	2.0	0.0	11.1
KILL	0	2	0	0	0	0	0	0	0	2	2	2	2.0	0.0	11.1
#GUL	0	0	0	0	2	0	0	0	0	2	2	2	2.0	0.0	11.1
MEGU	0	0	0	0	2	0	0	0	0	2	2	2	2.0	0.0	11.1
BEKI	0	0	0	0	0	2	0	0	1	3	2	1	1.5	0.7	22.2
#WOO	2	0	0	0	1	0	0	1	0	4	2	1	1.3	0.6	33.3
NOFL	0	0	0	0	1	0	0	1	0	2	1	1	1.0	0.0	22.2
PIWO	2	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	11.1
#PAS	20	51	0	5	21	5	0	23	9	134	51	5	19.1	16.0	77.8
STJA	4	1	0	0	0	0	0	0	0	5	4	1	2.5	2.1	22.2
NOCR	0	2	0	2	14	0	0	0	0	18	14	2	6.0	6.9	33.3
EUST	0	0	0	0	4	0	0	20	0	24	20	4	12.0	11.3	22.2
RSTO	3	2	0	0	1	0	0	0	0	6	3	1	2.0	1.0	33.3
FOSP	1	0	0	1	0	0	0	0	0	2	1	1	1.0	0.0	22.2
SOSP	0	1	0	2	2	0	0	1	1	7	2	1	1.4	0.5	55.6
DEJU	12	45	0	0	0	2	0	0	8	67	45	2	16.8	19.3	44.4
HOFI	0	0	0	0	0	3	0	2	0	5	3	2	2.5	0.7	22.2
#TOT	24	57	0	11	33	8	1	32	26	192	57	1	24.0	17.7	88.9

Bird use of Riparian habitat for Spring 87

Date	07Mar	15Mar	21Mar	28Mar	04Apr	11Apr	18Apr	25Apr	02May	09May	16May	23May	31May	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	0	1	0	0	0	2	0	0	0	0	0	3	2	1	1.5	0.7	15.4
GBHE	0	0	0	1	0	0	0	2	0	0	0	0	0	3	2	1	1.5	0.7	15.4
#DAB	0	0	0	2	2	0	0	0	0	2	0	2	0	8	2	2	2.0	0.0	30.8
MALL	0	0	0	2	2	0	0	0	0	2	0	2	0	8	2	2	2.0	0.0	30.8
#DIV	6	4	0	0	0	0	2	3	9	0	6	2	0	32	9	2	4.6	2.6	53.8
COME	6	1	0	0	0	0	2	3	9	0	6	2	0	29	9	1	4.1	2.9	53.8
RBME	0	3	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3.0	0.0	7.7
#RAP	0	1	0	0	0	0	1	0	2	0	0	0	0	4	2	1	1.3	0.6	23.1
OSPR	0	0	0	0	0	0	1	0	1	0	0	0	0	2	1	1	1.0	0.0	15.4
BAEA	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
MERL	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	7.7
#SHO	0	0	0	0	0	0	0	2	20	5	0	3	2	32	20	2	6.4	7.7	38.5
KILL	0	0	0	0	0	0	0	0	0	4	0	1	2	7	4	1	2.3	1.5	23.1
SDSA	0	0	0	0	0	0	0	0	0	1	0	2	0	3	2	1	1.5	0.7	15.4
WESA	0	0	0	0	0	0	0	2	20	0	0	0	0	22	20	2	11.0	12.7	15.4
#GUL	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
GWGU	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
BEKI	0	1	1	0	0	0	0	0	1	1	0	0	0	4	1	1	1.0	0.0	30.8
#PAS	49	2	2	109	20	4	43	36	31	37	15	25	14	387	109	2	29.8	28.4	100.0
TRSW	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
VGSW	0	0	0	0	0	0	2	0	15	4	0	2	9	32	15	2	6.4	5.6	38.5
NRWS	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	2	2.0	0.0	7.7
BASW	0	0	0	0	0	0	0	0	0	4	8	4	2	18	8	2	4.5	2.5	30.8
STJA	0	0	1	3	0	0	0	0	0	0	0	0	0	4	3	1	2.0	1.4	15.4
NOCR	5	2	0	16	0	4	3	3	2	1	6	1	0	43	16	1	4.3	4.4	76.9
CORA	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
CBCH	0	0	0	5	0	0	0	0	0	0	0	0	0	5	5	5	5.0	0.0	7.7
BEWR	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	7.7
AMRO	0	0	0	20	0	0	6	13	0	7	0	4	1	51	20	1	8.5	6.9	46.2
EUST	20	0	0	40	4	0	6	0	0	5	0	0	0	75	40	4	15.0	15.4	38.5
OCWA	0	0	0	0	0	0	0	1	0	2	0	1	0	4	2	1	1.3	0.6	23.1
YEWA	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	2	2.0	0.0	7.7
YRWA	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	7.7
COYE	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	7.7
RSTO	2	0	0	1	0	0	0	1	2	4	0	1	0	11	4	1	1.8	1.2	46.2
SAVS	0	0	0	0	0	0	0	12	6	3	0	0	0	21	12	3	7.0	4.6	23.1
SOSP	0	0	0	4	2	0	6	0	2	0	1	2	0	17	6	1	2.8	1.8	46.2
WCSP	0	0	0	0	0	0	4	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
DEJU	20	0	1	9	10	0	8	0	0	0	0	0	0	48	20	1	9.6	6.8	38.5
RWBL	0	0	0	6	0	0	0	1	4	0	0	1	0	12	6	1	3.0	2.4	30.8
BRBL	0	0	0	0	0	0	4	0	0	3	0	3	0	10	4	3	3.3	0.6	23.1
PUFI	0	0	0	0	0	0	0	1	0	1	0	0	0	2	1	1	1.0	0.0	15.4
HOFI	2	0	0	4	4	0	2	2	0	0	0	4	2	20	4	2	2.9	1.1	53.8
#TOT	55	8	3	112	22	4	47	43	63	45	21	32	16	471	112	3	36.2	30.1	100.0

Bird use of Riparian habitat for Summer 87

Date	06Jun	13Jun	21Jun	27Jun	04Jul	11Jul	18Jul	25Jul	01Aug	08Aug	15Aug	22Aug	29Aug	Total	Max	Min	Mean	SD	%Freq
#HER	1	0	0	0	1	0	0	0	1	0	1	0	4	8	4	1	1.6	1.3	38.5
GBHE	1	0	0	0	1	0	0	0	1	0	1	0	4	8	4	1	1.6	1.3	38.5
#GEE	12	0	0	0	0	0	0	0	0	0	8	0	0	20	12	8	10.0	2.8	15.4
CAGO	12	0	0	0	0	0	0	0	0	0	8	0	0	20	12	8	10.0	2.8	15.4
#DAB	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
MALL	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#DIV	0	0	2	0	0	0	0	0	0	0	1	0	0	3	2	1	1.5	0.7	15.4
COME	0	0	2	0	0	0	0	0	0	0	1	0	0	3	2	1	1.5	0.7	15.4
#RAP	0	0	4	0	0	0	0	0	0	0	2	0	0	6	4	2	3.0	1.4	15.4
BAEA	0	0	4	0	0	0	0	0	0	0	1	0	0	5	4	1	2.5	2.1	15.4
MERL	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	7.7
#SHO	3	0	0	1	0	7	0	0	14	0	33	11	9	78	33	1	11.1	10.6	53.8
KILL	3	0	0	1	0	6	0	0	2	0	0	5	9	26	9	1	4.3	2.9	46.2
WESA	0	0	0	0	0	0	0	0	12	0	33	6	0	51	33	6	17.0	14.2	23.1
SBDO	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#GUL	0	0	0	0	0	0	31	0	0	14	0	0	4	49	31	4	16.3	13.7	23.1
BOGU	0	0	0	0	0	0	30	0	0	0	0	0	0	30	30	30	30.0	0.0	7.7
MEGU	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	0.0	7.7
GWGU	0	0	0	0	0	0	1	0	0	14	0	0	2	17	14	1	5.7	7.2	23.1
VASW	0	0	4	0	0	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
RUHU	0	0	4	0	0	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
BEKI	0	0	0	0	0	2	0	0	0	0	1	0	1	4	2	1	1.3	0.6	23.1
#WOO	0	0	2	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
NOFL	0	0	2	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
#PAS	52	3	51	1	12	7	17	6	0	3	23	0	4	179	52	1	16.3	18.6	84.6
WIFL	0	0	2	0	0	1	0	0	0	0	0	0	0	3	2	1	1.5	0.7	15.4
WEFL	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
TRSW	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
BASW	0	0	0	0	12	0	0	0	0	0	15	0	0	27	15	12	13.5	2.1	15.4
STJA	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
NOCR	12	0	0	0	0	0	3	0	0	0	0	0	0	15	12	3	7.5	6.4	15.4
CBCH	0	0	8	0	0	0	0	6	0	0	8	0	0	22	8	6	7.3	1.2	23.1
BEWR	0	0	6	0	0	0	0	0	0	0	0	0	0	6	6	6	6.0	0.0	7.7
SWTH	0	0	2	0	0	0	2	0	0	0	0	0	0	4	2	2	2.0	0.0	15.4
AMRO	0	0	6	1	0	2	2	0	0	0	0	0	0	11	6	1	2.8	2.2	30.8
EUST	8	0	8	0	0	0	0	0	0	0	0	0	0	16	8	8	8.0	0.0	15.4
OCWA	0	0	1	0	0	0	0	0	0	1	0	0	0	2	1	1	1.0	0.0	15.4
YEWA	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
RSTO	0	0	2	0	0	0	0	0	0	0	0	0	2	4	2	2	2.0	0.0	15.4
SAVS	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
SOSP	0	3	1	0	0	0	0	0	0	2	0	0	0	6	3	1	2.0	1.0	23.1
RWBL	6	0	0	0	0	0	10	0	0	0	0	0	0	16	10	6	8.0	2.8	15.4
BRBL	20	0	6	0	0	0	0	0	0	0	0	0	0	26	20	6	13.0	9.9	15.4
PUFI	0	0	2	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
HOFI	0	0	4	0	0	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
PISI	3	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3.0	0.0	7.7
AMGO	0	0	2	0	0	4	0	0	0	0	0	0	0	6	4	2	3.0	1.4	15.4
#TOT	68	3	67	2	13	16	49	6	15	17	69	11	22	358	69	2	27.5	25.8	100.0

Bird use of Riparian habitat for Autumn 87

Date	05Sep	12Sep	19Sep	26Sep	03Oct	10Oct	17Oct	24Oct	31Oct	07Nov	14Nov	21Nov	28Nov	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
GBHE	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#DAB	0	0	0	0	0	0	0	0	0	5	100	0	0	105	100	5	52.5	67.2	15.4
MALL	0	0	0	0	0	0	0	0	0	0	100	0	0	100	100	100	100.0	0.0	7.7
NOPI	0	0	0	0	0	0	0	0	0	5	0	0	0	5	5	5	5.0	0.0	7.7
#RAP	0	0	0	1	0	0	0	0	1	0	0	0	0	2	1	1	1.0	0.0	15.4
SSHA	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
MERL	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	7.7
#SHO	8	0	7	2	0	1	0	2	1	0	7	0	0	28	8	1	4.0	3.2	53.8
SEPL	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
KILL	5	0	5	2	0	1	0	2	1	0	7	0	0	23	7	1	3.3	2.4	53.8
LEYE	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
WESA	2	0	1	0	0	0	0	0	0	0	0	0	0	3	2	1	1.5	0.7	15.4
#GUL	0	0	0	5	0	0	0	0	0	0	0	0	83	88	83	5	44.0	55.2	15.4
MEGU	0	0	0	0	0	0	0	0	0	0	0	0	10	10	10	10	10.0	0.0	7.7
HEGU	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3.0	0.0	7.7
GWGU	0	0	0	5	0	0	0	0	0	0	0	0	70	75	70	5	37.5	46.0	15.4
BEKI	0	0	0	2	1	2	0	0	0	1	0	2	0	8	2	1	1.6	0.5	38.5
#WOO	0	0	0	0	0	0	0	0	1	0	0	0	1	2	1	1	1.0	0.0	15.4
NOFL	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	7.7
PIWO	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
#PAS	6	8	12	87	0	102	20	3	195	3	10	8	4	458	195	3	38.2	59.8	92.3
STJA	0	0	0	3	0	0	1	0	1	0	0	1	0	6	3	1	1.5	1.0	30.8
NOCR	0	0	0	1	0	0	0	0	5	0	0	0	2	8	5	1	2.7	2.1	23.1
CBCH	0	0	10	0	0	0	0	0	0	0	0	3	0	13	10	3	6.5	4.9	15.4
BEWR	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	7.7
WIWR	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	7.7
RCKI	0	0	0	0	0	0	0	0	3	0	0	0	0	3	3	3	3.0	0.0	7.7
AMRO	2	0	0	11	0	0	2	0	5	0	0	0	0	20	11	2	5.0	4.2	30.8
EUST	0	0	0	36	0	100	6	0	43	0	0	0	0	185	100	6	46.3	39.3	30.8
RSTO	0	0	0	4	0	1	1	0	5	0	0	1	0	12	5	1	2.4	1.9	38.5
SAVS	0	0	0	12	0	0	7	0	0	0	0	0	0	19	12	7	9.5	3.5	15.4
SOSP	0	0	0	4	0	0	0	2	12	0	0	2	2	22	12	2	4.4	4.3	38.5
GCSP	0	0	0	8	0	0	0	0	22	0	0	0	0	30	22	8	15.0	9.9	15.4
WCSP	0	0	0	4	0	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
DEJU	0	0	0	4	0	0	3	0	40	0	0	0	0	47	40	3	15.7	21.1	23.1
RWBL	4	0	0	0	0	0	0	0	30	0	0	0	0	34	30	4	17.0	18.4	15.4
PUFI	0	2	0	0	0	0	0	0	4	0	0	0	0	6	4	2	3.0	1.4	15.4
HOFI	0	6	2	0	0	1	0	0	0	3	10	0	0	22	10	1	4.4	3.6	38.5
PISI	0	0	0	0	0	0	0	0	25	0	0	0	0	25	25	25	25.0	0.0	7.7
#TOT	14	8	19	97	1	105	21	5	198	9	117	10	88	692	198	1	53.2	61.6	100.0

Bird use of Riparian habitat for Winter 87

Date	05Dec	12Dec	19Dec	26Dec	Total	Max	Min	Mean	SD	%Freq
#SWA	0	0	4	0	4	4	4	4.0	0.0	25.0
TRUS	0	0	4	0	4	4	4	4.0	0.0	25.0
#RAP	5	0	0	1	6	5	1	3.0	2.8	50.0
BAEA	4	0	0	0	4	4	4	4.0	0.0	25.0
MERL	1	0	0	1	2	1	1	1.0	0.0	50.0
#GUL	0	0	7	0	7	7	7	7.0	0.0	25.0
GWGU	0	0	7	0	7	7	7	7.0	0.0	25.0
BEKI	0	0	1	0	1	1	1	1.0	0.0	25.0
#PAS	0	34	43	7	84	43	7	28.0	18.7	75.0
STJA	0	0	1	0	1	1	1	1.0	0.0	25.0
NOCR	0	30	10	0	40	30	10	20.0	14.1	50.0
RSTO	0	1	3	0	4	3	1	2.0	1.4	50.0
SOSP	0	3	4	0	7	4	3	3.5	0.7	50.0
DEJU	0	0	20	0	20	20	20	20.0	0.0	25.0
HOFI	0	0	0	7	7	7	7	7.0	0.0	25.0
PISI	0	0	5	0	5	5	5	5.0	0.0	25.0
#TOT	5	34	55	8	102	55	5	25.5	23.6	100.0

Bird use of Cultivated Field habitat for Winter 86

Date	03Jan	10Jan	17Jan	24Jan	31Jan	07Feb	14Feb	21Feb	28Feb	Total	Max	Min	Mean	SD	%Freq
#DAB	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	11.1
MALL	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	11.1
#DIV	0	2	0	0	0	0	0	0	1	3	2	1	1.5	0.7	22.2
BUFF	0	2	0	0	0	0	0	0	1	3	2	1	1.5	0.7	22.2
#RAP	2	0	0	5	3	0	6	1	0	17	6	1	3.4	2.1	55.6
BAEA	2	0	0	5	1	0	6	1	0	15	6	1	3.0	2.3	55.6
MERL	0	0	0	0	2	0	0	0	0	2	2	2	2.0	0.0	11.1
#GUL	0	0	0	19	0	12	0	0	0	31	19	12	15.5	4.9	22.2
GWGU	0	0	0	19	0	12	0	0	0	31	19	12	15.5	4.9	22.2
BEKI	1	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	11.1
#WOO	0	0	0	0	2	0	0	0	0	2	2	2	2.0	0.0	11.1
DOWO	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	11.1
NOFL	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	11.1
#PAS	25	2	33	8	44	2	6	107	1	228	107	1	25.3	34.3	100.0
STJA	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	11.1
NOCR	8	0	1	0	0	0	0	2	0	11	8	1	3.7	3.8	33.3
CBCH	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	11.1
WIWR	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	11.1
GCKI	8	0	0	0	0	0	0	0	0	8	8	8	8.0	0.0	11.1
AMRO	1	0	0	0	0	0	0	2	0	3	2	1	1.5	0.7	22.2
EUST	0	0	0	0	0	0	0	100	0	100	100	100	100.0	0.0	11.1
RSTO	1	0	0	1	2	1	0	0	0	5	2	1	1.3	0.5	44.4
FOSP	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	11.1
SOSP	1	0	0	1	6	1	0	1	1	11	6	1	1.8	2.0	66.7
GCSP	6	0	0	6	0	0	0	0	0	12	6	6	6.0	0.0	22.2
DEJU	0	0	1	0	10	0	0	0	0	11	10	1	5.5	6.4	22.2
RWBL	0	0	30	0	19	0	0	0	0	49	30	19	24.5	7.8	22.2
PUFI	0	0	0	0	4	0	0	0	0	4	4	4	4.0	0.0	11.1
HOFI	0	2	0	0	1	0	6	1	0	10	6	1	2.5	2.4	44.4
#TOT	28	4	33	33	49	14	12	108	2	283	108	2	31.4	32.6	100.0

Bird use of Cultivated Field habitat for Spring 87

Date	07Mar	15Mar	21Mar	28Mar	04Apr	11Apr	18Apr	25Apr	02May	09May	16May	23May	31May	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	1	3	3	0	0	0	0	0	0	0	0	7	3	1	2.3	1.2	23.1
GBHE	0	0	1	3	3	0	0	0	0	0	0	0	0	7	3	1	2.3	1.2	23.1
#SWA	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
TRUS	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#DAB	0	0	2	0	0	0	0	0	0	0	0	1	0	3	2	1	1.5	0.7	15.4
MALL	0	0	2	0	0	0	0	0	0	0	0	1	0	3	2	1	1.5	0.7	15.4
#DIV	0	0	0	6	0	0	0	0	0	0	0	0	0	6	6	6	6.0	0.0	7.7
BUFF	0	0	0	4	0	0	0	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
COME	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
#RAP	0	0	2	0	0	1	2	0	0	0	1	0	0	6	2	1	1.5	0.6	30.8
BAEA	0	0	1	0	0	1	1	0	0	0	1	0	0	4	1	1	1.0	0.0	30.8
COHA	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
SWHA	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#SHO	0	0	0	0	1	0	1	0	0	0	0	0	0	2	1	1	1.0	0.0	15.4
KILL	0	0	0	0	1	0	1	0	0	0	0	0	0	2	1	1	1.0	0.0	15.4
#GUL	0	0	0	0	0	0	4	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
GWGU	0	0	0	0	0	0	4	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
BTPI	0	0	0	0	0	0	0	0	1	0	0	0	2	3	2	1	1.5	0.7	15.4
VASW	0	0	0	0	0	0	0	0	10	0	0	0	0	10	10	10	10.0	0.0	7.7
BEKI	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
#WOO	0	0	0	1	1	0	0	1	0	0	1	3	0	7	3	1	1.4	0.9	38.5
NOFL	0	0	0	1	1	0	0	1	0	0	1	3	0	7	3	1	1.4	0.9	38.5
#PAS	24	19	80	9	83	65	42	16	16	30	19	38	30	471	83	9	36.2	24.7	100.0
WEFL	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	7.7
TRSW	0	0	0	0	0	0	4	0	0	0	0	0	0	4	4	4	4.0	0.0	7.7
CLSW	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	7.7
BASW	0	0	0	0	0	0	0	0	8	0	6	8	3	25	8	3	6.3	2.4	30.8
STJA	0	0	2	1	0	0	0	0	0	0	0	0	0	3	2	1	1.5	0.7	15.4
NOCR	0	0	0	0	0	0	10	3	2	4	0	0	0	19	10	2	4.8	3.6	30.8
CORA	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	2	2.0	0.0	7.7
CBCH	0	0	0	0	0	0	0	0	0	0	1	0	1	2	1	1	1.0	0.0	15.4
BEWR	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	2	2.0	0.0	7.7
GCKI	0	0	0	0	4	0	0	0	0	0	0	15	0	19	15	4	9.5	7.8	15.4
AMRO	1	1	10	0	4	4	6	3	5	4	0	3	2	43	10	1	3.9	2.5	84.6
CEWA	0	0	0	0	0	0	0	0	0	0	0	10	0	10	10	10	10.0	0.0	7.7
EUST	20	2	55	0	62	50	10	0	0	4	0	0	16	219	62	2	27.4	24.3	61.5
OCWA	0	0	0	0	0	1	0	1	0	1	2	0	1	6	2	1	1.2	0.4	38.5
YEWA	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	7.7
YRWA	0	0	0	0	2	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
COYE	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	7.7
RSTO	0	0	0	0	0	2	0	0	0	2	1	0	3	8	3	1	2.0	0.8	30.8
SAVS	0	0	0	0	1	0	0	0	0	12	1	0	0	14	12	1	4.7	6.4	23.1
SOSP	0	1	2	2	0	4	0	2	0	0	0	0	0	11	4	1	2.2	1.1	38.5
GCSP	0	0	0	0	0	0	0	3	1	0	0	0	0	4	3	1	2.0	1.4	15.4
WCSP	0	0	0	0	0	0	0	2	0	0	0	0	0	2	2	2	2.0	0.0	7.7
DEJU	0	0	4	0	0	4	0	0	0	0	0	0	0	8	4	4	4.0	0.0	15.4
RWBL	0	12	0	0	10	0	10	0	0	0	0	0	2	34	12	2	8.5	4.4	30.8
BRBL	0	2	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
BHCO	0	0	0	0	0	0	0	0	0	1	2	0	0	3	2	1	1.5	0.7	15.4

Date	07Mar	15Mar	21Mar	28Mar	04Apr	11Apr	18Apr	25Apr	02May	09May	16May	23May	31May	Total	Max	Min	Mean	SD	%Freq
PUFI	0	0	7	0	0	0	0	0	0	0	0	0	0	7	7	7	7.0	0.0	7.7
HOFI	3	1	0	6	0	0	2	2	0	0	2	0	0	16	6	1	2.7	1.8	46.2
AMGO	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	0.0	7.7
#TOT	26	19	85	19	89	66	49	17	27	30	21	42	32	522	89	17	40.2	25.0	100.0

Bird use of Cultivated Field habitat for Summer 87

Date	06Jun	13Jun	21Jun	27Jun	04Jul	11Jul	18Jul	25Jul	01Aug	08Aug	15Aug	22Aug	29Aug	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	7.7
GBHE	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	7.7
#GEE	0	0	0	0	0	0	8	0	0	0	0	0	0	8	8	8	8.0	0.0	7.7
CAGO	0	0	0	0	0	0	8	0	0	0	0	0	0	8	8	8	8.0	0.0	7.7
#RAP	3	0	2	0	0	0	0	3	0	2	2	0	0	12	3	2	2.4	0.5	38.5
TUVU	3	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3.0	0.0	7.7
BAEA	0	0	2	0	0	0	0	0	0	0	1	0	0	3	2	1	1.5	0.7	15.4
NOHA	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	7.7
MERL	0	0	0	0	0	0	0	3	0	2	0	0	0	5	3	2	2.5	0.7	15.4
#SHO	0	0	11	0	25	0	0	0	0	0	1	0	0	37	25	1	12.3	12.1	23.1
KILL	0	0	9	0	4	0	0	0	0	0	0	0	0	13	9	4	6.5	3.5	15.4
SDSA	0	0	2	0	0	0	0	0	0	0	1	0	0	3	2	1	1.5	0.7	15.4
WESA	0	0	0	0	21	0	0	0	0	0	0	0	0	21	21	21	21.0	0.0	7.7
#GUL	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
GWGU	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
VASW	0	0	2	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
RUHU	0	2	4	0	0	0	0	0	0	0	0	0	0	6	4	2	3.0	1.4	15.4
BEKI	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	7.7
#WOO	0	1	3	0	2	0	0	0	2	0	0	0	0	8	3	1	2.0	0.8	30.8
NOFL	0	1	3	0	2	0	0	0	2	0	0	0	0	8	3	1	2.0	0.8	30.8
#PAS	40	11	80	52	12	21	46	6	27	126	19	13	28	481	126	6	37.0	33.8	100.0
WIFL	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
WEFL	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	2	2.0	0.0	7.7
TRSW	0	0	10	0	0	0	0	0	0	0	0	0	0	10	10	10	10.0	0.0	7.7
VGSW	0	0	8	2	0	2	4	0	0	0	0	0	0	16	8	2	4.0	2.8	30.8
CLSW	0	0	0	0	0	0	4	0	0	0	5	0	0	9	5	4	4.5	0.7	15.4
BASW	20	0	24	8	2	6	21	6	10	25	12	2	10	146	25	2	12.2	8.3	92.3
NOCR	0	0	0	0	0	0	7	0	0	1	0	0	1	9	7	1	3.0	3.5	23.1
CORA	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	2	2.0	0.0	7.7
BEWR	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	7.7
SWTH	0	0	0	0	2	0	0	0	2	0	0	0	0	4	2	2	2.0	0.0	15.4
AMRO	0	0	15	1	2	2	6	0	2	0	0	0	0	28	15	1	4.7	5.4	46.2
EUST	10	7	4	36	0	9	0	0	2	100	0	6	10	184	100	2	20.4	31.5	69.2
OCWA	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
YEWA	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	2	2.0	0.0	7.7
BTGW	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	7.7
TOWA	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	2	2.0	0.0	7.7
COYE	0	0	3	0	2	0	0	0	0	0	0	0	3	8	3	2	2.7	0.6	23.1
WIWA	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
RSTO	2	1	0	1	0	0	0	0	2	0	0	0	0	6	2	1	1.5	0.6	30.8
SAVS	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
SOSP	0	0	2	0	0	2	0	0	0	0	0	0	4	8	4	2	2.7	1.2	23.1
RWBL	3	0	10	0	0	0	0	0	0	0	0	0	0	13	10	3	6.5	4.9	15.4
BRBL	1	0	2	0	0	0	0	0	0	0	0	0	0	3	2	1	1.5	0.7	15.4
BHCO	2	0	1	3	2	0	0	0	0	0	0	1	0	9	3	1	1.8	0.8	38.5
HOFI	2	0	0	0	0	0	0	0	0	0	0	2	0	4	2	2	2.0	0.0	15.4
AMGO	0	2	0	1	2	0	2	0	2	0	0	1	0	10	2	1	1.7	0.5	46.2
#TOT	43	14	102	52	39	21	55	9	30	129	22	13	28	557	129	9	42.8	35.7	100.0

Bird use of Cultivated Field habitat for Autumn 87

Date	05Sep	12Sep	19Sep	26Sep	030ct	100ct	170ct	240ct	310ct	07Nov	14Nov	21Nov	28Nov	Total	Max	Min	Mean	SD	%Freq
#SWA	0	0	0	0	0	0	0	0	0	0	0	6	0	6	6	6	6.0	0.0	7.7
TRUS	0	0	0	0	0	0	0	0	0	0	0	6	0	6	6	6	6.0	0.0	7.7
#RAP	0	0	1	0	2	0	1	2	0	2	0	3	0	11	3	1	1.8	0.8	46.2
BAEA	0	0	0	0	2	0	1	2	0	2	0	1	0	8	2	1	1.6	0.5	38.5
NOHA	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
MERL	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	2	2.0	0.0	7.7
#SHO	0	0	0	0	0	0	0	0	0	0	0	7	0	7	7	7	7.0	0.0	7.7
KILL	0	0	0	0	0	0	0	0	0	0	0	7	0	7	7	7	7.0	0.0	7.7
#GUL	0	0	11	0	0	7	0	0	0	13	0	0	0	31	13	7	10.3	3.1	23.1
GWGU	0	0	11	0	0	7	0	0	0	13	0	0	0	31	13	7	10.3	3.1	23.1
BEKI	0	0	0	1	0	0	1	2	0	0	0	0	0	4	2	1	1.3	0.6	23.1
#WOO	0	0	0	1	0	0	0	0	0	2	0	0	0	3	2	1	1.5	0.7	15.4
NOFL	0	0	0	1	0	0	0	0	0	2	0	0	0	3	2	1	1.5	0.7	15.4
#PAS	10	22	7	60	90	42	45	14	42	62	126	28	35	583	126	7	44.8	33.7	100.0
WIFL	0	0	0	0	0	0	0	2	0	0	0	0	0	2	2	2	2.0	0.0	7.7
STJA	0	0	0	1	3	0	0	0	0	1	0	0	0	5	3	1	1.7	1.2	23.1
NOCR	2	0	0	5	0	0	4	0	0	8	22	11	16	68	22	2	9.7	7.2	53.8
CORA	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
CBCH	0	4	0	0	0	0	0	0	0	3	0	0	0	7	4	3	3.5	0.7	15.4
BRCR	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	2	2.0	0.0	7.7
BEWR	0	0	0	0	0	0	0	0	0	1	2	0	0	3	2	1	1.5	0.7	15.4
WIWR	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
GCKI	0	0	0	0	0	0	0	0	0	0	12	0	0	12	12	12	12.0	0.0	7.7
RCKI	0	0	0	0	0	0	0	0	0	0	8	0	0	8	8	8	8.0	0.0	7.7
AMRO	0	0	0	6	16	9	7	0	18	4	0	0	4	64	18	4	9.1	5.7	53.8
EUST	0	0	1	0	0	8	5	0	12	12	50	0	0	88	50	1	14.7	17.8	46.2
WARB	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	7.7
YRWA	0	0	0	0	5	0	0	0	0	0	0	0	0	5	5	5	5.0	0.0	7.7
COYE	0	3	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3.0	0.0	7.7
RSTO	0	2	0	5	5	2	0	0	4	4	2	1	3	28	5	1	3.1	1.5	69.2
SAVS	2	5	0	0	8	0	5	0	0	0	0	0	0	20	8	2	5.0	2.4	30.8
FOSP	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
SOSP	2	3	1	8	0	3	1	4	3	3	4	0	2	34	8	1	3.1	1.9	84.6
LISP	0	3	0	0	0	0	0	1	0	0	0	0	0	4	3	1	2.0	1.4	15.4
GCSP	0	0	0	15	3	11	7	5	0	9	2	0	0	52	15	2	7.4	4.6	53.8
WCSP	0	0	0	5	0	0	0	0	0	1	0	0	0	6	5	1	3.0	2.8	15.4
DEJU	0	0	0	3	0	7	5	0	0	5	18	16	6	60	18	3	8.6	5.9	53.8
RWBL	0	0	0	0	15	2	0	2	0	0	0	0	0	19	15	2	6.3	7.5	23.1
BRBL	0	0	0	0	25	0	0	0	0	0	0	0	0	25	25	25	25.0	0.0	7.7
PUFI	0	2	0	8	3	0	0	0	0	0	0	0	3	16	8	2	4.0	2.7	30.8
HOFI	0	0	5	4	7	0	11	0	5	10	4	0	0	46	11	4	6.6	2.9	53.8
#TOT	10	22	19	62	92	49	47	18	42	79	126	44	35	645	126	10	49.6	33.2	100.0

Bird use of Cultivated Field habitat for Winter 87

Date	05Dec	12Dec	19Dec	26Dec	Total	Max	Min	Mean	SD	%Freq
#SWA	0	2	0	0	2	2	2	2.0	0.0	25.0
TRUS	0	2	0	0	2	2	2	2.0	0.0	25.0
#RAP	2	3	1	0	6	3	1	2.0	1.0	75.0
BAEA	2	3	1	0	6	3	1	2.0	1.0	75.0
#SHO	0	3	0	0	3	3	3	3.0	0.0	25.0
KILL	0	2	0	0	2	2	2	2.0	0.0	25.0
GRYE	0	1	0	0	1	1	1	1.0	0.0	25.0
#GUL	0	0	1	0	1	1	1	1.0	0.0	25.0
GWGU	0	0	1	0	1	1	1	1.0	0.0	25.0
#WOO	0	0	1	1	2	1	1	1.0	0.0	50.0
NOFL	0	0	1	1	2	1	1	1.0	0.0	50.0
#PAS	48	62	238	8	356	238	8	89.0	101.9	100.0
STJA	0	0	0	1	1	1	1	1.0	0.0	25.0
NOCR	0	7	0	2	9	7	2	4.5	3.5	50.0
GCKI	0	3	0	0	3	3	3	3.0	0.0	25.0
RCKI	0	1	1	0	2	1	1	1.0	0.0	50.0
AMRO	2	3	1	1	7	3	1	1.8	1.0	100.0
EUST	0	24	150	0	174	150	24	87.0	89.1	50.0
RSTO	1	2	0	3	6	3	1	2.0	1.0	75.0
FOSP	0	0	1	0	1	1	1	1.0	0.0	25.0
SOSP	0	0	3	1	4	3	1	2.0	1.4	50.0
GCSP	14	0	4	0	18	14	4	9.0	7.1	50.0
DEJU	30	22	62	0	114	62	22	38.0	21.2	75.0
HOFI	1	0	16	0	17	16	1	8.5	10.6	50.0
#TOT	50	70	241	9	370	241	9	92.5	102.2	100.0

Bird use of Mixed Forest/Residential habitat for Winter 86

Date	03Jan	10Jan	17Jan	24Jan	31Jan	07Feb	14Feb	21Feb	28Feb	Total	Max	Min	Mean	SD	%Freq
#DAB	0	1	10	0	0	0	0	0	0	11	10	1	5.5	6.4	22.2
MALL	0	1	0	0	0	0	0	0	0	1	1	1	1.0	0.0	11.1
NOPI	0	0	10	0	0	0	0	0	0	10	10	10	10.0	0.0	11.1
#DIV	3	3	200	6	2	0	0	0	0	214	200	2	42.8	87.9	55.6
SCAU	0	0	200	0	0	0	0	0	0	200	200	200	200.0	0.0	11.1
COGO	0	0	0	1	0	0	0	0	0	1	1	1	1.0	0.0	11.1
BUFF	3	3	0	5	2	0	0	0	0	13	5	2	3.3	1.3	44.4
#RAP	0	2	1	15	1	0	1	2	0	22	15	1	3.7	5.6	66.7
BAEA	0	2	1	15	0	0	0	2	0	20	15	1	5.0	6.7	44.4
MERL	0	0	0	0	1	0	1	0	0	2	1	1	1.0	0.0	22.2
#SHO	0	1	0	0	2	0	0	0	0	3	2	1	1.5	0.7	22.2
KILL	0	1	0	0	2	0	0	0	0	3	2	1	1.5	0.7	22.2
#GUL	0	0	0	0	38	0	0	14	0	52	38	14	26.0	17.0	22.2
GWGU	0	0	0	0	38	0	0	14	0	52	38	14	26.0	17.0	22.2
BEKI	0	0	0	4	0	0	0	1	0	5	4	1	2.5	2.1	22.2
#WOO	1	2	1	1	1	0	0	0	1	7	2	1	1.2	0.4	66.7
NOFL	1	2	1	1	1	0	0	0	1	7	2	1	1.2	0.4	66.7
#PAS	57	116	21	195	92	142	112	249	151	1135	249	21	126.1	68.9	100.0
STJA	1	1	4	4	1	2	8	1	1	23	8	1	2.6	2.4	100.0
NOCR	52	0	7	6	0	12	0	28	0	105	52	6	21.0	19.4	55.6
CBCH	0	0	0	5	0	0	0	4	0	9	5	4	4.5	0.7	22.2
WIWR	0	1	0	0	0	0	0	0	0	1	1	1	1.0	0.0	11.1
GCKI	0	0	0	0	14	0	0	0	0	14	14	14	14.0	0.0	11.1
AMRO	0	0	10	0	2	0	2	0	9	23	10	2	5.8	4.3	44.4
EUST	0	10	0	62	0	0	36	130	21	259	130	10	51.8	47.9	55.6
RSTO	0	0	0	0	0	3	6	2	0	11	6	2	3.7	2.1	33.3
SOSP	2	0	0	1	0	3	3	0	0	9	3	1	2.3	1.0	44.4
GCSP	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	11.1
WCSP	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	11.1
DEJU	2	4	0	1	0	6	44	13	26	96	44	1	13.7	15.9	77.8
RWBL	0	60	0	114	50	75	1	36	19	355	114	1	50.7	37.4	77.8
BRBL	0	40	0	0	25	30	0	30	70	195	70	25	39.0	18.2	55.6
BHCO	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	11.1
PUFI	0	0	0	0	0	6	0	0	2	8	6	2	4.0	2.8	22.2
HOFI	0	0	0	2	0	5	12	4	1	24	12	1	4.8	4.3	55.6
#TOT	61	125	233	221	136	142	113	266	152	1449	266	61	161.0	65.6	100.0

Bird use of Mixed Forest/Residential habitat for Spring 87

Date	07Mar	15Mar	21Mar	28Mar	04Apr	11Apr	18Apr	25Apr	02May	09May	16May	23May	31May	Total	Max	Min	Mean	SD	%Freq
#DAB	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
MALL	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
#DIV	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
COME	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
#RAP	0	0	1	5	2	1	3	2	0	1	2	1	0	18	5	1	2.0	1.3	69.2
OSPR	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	7.7
HAWK	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
BAEA	0	0	1	4	2	0	3	2	0	1	2	0	0	15	4	1	2.1	1.1	53.8
MERL	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#SHO	0	1	0	2	0	0	3	0	0	0	0	0	0	6	3	1	2.0	1.0	23.1
KILL	0	1	0	2	0	0	3	0	0	0	0	0	0	6	3	1	2.0	1.0	23.1
#GUL	0	0	0	0	0	0	3	0	0	1	0	0	0	4	3	1	2.0	1.4	15.4
BOGU	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1.0	0.0	7.7
GWGU	0	0	0	0	0	0	3	0	0	0	0	0	0	3	3	3	3.0	0.0	7.7
BTPI	0	0	0	0	0	0	0	0	21	0	0	0	3	24	21	3	12.0	12.7	15.4
VASW	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	7.7
RUHU	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2.0	0.0	7.7
BEKI	0	0	2	2	0	0	0	0	0	0	2	1	1	8	2	1	1.6	0.5	38.5
#WOO	1	1	0	0	0	0	0	0	0	0	0	0	1	3	1	1	1.0	0.0	23.1
NOFL	1	1	0	0	0	0	0	0	0	0	0	0	1	3	1	1	1.0	0.0	23.1
#PAS	44	42	48	135	79	13	110	44	14	26	54	93	85	787	135	13	60.5	37.3	100.0
TRSW	0	0	0	0	0	0	6	1	0	0	0	0	0	7	6	1	3.5	3.5	15.4
VGSW	0	0	1	5	2	0	0	9	0	3	0	18	20	58	20	1	8.3	7.8	53.8
BASW	0	0	0	0	0	0	0	1	0	3	9	4	2	19	9	1	3.8	3.1	38.5
STJA	2	0	0	5	1	0	0	1	0	0	0	0	0	9	5	1	2.3	1.9	30.8
NOCR	1	3	13	11	10	4	19	4	2	1	0	5	8	81	19	1	6.8	5.6	92.3
CORA	0	1	0	0	0	0	0	0	0	0	0	0	1	2	1	1	1.0	0.0	15.4
CBCH	2	0	0	14	2	0	0	3	0	0	1	1	0	23	14	1	3.8	5.0	46.2
BEWR	1	1	0	0	1	0	1	0	0	0	0	0	0	4	1	1	1.0	0.0	30.8
GCKI	2	0	0	17	0	0	0	2	0	0	0	0	0	21	17	2	7.0	8.7	23.1
SWTH	0	0	0	0	0	0	0	0	0	0	0	1	1	2	1	1	1.0	0.0	15.4
AMRO	0	11	1	34	12	4	38	4	2	1	27	8	6	148	38	1	12.3	13.2	92.3
VATH	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3	3	3.0	0.0	7.7
EUST	7	14	22	10	20	0	22	7	5	6	0	34	20	167	34	5	15.2	9.2	84.6
OCWA	0	0	0	0	0	1	0	0	2	0	0	2	2	7	2	1	1.8	0.5	30.8
YEWA	0	0	0	0	0	0	0	0	0	1	0	5	1	7	5	1	2.3	2.3	23.1
YRWA	0	0	0	0	3	0	0	2	0	0	0	0	0	5	3	2	2.5	0.7	15.4
MGWA	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
COYE	0	0	0	0	0	0	0	0	0	1	1	0	1	3	1	1	1.0	0.0	23.1
WIWA	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	7.7
RSTO	1	0	2	2	0	0	2	0	0	0	0	0	0	7	2	1	1.8	0.5	30.8
SAVS	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
SOSP	0	1	3	4	5	2	2	0	0	2	2	2	1	24	5	1	2.4	1.3	76.9
GCSP	0	2	0	3	0	0	0	3	0	1	0	0	0	9	3	1	2.3	1.0	30.8
WCSP	0	0	0	0	0	0	1	0	0	0	0	0	3	4	3	1	2.0	1.4	15.4
DEJU	4	3	1	8	2	1	3	0	0	0	0	0	0	22	8	1	3.1	2.4	53.8
RWBL	5	3	0	12	0	0	6	2	0	0	2	0	0	30	12	2	5.0	3.8	46.2
BRBL	18	0	2	2	0	1	2	2	2	3	6	1	5	44	18	1	4.0	4.9	84.6
BHCO	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
PUFI	0	0	3	0	2	0	0	0	0	2	0	0	0	7	3	2	2.3	0.6	23.1

Date	07Mar	15Mar	21Mar	28Mar	04Apr	11Apr	18Apr	25Apr	02May	09May	16May	23May	31May	Total	Max	Min	Mean	SD	%Freq
HOFI	0	3	0	8	5	0	4	0	0	2	1	7	6	36	8	1	4.5	2.4	61.5
PISI	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4.0	0.0	7.7
AMGO	0	0	0	0	0	0	0	0	0	0	5	4	3	12	5	3	4.0	1.0	23.1
EVGR	0	0	0	0	14	0	2	0	0	0	0	0	0	16	14	2	8.0	8.5	15.4
HOSP	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	7.7
#TOT	45	44	51	144	81	14	121	46	36	28	58	95	93	856	144	14	65.8	38.3	100.0

Bird use of Mixed Forest/Residential habitat for Summer 87

Date	06Jun	13Jun	21Jun	27Jun	04Jul	11Jul	18Jul	25Jul	01Aug	08Aug	15Aug	22Aug	29Aug	Total	Max	Min	Mean	SD	%Freq
#GEE	0	0	0	0	0	0	0	0	0	0	20	0	0	20	20	20	20.0	0.0	7.7
CAGO	0	0	0	0	0	0	0	0	0	0	20	0	0	20	20	20	20.0	0.0	7.7
#DIV	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	7.7
COME	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	7.7
#RAP	2	0	3	1	0	1	2	0	0	0	1	0	0	10	3	1	1.7	0.8	46.2
TUVU	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
BAEA	1	0	1	0	0	0	2	0	0	0	1	0	0	5	2	1	1.3	0.5	30.8
MERL	0	0	2	1	0	1	0	0	0	0	0	0	0	4	2	1	1.3	0.6	23.1
#SHO	0	0	0	2	0	0	2	0	0	0	0	0	1	5	2	1	1.7	0.6	23.1
KILL	0	0	0	1	0	0	2	0	0	0	0	0	0	3	2	1	1.5	0.7	15.4
GRYE	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1.0	0.0	7.7
SDSA	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#GUL	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	7.7
GWGU	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1.0	0.0	7.7
RODO	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
BTPI	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
RUHU	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
BEKI	0	0	0	0	0	0	1	0	0	0	0	1	1	3	1	1	1.0	0.0	23.1
#WOO	0	0	1	2	2	1	3	0	0	0	2	1	0	12	3	1	1.7	0.8	53.8
NOFL	0	0	1	2	1	1	3	0	0	0	2	1	0	11	3	1	1.6	0.8	53.8
PIWO	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#PAS	69	0	98	69	12	21	185	3	41	0	114	69	22	703	185	3	63.9	53.8	84.6
WIFL	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
TRSW	0	0	7	2	0	0	0	0	2	0	0	0	0	11	7	2	3.7	2.9	23.1
VGSW	5	0	10	8	0	3	0	0	0	0	0	0	0	26	10	3	6.5	3.1	30.8
BASW	2	0	15	7	0	12	17	0	0	0	8	12	0	73	17	2	10.4	5.1	53.8
STJA	0	0	0	0	0	0	0	0	0	0	0	1	9	10	9	1	5.0	5.7	15.4
NOCR	2	0	6	4	2	1	10	0	6	0	8	6	2	47	10	1	4.7	3.0	76.9
CBCH	6	0	0	7	0	0	10	3	0	0	18	0	0	44	18	3	8.8	5.7	38.5
BUSH	0	0	8	0	0	0	0	0	0	0	0	0	0	8	8	8	8.0	0.0	7.7
BRCR	0	0	0	0	0	0	5	0	0	0	0	0	0	5	5	5	5.0	0.0	7.7
BEWR	1	0	0	2	0	0	1	0	0	0	0	0	0	4	2	1	1.3	0.6	23.1
GCKI	0	0	0	6	0	0	6	0	6	0	8	0	0	26	8	6	6.5	1.0	30.8
SWTH	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
AMRO	4	0	16	2	0	0	14	0	10	0	0	2	3	51	16	2	7.3	6.0	53.8
CEWA	0	0	0	2	0	0	10	0	0	0	0	1	0	13	10	1	4.3	4.9	23.1
EUST	21	0	16	0	0	2	46	0	0	0	8	14	8	115	46	2	16.4	14.4	53.8
OCWA	2	0	1	0	0	0	1	0	0	0	0	0	0	4	2	1	1.3	0.6	23.1
YRWA	0	0	0	0	0	0	5	0	0	0	0	0	0	5	5	5	5.0	0.0	7.7
COYE	1	0	0	0	0	0	0	0	1	0	0	0	0	2	1	1	1.0	0.0	15.4
RSTO	3	0	3	2	0	0	0	0	4	0	1	0	0	13	4	1	2.6	1.1	38.5
SAVS	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1.0	0.0	7.7
SOSP	0	0	1	0	0	0	1	0	0	0	0	0	0	2	1	1	1.0	0.0	15.4
WCSP	0	0	0	2	0	1	4	0	2	0	0	0	0	9	4	1	2.3	1.3	30.8
RWBL	4	0	1	1	4	0	0	0	0	0	4	0	0	14	4	1	2.8	1.6	38.5
BRBL	8	0	2	2	0	0	48	0	0	0	4	24	0	88	48	2	14.7	18.3	46.2
BHCO	0	0	0	2	0	0	0	0	0	0	1	0	0	3	2	1	1.5	0.7	15.4
NOOR	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7

Date	06Jun	13Jun	21Jun	27Jun	04Jul	11Jul	18Jul	25Jul	01Aug	08Aug	15Aug	22Aug	29Aug	Total	Max	Min	Mean	SD	%Freq
PUFI	1	0	2	0	2	0	2	0	2	0	9	0	0	18	9	1	3.0	3.0	46.2
HOFI	9	0	7	15	4	2	4	0	6	0	3	6	0	56	15	2	6.2	3.9	69.2
PISI	0	0	0	0	0	0	0	0	0	0	18	0	0	18	18	18	18.0	0.0	7.7
AMGO	0	0	3	0	0	0	1	0	2	0	24	2	0	32	24	1	6.4	9.9	38.5
#TOT	71	0	103	74	14	23	196	3	41	0	139	71	24	759	196	3	69.0	58.8	84.6

Bird use of Mixed Forest/Residential habitat for Autumn 87

Date	05Sep	12Sep	19Sep	26Sep	03Oct	10Oct	17Oct	24Oct	31Oct	07Nov	14Nov	21Nov	28Nov	Total	Max	Min	Mean	SD	%Freq
#HER	0	0	0	1	0	0	0	1	0	0	0	0	0	2	1	1	1.0	0.0	15.4
GBHE	0	0	0	1	0	0	0	1	0	0	0	0	0	2	1	1	1.0	0.0	15.4
#DIV	0	0	0	5	0	0	0	0	0	0	0	0	3	8	5	3	4.0	1.4	15.4
BUFF	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3.0	0.0	7.7
COME	0	0	0	5	0	0	0	0	0	0	0	0	0	5	5	5	5.0	0.0	7.7
#RAP	1	0	1	1	2	0	1	3	0	0	1	2	2	14	3	1	1.6	0.7	69.2
BAEA	0	0	1	0	0	0	0	2	0	0	0	1	1	5	2	1	1.3	0.5	30.8
RTHA	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
MERL	1	0	0	1	1	0	1	1	0	0	1	1	1	8	1	1	1.0	0.0	61.5
#SHO	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
LEYE	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1.0	0.0	7.7
#GUL	0	0	8	4	0	0	0	0	0	15	0	0	0	27	15	4	9.0	5.6	23.1
BOGU	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
GWGU	0	0	8	2	0	0	0	0	0	15	0	0	0	25	15	2	8.3	6.5	23.1
RODO	3	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3.0	0.0	7.7
BEKI	2	2	0	0	0	0	0	0	1	0	0	2	0	7	2	1	1.8	0.5	30.8
#WOO	0	2	4	1	0	1	1	2	2	0	0	0	2	15	4	1	1.9	1.0	61.5
DOWO	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1.0	0.0	7.7
NOFL	0	2	1	1	0	1	1	2	0	0	0	0	2	10	2	1	1.4	0.5	53.8
PIWO	0	0	3	0	0	0	0	0	1	0	0	0	0	4	3	1	2.0	1.4	15.4
#PAS	56	16	94	186	63	15	330	204	200	79	78	315	81	1717	330	15	132.1	105.2	100.0
STJA	3	0	0	4	0	0	0	4	0	0	6	3	1	21	6	1	3.5	1.6	46.2
NOCR	8	2	14	15	0	2	18	0	0	38	12	13	3	125	38	2	12.5	10.6	76.9
CORA	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
CBCH	2	0	0	4	0	0	0	30	10	6	0	0	0	52	30	2	10.4	11.3	38.5
BEWR	0	0	1	0	0	0	0	0	0	1	0	0	0	2	1	1	1.0	0.0	15.4
GCKI	6	0	10	0	0	0	0	12	0	0	0	0	0	28	12	6	9.3	3.1	23.1
RCKI	0	0	0	0	0	0	0	0	3	0	0	0	0	3	3	3	3.0	0.0	7.7
AMRO	0	1	0	8	1	3	3	12	0	1	0	0	0	29	12	1	4.1	4.3	53.8
EUST	0	12	57	70	35	4	131	26	66	15	0	85	24	525	131	4	47.7	38.3	84.6
OCWA	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
YRWA	0	0	0	18	7	0	0	0	0	0	0	0	0	25	18	7	12.5	7.8	15.4
BTGW	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2	2	2.0	0.0	7.7
RSTO	0	0	0	0	0	0	4	0	1	1	4	5	3	18	5	1	3.0	1.7	46.2
SAVS	0	0	6	35	1	0	49	2	0	0	0	0	0	93	49	1	18.6	22.0	38.5
SOSP	2	0	2	3	3	0	9	4	5	3	3	0	2	36	9	2	3.6	2.1	76.9
GCSP	0	0	0	0	0	0	11	0	4	0	1	4	5	25	11	1	5.0	3.7	38.5
WCSP	0	0	0	0	0	0	0	0	0	0	0	8	1	9	8	1	4.5	4.9	15.4
DEJU	0	0	0	2	0	2	2	60	38	0	22	113	5	244	113	2	30.5	39.4	61.5
RWBL	0	0	0	12	1	4	75	24	29	0	8	0	0	153	75	1	21.9	25.6	53.8
BRBL	30	1	0	5	15	0	27	24	44	0	20	80	6	252	80	1	25.2	23.3	76.9
PUFI	0	0	0	3	0	0	0	0	0	0	0	0	0	3	3	3	3.0	0.0	7.7
HOFI	3	0	4	3	0	0	1	6	0	14	0	4	31	66	31	1	8.3	10.0	61.5
PISI	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	2	2.0	0.0	7.7
#TOT	62	21	107	198	65	16	332	210	203	94	79	319	88	1794	332	16	138.0	104.9	100.0

Bird use of Mixed Forest/Residential habitat for Winter 87

Date	05Dec	12Dec	19Dec	26Dec	Total	Max	Min	Mean	SD	%Freq
#SWA	0	0	0	2	2	2	2	2.0	0.0	25.0
TRUS	0	0	0	2	2	2	2	2.0	0.0	25.0
#DAB	0	0	68	0	68	68	68	68.0	0.0	25.0
GWTE	0	0	4	0	4	4	4	4.0	0.0	25.0
NOPI	0	0	47	0	47	47	47	47.0	0.0	25.0
AMWI	0	0	17	0	17	17	17	17.0	0.0	25.0
#RAP	0	3	8	0	11	8	3	5.5	3.5	50.0
BAEA	0	3	8	0	11	8	3	5.5	3.5	50.0
#SHO	0	0	0	2	2	2	2	2.0	0.0	25.0
KILL	0	0	0	2	2	2	2	2.0	0.0	25.0
#GUL	0	0	0	9	9	9	9	9.0	0.0	25.0
GWGU	0	0	0	9	9	9	9	9.0	0.0	25.0
BEKI	0	0	0	1	1	1	1	1.0	0.0	25.0
#WOO	1	0	0	2	3	2	1	1.5	0.7	50.0
NOFL	1	0	0	2	3	2	1	1.5	0.7	50.0
#PAS	110	83	227	168	588	227	83	147.0	64.0	100.0
STJA	3	2	2	2	9	3	2	2.3	0.5	100.0
NOCR	50	8	29	16	103	50	8	25.8	18.3	100.0
CBCH	0	1	0	0	1	1	1	1.0	0.0	25.0
BEWR	0	0	0	1	1	1	1	1.0	0.0	25.0
WIWR	1	0	0	1	2	1	1	1.0	0.0	50.0
AMRO	1	0	3	1	5	3	1	1.7	1.2	75.0
EUST	8	6	71	24	109	71	6	27.3	30.3	100.0
YRWA	0	1	0	0	1	1	1	1.0	0.0	25.0
RSTO	0	1	5	7	13	7	1	4.3	3.1	75.0
SOSP	1	4	3	4	12	4	1	3.0	1.4	100.0
GCSP	12	0	12	2	26	12	2	8.7	5.8	75.0
WCSP	2	0	0	0	2	2	2	2.0	0.0	25.0
DEJU	12	28	25	37	102	37	12	25.5	10.3	100.0
RWBL	0	0	0	20	20	20	20	20.0	0.0	25.0
BRBL	0	0	41	41	82	41	41	41.0	0.0	50.0
HOFI	20	32	36	12	100	36	12	25.0	11.0	100.0
#TOT	111	86	303	184	684	303	86	171.0	97.3	100.0

APPENDIX XIV

HIGHEST BIRD NUMBERS RECORDED ON THE TRENT RIVER ESTUARY - 1987

Species	Number	Month
RTLO	3	Win 86
PALO	4	Spr 87
COLO	12	Aut 87
HOGR	8	Aut 87
RNGR	5	Aut 87
WEGR	20	Aut 87
CORM	1	Spr 87
DCCO	4	Spr 87
PECO	5	Spr 87
GBHE	10	Sum 87
TRUS	9	Win 86
BRAN	450	Spr 87
CAGO	28	Sum 87
GWTE	18	Aut 87
MALL	112	Aut 87
NOPI	481	Aut 87
NOSL	1	Aut 87
EUWI	2	Spr 87
AMWI	165	Win 87
SCAU	200	Win 86
GRSC	18	Win 87
LESC	4	Win 86
HADU	20	Aut 87
OLDS	1	Win 86
SCOT	100	Win 87
BLSC	136	Win 86
SUSC	45	Aut 87
WWSC	188	Win 86
COGO	44	Win 87
BAGO	44	Win 86
BUFF	77	Aut 87
HOME	1	Win 87
COME	24	Aut 87
RBME	6	Aut 87
TUVU	4	Sum 87
OSPR	2	Sum 87
HAWK	1	Spr 87
BAEA	43	Win 86
NOHA	1	Win 86
SSHA	1	Aut 87
COHA	1	Spr 87
SWHA	1	Spr 87
RTHA	1	Aut 87
MERL	4	Sum 87
RNPH	1	Aut 87
SACR	4	Aut 87
BBPL	124	Win 87
SEPL	6	Spr 87
KILL	18	Sum 87
GRYE	3	Spr 87
LEYE	5	Aut 87
SDSA	3	Spr 87
WHIM	5	Spr 87
BLTU	29	Win 87
WESA	145	Spr 87
LESA	20	Sum 87
BASA	8	Sum 87
DUNL	1000	Aut 87
SBDO	3	Sum 87
SHOR	100	Win 86
GULL	200	Spr 87
BOGU	84	Sum 87
MEGU	76	Aut 87
HEGU	6	Aut 87
THGU	58	Spr 87
GWGU	1147	Win 86
GLGU	1	Win 86
CATE	4	Sum 87
MAMU	3	Sum 87
RODO	3	Aut 87
BTPI	22	Spr 87
VASW	11	Spr 87
RUHU	9	Sum 87
BEKI	6	Win 86
DOWO	2	Sum 87
HAWO	1	Spr 87
NOFL	7	Sum 87
PIWO	3	Aut 87
WIFL	4	Sum 87
WEFL	2	Sum 87
TRSW	29	Sum 87
VGSW	52	Sum 87
NRWS	5	Sum 87
CLSW	5	Sum 87
BASW	60	Sum 87
STJA	13	Aut 87
NOCR	121	Aut 87
CORA	4	Aut 87
CBCH	58	Aut 87
BUSH	12	Sum 87
RBNU	1	Aut 87
BRCR	5	Sum 87
BEWR	6	Sum 87
WIWR	2	Aut 87
GCKI	17	Spr 87
RCKI	9	Aut 87
SWTH	4	Sum 87
AMRO	56	Spr 87
VATH	3	Spr 87
CEWA	37	Spr 87
NOSH	1	Aut 87
EUST	425	Aut 87
WARB	1	Aut 87
OCWA	6	Sum 87
YEWA	11	Spr 87
YRWA	18	Aut 87
BTGW	2	Spr 87
TOWA	2	Sum 87
MGWA	1	Spr 87
COYE	6	Sum 87
WIWA	2	Spr 87
RSTO	14	Win 87
CHSP	1	Spr 87
SAVS	92	Aut 87
FOSP	2	Sum 87
SOSP	31	Win 87
LISP	5	Aut 87
GCSP	29	Aut 87
WCSP	15	Aut 87
DEJU	130	Aut 87
RWBL	134	Win 86
WEME	1	Aut 87
BRBL	96	Aut 87
BHCO	5	Spr 87
NOOR	2	Spr 87
PUFI	15	Spr 87
HOFI	74	Win 87
PISI	32	Win 87
AMGO	79	Sum 87
EVGR	14	Spr 87
HOSP	1	Spr 87
Total	7174	

APPENDIX XV

WEATHER AND TIDES - 1987

Date	Temp.°C.	Hour (PST)	Tide (meters)	Weather
3 January	6°	0850	5.2	Broken cloud, occasional
		1435	3.6	light showers.
10 "	6°	0825	4.1	Dull, overcast, intermittant
		1250	4.5	rain, strong winds.
17 "	3°	0805	4.9	Overcast
24 "	3.5°	0540	3.8	Partly clear, wind WNW at
		1110	4.8	at 3 kph.
31 "	3°	0730	5.1	Sunny, calm.
		1310	3.3	
7 February	3°	1055	4.4	Thin broken cirrus, sunny.
		1925	1.7	At 1200 hrs. thick fog over water.
14 "	5°	0650	4.8	Sunny with cloudy periods.
21 "	5°	0945	4.7	Clear, calm; windy by 1100 hrs.
		1730	1.5	
28 "	0°	0610	5.0	Dull, snowing lightly. By
		1200	3.0	1200 hrs. heavy wet snow, no visibility seaward.
7 March	5.5°	0905	4.0	Dull. overcast, calm.
15 "	8°	1150	2.6	Clear, then some cloud,
		1730	4.0	slight breeze.
21 "	2.5°	0805	4.7	Clear, calm.
		1555	1.0	
28 "	3.5°	1100	2.5	Clear, some wind.
		1640	4.3	
4 April	7°	0740	4.0	Partially cloudy.
		1530	1.6	
11 "	6°	1015	2.5	Sunny, cool wind.
		1555	4.0	

18 "	5°	0645	4.3	Sunny, cool NW wind.
		1430	0.8	
25 "	6°	1000	2.1	Clear, calm.
		1600	4.1	
2 May	7°	0715	4.0	Heavy rain, strong winds, cold!
9 May	12°	1015	2.3	Sunny, slight breeze.
		1600	3.8	
16 "	11°	0640	4.5	Clear.
		1420	0.7	
23 "	12°	1000	5.7	Sunny.
		1620	4.0	
31 "	8°	0645	4.0	Overcast, some sun,
		1435	1.0	light breeze.
6 June	11°	0845	2.4	Clear, cold.
		1435	3.7	
13 "	15°	0535	4.7	Sunny.
		1320	-0.4	
21 "	15°	0925	4.7	Grey and cool.
		1655	3.0	
27 "	25°	0515	2.9	Clear and warm.
		1300	2.3	
4 July	21.5°	0700	2.5	Overcast, rainy.
		1235	3.5	
11 "	23°	0430	4.7	Clear, high cirrus cloud.
		1220	-0.5	
18 "	28°	0700	2.1	Clouding over.
		1345	3.8	
25 "	22°	0440	4.1	Low overcast, heavy showers.
		1210	1.0	
1 August	16°	0505	2.4	Clear, sunny
		1045	3.7	NW wind 2 kph.
8 "	16.5°	0330	4.6	Sunny.
		1115	0.7	
15 "	21°	0505	2.0	Cloudy.
		1135	4.0	

22 "	16.5°	0400 1115	4.0 1.3	Sunny
29 "	22°	0325 0940	2.1 4.1	Clear, slight cloud.
5 September	21°	1005 1745	0.9 4.9	Clear, warm.
12 "	18.5°	1010 1530	4.4 3.3	Cloudy, cool.
19 September	17°	1000 1720	1.7 4.6	Overcast, calm.
26 "	13°	0850 1410	4.4 3.1	Clear, sunny, SE breeze.
3 October	21°	0845 1620	1.5 4.8	Clear, calm.
10 "	16.5°	0910 1430	4.7 3.4	Sunny.
17 "	11.5°	0815 1545	2.2 4.6	Clear.
24 "	14°	0805 1320	4.7 3.4	Overcast.
31 "	12°	0705 1445	1.8 4.9	Rain overnight, calm.
7 November	10.5°	0720 1240	4.9 3.7	Overcast, SE wind, 11 kph.
14 "	7°	0455 1255	2.3 4.7	Clear, sunny.
21 "	10°	0620 1120	4.9 3.8	0900 hrs, calm; 1100 hrs SE wind; 1130 hrs rain.
28 "	2°	0425 1200	1.9 5.1	Dull, overcast, calm.
5 December	6°	0640 1150	5.0 4.0	Overcast, light rain, SE wind 25 kph.
12 "	1.5°	0315 1100	2.1 4.8	Clear, SE wind 7 kph.

18	"	1°	0540	4.9	Some sun, scattered
			1015	4.1	cloud, calm, ice underfoot.
26	"	0°	0305	1.7	Overcast, becoming sunny.
			1025	5.2	