Bird Monitoring on the Togiak National Wildlife Refuge and the Dillingham Area, Alaska, 1999

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Key Words: Landbird, Waterfowl, Christmas Bird Count, Great Backyard Bird Count, North American Migration Count, Breeding Bird Survey, Off-Road Point Count, Area Search, Checklist, Alaska Sight Record Report, Aerial telemetry, Togiak National Wildlife Refuge, Dillingham, Alaska

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ABSTRACT

Monitoring landbirds and waterfowl relates directly to three of the purposes for which the Togiak National Wildlife Refuge was created: 1) conserving fish and wildlife populations and habitats in their natural diversity; 2) fulfilling international treaty obligations with respect to wildlife and their habitats; and 3) providing continued subsistence uses by local residents. Landbirds and waterfowl were recorded while performing numerous bird counts: Christmas Bird Count; Great Backyard Bird Count; 2 North American Migration Counts; 4 Breeding Bird Surveys; 8 Off-Road Point Counts; 7 Area Searches; Checklists from 2 seasonal field camps; aerial surveys of the Refuge coastline; Refuge staff recorded spring migrants in the Dillingham area; and other birds of interest observed in the Dillingham area were recorded. In addition, tarsus bands and neck collars on migrating geese were read, two Alaska Sight Record Reports were filled out (Brambling and Terek Sandpiper), and a Black-capped Chickadee with a deformed bill was observed in Dillingham. Four other bird monitoring projects conducted in 1999 on the Refuge will be reported elsewhere. These projects include: 1) the annual population and productivity of cliff-nesting seabirds at Cape Peirce; 2) the late summer occurrence of shorebirds on the southern Nushagak Peninsula; 3) occupancy and productivity of raptor nests; and 4) Harlequin duck pair and brood surveys. It is recommended that the Togiak National Wildlife Refuge continues to participate in these landbird and waterfowl monitoring efforts to assist in monitoring the populations of North America's birds and to provide valuable data for the Western and Southwestern Biogeographic Regions of Alaska.

INTRODUCTION

Landbirds are an important component of the avian diversity of Alaska. Principal to the management of migratory landbirds is an understanding of their occurrence on the landscape. Baseline information on bird distribution is a primary need to preserve a natural diversity and abundance of fauna and flora on Refuge lands (USFWS 1993). Monitoring landbirds relates directly to two of the purposes for which the Togiak National Wildlife Refuge (Refuge) was created: 1) conserving fish and wildlife populations and habitats in their natural diversity; and 2) fulfilling international treaty obligations with respect to wildlife and their habitats (USFWS 1996).

Continental and local declines in numerous bird populations has lead to concern for the future of migratory and resident bird species (Boreal Partners in Flight Working Group 1999). Declines in populations of landbirds, particularly resident species, could reflect the deterioration of ecosystem processes (Andres and Doyle 1998).

The Togiak National Wildlife Refuge Wildlife Inventory and Monitoring Plan (USFWS 1996) describes projects and procedures for gathering baseline resource information essential for the conservation of wildlife populations and their ecosystems in and adjacent to the Refuge. One of the 10 inventory and monitoring projects listed is the Passerine Bird Monitoring Project. The objective of this is to monitor neotropical and resident landbirds within and adjacent to the Refuge. The Refuge performed numerous specific bird counts during 1999 including a Christmas

Bird Count, Great Backyard Bird Count, North American Migration Count, 4 Breeding Bird Survey routes, 8 Off-Road Point Counts, 7 Area Searches, 2 Checklists at seasonal field camps, and Refuge staff recorded spring migrants in the Dillingham area. In addition, other birds of interest observed were recorded, including submission of Alaska Sight Record Reports for two of these species.

Numerous bays within and adjacent to the Refuge contain extensive eelgrass *Zostera marina* beds that provide important staging and feeding habitat in the spring and fall for migrating waterfowl. As many as a quarter-million waterfowl have been counted in the bays, lagoons, and lakes along the coast of the Togiak Refuge, one of the last stopping areas for waterfowl awaiting spring breakup in the Arctic (USFWS 1996). Pacific brant *Branta bernicla*, Emperor geese *Chen canagica*, Canada geese *B. canadensis*, *B.C. taverneri*, and numerous duck species comprise the bulk of the birds using these areas.

Monitoring the spring and fall migration of waterfowl relates directly to three of the purposes for which the Refuge was created: 1) conserving fish and wildlife populations and habitats in their natural diversity; 2) fulfilling international treaty obligations with respect to wildlife and their habitats; and 3) providing continued subsistence uses by local residents.

The Waterfowl Monitoring Project is one of 10 projects listed in the Togiak National Wildlife Refuge Wildlife Inventory and Monitoring Plan (USFWS 1996). The Refuge performed two main waterfowl monitoring projects during the 1999 field season: aerial surveys of waterfowl species along the Refuge coastline and ground surveys at Nanvak Bay. In addition, an aerial survey was performed for radio-tagged Pacific brant and Emperor geese, field personnel read tarsus bands and neck collars on migrating geese, and waterfowl species were recorded during the Christmas Bird Count, Great Backyard Bird Count, North American Migration Count, 4 Breeding Bird Survey routes, 8 Off-Road Point Counts, 7 Area Searches, a Checklist at a shorebird monitoring field camp, and in Dillingham by Refuge staff on an incidental basis.

As in past years, waterfowl monitoring was opportunistic and secondary to the purpose of field camps. Funding was not budgeted in 1999 for waterfowl, however, funding was budgeted for the Harlequin pair and brood surveys which are reported elsewhere.

This report concentrates on the landbird and waterfowl monitoring work performed in 1999 on the Togiak National Wildlife Refuge. Four other bird projects were performed this year and they will be reported elsewhere. These projects include: 1) the annual population and productivity of cliff-nesting seabirds at Cape Peirce; 2) the late summer occurrence of shorebirds on the southern Nushagak Peninsula; 3) occupancy and productivity of raptor nests; and 4) Harlequin duck pair and brood surveys.

OBJECTIVES

LANDBIRDS

1. Participate in the various continent-wide bird counts to assist in monitoring the populations of North America's birds. These counts are the Christmas Bird Count, Great Backyard Bird Count, North American Migration Count, Breeding Bird Surveys, and Off-Road Point Counts.

2. Capitalize on opportunities for public outreach by involving volunteers in local bird counts when possible. The counts that permit this are the Christmas Bird Count, Great Backyard Bird Count, and the North American Migration Count.

3. Perform Area Searches in areas where the Refuge has little knowledge of bird species and populations.

4. Conduct Bird Checklists in various field camps secondary to the main duties performed.

5. Have Refuge staff record spring migrants in the Dillingham area on an incidental basis.

6. Document other bird species of interest with uncommon species being documented and submitted on the Alaska Sight Record Report form.

WATERFOWL

1. Monitor spring and fall staging and migration of waterfowl on the Togiak National Wildlife Refuge.

2. Provide support for other USFWS offices and agencies as time and money permit. For example, recording waterfowl tarsus bands and neck collars and monitoring radio-tagged geese by aerial and ground surveys.

STUDY AREA

The study area for these varied landbird and waterfowl monitoring efforts, in general, was the Togiak National Wildlife Refuge and the Dillingham area (Figure 1). The Christmas Bird Count, Great Backyard Bird Count, North American Migration Count, and one Breeding Bird Survey were conducted in the Dillingham area. A second North American Migration Count was performed at Cape Peirce. Three other Breeding Bird Survey routes were run: Togiak River, Goodnews River, and the Kanektok River. Seven Off-Road Point Counts were conducted in the Cape Peirce area and one was conducted in the Cape Newenham area. Seven Area Searches were performed: three on the Nushagak Peninsula and one each on the Kulukak River, Nagugun Lake,

Heart Lake, and Kagati Lake. Two Checklists at seasonal field camps were performed. These camps were located at Cape Peirce and the southern tip of the Nushagak Peninsula. Refuge staff recorded spring migrants and other birds of interest in the Dillingham area. The aerial surveys for waterfowl were conducted along the coastline from the Nushagak Peninsula to Goodnews Bay with emphasis on Osviak, Nanvak, Chagvan, and Goodnews Bays.

METHODS

LANDBIRDS

The Christmas Bird Count was conducted following methods described in the National Audubon Society Christmas Bird Count Paper Form Instructions. The Great Backyard Bird Count was conducted following methods described on the birdsource.cornell.edu web site. The North American Migration Count was conducted following methods described by Boreal *Partners in Flight*.

The 4 Breeding Bird Surveys, 8 Off-Road Point Counts, 7 Area Searches, and 2 Checklists were conducted following methods listed in the Alaska National Wildlife Refuges Landbird Inventory and Monitoring Protocols (Andres and Doyle 1998). The Goodnews River motorboat-based Breeding Bird Survey was created and performed for the first time this year. Methods for planning and conducting this survey were found in Andres and Doyle (1998) and from information gathered during conversations with Pardieck (pers. comm.). In addition to the methods for conducting the Area Searches outlined in the Alaska National Wildlife Refuges Landbird Inventory and Monitoring Protocols, information was also gathered during conversations with Andres (pers. comm.).

The spring migrants documented by Refuge staff in the Dillingham area were incidental observations recorded on a clipboard in the office. All staff were asked to record new species as they observed them around the Dillingham area. No formal protocol was used.

The standardized Alaska Sight Record Report was used to record sightings of bird species rare or uncommon to this area. An example of the Alaska Sight Record Report is shown in Appendix 1. These reports are archived at this office and also sent to D. Gibson of the University of Alaska Museum in Fairbanks, Alaska. In addition to these birds, other noteworthy birds were recorded incidentally with no formal protocol.

WATERFOWL

Aerial surveys were conducted in a Cessna 185 (N735EA) or a Piper Super Cub (N9786P) with one pilot and one observer. The Refuge coastline and entire bays were flown at altitudes that allowed counting of waterfowl and identification to species. An aerial telemetry survey was performed for radio-tagged Pacific brant and Emperor geese using an Advanced Telemetry

Systems receiver in a Cessna 185 with H-antennas mounted to the wing struts.

Ground counts at Nanvak Bay consisted of daily recordings of all waterfowl species from a canvas-covered observation tower located on the south shore of the bay. The tower is approximately 11 feet tall with zippered flaps on the canvas cover that open as windows for observing the birds. A Nikon Spotter XL or Fujinon Field Scope 80 were used for the observations.

The methods used for the Christmas Bird Count, Great Backyard Bird Count, North American Migration Count, Breeding Bird Surveys, Off-Road Point Counts, Area Searches, and Checklists are reported above.

Secondary to the waterfowl monitoring at Nanvak Bay, tarsus bands on Pacific brant and neck collars on other goose species were read. Flocks of geese were approached as closely as possible in relation to the power of the optics being used. A Questar telescope, Nikon Spotter XL, or Fujinon Field Scope 80 were used for the observations. For flocks of Brant, the legs of the geese are scanned for individual color-marked tarsus bands. Upon observing a band, the color of the band and the letters are recorded along with the code on the band. Then, the flock is scanned for additional bands. The time of observation and the flock size is recorded as well. All results are sent to USFWS Migratory Bird Management in Anchorage, Alaska.

RESULTS

LANDBIRDS

The 5th Annual Dillingham Christmas Bird Count (CBC) was conducted on 2 January in the 15 mile diameter circle surrounding Dillingham, Alaska. The center of this circle is 59° 04'N by 158° 37'W. The count began at 9:15 a.m. and lasted until 5:30 p.m. There were a total of 38 observers in the field and at household bird feeders recording 19 bird species and 953 individual birds (Table 1).

The 1st Annual Dillingham Great Backyard Bird Count (GBBC) was conducted over a 4-day time period (19-22 February). The count area was advertised simply as the Dillingham area. The actual bird counts ranged from the backyards of numerous residents of Dillingham and the village of Portage Creek located approximately 46 km east of Dillingham. There were a total of 89 observers in the field and at household bird feeders recording 20 bird species and 3,978 individual birds with a daily peak of 27 observers, 20 separate bird species, and 2,455 individual birds (Table 2).

The 3rd Annual Dillingham North American Migration Count (NAMC) was conducted on 8 May at Cape Peirce and in Dillingham. The area covered for the Cape Peirce NAMC was from the south shore of Nanvak Bay along the coastal sea cliffs to Cape Peirce Point, around to Shaiak Island and then down across the open tundra back to Nanvak Bay. The area covered by the

Dillingham NAMC was the greater Dillingham area, including Nushagak Bay, Lilly Pond, Aleknagik Road up to the lake, Kanakanak Road to the hospital, Wood River Road, around the airport, Waskey Road, Snake Lake Road, local residents' yards, and the Portage Creek area 46 km east of Dillingham. For the Cape Peirce NAMC there was 1 observer in the field who recorded 34 bird species and 56,693 individual birds (Table 3). For the Dillingham NAMC there were 31 observers in the field recording 59 bird species and 2,870 individual birds.

Four Breeding Bird Survey (BBS) routes were conducted in the Dillingham area and on the Togiak National Wildlife Refuge. The Dillingham BBS route was conducted on 26 June along the entire length of Aleknagik Lake Road and the first 4 miles of Snake Lake Road. The count began at 4:30 a.m. and lasted until 9:04 a.m. The one observer recorded 33 bird species and 398 individual birds (Table 4). The Togiak River BBS route was conducted on 30 June along the Togiak River starting at Togiak Lake and heading down-river for the required 50 stops. The count began at 3:38 a.m. and lasted until 9:58 a.m. The one observer recorded 36 bird species and 376 individual birds. The Goodnews Bay BBS route was conducted on 1 July along the Goodnews River starting at Canyon Creek and heading down-river for the required 50 stops. The count began at 4:00 a.m. and lasted until 9:28 a.m. The one observer recorded 38 bird species and 425 individual birds. The Kanektok River BBS route was conducted on 3 July along the Kanektok River starting at Klak Creek and heading down-river for the required 50 stops. The count began at 3:47 a.m. and lasted until 10:26 a.m. The one observer recorded 35 bird species and 451 individual birds.

Eight Off-Road Point Counts (ORPC) were conducted on the Togiak National Wildlife Refuge. Seven of these were performed at Cape Peirce and one was performed at Cape Newenham. The Cape Peirce ORPC routes (route names Cabin Ponds, South Firebaugh-Twins, Slug River, Puffin Creek, Sea Cliffs Trail, South-North Spit, and North-North Spit) were run from 15 June to 20 June and are summarized in Table 5. Combining all 7 Cape Peirce ORPC, the observer recorded 54 bird species (range by count 15-26) and 4,397 individual birds (range by count 125-3,181). The Cape Newenham ORPC route (route name Cape Newenham) was run on 27 June. The observer recorded 11 bird species and 128 individual birds.

Habitat Data for the North-North Spit and the Cape Newenham ORPC routes were collected this year. This data is archived at the Togiak National Wildlife Refuge and the USGS Alaska Biological Science Center in Anchorage, Alaska.

Seven Area Searches were conducted from 8 June to 18 July. The Checklist scale was used for determining breeding status and relative abundance. In addition to species recorded during the actual Area Searches, incidental observations at other times were recorded. From 8-10 June two observers recorded 21 bird species and 506 individual birds along the northwest portion of the Nushagak Peninsula (Table 6). From 14-16 June two observers recorded 49 bird species and 1,025 individual birds along the southern portion of the Nushagak Peninsula (Table 7). From 25-28 June two observers recorded 37 bird species and 899 individual birds along the Kulukak River (Table 8). On 28 June two observers recorded 28 bird species and 969 individual birds along the southwestern portion of the Nushagak Peninsula (Table 7). From 7-9 July two observers

recorded 36 bird species and 1,561 individual birds around Nagugun Lake (Table 9). From 11-13 July two observers recorded 44 bird species and 1,884 individual birds around Heart Lake (Table 10). From 16-18 July two observers recorded 46 bird species and 1,474 individual birds around Kagati Lake (Table 11).

Two Checklists were created from separate field camps on the Refuge. At Cape Peirce field personnel recorded all bird species observed daily secondarily to their seabird and marine mammal monitoring. The Checklist created was from 5 May to 8 October and consisted of 100 bird species and 269,565 total individual birds (Table 12). This number is deceiving as it includes large flocks of waterfowl and other birds seen over multiple days. The Checklist created along the southern portion of the Nushagak Peninsula was from 3 August to 9 September and consisted of 45 bird species and 26,744 individual birds (Table 13).

For the fifth year in a row Refuge staff documented initial sightings of spring migrants in the Dillingham area. In 1999, 23 bird species and 97 individual birds were recorded from 6 April to 4 June (Table 14).

There were two Alaska Sight Record Reports filled out this year. They were both sent to D. Gibson of the University of Alaska Museum. One report was of a Brambling that was seen around the Dillingham area (Appendix 1). Observations of a single Brambling were made on 2, 10, and 21 January, and 22, 23, and 27 February. Observations of a pair of Brambling were made on 25 January and 12 February. The bird was photo-documented as well. The second report was of a Terek Sandpiper observed at Cape Peirce on 7 June (Appendix 2).

Other birds of interest that were observed in the Dillingham area were a Snowy Owl seen on the Nushagak Peninsula on 6 March and 9 Brown-headed Cowbirds in Dillingham on 1 September. These sightings were made by reputable birders, however, no photos were taken. Also, of interest, is a sighting of a Black-capped Chickadee with a deformed bill. This sighting was made on 5 July outside of Dillingham and was reported to C. Handel of the USGS Alaska Biological Science Center in Anchorage. A copy of the incident report is provided in Appendix 3. A similar Black-capped Chickadee with a deformed bill was reported in the Dillingham area during the winter of 1997/1998.

WATERFOWL

Aerial surveys of the Refuge coastline were performed on 26 April, 14 May, 16 August, and 25 August (Table 15). The surveys flown in April and May were performed to document migrating waterfowl species. The icing conditions during the 26 April survey did not show much open water available for waterfowl. Osviak and Nanvak bays were completely iced up and only the main channel was open at Chagvan Bay. The icing conditions during the 14 May survey showed much more open water available for waterfowl. Goodnews Bay was approximately 30% open, being open at the bay entrance and along the edges. Most of Chagvan Bay and Osviak Bay were open with ice along the edge. Nanvak Bay was completely iced up with a small open-water

section at the bay entrance.

The aerial survey flown on 16 August was an incidental count. Upon flying over Osviak Bay returning to Dillingham after a short field project we noticed a few flocks of geese in the bay, which we recorded. The aerial survey flown on 25 August was performed to document marine mammal carcasses along the Refuge coastline after Refuge staff and the public became concerned about the number of gray whale carcasses in the area. While performing this flight, we also recorded all waterfowl observed.

Staging and migrating waterfowl using Nanvak Bay were recorded from 5 May to 8 October (Table 12).

In support of other USFWS and/or USGS-BRD projects, Togiak Refuge staff completed one aerial survey for radio-tagged Pacific brant and Emperor geese. There were 65 radios on Brant with frequencies ranging from 165.504-167.983 and 40 radios on Emperor geese with frequencies ranging from 166.880-167.281. In addition, a receiver was sent to the Cape Peirce field camp so that staff could listen for radio-tagged geese in and around Nanvak Bay. No frequencies were heard from either the aerial or ground surveys.

Eleven unique, and 12 total, tarsus bands on Pacific brant were recorded at Nanvak Bay from 11-14 May (Table 16). One neck collar on an Emperor goose was read on 19 September at Nanvak Bay and 1 neck collar on a Canada goose was read on 20 September at Nanvak Bay. This Canada goose was re-sighted the following day and the collar was read also.

Waterfowl species were recorded during the Christmas Bird Count, Great Backyard Bird Count, North American Migration Count, 4 Breeding Bird Survey routes, 8 Off-Road Point Counts, 7 Area Searches, a Checklist at a shorebird monitoring field camp, and by Refuge staff on an incidental basis in the Dillingham area (Tables 1-14).

DISCUSSION

LANDBIRDS

Although inventories and some habitat-based monitoring schemes are feasible at the individual Refuge level, often single Refuges will not have the appropriate statistical power to detect population or demographic changes on their unit (Andres and Doyle 1998). The allocation of effort among a cluster of refuges, as a division of the biogeographic region, is likely the most feasible approach to broadscale landbird monitoring. The Togiak National Wildlife Refuge falls within two biogeographic regions, the Western and Southwestern Biogeographic Regions (Boreal Partners in Flight Working Group 1999).

The priority species for these biogeographic regions are: Gyrfalcon, Gray-cheeked Thrush, Varied Thrush, Blackpoll Warbler, Golden-crowned Sparrow, McKay's Bunting, Rusty Blackbird, and

Hoary Redpoll. The factors contributing to the priority determinations were because of decreasing population trends, the global monitoring responsibility, and the boreal North America monitoring responsibility. With this in mind, it is recommended that the Togiak National Wildlife Refuge continue to conduct the various landbird monitoring efforts and bird counts on Refuge land and around the Dillingham area to assist in monitoring the populations of North America's birds.

The Landbird Conservation Plan for Alaska Biogeographic Regions notes the Gray-cheeked Thrush, Varied Thrush, Blackpoll Warbler, and Golden-crowned Sparrow can probably be effectively monitored at the regional level in western Alaska with a combination of river Breeding Bird Survey routes and Off-Road Point Counts. To support this, the Togiak National Wildlife Refuge has continued to perform 8 Off-Road Point Counts, the Dillingham Breeding Bird Survey route and restarted river Breeding Bird Survey routes created and run only once (Togiak River in 1994 and Kanektok River in 1995). In addition, a new river Breeding Bird Survey route was created and run on the Goodnews River this year.

The addition of a few more riparian routes might increase Rusty Blackbird detections sufficiently to monitor this species as well (Boreal Partners in Flight Working Group 1999). This will be addressed in future Refuge landbird monitoring efforts. Incidental, unpublished bird observations archived in the Refuge files may shed some light on this species and all of the priority species. Intense Area Searches where we know little of the bird species present and populations will also be of importance.

WATERFOWL

Alaska experienced a later and more delayed spring breakup than those in recent years. This generally widespread late and delayed spring breakup on the western tundra and on the North Slope will detract from waterfowl production in Alaska this year (Conant et. al. 1999). In relation to this, the April aerial survey count was low this year due to extensive ice in the bays at the times of the surveys. The spring migration of waterfowl at Nanvak Bay was late because of extensive ice conditions. During early May, flocks of Brant seemed like they didn't know where to go in their search for the eelgrass beds that were still under the ice (MacDonald pers. obs.). Flocks of geese were coming and going in all directions as ice was still covering all of Nanvak Bay and flocks arriving from the north were assumably from Chagvan Bay, which was also ice-bound.

In the past, waterfowl aerial surveys were only performed in the spring. However, during two fall flights this year, we were able to document some of the fall waterfowl migration secondary to the main purpose of the flights.

The waterfowl monitoring at Nanvak Bay does not include the whole bay. These observations typically document waterfowl in only the southern two thirds of Nanvak Bay. In past years when waterfowl monitoring was the primary objective for field personnel, another observation tower in the northern, or upper, portion of Nanvak Bay was utilized to document the waterfowl present in

the upper third of Nanvak Bay. Combining the counts from both observation towers provided an fairly accurate count of the entire bay.

The air and ground surveys for radio-tagged Pacific brant and Emperor geese were part of a larger effort to gain an understanding of their migration patterns along the Pacific Flyway and wintering movement. Of particular interest is the stopover chronology during the spring migration but information of the fall migration will be beneficial as well. The radio-tagged Brant will provide an opportunity to better characterize the use of Nanvak and Chagvan bays. However, no radios were heard during our air and ground surveys.

Tarsus band and neck collar reading for spring staging and migrating geese was severely hampered by the extensive ice conditions in Nanvak Bay. Geese were unable to use the area when staff had sufficient time to look for and read bands. In the past 3 years, staff at Cape Peirce have read 516, 141, and 12 Brant tarsus bands, respectively. Previous to this time, very few bands were read on an annual basis. The high number of bands read in 1997 can be attributed to a couple of factors: an early spring with camp opening at a time when the bulk of the Brant using Nanvak Bay were present; large flocks of Brant spent a lot of time right along the southern shore of Nanvak Bay in easy view of the observer; and the observer had a large portion of time to read bands. The number of bands read fell off steadily in the following two years as a result of unfavorable weather and ice conditions in the bay, the timing of opening the field camp has been a little later in the last two years, and the time available for staff for this effort has not been as steady.

Incidental ground and aerial observations of waterfowl, and all species for that matter, have been beneficial to the Togiak National Wildlife Refuge. These sightings clue us in on waterfowl use that may become important for future monitoring.

RECOMMENDATIONS

LANDBIRDS

1. Continue to participate in the various continent-wide bird counts to assist in monitoring the populations of North America's birds, such as the Christmas Bird Count, Great Backyard Bird Count, North American Migration Count, Breeding Bird Surveys, and Off-Road Point Counts.

2. Continue to capitalize on opportunities for public outreach by involving volunteers in local bird counts when possible, such as the Christmas Bird Count, Great Backyard Bird Count, and the North American Migration Count.

3. Continue to perform Area Searches in areas where the Refuge has little knowledge of bird species and populations.

4. Continue to have field camps document birds in their study areas by performing Checklists secondarily to the main duties performed.

5. Continue to have Refuge staff record spring migrants and other birds of interest in the Dillingham area on an incidental basis, submitting Alaska Sight Record Reports when appropriate.

6. Commence the fall NTT World Bird Count, to promote further public involvement and to have a public bird count during a time when there have previously not been bird counts.

7. Continue to mist net and band landbirds.

8. Develop and maintain a brochure of Togiak National Wildlife Refuge birds.

9. Educate the public regarding the issue of Black-capped Chickadees with bill deformities.

10. Educate the public regarding injured and dead birds including discussion of the Bird Treatment and Learning Center and the National Eagle Repository.

WATERFOWL

1. Continue to monitor spring and fall staging and migration of waterfowl on the Togiak National Wildlife Refuge.

2. Continue to record waterfowl tarsus bands and neck collars when possible.

3. Continue to participate in the various continent-wide bird counts to assist in monitoring

the populations of North America's birds, such as the Christmas Bird Count, Great Backyard Bird Count, North American Migration Count, Breeding Bird Surveys, and Off-Road Point Counts.

4. Continue other waterfowl monitoring activities such as Area Searches in areas where the Refuge has little knowledge of bird species and populations, Checklists at other field camps, and recording spring migrants in the Dillingham area on an incidental basis.

5. Continue to assist other USFWS offices and other agencies with aerial surveys and ground observations as time and money permits.

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For all the effort and work performing or assisting with aerial surveys, Area Searches, Off-Road Point Counts, Breeding Bird Surveys, Checklists, and to the list of incidental spring migrants seen in the Dillingham area I thank Andy Aderman, Chris Brylinski, Anne Hathorn, Kathy Kaldor, Daniel Laven, Melissa McClaran, Liz Mitchell, Aaron Poetter, Jessica Wachtel, and Carol Wilson. An extra special thanks goes out to Andy Aderman for showing me the points and procedure for the Cape Peirce Off-Road Point Counts.

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Thanks also goes out to the many local residents of the Dillingham area for participating in the 1999 Christmas Bird Count, Great Backyard Bird Count, and North American Migration Count.

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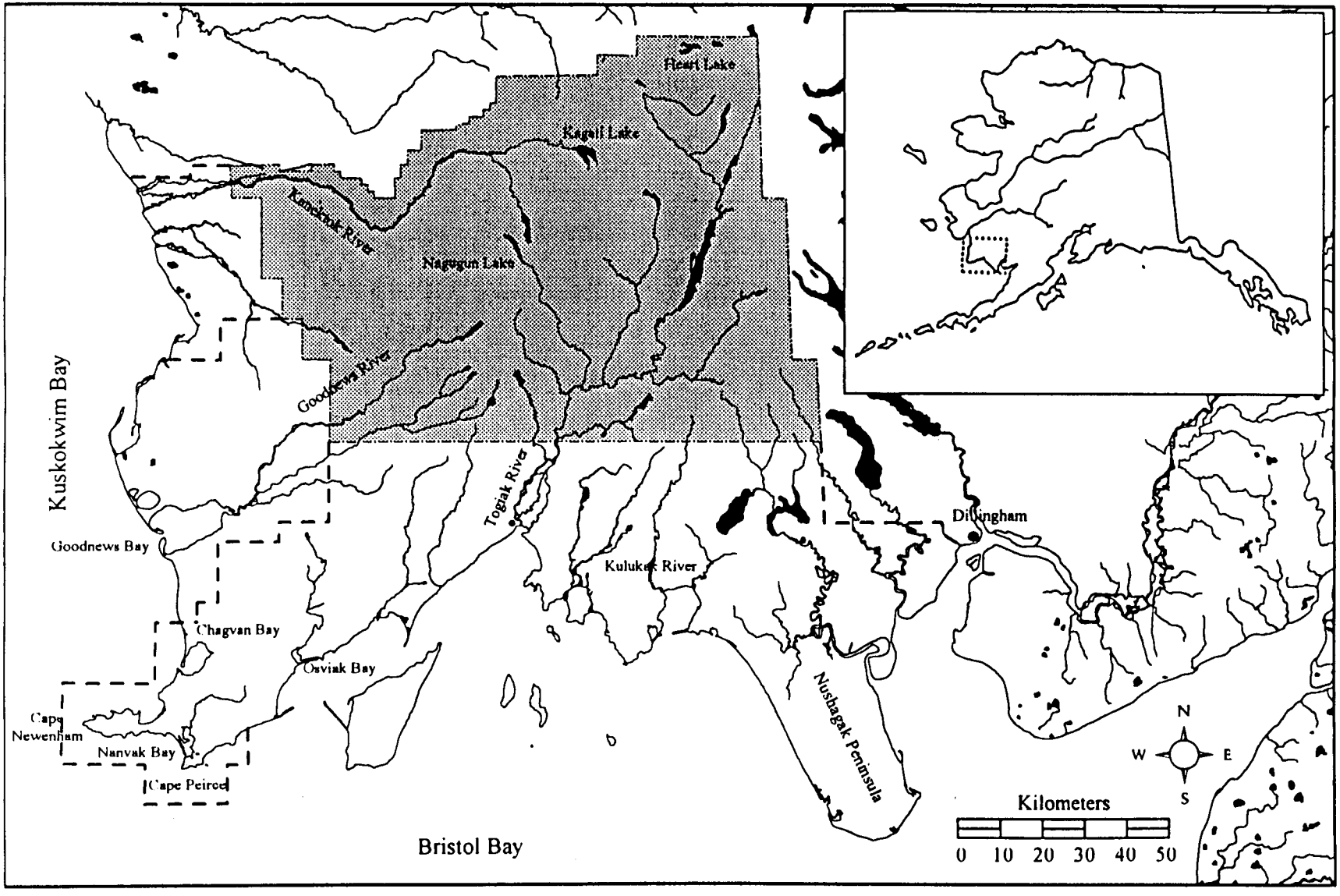

Figure 1. Locations of Bird Monitoring work, Togiak National Wildlife Refuge, Alaska, 1999.

Table 1. Results of Christmas Bird Count conducted in Dillingham, Alaska, 1999.

Species	Date of Count 2 January
Common Merganser	221
Bald Eagle	5
Common Murres	8
Downy Woodpecker	2
Gray Jay	14
Black-billed Magpie	44
Common Raven	206
Black-capped Chickadee	47
Boreal Chickadee	2
Red-breasted Nuthatch	13
Varied Thrush	1
Northern Shrike	1
White-crowned Sparrow	1
Dark-eyed Junco	6
Brambling	1
Pine Grosbeak	179
Pine Siskin	6
White-winged Crossbill	69
Common Redpoll	22
Redpoll Species	99
Unidentified Species	6
Total Number of Birds	953
Total Species	19
Participants	38

Table 2. Results of Great Backyard Bird Count conducted in Dillingham, Alaska, 1999.

Species	Date of Count				Peak Daily Total	Daily Average
	19 February	20 February	21 February	22 February		
Common Merganser	1306				1306	327
Bald Eagle	5	3	4	3	5	4
Great Horned Owl			1		1	0
Downy Woodpecker	3	1	2	1	3	2
Hairy Woodpecker			1		1	0
Three-toed Woodpecker	2				2	1
Gray Jay	1	2	13	7	13	6
Black-billed Magpie	13	15	16	22	22	17
Common Raven	35	39	38	32	39	36
Black-capped Chickadee	68	18	88	81	88	64
Boreal Chickadee	3		3	6	6	3
Red-breasted Nuthatch	3	4	9	6	9	6
Varied Thrush	1	1	1	1	1	1
White-crowned Sparrow	1			1	1	1
Brambling				2	2	1
Pine Grosbeak	99	143	115	85	143	111
Pine Siskin	19	50	108	30	108	52
White-winged Crossbill	15	4	45	14	45	20
Common Redpoll	25	53	167	87	167	83
Hoary Redpoll	2		1	2	2	1
Redpoll Species	76	491	318	167	491	263
Total Number of Birds	1,677	824	930	547	2,455	995
Total Species	17	12	16	16	20	15
Participants	24	18	20	27	27	22

Table 3. Results of North American Migration Counts conducted in the Dillingham and Cape Peirce areas, Alaska, 1999.

Species	Dillingham Unit 17C 8 May	Cape Peirce Unit 17A 8 May	Species	Dillingham Unit 17C 8 May	Cape Peirce Unit 17A 8 May
Horned Grebe	2		Mew Gull	79	7
Red-necked Grebe		2	Herring Gull	20	
Double-crested Cormorant		5	Glaucous-winged Gull	906	776
Pelagic Cormorant		100	Glaucous Gull	12	7
Tundra Swan	26		Black-legged Kittiwake		1,892
Greater White-fronted Goose	31		Arctic Tern	4	
Snow Goose	41		Common Murre		20,156
Emperor Goose	204	9	Black Guillemot		1
Black Brant	6	5,178	Pigeon Guillemot		6
Canada Goose	161		Short-eared Owl		1
Green-winged Teal	14		Downy Woodpecker	1	
Mallard	13	8	Three-toed Woodpecker	2	
Northern Pintail	30	52	Tree Swallow	4	
Northern Shoveler	45		Bank Swallow	2	
Greater Scaup	199	12	Gray Jay	9	
Common Eider		11	Black-billed Magpie	5	
King Eider		28,181	Common Raven	146	16
Steller's Eider		57	Black-capped Chickadee	69	
Harlequin Duck	4	81	Boreal Chickadee	2	
Oldsquaw		10	Red-breasted Nuthatch	15	
White-winged Scoter		61	American Robin	45	
Barrow's Goldeneye	18		Varied Thrush	82	
Common Goldeneye	8	38	American Pipit		3
Bufflehead	1		Bohemian Waxwing	3	
Common Merganser	86		Blackpoll Warbler	1	
Bald Eagle	20	1	American Tree Sparrow	1	1
Northern Harrier	5		Fox Sparrow	6	
Northern Goshawk	1		Golden-crowned Sparrow	9	
Red-tailed Hawk	1		Dark-eyed Junco	5	
Rough-legged Hawk	1	2	Pine Siskin	114	
Sharp-shinned Hawk	2		White-winged Crossbill	17	
Merlin	1		Lapland Longspur		1
Spruce Grouse	4		Snow Bunting		11
Sandhill Crane	68	2	Rosy Finch		1
American Golden-Plover		3	Pine Grosbeak	53	
Greater Yellowlegs	2		Common Redpoll	132	
Lesser Yellowlegs	1		Redpoll Species	111	
Long-billed Dowitcher	6				
Short-billed Dowitcher	2				
Common Snipe	4		Total Number of Birds	2,870	56,693
Parasitic Jaeger		1	Total Species	59	34
Bonaparte's Gull	8		Total Number of Participants	31	1

Table 4. Results of Breeding Bird Surveys conducted in Dillingham and the Togiak, Goodnews, and Kanektok Rivers, Alaska, 1999.

Species	Dillingham 26 June	Togiak 30 June	Goodnews 1 July	Kanektok 3 July
Red-throated Loon		2	5	
Common Loon	3			
Tundra Swan		2	2	2
Green-winged Teal	2		1	3
Mallard			1	2
Northern Pintail			7	
Greater Scaup			2	
Harlequin Duck		4	1	
Red-breasted Merganser	1	10	19	11
Common Merganser		2		7
Bald Eagle		2	3	6
Merlin	1			1
Willow Ptarmigan		1		
Sandhill Crane	4			
Semipalmated Plover		1	5	9
Greater Yellowlegs	5	20	12	7
Wandering Tattler			1	
Spotted Sandpiper			4	8
Least Sandpiper				2
Common Snipe	11	6	18	4
Long-tailed Jaeger			2	
Mew Gull	2	1	9	12
Glaucous-winged Gull	67	3	4	
Arctic Tern	2	15	31	55
Boreal Owl	1			
Alder Flycatcher	12	1		
Tree Swallow	6	15		20
Bank Swallow		10	22	54
Gray Jay	3			
Black-billed Magpie	2	1	1	
Common Raven	4	1	4	
American Dipper		1		
Arctic Warbler	49	27	41	17
Ruby-crowned Kinglet	6			
Gray-cheeked Thrush	4	23	19	16
Hermit Thrush	4	1		4
American Robin	15	4	10	5
Varied Thrush	13			3
Yellow Wagtail		3	11	13
Orange-crowned Warbler	47	26	9	9
Yellow Warbler	2	1	10	22
Myrtle Warbler	5	3	1	3
Blackpoll Warbler	20	7	9	10
Northern Waterthrush	11	35	20	16
Wilson's Warbler	42	17	18	30
American Tree Sparrow		43	17	15
Savannah Sparrow		9	27	18
Fox Sparrow	6	1		1
Song Sparrow			1	5
Golden-crowned Sparrow	20	39	30	28
White-crowned Sparrow	14	2	3	3
Dark-eyed Junco	5		1	
Common Redpoll	9	37	44	30
Total Number of Birds	398	376	425	451
Total Species	33	36	38	35
Participants	1	1	1	1

Table 5. Results of Off-Road Point Counts conducted in the Cape Peirce and Cape Newenham areas, Alaska, 1999.

	Route Name / Date of Count							
	Cape Peirce							
Species	Cabin Ponds 15 June	South Firebaugh-Twins 16 June	Slug River 17 June	Puffin Creek 18 June	South-North Spit 19 June	Sea Cliffs Trail 19 June	North-North Spit 20 June	Cape Newenham 27 June
Red-throated Loon				2	3			
Double-crested Cormorant					3	2		
Pelagic Cormorant	1	1		2	6	190		
Tundra Swan					1		1	
Greater White-fronted Goose							1	
Black Brant			12		1			
Green-winged Teal	3		3	2	2		5	
Mallard							2	
Northern Pintail	6				15		9	
Greater Scaup							12	
Common Eider					4			
King Eider						14		
Harlequin						31		
Black Scoter					8		1	
White-winged Scoter					12	69		
Red-breasted Merganser	2		4					
Bald Eagle							2	
Northern Harrier			1					
Willow Ptarmigan		1	7	1			1	
Sandhill Crane	1	1	5	1	4	1	3	
Pacific Golden-Plover			1					
Semipalmated Plover								2
Greater Yellowlegs			2					
Black Turnstone							2	
Western Sandpiper	14	3	10		1		6	
Least Sandpiper		1			1		7	8
Rock Sandpiper								3
Red-necked Phalarope							8	
Common Snipe	7		3					
Parasitic Jaeger							2	
Long-tailed Jaeger				5				
Glaucous-winged Gull	26		70	60	158	2	7	
Black-legged Kittiwake			1		13	1,330	5	31
Arctic Tern			3					
Common Murre						1,420		
Pigeon Guillemot						5		
Horned Puffin						2		
Tufted Puffin						1		
Tree Swallow	2						7	
Bank Swallow	1		2	1	6		15	
Common Raven	9	7	2	1	11	8	2	7
Gray-cheeked Thrush			8	16				
Hermit Thrush			1	1				1
Yellow Wagtail	5	6	9	6	20		13	
American Pipit		1				3		8
Orange-crowned Warbler		1	1	3				
Yellow Warbler	2		9	5				
Wilson's Warbler	3	1	2	12			1	
American Tree Sparrow			21	1				
Savannah Sparrow	40	34	31	17	37	28	38	17
Fox Sparrow				8		1		
Golden-crowned Sparrow	14	6	6	15		16	4	2
White-crowned Sparrow	3			4				
Lapland Longspur	25	47	11	6	1	15	14	11
Snow Bunting	1	3		1		11		5
Redpoll species	14	12	11	14	9	32	8	33
Total Number of Birds	179	125	236	184	316	3,181	176	128
Total Species	20	15	26	23	21	20	26	11
Participants	1	1	1	1	1	1	1	1

Table 6. Results of Area Searches conducted along the northwest portion of the Nushagak Peninsula, Alaska, 1999.

Species	Area Search #1 - 8 June Coastal Tundra Status	Abundance	Area Search #2 - 9 June Upland Shrub Status	Abundance	Area Search #3 - 10 June Alpine/Rocky Status	Abundance
Bald Eagle	P	Rare	P	Uncommon		
Northern Harrier	P	Rare	PO	Uncommon		
Rough-legged Hawk	P	Rare				
Unidentified Falcon spp.			P	Rare		
Willow Ptarmigan	P	Uncommon	P	Uncommon	P	Rare
Sandhill Crane	P	Rare				
Common Snipe	CO	Rare	CO	Uncommon		
Alder Flycatcher	P	Rare				
Horned Lark					P	Rare
Tree Swallow	P	Common	PC	Uncommon		
Bank Swallow					PO	Uncommon
Unidentified Swallow spp.	P	Fairly Common				
Common Raven	P	Fairly Common	P	Uncommon		
Hermit Thrush	PT	Common	PT	Common		
American Robin	CN	Uncommon			CN	Uncommon
American Pipit					P	Rare
Orange-crowned Warbler	PT	Common	PT	Fairly Common		
Yellow Warbler	P	Rare				
Northern Waterthrush	PT	Uncommon	PT	Uncommon		
Wilson's Warbler	PC	Common	PC	Common		
Savannah Sparrow	PT	Common	PT	Common	PT	Uncommon
Fox Sparrow	PT	Common	PT	Common		
Golden-crowned Sparrow	PT	Common	PT	Common	PT	Uncommon
Unidentified Redpoll spp.	PO	Common	PO	Abundant	PO	Common

Codes: CN=Confirmed breeder carrying nest material; CO=Confirmed breeder in occupied nest;
P=Possible breeder; PC=Probable breeder showing courtship behavior;
PO=Probable breeder pair observation; PT=Probable breeder in permanent territory
Rare=1 individual per day; Uncommon=2-4 individuals per day
Fairly Common=5-9 individuals per day; Common=10-49 individuals per day
Abundant=>/=50 individuals per day

Table 7 Results of Area Searches conducted along the southern and southwestern portions of the Nushagak Peninsula, Alaska, 1999

	Southern portion Area Search #1 - 14 June Grassy Ponds		Southern portion Area Search #2 - 15 June Slough		Southern portion Area Search #3 - 16 June Muskeg/Marsh/Ponds		Southwestern portion Area Search #1 - 28 June Wet coastal tundra/Grassy ponds	
Species	Status	Abundance	Status	Abundance	Status	Abundance	Status	Abundance
Red-throated Loon	P	Uncommon	P	Rare	P	Rare	CE	Fairly Common
Pacific Loon					P	Uncommon	CG	Uncommon
Unidentified Loon spp	P	Uncommon						
Greater White-fronted Goose	P	Uncommon	P	Common	P	Fairly Common	CG	Abundant
Brant	O	Common	O	Uncommon				
Canada Goose					P	Common	PA	Common
Green-winged Teal	PO	Uncommon	PO	Fairly Common	PO	Common	PA	Common
Mallard			PO	Fairly Common			P	Uncommon
Northern Pintail	CE	Common	PO	Common	PO	Common	PA	Abundant
Northern Shoveler	PO	Common	P	Rare	PO	Uncommon	PO	Uncommon
Gadwall	PO	Uncommon						
American Wigeon			P	Rare	PO	Uncommon	P	Common
Greater Scaup	PO	Fairly Common	PO	Uncommon	PO	Fairly Common	P	Uncommon
Common Eider			PO	Common			CG	Common
Unidentified Eider spp			PO	Common				
Oldsquaw	PO	Uncommon	PO	Fairly Common	P	Rare	PA	Fairly Common
Black Scoter	PO	Common	P	Rare	PO	Fairly Common		
White-winged Scoter	PO	Uncommon						
Red-breasted Merganser			PO	Fairly Common	PO	Uncommon	PO	Uncommon
Bald Eagle	P	Rare						
Northern Harrier	P	Rare						
Rough-legged Hawk								
Willow Ptarmigan	PC	Common	CE	Common	PT	Common		
Sandhill Crane	PO	Abundant	CD	Abundant	P	Common	PA	Abundant
Black-bellied Plover					P	Rare		
American Golden-Plover					P	Rare		
Semipalmated Plover			P	Rare	P	Uncommon		
Greater Yellowlegs	PC	Rare					P	Uncommon
Whimbrel							P	Fairly Common
Black Turnstone			PA	Uncommon			PA	Common
Western Sandpiper			PC	Common	PC	Fairly Common	P	Abundant
Least Sandpiper	PC	Fairly Common	P	Rare	PC	Fairly Common		
Unidentified Sandpiper spp			P	Uncommon	P	Common	P	Common
Unidentified Dowitcher spp	P	Uncommon	PC	Uncommon	P	Uncommon		
Dunlin	PC	Common	PC	Uncommon	PC	Uncommon	PA	Abundant
Common Snipe	PC	Rare	PC	Uncommon	PC	Uncommon		
Red-necked Phalarope	PO	Common			PO	Fairly Common	PA	Fairly Common
Parasitic Jaeger	PO	Uncommon	PO	Uncommon			P	Fairly Common
Long-tailed Jaeger	PT	Rare			P	Rare	P	Rare
Mew Gull					P	Fairly Common	CG	Common
Bonaparte's Gull			P	Rare				
Black-legged Kittiwake			O	Uncommon				
Sabine's Gull			P	Rare			P	Fairly Common
Arctic Tern	PA	Common	PA	Common	PA	Common	CE	Common
Tree Swallow	PC	Uncommon						
Bank Swallow	CO	Common	PT	Fairly Common	P	Rare		
Unidentified Swallow spp	PO	Common			P	Fairly Common		
Common Raven							P	Rare
American Robin	P	Rare						
Yellow Wagtail	PC	Fairly Common						
Wilson's Warbler	PC	Common						
Savannah Sparrow	PT	Abundant	PT	Common	PT	Common	PC	Abundant
Fox Sparrow					PT	Uncommon		
Golden-crowned Sparrow	PT	Fairly Common			PT	Fairly Common		
White-crowned Sparrow	P	Rare			P	Rare		
Lapland Longspur	PC	Common			PT	Common		
Unidentified Redpoll spp	PT	Fairly Common			PT	Fairly Common		

CD=Confirmed breeder showing distraction display; CE=Confirmed breeder nest with eggs.
CO=Confirmed breeder in occupied nest; O=Observed showing no evidence of breeding.
P=Possible breeder; PA=Probable breeder showing agitated behavior,
PC=Probable breeder showing courtship behavior; PO=Probable breeder pair observation.
PT=Probable breeder in permanent territory
Rare=1 individual per day; Uncommon=2-4 individuals per day
Fairly Common=5-9 individuals per day; Common=10-49 individuals per day
Abundant=>/=50 individuals per day

Table 8. Results of Area Searches conducted along the Kulukak River, Alaska, 1999.

	Area Search #1 - 25 June Upland tundra/Shrub		Area Search #2 - 27 June Cottonwoods		Area Search #3 - 28 June River bluff/Open tundra	
Species	Status	Abundance	Status	Abundance	Status	Abundance
Tundra Swan	P	Rare			P	Uncommon
Greater Scaup					PO	Uncommon
Harlequin			PO	Uncommon	P	Uncommon
Barrow's Goldeneye			P	Rare	P	Rare
Red-breasted Merganser					PO	Fairly Common
Common Merganser			PO	Uncommon	PO	Common
Bald Eagle			P	Rare		Rare
Northern Harrier					PO	Uncommon
Willow Ptarmigan	P	Uncommon				
Greater Yellowlegs	PA	Uncommon	PA	Uncommon	PA	Fairly Common
Spotted Sandpiper			P	Uncommon	P	Common
Common Snipe	PC	Rare	PC	Uncommon	PC	Uncommon
Mew Gull					P	Uncommon
Arctic Tern					P	Uncommon
Great-horned Owl			CR	Uncommon		
Alder Flycatcher	PT	Uncommon	PT	Fairly Common		
Black-billed Magpie	P	Uncommon	P	Rare	P	Uncommon
Common Raven	P	Rare			CR	Fairly Common
Tree Swallow	PT	Fairly Common	PT	Fairly Common	P	Uncommon
Cliff Swallow					CO	Common
Arctic Warbler	PT	Common	PT	Abundant	PT	Common
Gray-cheeked Thrush	PT	Fairly Common	PT	Common	PT	Uncommon
Swainson's Thrush					P	Rare
Hermit Thrush	PT	Common	PT	Fairly Common		
American Robin					PT	Uncommon
Yellow Wagtail					PT	Rare
American Pipit			PT	Uncommon		
Orange-crowned Warbler	PT	Fairly Common	PT	Common	PT	Common
Yellow Warbler	PT	Uncommon	PT	Uncommon		
Blackpoll Warbler			PT	Common	PT	Fairly Common
Northern Waterthrush	PT	Uncommon	CF	Common	PT	Common
Wilson's Warbler	PT	Fairly Common	PT	Common	PT	Common
American Tree Sparrow	PT	Fairly Common	PT	Common	PT	Common
Savannah Sparrow	PT	Common	PT	Common	PT	Common
Fox Sparrow	PT	Fairly Common	PT	Fairly Common		
Golden-crowned Sparrow	PT	Common	PT	Abundant	PT	Common
Unidentified Redpoll spp.	PT	Common	PT	Abundant	PT	Abundant

Codes: CF=Confirmed breeder carrying food; CO=Confirmed breeder in occupied nest;
CR=Confirmed breeder recently fledged young; P=Possible breeder;
PA=Probable breeder showing agitated behavior; PC=Probable breeder showing courtship behavior
PO=Probable breeder pair observation; PT=Probable breeder in permanent territory
Rare=1 individual per day; Uncommon=2-4 individuals per day
Fairly Common=5-9 individuals per day; Common=10-49 individuals per day
Abundant=>/=50 individuals per day

Table 9. Results of Area Searches conducted around Nagugun Lake, Alaska, 1999.

Species	Area Search #1 - 7 July Upland Shrub/Riparian Status	Abundance	Area Search #2 - 8 July Upland Shrub/Riparian Status	Abundance	Area Search #3 - 9 July Open tundra/Marsh Status	Abundance
Red-throated Loon					P	Rare
Green-winged Teal	P	Uncommon	P	Rare	CR	Common
Northern Pintail					PA	Uncommon
Greater Scaup	PO	Fairly Common				
Harlequin			P	Uncommon		
Northern Harrier	P	Rare				
Willow Ptarmigan	P	Uncommon	P	Rare	P	Rare
Semipalmated Plover	P	Fairly Common			CR	Fairly Common
Greater Yellowlegs			PA	Uncommon	PA	Uncommon
Wandering Tattler					P	Uncommon
Spotted Sandpiper	P	Rare				
Least Sandpiper	P	Common	P	Uncommon	PT	Common
Rock Sandpiper					PT	Uncommon
Common Snipe	PC	Uncommon	P	Uncommon	PC	Uncommon
Red-necked Phalarope	PO	Uncommon			PA	Fairly Common
Mew Gull			P	Rare	P	Rare
Arctic Tern	P	Uncommon			P	Fairly Common
Black-billed Magpie			P	Rare		
American Dipper			P	Uncommon		
Gray-cheeked Thrush	CF	Common	PT	Fairly Common	PT	Fairly Common
Swainson's Thrush					PT	Uncommon
Hermit Thrush	PT	Common	PT	Common	CF	Common
American Robin	P	Rare				
Varied Thrush	P	Rare			PT	Uncommon
American Pipit	PT	Fairly Common	PT	Uncommon	PT	Common
Orange-crowned Warbler	PT	Common	PT	Fairly Common	PT	Uncommon
Yellow Warbler	P	Common	PT	Common	PT	Uncommon
Myrtle Warbler	P	Rare	P	Rare		
Northern Waterthrush	PT	Fairly Common	CF	Common	PT	Uncommon
Wilson's Warbler	PT	Common	PO	Common	PT	Common
American Tree Sparrow	PT	Fairly Common	PT	Uncommon	P	Rare
Savannah Sparrow	CR	Abundant	PT	Abundant	CR	Abundant
Fox Sparrow			PT	Uncommon		
Golden-crowned Sparrow	CR	Abundant	CR	Abundant	PT	Abundant
White-crowned Sparrow	P	Uncommon	P	Rare	P	Uncommon
Lapland Longspur					PO	Fairly Common
Unidentified Redpoll spp.	CR	Abundant	CR	Abundant	CR	Abundant
Unidentified Bird	P	Common	P	Common	P	Uncommon

Codes: CF=Confirmed breeder carrying food; CR=Confirmed breeder recently fledged young;
P=Possible breeder; PA=Probable breeder showing agitated behavior;
PC=Probable breeder showing courtship behavior; PO=Probable breeder pair observation;
PT=Probable breeder in permanent territory
Rare=1 individual per day; Uncommon=2-4 individuals per day
Fairly Common=5-9 individuals per day; Common=10-49 individuals per day
Abundant=>/=50 individuals per day

Table 10. Results of Area Searches conducted around Heart Lake, Alaska, 1999.

Species	Area Search #1 - 11 July Upland Tundra/Riparian Status	Abundance	Area Search #2 - 12 July Upland Shrub/Riparian Status	Abundance	Area Search #3 - 13 July Open Tundra/Marsh Status	Abundance
Pacific Loon			P	Uncommon		
Tundra Swan	P	Fairly Common				
Green-winged Teal			CG	Fairly Common		
Mallard			CG	Fairly Common		
American Wigeon	CG	Fairly Common	P	Uncommon	P	Rare
Greater Scaup	P	Rare	P	Common		
Oldsquaw			CG	Fairly Common		
Black Scoter					P	Uncommon
Red-breasted Merganser	P	Rare	P	Rare		
Bald Eagle	P	Rare			P	Rare
Northern Harrier	P	Rare	P	Rare	P	Rare
Rough-legged hawk			P	Rare		
Gyrfalcon					P	Rare
Willow Ptarmigan	P	Rare	P	Rare	P	Rare
Semipalmated Plover	P	Fairly Common	PT	Fairly Common	PT	Fairly Common
Greater Yellowlegs			PA	Uncommon		
Spotted Sandpiper	P	Rare				
Least Sandpiper	P	Common	CD	Uncommon	PT	Common
Unk. small sandpiper species			P	Rare		
Common Snipe					P	Uncommon
Red-necked Phalarope	PT	Fairly Common	PT	Uncommon	P	Uncommon
Mew Gull	P	Uncommon	CG	Uncommon		
Arctic Tern	CO	Fairly Common	P	Uncommon		
Horned Lark	P	Uncommon				
Tree Swallow			PT	Uncommon		
Bank Swallow			PT	Fairly Common	P	Rare
Cliff Swallow	P	Fairly Common	CO	Abundant		
Black-billed Magpie			PT	Uncommon		
Common Raven	P	Rare	P	Uncommon	P	Uncommon
Arctic Warbler	P	Fairly Common	P	Fairly Common	P	Fairly Common
Gray-cheeked Thrush	PT	Common	PT	Common	CF	Common
Hermit Thrush	PT	Uncommon	PT	Common	PT	Uncommon
American Robin	P	Uncommon	P	Fairly Common	P	Rare
Yellow Wagtail	PT	Abundant	PT	Common	PT	Common
American Pipit	PT	Common	PT	Fairly Common	PT	Uncommon
Orange-crowned Sparrow	PT	Uncommon	PT	Common	P	Uncommon
Yellow Warbler	PT	Fairly Common	PT	Common	PT	Common
Northern Waterthrush	PT	Rare	PT	Common	PT	Fairly Common
Wilson's Warbler	PT	Common	PT	Common	CF	Common
American Tree Sparrow	CR	Abundant	PT	Abundant	PT	Abundant
Savannah Sparrow	PT	Abundant	CR	Abundant	PT	Abundant
Fox Sparrow	PT	Uncommon	PT	Uncommon		
Golden-crowned Sparrow	CF	Abundant	PT	Abundant	PT	Abundant
White-crowned Sparrow	PT	Fairly Common	P	Uncommon		
Lapland Longspur	CF	Common	PT	Fairly Common	PT	Fairly Common
Unidentified Redpoll spp.	PT	Abundant	CR	Abundant	PT	Abundant
Unidentified Bird	P	Fairly Common	P	Uncommon	P	Fairly Common

Codes: CD=Confirmed breeder distraction display; CF=Confirmed breeder carrying food;
CG=Confirmed breeder with precocial young; CO=Confirmed breeder in occupied nest;
CR=Confirmed breeder with recently fledged young; P=Possible breeder;
PA=Probable breeder showing agitated behavior; PO=Probable breeder pair observation;
PT=Probable breeder in permanent territory
Rare=1 individual per day; Uncommon=2-4 individuals per day
Fairly Common=5-9 individuals per day; Common=10-49 individuals per day
Abundant=>/=50 individuals per day

Table 11. Results of Area Searches conducted around Kagati Lake, Alaska, 1999.

Species	Area Search #1 - 16 July Upland Tundra/Riparian Status	Abundance	Area Search #2 - 17 July Alpine Tundra/Shrub Status	Abundance	Area Search #3 - 18 July Upland Shrub/Pond Status	Abundance
Red-throated Loon	P	Rare				
Green-winged Teal	P	Rare				
American Wigeon	CG	Fairly Common				
Greater Scaup	CG	Uncommon			P	Fairly Common
Black Scoter					PO	Uncommon
Common Goldeneye	P	Rare			P	Uncommon
Unidentified Duck					P	Rare
Bald Eagle	P	Uncommon				
Northern Harrier	PO	Uncommon	P	Rare	PO	Uncommon
Rough-legged Hawk	CG	Uncommon	PT	Uncommon		
Willow Ptarmigan	CR	Fairly Common	PT	Uncommon	P	Uncommon
Sandhill Crane	PT	Uncommon				
Semipalmated Plover	CR	Common	PT	Uncommon	PA	Uncommon
Greater Yellowlegs	P	Uncommon				
Wandering Tattler					P	Rare
Spotted Sandpiper	CG	Uncommon			P	Rare
Whimbrel	P	Rare				
Least Sandpiper	P	Uncommon	PT	Uncommon		
Common Snipe	P	Rare			P	Uncommon
Long-tailed Jaeger					P	Uncommon
Mew Gull	P	Uncommon			P	Uncommon
Glaucous-winged Gull	P	Rare				
Arctic Tern	CG	Uncommon			P	Rare
Horned Lark	P	Uncommon	CR	Common		
Tree Swallow	P	Uncommon			P	Uncommon
Bank Swallow	PT	Common			P	Uncommon
Black-billed Magpie	P	Rare			P	Rare
Common Raven	PT	Fairly Common	PT	Uncommon	P	Rare
Arctic Warbler	CF	Uncommon	CF	Uncommon	CF	Fairly Common
Gray-cheeked Thrush	PT	Common	CF	Fairly Common	PT	Fairly Common
Swainson's Thrush			PT	Uncommon		
Hermit Thrush	PT	Fairly Common	CF	Common	PT	Fairly Common
American Robin	P	Uncommon	PT	Uncommon		
Varied Thrush			P	Rare		
Yellow Wagtail	P	Rare	PT	Uncommon	PT	Common
American Pipit	PT	Fairly Common	CF	Common	PT	Fairly Common
Orange-crowned Warbler	CF	Common	CF	Fairly Common	PT	Fairly Common
Yellow Warbler	P	Fairly Common	P	Rare	P	Rare
Blackpoll Warbler			P	Rare		
Northern Waterthrush	CF	Fairly Common				
Wilson's Warbler	CF	Common	CF	Common	CF	Common
American Tree Sparrow	PT	Abundant	PT	Common	CR	Abundant
Savannah Sparrow	CR	Abundant	PT	Abundant	CR	Abundant
Fox Sparrow					P	Rare
Golden-crowned Sparrow	CR	Abundant	PT	Common	PT	Abundant
White-crowned Sparrow			P	Rare		
Lapland Longspur					PO	Fairly Common
Unidentified Redpoll spp.	PT	Abundant	PT	Abundant	CR	Abundant
Unidentified Bird	P	Fairly Common	P	Uncommon	P	Uncommon

Codes: CF=Confirmed breeder carrying food; CG=Confirmed breeder with precocial young;
CR=Confirmed breeder with recently fledged young; P=Possible breeder;
PA=Probable breeder showing agitated behavior; PO=Probable breeder pair observation;
PT=Probable breeder in permanent territory
Rare=1 individual per day; Uncommon=2-4 individuals per day
Fairly Common=5-9 individuals per day; Common=10-49 individuals per day
Abundant=>/=50 individuals per day

Table 12 Results of Checklist created at Cape Peirce, Alaska, 1999

Numbers in table represent the average number of birds/day/period

Species	May				June				July				August				September				October	
	1-7	8-14	15-21	22-31	1-7	8-14	15-21	22-30	1-7	8-14	15-21	22-31	1-7	8-14	15-21	22-31	1-7	8-14	15-21	22-30	1-7	8-15
Red-throated Loon						0.3	0.3		0.3	0.3			0.1						0.3			
Pacific Loon							0.1	0.2				0.1										
Common Loon				0.6											0.1							
Horned Grebe		0.3											0.3									
Red-necked Grebe	0.1	0.3			0.3		0.1						0.6		0.6				0.3			
Fork-tailed Storm-petrel																			0.1			
Double-crested Cormorant	0.6	1.6	0.7		0.3	1.3	0.7	0.9	1.6	1.4		0.4	0.1	0.3	0.4	0.1	0.1	0.3	0.7	0.7	1.1	
Pelagic Cormorant	1.0	28.9	51.0	35.2	17.9	18.9	49.9	5.1	75.0	32.6	32.4	7.5		14.3	21.4		6.7	4.4	7.1			0.1
Unid. cormorant spp																			0.1			
Tundra Swan				0.3	0.1																	
Greater White-fronted Goose			7.1					2.7														
Emperor Goose	0.9	4.4	4.0	12.3	0.3	2.9									0.7	0.6	4.7	13.7	65.9	5.0	3.6	0.9
Brant	184.3	1528.7	3276.9	2229.6	205.3	4.3		2.3	5.7			0.4		16.4		0.4			108.7	46.1	8.9	
Canada Goose				0.4				4.7						7.6	154.0	835.6	145.7	209.6	1283.0	1726.4	194.6	103.6
Unid. goose species																			34.3	135.7	865.0	
Green-winged Teal	0.4	4.3	5.6	6.1	1.4	1.9	3.4	2.0	0.3	0.6		0.7	0.6	0.9	1.6	4.0	8.3	5.1	9.7	1.4		
Mallard	0.9	4.1	0.4																			
Northern Pintail	33.3	33.7	2.7	2.0	0.6	1.7	3.4	1.0	0.6						7.9	26.6		0.4	20.1	5.6		
Northern Shoveler		7.4	3.6	1.3			0.3	0.3							0.6	0.4						
American Wigeon			0.6	0.3											0.7				0.3	0.3		
Eurasian Wigeon	0.4	0.9																				
Greater Scaup	1.7	42.1	12.0	2.3	0.9	2.9	3.4	1.3	1.3	1.6	0.1											
Common Eider		4.3				1.6	1.0	1.6	0.3	0.4		1.0		0.7			1.3		1.6	36.0	35.1	
King Eider		4027.0	0.6	0.3	0.3	0.9	8.6	14.6	3.4	4.0	0.9	2.1	4.4	3.6	2.9	3.7	0.9	3.1	3.4	0.4		
Steller's Eider	8.1	38.6	16.4	0.6																		
Unid. eider spp																			6.6	4.3		
Harlequin	3.4	26.1	32.4	15.6	2.4	3.6	3.4	11.9	5.7	4.9	1.9	0.3	1.1	1.3	3.1	3.1	3.0		2.3	1.3	2.3	
Oldsquaw	3.3	8.6	4.7																			
Black Scoter	0.3	11.0	14.6	19.3	1.9	5.1	4.9	0.7	0.9	7.4	2.6				0.4							
Surf Scoter																					1.3	0.1
White-winged Scoter	0.1	10.6	2.0				7.0	4.6	0.7	0.1	1.3		2.1				0.1		2.1	0.7		
Common Goldeneye	1.9	9.0	0.6	0.3																		
Bufflehead		0.9	0.6	0.4	0.3						0.3	0.3							0.3			
Common Merganser				1.7	0.1																	
Red-breasted Merganser		4.4	2.1	4.0	1.4	2.0	0.9	1.9	3.1	55.0	36.6	27.4	34.7	21.6	6.9	8.6	4.4		5.9	0.3	1.6	5.7
Unid. duck spp																			4.7	3.0	41.4	
Bald Eagle	0.3	1.7	0.6	0.3	0.3			0.3	0.3	0.6		0.1	0.1		1.1	0.1		0.4	0.4	0.7	0.1	
Northern Harrier	0.1	0.3	0.4	0.3		0.3			0.1						0.3	0.4		0.3			0.1	
Rough-legged Hawk	0.1	0.7	0.1			0.1	0.1	0.1														
Merlin																	0.1		0.3			
Peregrine Falcon	0.3	0.1		0.3				0.1		0.4					0.7	1.6	0.4					
Willow Ptarmigan							0.1															
Sandhill Crane	0.9	1.1	1.3	2.4	0.3	1.1	0.9	1.4	2.0	2.6	0.9	7.0	3.1	4.6	9.0	6.3	10.1	21.0	2.7			
Black-bellied Plover											0.6				4.4				0.4			
American Golden-plover	0.1	0.9	0.1																			
Pacific Golden-plover																		4.1	2.1			
Unid. pluvialis spp.															12.4		0.4		3.6			
Semipalmated Plover		0.9	1.7	4.9	1.7	1.3	2.0	2.1	0.4	1.4	1.3	3.1	2.6	1.0	1.1				0.1			
Greater Yellowlegs		0.3																	0.7	0.6		
Lesser Yellowlegs																		0.4				
Terek Sandpiper					0.1							0.1										
Wandering tattler																0.3						
Whimbrel					0.1										3.9	13.9						
Bar-tailed Godwit		0.1																				
Ruddy Turnstone		0.4																				
Black Turnstone		0.7										0.1		2.0	1.7	0.7						

Table 12 Results of Checklist created at Cape Peirce, Alaska, 1999

Numbers in table represent the average number of birds/day/period

Species	May				June				July				August				September				October	
	1-7	8-14	15-21	22-31	1-7	8-14	15-21	22-30	1-7	8-14	15-21	22-31	1-7	8-14	15-21	22-31	1-7	8-14	15-21	22-30	1-7	8-15
Sanderling																19.0	2.9	2.1	0.3			
Western Sandpiper			0.6	0.3			0.1	0.3	0.9	0.1		0.3	0.9	7.0	5.3	11.6			5.0			
Least Sandpiper		3.1	2.6	2.6	1.1	3.1	3.1	4.9	2.4	1.3	0.1	2.7	1.3	0.7	3.9				0.1			
Rock Sandpiper				0.3											0.7							
Unid. sandpiper spp																			18.4	43.6	45.9	
Dunlin		0.7		0.1				5.1		3.6	42.9	17.9	2.9	12.6	37.3	19.0			0.9			
Short-billed Dowitcher																			0.6			
Long-billed Dowitcher																			0.4			
Unid. dowitcher spp		0.1													2.4	0.1			4.4			
Common Snipe		0.3		0.1			0.6	1.3	0.1			0.6			0.3	0.1						
Red-necked Phalarope			1.3	1.1		0.9		0.1						0.9	0.6							
Parasitic Jaeger		0.3	0.3	0.6								0.3	0.6			0.1						
Long-tailed Jaeger												0.3		0.1								
Unid. jaeger spp					0.1																	
Bonaparte's Gull		0.7											0.1							7.1		
Mew Gull	0.9	5.7	0.4	10.1	7.0														0.7	0.3		
Thayer's Gull																				0.3		
Herring Gull		0.1																	0.4			
Glaucous-winged Gull	57.7	378.7	72.3	89.7	49.9	148.3	355.0	204.1	153.6	75.6	25.0	54.1	46.4	57.1	26.4	13.3	23.0	41.0	145.7	273.0	192.1	17.3
Glaucous Gull	1.3	2.1	1.3	1.3	0.4	0.4		0.4											2.0	1.6		0.3
Black-legged Kittiwake		289.1	426.3	119.1	343.0	218.1	598.3	1156.9	529.3	420.6	359.4	46.3	42.9	35.7			264.3	344.3	435.7	44.3	168.4	5.6
Sabine's Gull																			0.6	0.1		
Unid. gull spp						3.7													141.3	12.1		
Arctic Tern		0.1	0.1								1.3											
Common Murre	4.9	2886.1	189.3	327.0	1358.9	386.9	835.6	1843.6	1364.4	407.0		28.6		85.7								
Black Guillemot		0.1																				
Pigeon Guillemot		2.7	5.6	8.0	2.7	6.3	3.3	4.6	3.3	3.1	1.7	2.3	0.6	1.0	3.4	0.3						
Parakeet Auklet				0.3	0.3	1.1		4.4	1.6	2.6	1.9	2.7	0.6	1.0								
Tufted Puffin			1.6	0.6	0.6	2.7	1.9	4.1	1.9	2.9	1.1	0.6	1.1	2.4	2.0	1.7						
Horned Puffin			2.3	2.3	4.3	3.1	4.4	4.9	5.6	5.9	2.6	1.4	1.4	1.7	2.1	4.7	3.6	1.0	2.3			
Short-eared Owl		0.7	0.3	0.1	0.1																	
Tree Swallow				3.6	1.9	3.6	2.6	3.0	2.1	1.6	1.6	2.0	0.3	0.3	0.3							
Violet-green Swallow								0.3														
Bank Swallow						2.4	1.4	3.3	3.0	3.1	1.4	0.7	0.7	0.9	0.3					0.1		
Barn Swallow						0.1																
Unid. swallow spp						5.7																
Black-billed Magpie																					0.7	
Common Raven	9.4	18.7	11.6	16.0	25.1	12.7	20.6	19.7	19.3	12.6	5.0	6.0	4.3	5.4	13.4	20.1	9.9	8.0	9.6	14.3	9.4	0.4
Black-capped Chickadee																				1.3	1.0	0.3
Hermit Thrush		0.3	0.6	0.1		0.3																
Yellow Wagtail			0.3	1.0	0.3	0.7	1.4	3.7	2.0	2.4	0.3	1.6	1.0	0.4	2.9	0.3						
American Pipit	0.3	0.4	1.3					0.4		0.4	0.4	1.0			3.6	4.1						
Yellow Warbler							0.4															
Wilson's Warbler						0.3	0.6		0.3	0.1				0.4	0.9							
American Tree Sparrow		0.1	2.0								0.3											
Savannah Sparrow		0.3	1.3	3.6	2.9	4.4	5.9	6.1	6.3	7.0	3.6	1.7	2.0	4.0	3.7	2.1						
Fox Sparrow		0.1	0.3	0.3		0.1																
Golden-crowned Sparrow		0.1	1.9	4.4	2.3	3.0	5.7	4.7	3.6	3.9	1.3	2.7	1.3	2.0	1.4	0.3	0.3					
Dark-eyed Junco																	0.1			0.3		
Lapland Longspur	3.4	4.6	1.4	2.4	1.7	0.7	3.0	2.9	3.3	1.1	0.3	2.0	1.3		5.0	0.7						
Snow Bunting	1.1	6.3	11.6	7.1	3.1	3.0	4.7	9.6	5.4	10.3	1.6	3.4	4.7	2.9	3.6				0.6	0.6	0.9	2.9
Rusty Blackbird																				0.1		
Gray-crowned Rosy-finch		0.1			0.3			0.3	0.1	1.3												
Common Redpoll			0.1					5.4	1.7	11.7	4.3		3.1	0.7	2.3	0.6						

Table 13. Results of Checklist created along the southern portion of the Nushagak Peninsula, Alaska, 1999.

Numbers in table represent the average number of birds/day/period

	August				September	
Species	1-7	8-14	15-21	22-31	1-7	8-9
Aleutian Tern	3.6	13.7	12.6	1.9	0.0	0.0
American Pipit	0.7	2.1	0.0	3.0	0.0	0.0
Arctic Tern	34.7	34.6	7.9	32.0	0.0	0.0
Bald Eagle	0.6	0.1	0.0	0.2	0.0	0.0
Bank Swallow	0.7	1.4	0.3	0.0	0.3	0.0
Black-legged Kittiwake	0.0	138.1	132.9	11.5	0.0	0.0
Black Scoter	0.1	2.9	2.1	10.3	21.4	0.5
Bonaparte's Gull	0.0	0.0	0.0	0.0	0.4	4.0
Canada Goose	36.1	120.7	123.4	106.3	0.0	0.5
Common Eider	0.0	5.9	11.3	8.8	291.0	150.0
Common Loon	0.0	0.0	0.0	0.0	8.3	15.5
Common Merganser	0.0	0.0	0.0	0.0	1.1	0.0
Common Raven	0.6	3.9	1.0	1.4	0.0	1.0
Unid. cormorant species	0.0	0.1	0.3	0.9	0.7	0.0
Double-crested Cormorant	0.6	0.1	0.4	0.1	5.4	0.0
Unid. eider species	6.7	7.4	0.0	0.0	0.3	0.0
Emperor Goose	0.0	0.0	0.0	1.3	8.4	24.5
Unid. gavia species	0.3	4.1	1.7	3.2	0.1	0.0
Glaucous Gull	0.0	0.0	0.0	0.0	2.0	3.0
Unid. goose species	23.6	1.0	10.7	15.3	0.1	0.5
Glaucous-winged Gull	0.0	48.9	52.0	54.0	20.1	49.0
Green-winged Teal	3.7	1.4	4.1	19.9	13.0	4.5
Herring Gull	0.0	0.0	0.0	0.0	3.9	0.0
King Eider	0.0	0.0	0.3	3.6	0.6	0.5
Lapland Longspur	1.4	13.0	0.0	0.0	3.1	0.0
Long-tailed Jaeger	0.0	1.4	0.1	0.3	0.0	12.5
Mallard	0.0	0.7	0.0	0.4	0.0	0.0
Mew Gull	0.0	0.0	1.7	5.0	1.6	0.0
Merlin	0.0	0.0	0.6	0.4	4.0	5.0
mixed gull	100.0	330.7	471.4	1.3	0.3	0.0
Northern Harrier	0.4	0.1	0.0	1.8	96.4	0.0
Northern Pintail	0.3	7.0	4.3	37.3	1.6	0.5
Northern Shoveler	0.1	0.0	0.9	1.9	21.1	3.5
Parasitic Jaeger	1.3	2.7	1.4	1.1	0.7	0.0
Pacific Loon	0.0	0.0	0.0	0.3	0.4	0.0
Pelagic Cormorant	0.0	0.0	0.0	0.0	1.1	0.0
Pigeon Guillemot	0.0	0.0	0.0	0.1	0.3	0.0
Pomarine Jaeger	0.0	0.0	0.0	0.0	0.0	0.0
Red-breasted Merganser	0.9	4.3	4.1	2.8	0.1	0.0
Redpoll species	1.0	2.3	0.0	0.0	4.1	3.5
Red-throated Loon	1.9	6.9	7.0	5.3	0.0	12.5
Sandhill Crane	8.0	23.7	5.6	3.6	1.7	0.0
Sabine's Gull	0.0	0.0	0.1	0.0	7.6	4.5
Savannah Sparrow	4.7	6.7	0.0	0.0	0.0	0.0
Scoter spp.	0.3	0.7	91.6	258.9	0.0	0.0
Surf Scoter	1.1	0.1	0.0	0.4	44.6	7.0
Tundra Swan	0.0	0.0	0.3	0.2	0.0	0.0
White-fronted Goose	2.6	1.7	1.3	28.2	0.7	1.0
Willow Ptarmigan	0.6	6.1	5.4	15.1	8.1	0.0
Wilson's Warbler	0.0	0.0	0.0	0.2	5.0	26.5
White-winged Scoter	2.1	68.4	43.1	53.6	0.0	0.0
Yellow Wagtail	0.0	0.1	0.0	0.0	44.0	41.0

Table 14. Incidental sightings of spring migrants in Dillingham, Alaska, 1999.

Species	Number of birds	Date of observation	Location	Observer
Mew Gull	2	6 April	Squaw Creek	M. Lisac
Glaucous-winged Gulls	4	16 April	Dillingham Boat Harbor	R. MacDonald
Northern Harrier	1	18 April	Arctic Avenue	A. Aderman
Tundra Swan	1	18 April	Nushagak Bay	J. Wojciehowski
Mallard	1	19 April	puddle behind office	J. Dyasuk, A. Aderman, R. MacDonald
Northern Pintail	3	19 April	Dillingham Boat Harbor	R. MacDonald
Sandhill Crane	1	20 April	heard over Snag Point	A. Aderman
Common Snipe	1	20 April	Unicorn Lane	M. Lisac
American Robin	1	23 April	Squaw Creek	R. MacDonald
Varied Thrush	1	24 April	Schroeder Subdivision	B. and L. Hurley
Greater Yellowlegs	1	27 April	Squaw Creek	V. Carscallen
Golden Eagle	1	27 April	Warehouse Mountain	J. Wojciehowski
Northern Goshawk	1	27 April	Warehouse Mountain	J. Wojciehowski
Bonaparte's Gull	1	2 May	Lake Aleknagik, east end	A. Aderman
American Wigeon	3	2 May	Lake Aleknagik, east end	A. Aderman
Snow Geese	40	5 May	Wood River	J. Nelson
Golden-crowned Sparrow	1	10 May	Togiak NWR office	A. Aderman
Tree Swallow	2	13 May	Togiak NWR office	A. Aderman
Dowitcher species	15	15 May	Lilly Pond	J. Moran
Scaup species	3	17 May	Nushagak Bay	J. Moran
Semipalmated Plover	1	17 May	"flats" outside of town	J. Moran
Redpoll species fledgling	3	24 May	Togiak NWR bunkhouse	J. Moran
Black-capped Chickadee fledgling	2	24 May	Togiak NWR office	J. Moran
Gray Jay fledgling	1	1 June	Dillingham airport	J. Moran, C. Wilson
Solitary Sandpiper	1	2 June	Dillingham airport	J. Moran, C. Wilson
Pine Siskin fledgling	6	4 June	Togiak NWR bunkhouse	J. Moran, C. Wilson

Table 15. Waterfowl counts during aerial surveys on the Togiak National Wildlife Refuge, Alaska, 1999.

	Snake River	Kanik River	Osviak Bay	Rugged Point	Maggy Beach	Chagvan Bay	Goodnews Bay	Chagvan Bay	Nanvak Bay	Coastline	Osviak Bay	Osviak Bay	NW Nush Pen	Chagvan Bay
				April					May				August	
	26	26	26	26	26	26	14	14	14	14	14	16	25	25
Tundra Swan	3	2												
White-fronted Goose										1				
Emperor Goose								14			48			2
Canada Goose											2	1,400	110	
Brant			1	2	11	524		8,547	837		85	11		337
Unid. goose species							1							
Mallard	20						2				6			
Green-winged Teal											4			
Northern Pintail							2							
Greater Scaup		10					38	296	44					
Unidentified duck species							70							
Common Eider						250	183	150						
King Eider							1							
Steller's Eider						2,570	2,338	1,504	50	2				
Black Scoter							11	430						
White-winged Scoter								6		4				
Red-breasted Merganser								80						

Table 16. Tarsus bands and neck collars read at Navak Bay, Alaska, 1999.

Species	Date	Time	Flock size	Code	Type	Band color	Letter color
Pacific brant	11 May	8:15-9:00 p.m.	46 Brant	H54	Tarsus band	White	Blue
Pacific brant	11 May	8:15-9:00 p.m.	46 Brant	REY	Tarsus band	Blue	White
Pacific brant	11 May	8:15-9:00 p.m.	46 Brant	RE9	Tarsus band	Blue	White
Pacific brant	12 May	9:10-10:45 a.m.	106 Brant	L1N	Tarsus band	White	Blue
Pacific brant	12 May	9:10-10:45 a.m.	106 Brant	909	Tarsus band	White	Blue
Pacific brant	12 May	9:10-10:45 a.m.	106 Brant	H54	Tarsus band	White	Blue
Pacific brant	12 May	9:10-10:45 a.m.	106 Brant	NKN	Tarsus band	Aqua	Black
Pacific brant	12 May	9:10-10:45 a.m.	106 Brant	2NK	Tarsus band	Blue	White
Pacific brant	12 May	9:10-10:45 a.m.	106 Brant	YH7	Tarsus band	White	Blue
Pacific brant	13 May	10:45-10:50 a.m.	30 Brant	LOA	Tarsus band	Silver	White
Pacific brant	13 May	10:45-10:50 a.m.	30 Brant	ELR	Tarsus band	Aqua	Black
Pacific brant	14 May	11:30 a.m.	56 Brant	TEK	Tarsus band	Aqua	Black
Emperor goose	19 September	1:00 p.m.	25 Emperor geese	F56	Neck collar	Yellow	"Dark"
Canada goose	20 September	8:30 a.m.	150 Canada geese	JZN	Neck collar	Yellow	"Dark"
Canada goose	21 September	8:30 a.m.	not recorded	JZN	Neck collar	Yellow	"Dark"

Appendix 1. Brambling Alaska Sight Record Report, Dillingham, Alaska.

Alaska Sight Record Report

Please fill out as accurately as possible. Include only those details of which you are certain and only those observed in the field; please leave blank details not observed. Attach any additional comments or details on separate sheets. Please print clearly or type.

Species Brambling Date(s) 10 January 1999
Location Dillingham, Alaska (Dan and Connie Pearson's house) Elevation 80'
Observer Rob MacDonald, Connie Pearson, Joanne Nelson Number of birds 1
Time of day 11:30 am - 1:30 pm Light conditions overcast, bright
Distance to bird 15'-55' Optical equipment Leica 8x42 binoculars
Length of time observed 2 hours off and on Sex Male
Plumage (e.g. Breeding) Winter plumage
Overall appearance and relative size
*** See attached photos***
sparrow-like, finch-like, 5-6"
roughly same size as the White-crowned sparrow that seemed to always be with it

Bill
yellow, short, stout
Crown and forehead
brown, mottled
Nape
tan, mottled
Face
brown, mottled
Eye
black
Throat
tan
Breast and side
orange
Belly and flanks
white
Undertail coverts

Back
brown, mottled
Wings
orange, black, orange wing bars
Underwing

Rump
white, obvious in flight and certain stances

Uppertail coverts

white

Upperside of tail

dark, black

Underside of tail

Legs

Behavior

Was accompanied by a White-crowned sparrow and a Varied thrush. These birds only came to the feeder when all other species left. These birds also roosted in tree tops surrounding the yard, but left when other birds arrived.

Voice

Habitat

Mixed spruce, birch forest, with an open yard roughly 20 yards long by 15 yards wide.

How identification was decided - elimination of similar species

We observed the species for 2 hours off and on. It was obvious that the bird was a Brambling by comparing to picture and text in the Golden Guide to Field Identification of Birds of North America. Joanne Nelson and Connie Pearson made the initial identification, called me, I studied the bird books, went over, and knew at once that it was in fact a Brambling.

Prior experience with this species

none

This description written from

_____ notes made during observation
XX notes made after observation
XX memory

Other observers (plus addresses)

Connie Pearson
P.O. Box 512
Dillingham, Alaska 99576

Joanne Nelson
P.O. Box 85
Dillingham, Alaska 99576

Signed _____ Date _____

Appendix 2. Terek Sandpiper Alaska Sight Record Report, Cape Peirce, Alaska.

Alaska Sight Record Report

Please fill out as accurately as possible. Include only those details of which you are certain and only those observed in the field; please leave blank details not observed. Attach any additional comments or details on separate sheets. Please print clearly or type.

Species Terek Sandpiper Date(s) 7 June 1999
Location Cape Peirce, Alaska (south side of Nanvak Bay) Elevation 50'
Observer Anne Hathorn Number of birds 1
Time of day 11:10 am Light conditions daylight, overcast
Distance to bird 35' Optical equipment Leica 8x42 binoculars
Length of time observed 5-7 minutes Sex Unknown
Plumage (e.g. Breeding) Breeding plumage
Overall appearance and relative size

Sandpiper, approximately 10" tall. Pale gray color on back of head, back and wing, with a black margin on edge of wing. Bill was upturned, legs bright orange. The most distinctive behavior was tail-bobbing, like a Spotted sandpiper. Bird appeared to be eating insects on sand dunes.

Bill

upturned. 2 ½ - 3 times longer than head width (nape to base of bill)

Crown and forehead

gray

Nape

gray

Face

faint whitish eye-line to base of bill

Eye

dark

Throat

lighter

Breast and side

gray to white

Belly and flanks

whitish / light

Undertail coverts

Back

gray

Wings

gray with dark margins on upper and lower edges of wing

Underwing

Rump

Uppertail coverts

Upperside of tail

Underside of tail

Legs

bright orange

Behavior

Tail bobbed as it walked around pecking at insects in the sand.

Voice

Habitat

Sand dune on edge of bay.

How identification was decided - elimination of similar species

Unlike other common sandpipers whose feathers appear to me mottled or a blend of colors, this sandpiper was a uniform pale gray on back and wings (except for dark/black edges of wing above and below). The upturned bill and bright orange legs were obvious as well as the tail bobbing like a Spotted sandpiper. National Geographic's Birds of North America 2nd edition was used to identify the bird. Also, later, previous records from 1973 and 1976 were found in reference material.

Prior experience with this species

none

This description written from

_____ notes made during observation
__XX__ notes made after observation
_____ memory

Other observers (plus addresses)

Liz Mitchell
U.S. Fish and Wildlife Service
Togiak National Wildlife Refuge
P.O. Box 270
Dillingham, Alaska 99576

Signed _____ Date _____

Appendix 3. Black-capped Chickadee Bill Deformity Incident Report, Dillingham, Alaska.

1) Contact
Debra Redpath, Dillingham, Alaska, (907) 842-5642 (wk), (907) 842-1674 (hm)

2) How many birds
1 bird observed a few times over a short period of time, roughly 1 week

3) Exact location of sighting
Her bird feeder at the end of Aspen Street

4) When
Around 5 July 1999

5) Description of deformity
Both upper and lower mandibles unusually long and skinny. The bill was very pointy, not curved, and about twice as long as a normal beak.

Length of upper mandible	About twice as long as normal
Length of lower mandible	About twice as long as normal
Extent of curvature	None, bill was straight
Bill crossed or not	Not crossed

6) What the bird was feeding on
Black sunflower seeds

How was it feeding — Using compensatory techniques as it had to turn its head to feed.

7) Any abnormal behavior
No other abnormal behavior.

8) Comments
She did not realize the deformity until she saw the compensatory feeding technique, which stood out as unusual. (I talked to Debra on 3 August 1999)