



# Juneau Douglas North Crossing PEL Study Bird and Habitat Surveys Report

Prepared for  
Alaska Department of Transportation and Public Facilities



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**ParametriX**

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## ATTACHMENTS

1. Draft Work Plan for Bird and Upland Habitat Surveys
2. eBird Sighting Frequency Data for the Mendenhall Wetlands Important Birding Area
3. Site Visit Summaries
4. Revisions to Preliminary Habitat Type Mapping from the Wildlife and Fish Resources Technical Memorandum
5. Common and Scientific Names of Species Mentioned in this Report

# Acronyms and Abbreviations

|        |  |
|--------|--|
| CBJ    | City and Borough of Juneau                     |
| DOT&PF | Alaska Department of Transportation and Public |
| GIS    | Facilities geographic information system       |
| NEPA   | National Environmental Policy Act              |
| PEL    | Planning and Environmental Linkages            |

# 1. Introduction

The City and Borough of Juneau (CBJ) has partnered with Alaska Department of Transportation and Public Facilities (DOT&PF) to study a possible transportation corridor to connect Juneau with the northern end of Douglas Island. DOT&PF has chosen the Planning and Environmental Linkages (PEL) process to identify and evaluate a purpose and need and recommend alternatives for such a connection. The PEL study considers potential crossing locations between Douglas Island and mainland Juneau in the channel area north of the existing Douglas Island Bridge. The analyses conducted for the PEL may be incorporated into a future National Environmental Policy Act (NEPA) review.

In April 2023, DOT&PF identified six alternatives to advance for detailed development in the Juneau Douglas North Crossing PEL Study (Figure 1). To support further evaluation of these alternatives, the project team performed field surveys to expand our understanding of environmental resources potentially affected by each alternative. This report identifies the goals and objectives of the field survey effort for birds and upland habitats, describes the methodology employed, summarizes the findings of the field surveys, and provides recommendations for refining the data that will support future evaluations.

A substantial amount of information about species and habitats in the study area is available from the sources identified in Section 2 (Methods) of this report. The goal of this field survey effort was to supplement that information with observations of (1) bird species in the study area during the fall migration period and (2) bird use of the habitat types that have been identified in the study area. To accomplish that goal, the field survey effort included the following tasks:

- Refining our understanding of the habitat types in the study area by collecting observations of the structural and vegetative composition of the land cover types that were defined and mapped in the *Wildlife and Fish Resources Technical Memorandum* for the Juneau Douglas North Crossing PEL Study.
- Conducting area-search surveys to document bird species and characterize the interactions of birds with different habitat types.

# 2. Methods

In September 2023, DOT&PF shared a draft work plan with the Technical Advisory Committee and the Stakeholder Advisory Committee for the Juneau Douglas North Crossing PEL Study (Attachment 1). The field study team revised the work plan in response to review comments from committee members. The methodology described in this report incorporates those revisions.

*Preliminary Research:* Before beginning fieldwork, biologists reviewed aerial imagery, bird species lists, observation records, and additional information from multiple resources, including:

- *Wildlife and Fish Resources Technical Memorandum* for the Juneau Douglas North Crossing PEL Study (Parametrix 2022).
- Juneau Audubon Society (<http://www.juneau-audubon-society.org/>).
- Alaska Audubon Society (<https://ak.audubon.org/southeast-alaska-birding-trail/juneau>).
- eBird (<https://ebird.org/hotspots>).
- Alaska Department of Fish and Game (<https://www.adfg.alaska.gov/index.cfm?adfg=animals.listbirds>).
- Hotspots: Bird Survey of Mendenhall Wetlands, April 2002 to May 2003 (Armstrong et al. 2004).

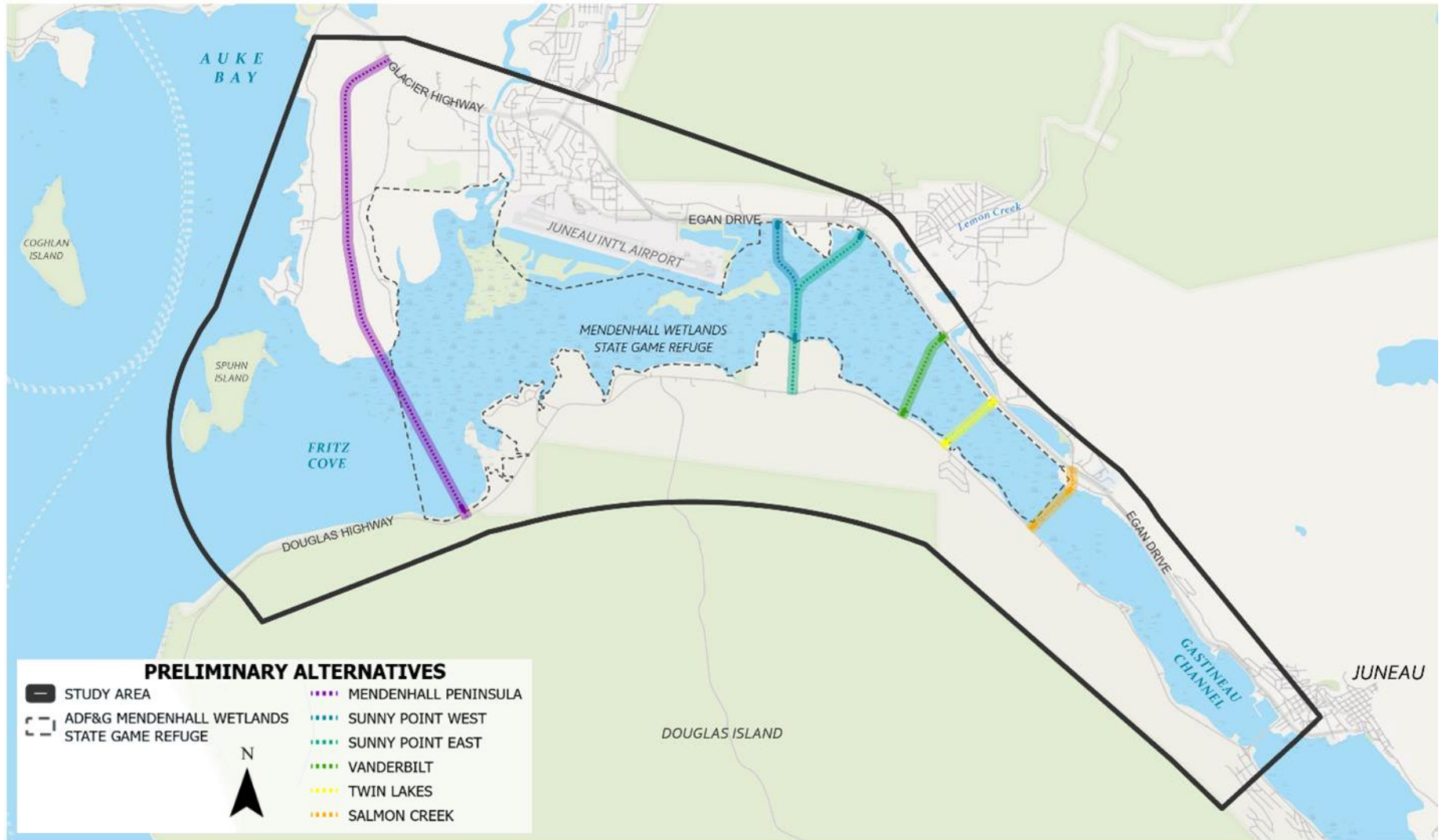


Figure 1. Study Area and Preliminary Alternatives

- The Mendenhall Wetlands: A Globally Recognized Important Bird Area (Armstrong et al. 2009).
- Juneau Second Channel Crossing Project Development Summary Report (HDR Alaska, Inc. 2005).
- Bird use of the Mendenhall Wetlands in Juneau, Alaska (Cain et al. 1988).
- Juneau International Airport. Final EIS and Section 4(f) Evaluation (FAA & CBJ 2007).

To gain insight about species likely to be encountered, the biologists compiled and reviewed sighting frequency data from eBird (2023) for bird species that have been observed in the Mendenhall Wetlands Important Birding Area during the months of September and October (Attachment 2).

*Study Area:* The study area for habitat evaluations and bird surveys consisted of the PEL study area, as described in the *Wildlife and Fish Resources Technical Memorandum* (Parametrix 2022). Biologists identified 13 locations for habitat evaluations and area-search surveys (Figure 2). These locations were based on proximity to the alternative alignments under review, proximity to known birding hot spots, accessibility, and opportunities to conduct surveys in a variety of habitat types.

*Equipment:* Biologists used a tablet computer with the ArcGIS Field Map application to record field observations (e.g., photograph locations, adjustments to previously mapped cover type boundaries). The tablet was linked to a Trimble DA2 Catalyst Global Navigation Satellite System GPS receiver with submeter accuracy. For personal safety, crew members wore high-visibility field vests during surveys.

*Habitat Evaluations:* Biologists collected data to characterize each of the nine land cover types identified in the *Wildlife and Fish Resources Technical Memorandum*, taking representative photographs and identifying characteristic plant species. Biologists performing field surveys gained access to the study areas via public lands (typically Mendenhall Wetland State Game Refuge access points and CBJ- or State-owned parcels). As discussed below, observations made during the field surveys resulted in the classification of a 10th land cover type, Bog/Fen. Data collected in each land cover type included plant species, structural characteristics, habitat quality, land use, and interactions of birds with habitat features. While collecting habitat evaluation data, biologists also confirmed and corrected cover type classifications and boundaries, as needed. Biologists also recorded incidental observations of non-avian taxa and evidence of their presence (e.g., mammal tracks and scat).

*Area-Search Surveys:* Two biologists conducted area-search surveys, walking through the survey areas and stopping at various points to observe bird activity. The entirety of the survey area polygons identified on Figure 2 were surveyed by walking through vegetation or viewing open areas with binoculars. A single, 1- to 3-hour survey visit was conducted in each survey area. The biologists identified, estimated the abundance of, and collected information about habitat use by the bird species observed. In accordance with methodologies developed for bird surveys during migratory periods (e.g., Alberta Environment and Parks 2020), most surveys were conducted during the morning and evening hours. This approach allowed the collection of data on a wider array of species than would be present during just one of these time periods, because different species are active at different times of the day. The morning surveys tend to capture nocturnal migrants landing after nighttime flights and diurnal migrants beginning migration in the daylight hours. The evening surveys tend to capture soaring migrants using thermals, waterfowl during foraging flights, and nocturnal migrants beginning nighttime flights (Alberta Environment and Parks 2020). These morning and evening periods also aligned with low tides, when the maximum amount of habitat was available to birds and surveyors in each survey area. Surveys were not conducted during periods of strong wind or heavy rain. Biologists also timed survey visits to avoid being in popular hunting areas under twilight conditions.

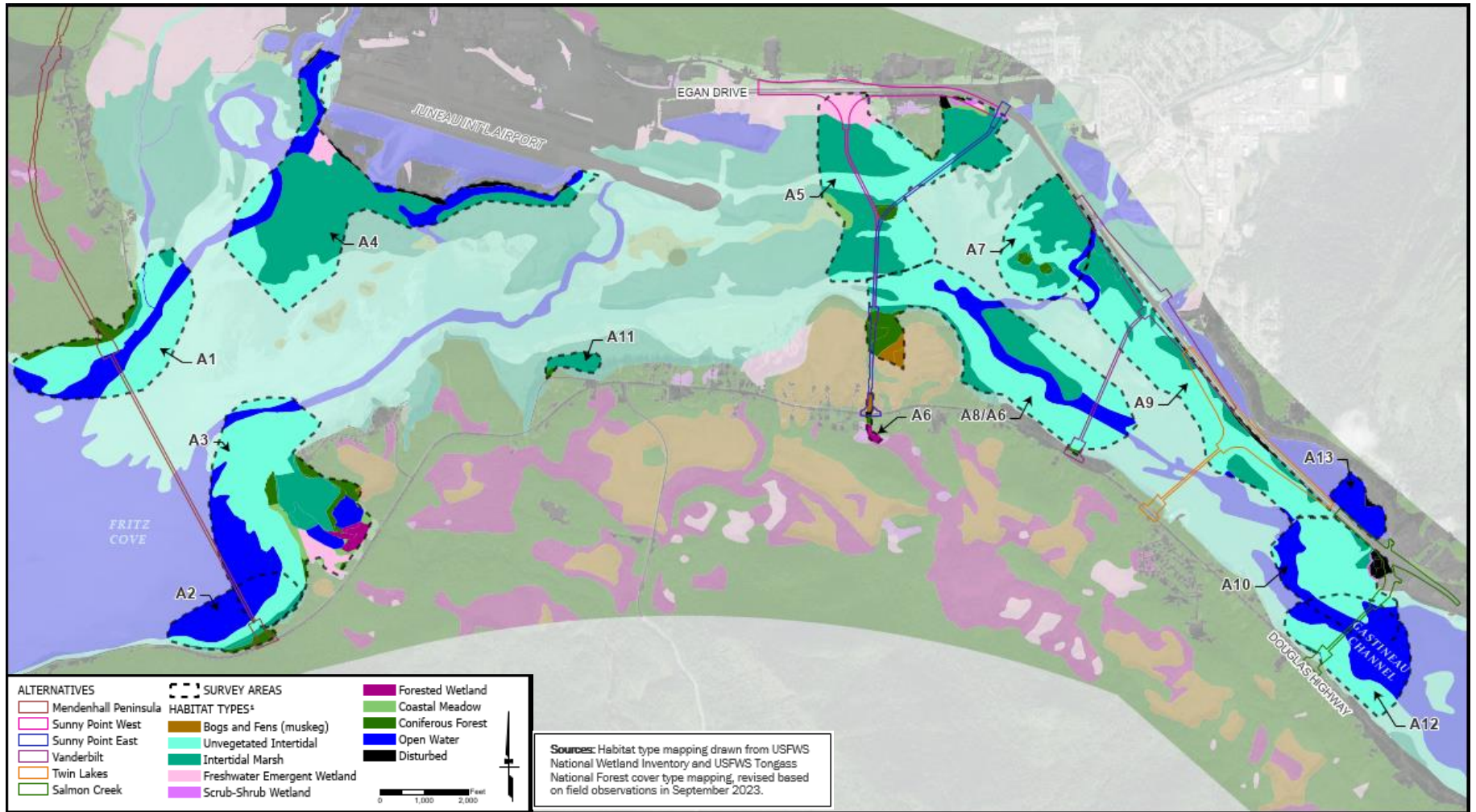


Figure 2. Bird Survey Areas and Habitat Types



To maximize opportunities for collecting observations of the interactions of birds with different habitat types, the survey areas encompassed a variety of land cover types. When identifying target areas for surveys, areas near the alternative alignments were favored, but the alternative locations were not the primary driver for determining the locations of survey areas. Part of the purpose in favoring those locations was to gain on-the-ground familiarity with each alternative alignment, facilitating future evaluations of the potential impacts of the alternatives.

### 3. Results

Parametrix biologists Mike Hall and Kaylee Moser conducted the field surveys from September 19 through September 28, 2023. Weather during the surveys was generally overcast and mild (45 °F to 55 °F) with periods of light rain and sunshine. See Attachment 3 for site visit summaries.

The biologists conducted surveys in 13 survey areas encompassing a total of 1,825 acres across 10 different habitat types (Table 1). Preliminary identification of habitat types in the study area was based on mapping developed for the *Wildlife and Fish Resources Technical Memorandum* (Parametrix 2022). During the surveys, biologists made pertinent alterations to the habitat type mapping based on field observations. The alterations consisted of boundary adjustments and habitat type reclassification, reflecting differences between remote sensing data and on-the-ground conditions.

Figure 2 displays the survey areas and mapped habitat types. Habitat type mapping in Figure 2 reflects the changes made by biologists during field surveys. Attachment 4 shows specific revisions informed by the field surveys.

Three habitat types (Unvegetated Intertidal, Intertidal Marsh, and Open Water) made up more than half of the area surveyed. This reflects the predominance of these habitat types in the areas that were emphasized for field review, combined with the ability of surveyors to detect birds at great distances in these open areas (sight distance was a factor in determining the size and shape of each survey area). Table 1 below provides the breakdown of the acreage of survey areas for each of the 10 habitat types. Table 2 summarizes the acreage of the habitat types within the potential impact footprint that has been defined for each alternative alignment.

In the course of conducting habitat evaluations, biologists observed some areas with distinctive features (e.g., stunted trees, a thick layer of *Sphagnum* mosses, certain plant species) characteristic of bogs and/or fens. Most such areas were preliminarily classified as Freshwater Emergent Wetland or Scrub-Shrub Wetland in the 2022 *Wildlife and Fish Resources Technical Memorandum*. Given the unique value of bog and fen habitats, the biologists recognized the importance of classifying Bog/Fen as a separate habitat type. Bogs support specialized flora and fauna adapted to acidic water, low available nutrients, and water-logged conditions. Fens are typically less acidic and more productive and biologically diverse than bogs. Both bogs and fens store large amounts of carbon in deep peat layers and play a beneficial role in regulating the global climate (ADF&G 2015).

Through further analysis, the biologists determined that the locations of the Bog/Fen areas identified in the field corresponded with the locations of polygons classified as “muskeg”<sup>1</sup> in geographic information system (GIS) data (the Forest Productivity data layer) obtained from the Tongass National Forest. This information, combined with the distinctive visual signature of these areas in aerial imagery, allowed biologists and GIS specialists to reclassify several habitat polygons in the study area as Bog/Fen.

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<sup>1</sup> Although “muskeg” is commonly used in Southeast Alaska to refer to *Sphagnum* moss- or sedge-dominated peatlands, the word has fallen out of widespread use in technical literature and has been replaced by more narrowly defined terms, such as “bog” or “fen” (Carstensen 2013).

**Table 1. Distribution of Habitat Types in Survey Areas (acres)**

| Survey Area ID     | Habitat Type |                        |                  |                |                             |                     |                  |          |                |           |
|--------------------|--------------|------------------------|------------------|----------------|-----------------------------|---------------------|------------------|----------|----------------|-----------|
|                    | Open Water   | Unvegetated Intertidal | Intertidal Marsh | Coastal Meadow | Freshwater Emergent Wetland | Scrub-Shrub Wetland | Forested Wetland | Bog/Fen  | Conifer Forest | Disturbed |
| A1                 | 42           | 96                     | 5                | 1              | --                          | --                  | --               | --       | 12             | --        |
| A2                 | 45           | 20                     | 7                | --             | --                          | --                  | --               | --       | 4              | --        |
| A3                 | 79           | 124                    | 38               | 8              | 10                          | --                  | 7                | <0.5     | 15             | --        |
| A4                 | 50           | 50                     | 153              | --             | 6                           | --                  | --               | --       | --             | 6         |
| A5                 | --           | 78                     | 132              | 8              | 16                          | 2                   | --               | --       | 5              | 2         |
| A6 <sup>1</sup>    | --           | --                     | --               | --             | --                          | --                  | 2                | 1        | 1              | <0.5      |
| A7                 | 4            | 39                     | 53               | 1              | --                          | --                  | --               | --       | 3              | <0.5      |
| A6/A8 <sup>1</sup> | 39           | 139                    | 48               | --             | --                          | --                  | --               | 6        | 15             | --        |
| A9                 | 6            | 122                    | 51               | 1              | --                          | --                  | --               | --       | --             | 3         |
| A10                | 41           | 71                     | 4                | --             | --                          | 1                   | --               | --       | --             | 5         |
| A11                | --           | --                     | 10               | --             | --                          | --                  | --               | --       | 1              | --        |
| A12                | 66           | 48                     | 1                | --             | --                          | --                  | --               | --       | --             | --        |
| A13                | 21           | --                     | --               | --             | --                          | --                  | --               | --       | --             | 1         |
| <b>TOTAL</b>       | <b>393</b>   | <b>787</b>             | <b>502</b>       | <b>19</b>      | <b>32</b>                   | <b>3</b>            | <b>9</b>         | <b>7</b> | <b>56</b>      | <b>17</b> |

Note: The area calculations for each survey area include portions that overlap neighboring survey areas.

<sup>1</sup> The acreage values for survey area A6 represent only a small area near N Douglas Highway. Survey area A6/A8 covers the intertidal areas along the north shore of Douglas Island, extending from the Sunny Point alignment to the Vanderbilt alignment.

**Table 2: Distribution of Habitat Types Areas within the Potential Impact Footprints of the Alignments (acres)**

| Alternative Alignment | Habitat Type |                        |                  |                |                             |                     |                  |          |                |           |
|-----------------------|--------------|------------------------|------------------|----------------|-----------------------------|---------------------|------------------|----------|----------------|-----------|
|                       | Open Water   | Unvegetated Intertidal | Intertidal Marsh | Coastal Meadow | Freshwater Emergent Wetland | Scrub-Shrub Wetland | Forested Wetland | Bog/Fen  | Conifer Forest | Disturbed |
| Mendenhall Peninsula  | 6            | 7                      | 1                | --             | --                          | 1                   | 6                | --       | 34             | 7         |
| Salmon Creek          | 2            | 6                      | <0.5             | <0.5           | --                          | <0.5                | --               | --       | 1              | 18        |
| Sunny Point East      | --           | 3                      | 5                | --             | <0.5                        | <0.5                | --               | 2        | 4              | 2         |
| Sunny Point West      | --           | 2                      | 6                | 7              | 11                          | 1                   | --               | 2        | 4              | 20        |
| Twin Lakes            | <0.5         | 20                     | 9                | 5              | --                          | --                  | --               | --       | 2              | 15        |
| Vanderbilt            | 7            | 11                     | 12               | 8              | --                          | --                  | --               | --       | 1              | 17        |
| <b>TOTAL</b>          | <b>15</b>    | <b>49</b>              | <b>33</b>        | <b>20</b>      | <b>11</b>                   | <b>2</b>            | <b>6</b>         | <b>4</b> | <b>46</b>      | <b>79</b> |

## **3.1 Habitat Evaluations**

On the following pages are profiles that provide overviews of the 10 habitat types in the study area. Each habitat profile includes a representative photograph, a brief description, characteristic plant species, and bird species observed in the habitat type during the September 2023 area-search surveys. These profiles build on and supplement existing reports (e.g., HDR Alaska, Inc. 2005) and species lists (e.g., eBird, Alaska Audubon Society, Juneau Audubon Society, Armstrong et al. 2004). See Attachment 5 for the scientific names of species mentioned in this report.

**Habitat Profile: Open Water**



Gastineau Channel near Survey Area A9, facing west.

|  |   |  |  |
|--|---|--|--|
| <p><b>Description</b></p>                  | <p>These areas in the subtidal zone are permanently inundated—generally, below the mean lower low water elevation—and include the deeper waters of Gastineau Channel, Fritz Cove, river outlets, and ponds/lakes.</p> |  |  |
| <p><b>Characteristic Plant Species</b></p> | <p>Submerged aquatic vegetation (e.g., eelgrass, macroalgae)</p>  |  |  |
| <p><b>Bird Species Observed</b></p>        | <p>American wigeon<br/>         California gull<br/>         Canada goose<br/>         glaucous-winged gull<br/>         green-winged teal</p>  | <p>herring gull<br/>         hooded merganser<br/>         horned grebe<br/>         lesser scaup<br/>         mallard</p> | <p>short-billed gull<br/>         northern pintail<br/>         red-necked grebe<br/>         ring-necked duck</p> |

**Habitat Profile: Unvegetated Intertidal**



Gastineau Channel at low tide in Survey Area A8, facing northwest.

|  |   |  |  |
|--|---|--|--|
| <p><b>Description</b></p>                  | <p>These areas regularly alternate between being inundated and exposed by tidal fluctuations. Biota include nonvascular plants, mollusks, crustaceans, and polychaete worms. Fish and other aquatic species are present when inundation occurs. Sparse low marsh vegetation may be present in some areas.</p> |  |  |
| <p><b>Characteristic Plant Species</b></p> | <p>Rockweed<br/>         Various green algae species<br/>         Sparse coverage of goosetongue, sea milkwort, and Pacific alkali grass</p>  |  |  |
| <p><b>Bird Species Observed</b></p>        | <p>American crow<br/>         American pipit<br/>         American wigeon<br/>         bald eagle<br/>         Bonaparte's gull<br/>         California gull</p>  | <p>glaucous-winged gull<br/>         greater yellowlegs<br/>         green-winged teal<br/>         herring gull<br/>         least sandpiper<br/>         lesser yellowlegs</p> | <p>mallard<br/>         merlin<br/>         short-billed gull<br/>         pectoral sandpiper<br/>         western sandpiper</p> |

**Habitat Profile: Intertidal Marsh**



Intertidal marsh habitat north of Hendrickson Point in Survey Area A8, facing northwest.

|  |   |   |  |
|--|---|---|--|
| <p><b>Description</b></p>                  | <p>These areas are largely restricted to elevational zones between areas where the Unvegetated Intertidal and Coastal Meadow habitat types are found. Estuarine areas sheltered from wave energy provide optimal conditions for bird nesting and foraging, as these areas have a reduced threat of wave washout. Lower elevations with relatively coarse substrates commonly feature succulent vascular plants such as goosetongue and arrowgrass. Terraces near tidal sloughs support dense stands of Lyngbye’s sedge.</p> |   |  |
| <p><b>Characteristic Plant Species</b></p> | <p>Lyngbye’s sedge<br/>         arrowgrass<br/>         beach rye<br/>         Canadian sandspurry</p>  | <p>Gmelin’s saltweed<br/>         goosetongue<br/>         low chickweed<br/>         Pacific alkali grass</p>  | <p>sea milkwort<br/>         seabeach sandwort<br/>         seablite<br/>         silverweed</p>   |
| <p><b>Bird Species Observed</b></p>        | <p>American crow<br/>         American dipper<br/>         American pipit<br/>         bald eagle<br/>         Canada goose<br/>         common raven</p>   | <p>golden-crowned sparrow<br/>         green-winged teal<br/>         herring gull<br/>         Lincoln’s sparrow<br/>         merlin<br/>         Northern harrier</p> | <p>Pacific wren<br/>         red-winged blackbird<br/>         Savannah sparrow<br/>         song sparrow<br/>         white-crowned sparrow<br/>         Wilson’s snipe</p> |

**Habitat Profile: Coastal Meadow**



Coastal Meadow habitat on the fringe of a dredge spoils island in Survey Area A5, facing northwest.

|                                     |  |   |   |
|-------------------------------------|--|---|---|
| <b>Description</b>                  | These areas are typically found in areas that were previously tidelands but that are now above the high tide line due to post-glacial rebound (i.e., uplift following the removal of the huge weight of ice sheets during the last glacial period). Dominant vegetation consists of grasses and other herbaceous plants. |   |   |
| <b>Characteristic Plant Species</b> | beach rye<br>beach pea<br>cow parsnip<br>fireweed  | foxtail barley<br>hemlock parsley<br>kneeling angelica<br>Lyngbye's sedge | Nootka lupine<br>red fescue<br>tufted hairgrass<br>yarrow |
| <b>Bird Species Observed</b>        | American robin<br>belted kingfisher<br>common yellowthroat   | Lincoln's sparrow<br>Pacific wren<br>red-winged blackbird                 | Savannah sparrow<br>song sparrow<br>white-crowned sparrow |

**Habitat Profile: Freshwater Emergent Wetland**



Freshwater emergent wetland located near West Creek in Survey Area A5, facing north.

|  |   |   |  |
|--|---|---|--|
| <p><b>Description</b></p>                  | <p>These grass- and sedge-dominated areas are generally found on riverine terraces and along the edges of ponds. They are occasionally flooded by seawater during storm surges.</p> |   |  |
| <p><b>Characteristic Plant Species</b></p> | <p>bluejoint reedgrass<br/>         cleavers<br/>         Douglas' water-hemlock<br/>         Lyngbye's sedge</p>   | <p>marsh cinquefoil<br/>         Northern grass-of-Parnassus<br/>         Pacific water-parsley</p> | <p>sweet gale<br/>         tufted hairgrass<br/>         yellow marsh-marigold</p> |
| <p><b>Bird Species Observed</b></p>        | <p>great blue heron                      spotted sandpiper</p>  |   |  |



**Habitat Profile: Scrub-Shrub Wetland**



Scrub-shrub wetland habitat west of Sunny Point in Survey Area A5, facing south.

|                                     |  |  |   |
|-------------------------------------|--|--|---|
| <b>Description</b>                  | These areas are dominated by shrubs and sapling trees, generally along permanent streams. At many sites, this habitat type is a transition zone between freshwater marshes and wooded plant communities. |  |   |
| <b>Characteristic Plant Species</b> | Barclay willow<br>black cottonwood   | Sitka alder                                      | Sitka willow  |
| <b>Bird Species Observed</b>        | American crow<br>common raven<br>common yellowthroat<br>Lincoln's sparrow  | merlin<br>orange-crowned warbler<br>Pacific wren | ruby-crowned kinglet<br>song sparrow<br>Steller's jay<br>yellow warbler |

**Habitat Profile: Forested Wetland**



Forested wetland directly north of North Douglas Highway in Survey Area A6, facing north.

|                                     |  |   |  |
|-------------------------------------|--|---|--|
| <b>Description</b>                  | These areas are generally found on steeper terrain than other wetland types in the study area, primarily near small drainages on the flatter parts of Douglas Island. Conifer species characterize these wetlands as the dominant species, although the trees may be stunted compared to trees found in areas with better-drained soils. |   |  |
| <b>Characteristic Plant Species</b> | fool's huckleberry<br>oval-leaf blueberry  | Sitka spruce<br>Shore pine<br>western hemlock | western redcedar<br>yellow skunk cabbage |
| <b>Bird Species Observed</b>        | American robin<br>belted kingfisher  | common raven                                  | Pacific wren                             |

Habitat Profile: Bog/Fen



Bog/Fen habitat located on Hendrickson Point in Survey Area A8, facing northeast.

|                                     |  |  |  |
|-------------------------------------|--|--|--|
| <b>Description</b>                  | These areas are generally found in areas away from tidal influence, interspersed throughout the forest. Dominant plant species are sphagnum mosses (in bogs), and sedges (in fens), along with stunted trees, low shrubs, and forbs. |  |  |
| <b>Characteristic Plant Species</b> | bog cranberry<br>bog rosemary<br>crowberry<br>Labrador tea   | lingonberry<br>fewflower sedge<br>shore pine | sphagnum moss<br>tall cottongrass<br>tufted clubrush |
| <b>Bird Species Observed</b>        | common raven   |  |  |

Habitat Profile: Conifer Forest



Conifer forest growing on a dredge spoils island in Survey Area A5, facing west.

|  |   |   |  |
|--|---|---|--|
| <p><b>Description</b></p>                  | <p>This is the most common upland habitat type in the study area. The dominant tree species are Sitka spruce and western hemlock, typical of low- to mid-elevation areas in Southeast Alaska. Patches of young forest have become established on the small islands created from dredging Gastineau Channel.</p> |   |  |
| <p><b>Characteristic Plant Species</b></p> | <p>bunchberry<br/>         devil's club<br/>         fool's huckleberry</p>   | <p>fernleaf goldthread<br/>         five-leaf bramble<br/>         lady fern</p>  | <p>oval-leaved blueberry<br/>         Sitka spruce<br/>         western hemlock</p>  |
| <p><b>Bird Species Observed</b></p>        | <p>American robin<br/>         bald eagle<br/>         black-billed magpie<br/>         belted kingfisher<br/>         chestnut-backed chickadee<br/>         common raven</p>  | <p>dark-eyed junco<br/>         Eurasian collared-dove<br/>         golden-crowned sparrow<br/>         Lincoln's sparrow<br/>         orange-crowned warbler<br/>         Pacific wren</p> | <p>sharp-shinned hawk<br/>         song sparrow<br/>         Steller's jay<br/>         ruby-crowned kinglet<br/>         white-crowned sparrow<br/>         varied thrush</p> |

**Habitat Profile: Disturbed**



Riprap bank armoring along Gastineau Channel in Survey Area A9, facing south.

|                                     |   |                                 |                                       |
|-------------------------------------|---|---------------------------------|---------------------------------------|
| <b>Description</b>                  | These areas are defined by past and ongoing human activities. Vegetation may include plant communities that colonize areas immediately after disturbance or species directly introduced by grass seeding and planting shrubs and trees. Areas classified as Disturbed include roads, residential and commercial development, industrial buildings, hatcheries, communication towers, power lines, and riprap armoring along Egan Drive. |                                 |                                       |
| <b>Characteristic Plant Species</b> | beach rye<br>fireweed   | pasture grasses<br>mosses       | Sitka willow<br>Sitka spruce          |
| <b>Bird Species Observed</b>        | American robin<br>bald eagle<br>European starling   | northern harrier<br>rock pigeon | song sparrow<br>white-crowned sparrow |

## 3.2 Bird/Habitat Interactions

Biologists observed 55 bird species during the field surveys. For each observation, biologists noted species, abundance, and associated habitat type. Many species were observed in a wide range of habitat types; others were more limited in their distribution. The following paragraphs summarize field observations of various species' use of each habitat type, with some additional insights drawn from literature.

The **Open Water** habitat type provides an important staging area for migratory birds to rest and feed (Armstrong et al. 2004). Biologists observed rafts of dabbling and diving ducks, such as mallards, American wigeons, Canada geese, and green-winged teals in this habitat type. Most such observations occurred in Fritz Cove, near the mouth of the Mendenhall River, and in the western Gastineau Channel. Small rafts (approximately 10 individuals) of lesser scaup and ring-necked ducks were observed feeding in the southern lake of the Twin Lakes area, as was a lone hooded merganser. Two horned grebes were seen feeding at the pond near the Fish Creek estuary. Large groups of gulls (including Bonaparte's, California, glaucous-winged, herring, and short-billed gulls) were observed in and near areas classified as Open Water throughout the study area.

The **Unvegetated Intertidal** habitat type provides important foraging habitat for a wide range of species. Biologists observed ducks, shorebirds, eagles, and gulls feeding on barnacles, mussels, rockweed, sand lance, and other food sources in this nutrient-rich habitat. Most of these observations were made during low tide along the expanses of exposed mud flats and mussel/barnacle beds between Lemon Creek and Salmon Creek. Greater yellowlegs, lesser yellowlegs, and sandpipers foraged in the tidal channels and estuaries near Sunny Point, the Fish Creek estuary, and the sloughs near the Airport Trail during low tides. Many gulls and eagles were observed near the Salmon Creek estuary, feeding on small fish and invertebrates as the tide receded.

The **Intertidal Marsh** habitat type is dominated by Lyngbye's sedge, an important food source for many species. Sedge seeds make up a large portion of the fall diet of resident Canada geese, and sedge-dominated areas support populations of invertebrates that are prey for a wide range of bird species (Armstrong et al. 2004). In survey area A11 near Ninemile Creek Road, biologists observed several juvenile western toads in and near small (approximately 1 to 2 square feet), shallow patches of freshly disturbed ground among the sedges. The disturbed areas may have represented predation attempts, possibly by birds. Areas of intertidal marsh habitat also provide resting areas for geese, ducks, shorebirds, and other species during migration or high tides. Near Sunny Point, biologists observed a northern harrier flushing and chasing a group of green-winged teal; a dispute between a merlin and northern harrier was also observed in this area. Seeds and insects in intertidal marshes provide forage for passerines, and the dense grasses provide hiding cover. Biologists frequently flushed sparrows and other songbirds while walking through these areas, and groups of American pipits were seen foraging.

Grasses in the **Coastal Meadow** habitat type provide foraging habitat and hiding cover for many species. Many of the bird species present in intertidal marsh areas were also seen in areas classified as Coastal Meadow, albeit less frequently; this may be attributable to the lower forage value of the plant species that make up most of the vegetative cover in coastal meadows, compared to that of Lyngbye's sedge (which is the predominant plant species many areas classified as Intertidal Marsh). Biologists observed red-winged blackbirds and American pipits foraging for seeds and insects. Burrows and tunnels in the grasses indicated the presence of voles and other small mammals, which provide prey for raptors. Seaweed, plant debris, trash, and other materials left by high tides provide foraging opportunities for corvids, gulls, and other species. Several Wilson's snipes were flushed from clumps of grass during field surveys near Sunny Point and survey area A11. Similar to areas of intertidal marsh, coastal meadows also provide resting areas for geese, ducks, shorebirds, and other species.

Areas classified as **Freshwater Emergent Wetland** bear many floristic and structural similarities to both intertidal marshes and coastal meadows. As such, the use of these areas by birds is substantially similar to what was described above for those habitat types. The two species observed in areas specifically classified as Freshwater Emergent Wetland (great blue heron and spotted sandpiper) are commonly seen in a variety of intertidal and other habitats.

Biologists encountered the **Scrub-Shrub Wetland** habitat type mainly at the edges of coastal meadows. Songbirds such as common yellowthroats, yellow warblers, orange-crowned warblers, Pacific wrens, common yellowthroats, and ruby-crowned kinglets were observed darting around among the willows.

The **Forested Wetland** habitat type provides foraging, resting, and breeding areas for a wide variety of birds. However, biologists conducting field surveys in September 2023 observed few birds in areas classified as Forested Wetland. This paucity of observations can be attributed to several factors, including (1) the scarcity of this habitat type in the survey areas, (2) the timing of the survey effort during the migration period, when most birds are not singing, (3) the abundance of hiding cover in this habitat type, and (4) limited sight distances for observers.

Structurally, the **Bog/Fen** habitat type is similar to both Freshwater Emergent Wetland and Scrub-Shrub Wetland. For reasons akin to those laid out for Forested Wetland—with the addition of the distance that separated Bog/Fen areas from bird-rich intertidal areas—biologists recorded few observations of birds in this habitat type.

Similar to Forested Wetland, the **Conifer Forest** habitat type supports a rich and diverse assemblage of bird species. This was the fourth most-abundant habitat type in the survey areas, providing opportunities to observe and document a comparatively large number of species. In addition, biologists found evidence of porcupine presence in survey area A3.

Although many areas classified as the **Disturbed** habitat type offer little in the way of forage or shelter, several opportunistic species make use of such areas. Gulls and eagles were frequently seen perched on utility poles and light standards, searching for prey.

## 4. Recommendations/Additional Information Needs

This report identifies several updates to the land cover type mapping that was developed for the 2022 *Wildlife and Fish Resources Technical Memorandum* for the Juneau Douglas North Crossing PEL Study. We recommend incorporating those updates—most notably, the identification of the Bog/Fen cover type—into the GIS data that are carried forward to support further analysis.

This report does not provide an analysis of potential effects of the alternatives on bird species or habitats, nor is it intended to rank or prioritize the alternatives. Such assessments would be performed during the NEPA process, as part of a comprehensive review of the project. Analyses of potential project-related impacts on wildlife should be based primarily on impacts to habitat. In other words, if an alternative would affect a certain habitat type, it should be assumed those effects would translate into impacts on any wildlife species known or expected to use that habitat, regardless of whether those species have been observed at that location.

In addition to the data sources identified in this and other reports, information about bird species in the study area can be drawn from bird activity logs prepared in support of the Juneau Airport's Wildlife Hazard Management Program.

Finally, if more information on the interactions of birds with habitats is desired, additional surveys during the spring migration and breeding periods would offer more direct insight. As noted in the work plan for this survey effort (Attachment 1), survey data collected during late September offer a snapshot of the activity of resident bird species and species that migrate through the study area. Information about seasonal and interannual variability in abundance can be drawn from existing data sources, such as eBird (2023).

## 5. References

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# **Attachment 1**

Draft Work Plan for Bird and  
Upland Habitat Surveys

## TECHNICAL MEMORANDUM

**DATE:** September 14, 2023  
**TO:** Ben Storey, Regional Environmental Manager, AK DOT&PF Southcoast Region  
**FROM:** Kaylee Moser and Mike Hall, Parametrix  
**SUBJECT:** Bird Survey Work Plan  
**CC:** Christy Gentemann, Environmental Impact Analyst, AK DOT&PF Southcoast Region  
Theresa Dutchuk, Senior NEPA Specialist, DOWL  
**PROJECT NAME:** Juneau Douglas North Crossing (JDNC)

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### INTRODUCTION

The City and Borough of Juneau (CBJ) has partnered with Alaska Department of Transportation and Public Facilities (DOT&PF) to explore a north crossing between Juneau and Douglas Island, north of the existing Douglas Island Bridge. DOT&PF has chosen the Planning and Environmental Linkage (PEL) process to evaluate the purpose and need for a north crossing, identify potential north crossing alternatives, evaluate the alternatives, and identify recommended crossing(s). In support of the evaluation of alternatives the project team is collecting environmental data to understand potential impacts of six proposed alternatives. This work plan has been developed to outline the goals, objectives, and methods for field surveys to document habitat use by birds during the fall migration period.

### GOALS AND OBJECTIVES

The goals of this effort are to document bird species present in the study area during the fall migration period and to identify differences in bird use of the habitat types that have been identified in the study area. Information collected through this effort will be used to evaluate the potential impacts of the alternatives on birds and bird habitat.

To accomplish these goals, we propose to

- Collect observations of the structural and vegetative composition of the land cover types that were defined and mapped in the Wildlife and Fish Resources Technical Memorandum for the Juneau Douglas North Crossing PEL Study and
- Conduct field surveys to document bird species detected and to characterize the interactions of birds with different habitat types.

### METHODOLOGY

*Preliminary Research:* Before beginning fieldwork, biologists will review available aerial photos, bird species lists, and observation records from multiple resources, including:

- Wildlife and Fish Resources Technical Memorandum for the Juneau Douglas North Crossing PEL Study (Parametrix 2022)
- Juneau Audubon Society (<http://www.juneau-audubon-society.org/>)
- Alaska Audubon Society (<https://ak.audubon.org/southeast-alaska-birding-trail/juneau>)

- eBird (<https://ebird.org/hotspots>)
- Alaska Department of Fish and Game (<https://www.adfg.alaska.gov/index.cfm?adfg=animals.listbirds>)
- *The Mendenhall Wetlands: A Globally Recognized Important Bird Area* (Armstrong et al. 2009)
- Google Earth images
- Other relevant reports (e.g., FAA and CBJ 2007).

*Study Area:* The study area for habitat evaluations and bird surveys will consist of the PEL study area, as identified in Wildlife and Fish Resources Technical Memorandum (Parametrix 2022). Biologists identified 10 preliminary locations for field surveys (see Figure 1, attached). A primary consideration in identifying survey area locations was to provide opportunities for collecting observations of habitat conditions and bird presence in a variety of habitat types. Survey area locations were also based on proximity to the proposed alternatives, proximity to identified birding hotspots, and access.

*Equipment:* Biologists will use a Trimble DA2 Catalyst Global Navigation Satellite System Global Positioning System (GPS) receiver with submeter accuracy, accompanied by a tablet computer with the ArcGIS Field Map application containing the base condition mapping layers.

*Habitat Evaluations:* Biologists will collect data to describe the characteristics of each land cover type. Observations of birds in these cover types will be used to identify the associations of birds with each habitat type. Data collected in each land cover type will include plant species, stand structure, habitat quality, and land use. While collecting habitat evaluation data, biologists will confirm and, as needed, correct assigned cover type classifications and boundaries. Corrections to the boundaries and cover type designations will be made in ArcGIS Field Maps. Biologists will also record incidental observations of non-avian taxa and evidence of their presence (e.g., tracks and scat).

*Bird Surveys:* Two biologists will conduct area-search surveys in mid-to-late September. Area-search surveys will be performed by walking through areas surrounding the yellow lines depicted on Figure 1, stopping as needed to observe bird activity and record observations. A single, 1- to 3-hour survey visit will be conducted in each survey area. For each detection, biologists will record the species, estimated number of individuals, and what habitat type birds were using.

Biologists aim to survey 2 or 3 areas per day, weather permitting, and will target surveys around dawn and dusk. In accordance with methodologies developed for bird surveys during migratory periods (e.g., Alberta Environment and Parks 2020), surveys will be conducted during the morning and the evening. Morning surveys begin around sunrise and will continue for 3 to 4 hours. Evening surveys will be conducted during the 3- to 4-hour period leading up to sunset. This approach will allow biologists to collect data on a wider array of species than would be present during just one of these time periods, as different species are active at different times of the day. The morning surveys may capture nocturnal migrants landing after nighttime flights and diurnal migrants beginning migration in the daylight hours. The evening surveys may capture soaring migrants using thermals, waterfowl during foraging flights, and nocturnal migrants beginning nighttime flights (Alberta Environment and Park 2020). Surveys will not be conducted during periods of strong wind or heavy rain. To minimize the risk of conflict with hunters, biologists will avoid conducting surveys in popular hunting areas during twilight hours (approximately 30 to 60 minutes after sunrise and 30 to 60 minutes before sunset, depending on cloud cover).

Table 1 on the following page provides details for each area. Access to at least four of the areas will depend on tidal conditions. Biologists will review tide charts before conducting surveys and plan appropriately.

## BACKGROUND INFORMATION

Survey data collected during late September offers a snapshot of the activity of resident bird species and species that use the study area as a migratory corridor. The fall migration period in Juneau extends from August 1 through November 30 (Juneau Audubon Society 2004). A list of bird species expected to be observed in September will be compiled before bird surveys begin, using the resources identified above.

**Table 1.** JDNC Bird Survey Area Information

| Survey Area ID | Approximate Survey Area Size (acres) | Habitat Types Present <sup>1</sup>   | Access to Survey Area  | Tide Dependency                |
|----------------|--------------------------------------|--|--|--------------------------------|
| A1             | 19                                   | Coniferous Forest, Coastal Meadow, Unvegetated Intertidal, Open Water  | Follow Mendenhall Peninsula Trail  | No                             |
| A2             | 11                                   | Coniferous Forest, Intertidal Marsh, Unvegetated Intertidal, Open Water  | Park at North Douglas Boat Launch Ramp and walk east   | No                             |
| A3             | 30                                   | Coniferous Forest, Freshwater Emergent Wetland, Coastal Meadow, Intertidal Marsh, Unvegetated Intertidal, Open Water | Follow the Fish Creek Trail  | No                             |
| A4             | 40                                   | Freshwater Emergent Wetland, Intertidal Marsh, Open Water  | Follow the Mendenhall Refuge Trail   | No                             |
| A5             | 9                                    | Freshwater Emergent Wetland, Coastal Meadow, Intertidal Marsh, Unvegetated Intertidal                                | Park at the western end of Sunny Drive and walk southwest  | Yes- Survey closer to low tide |
| A6             | 12                                   | Coniferous Forest, Forested Wetland, Scrub-Shrub wetland, Freshwater Emergent Wetland                                | Walk through City and Borough of Juneau Lands and Resources parcels 6D0901060110 and 6D0901070050  | No                             |
| A7             | 10                                   | Coastal Meadow, Unvegetated Intertidal, Open Water   | Park at the Mendenhall Wetland Scenic View pull out and walk southeast towards Lemon Creek.  | Yes- Survey closer to low tide |
| A8             | 6                                    | Intertidal Marsh, Unvegetated Intertidal, Open Water   | Park at pullout along North Douglas Highway, walk through City and Borough of Juneau Lands and Resources parcels 6D0901000090 and 6D0901000080 | Yes- Survey closer to low tide |
| A9             | 18                                   | Coastal Meadow, Unvegetated Intertidal, Open Water   | Park at the Mendenhall Wetland Scenic View pull out and walk southeast.  | No                             |
| A10            | 12                                   | Coastal Meadow, Unvegetated Intertidal, Open Water   | Walk along the Salmon Creek outlet   | Yes- Survey closer to low tide |

<sup>1</sup> See the JDNC PEL Wildlife and Fish Technical Memorandum for habitat type descriptions.

If you have any questions, we are available to discuss.



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## REFERENCES:

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# **Attachment 2**

eBird Sighting Frequency  
Data for the Mendenhall  
Wetlands Important  
Birding Area

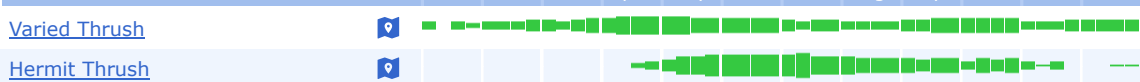
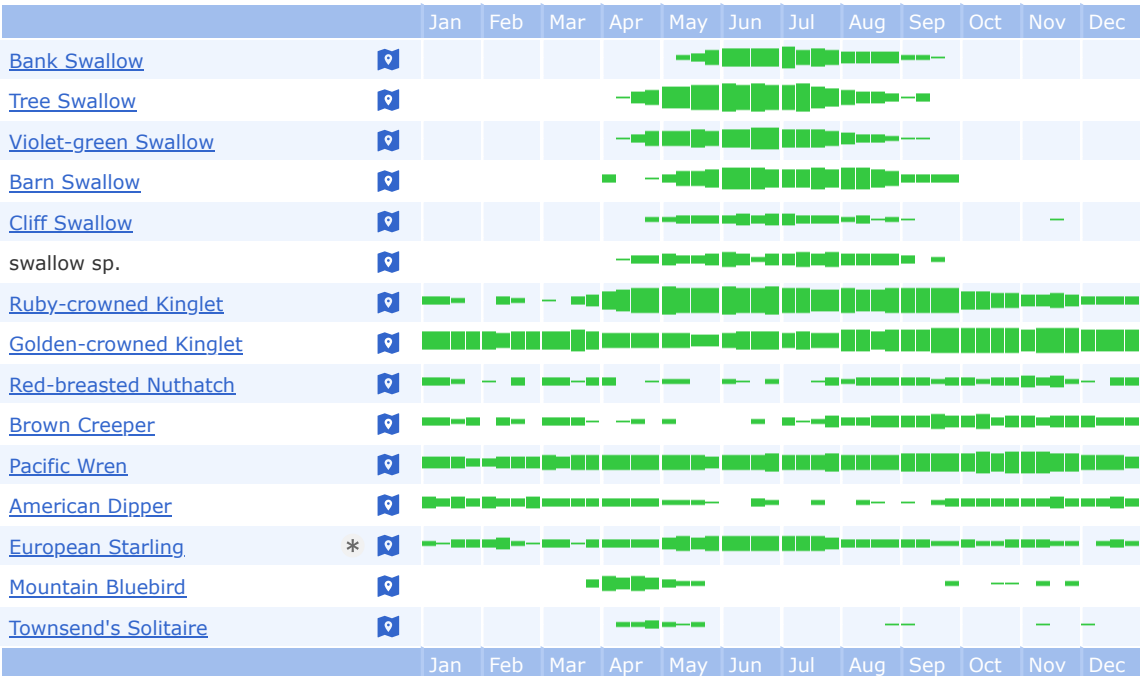
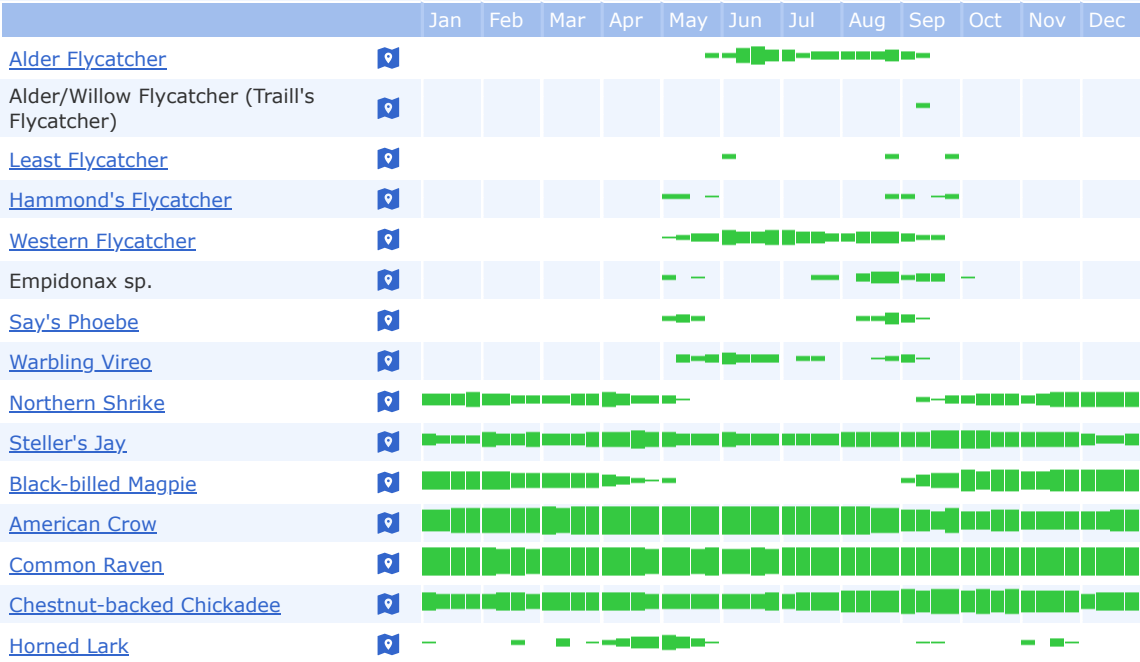
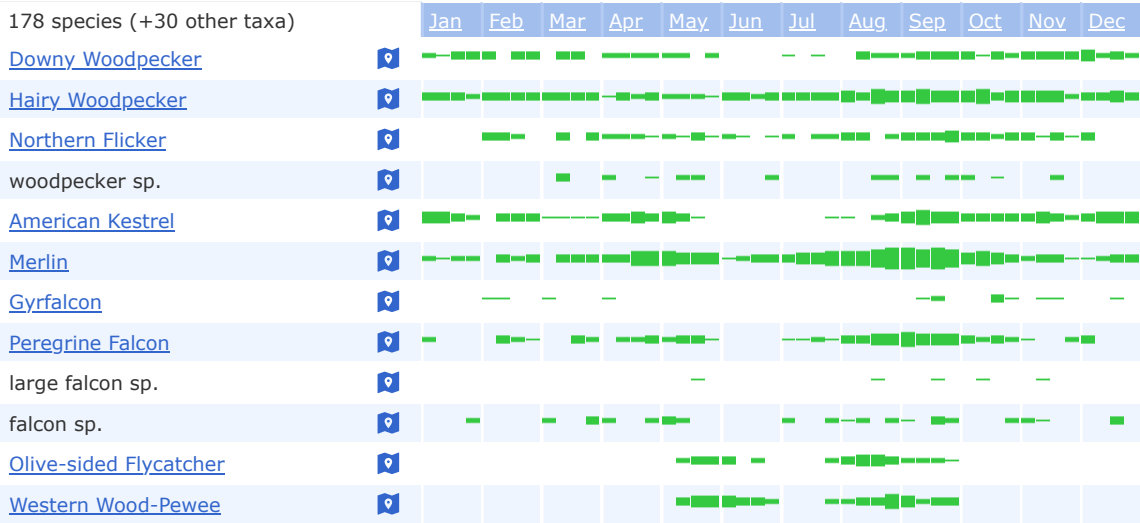








178 species (+30 other taxa)



178 species (+30 other taxa)



**KEY:** = insufficient data | = rare to widespread

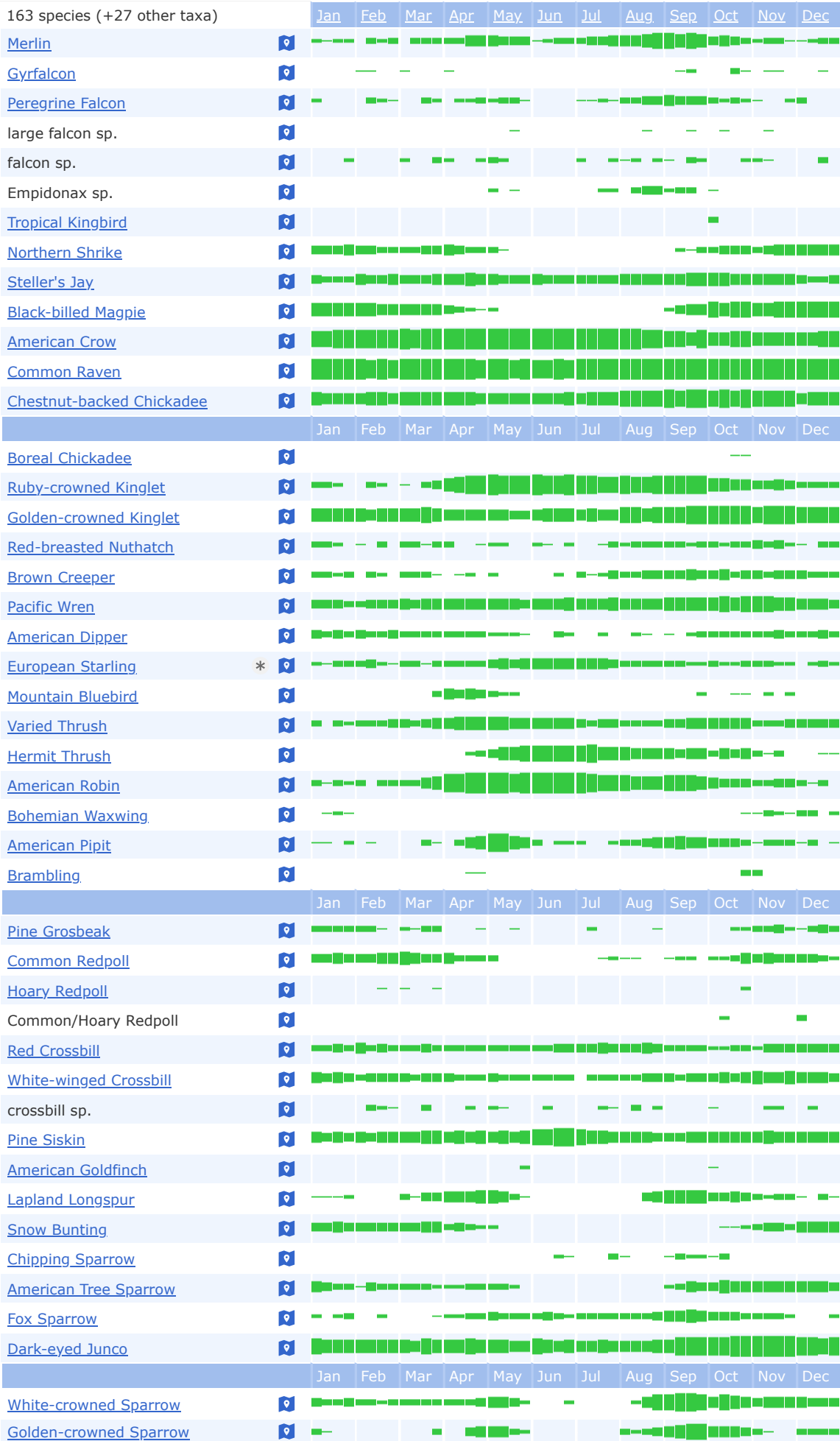
[Download Histogram Data](#)





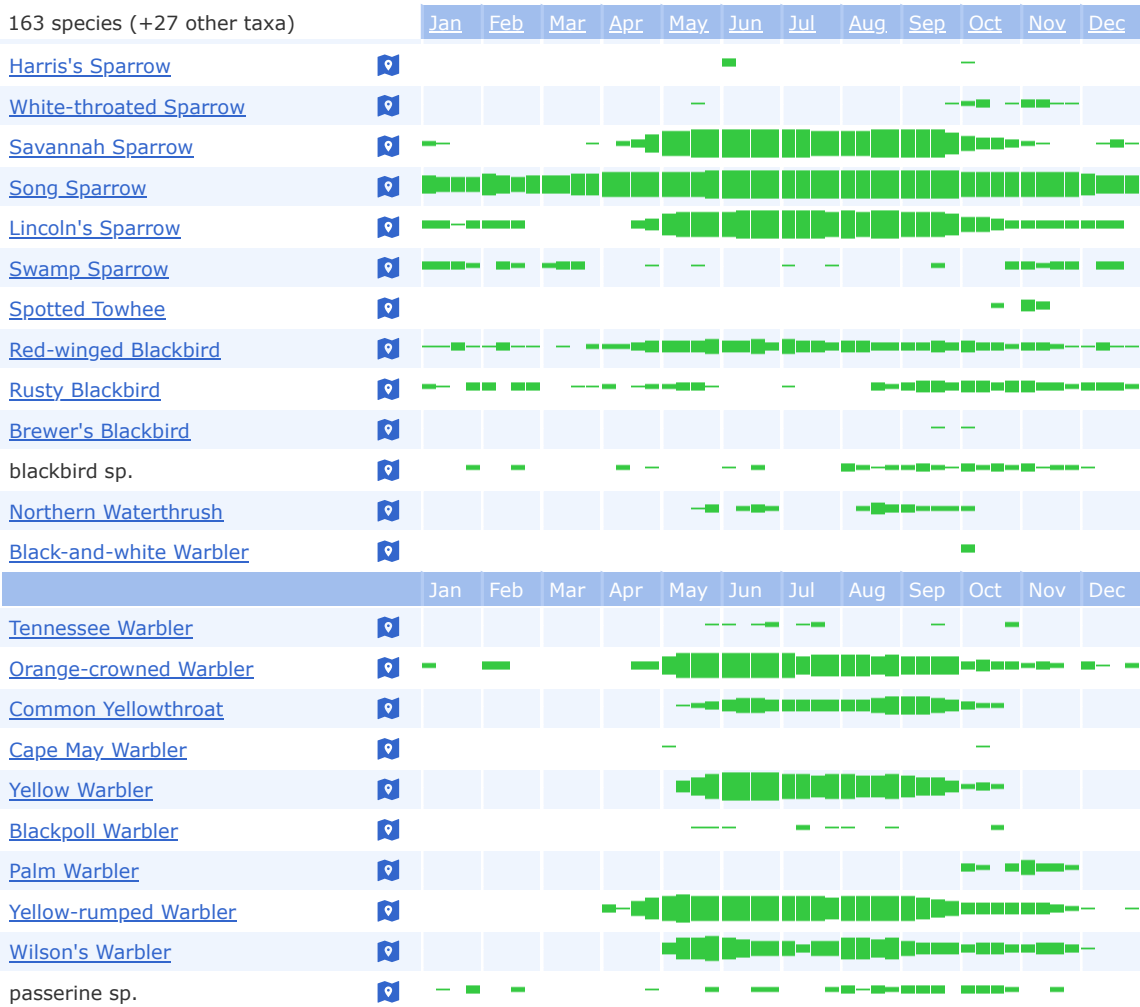


163 species (+27 other taxa)





163 species (+27 other taxa)



KEY: | ■ = insufficient data | ■ = rare to widespread

[Download Histogram Data](#)

# **Attachment 3**

## Site Visit Summaries

## Survey Area A1

Date and time: 9/22/2023, 3:45pm – 6:15pm

Conditions: overcast, light rain, 45°F

| Species                | Habitat Association    | Approximate Abundance |
|------------------------|------------------------|-----------------------|
| mallard                | Fly-over               | 60                    |
| song sparrow           | Intertidal Marsh       | 5                     |
| bald eagle             | Fly-over               | 2                     |
| Lincoln's sparrow      | Conifer Forest         | 3                     |
| short-billed gull      | Open Water             | 50                    |
| American wigeon        | Open Water             | 5                     |
| spotted sandpiper      | Unvegetated Intertidal | 2                     |
| Pacific wren           | Conifer Forest         | 4                     |
| common raven           | Fly-over               | 2                     |
| golden-crowned sparrow | Intertidal Marsh       | 2                     |

## Survey Area A2

Date and time: 9/21/2023, 2:40pm – 4:20pm

Conditions: overcast, 45°F

| Species                | Habitat Association             | Approximate Abundance |
|------------------------|---------------------------------|-----------------------|
| bald eagle             | Fly-over                        | 2                     |
| short-billed gull      | Unvegetated Intertidal          | 5                     |
| mallard                | Intertidal Marsh/Open Water     | 10                    |
| golden-crowned sparrow | Conifer Forest/Intertidal Marsh | 2                     |
| song sparrow           | Intertidal Marsh                | 3                     |
| Pacific wren           | Intertidal Marsh                | 3                     |
| herring gull           | Intertidal Marsh/Open Water     | 10                    |
| Bonaparte's gull       | Unvegetated Intertidal          | 3                     |
| common raven           | Conifer Forest                  | 2                     |
| red-necked grebe       | Open Water                      | 1                     |
| Canada goose           | Open Water                      | 10                    |

### Survey Area A3

Date and time: 9/25/2023, 3:20pm – 6:00pm

Conditions: partially sunny, 55°F

| Species             | Habitat Association               | Approximate Abundance |
|---------------------|-----------------------------------|-----------------------|
| belted kingfisher   | Conifer Forest/Coastal Meadow     | 1                     |
| varied thrush       | Conifer Forest                    | 2                     |
| black-billed magpie | Conifer Forest                    | 1                     |
| horned grebe        | Open Water                        | 2                     |
| herring gull        | Open Water                        | 5                     |
| short-billed gull   | Open Water                        | 2                     |
| bald eagle          | Unvegetated Intertidal            | 5                     |
| Lincoln's sparrow   | Intertidal Marsh                  | 3                     |
| green-winged teal   | Open Water/Intertidal Marsh       | 5                     |
| Pacific wren        | Conifer Forest                    | 3                     |
| greater yellowlegs  | Unvegetated Intertidal            | 2                     |
| American crow       | Intertidal Marsh                  | 2                     |
| mallard             | Fly-over/Open Water               | 4                     |
| dark-eyed junco     | Conifer Forest                    | 5                     |
| American wigeon     | Unvegetated Intertidal/Open Water | 500                   |

### Survey Area A4

Date and time: 9/19/2023, 3:30pm – 7:30pm

Conditions: sunny, 55°F

| Species                   | Habitat Association             | Approximate Abundance |
|---------------------------|---------------------------------|-----------------------|
| Lincoln's sparrow         | Intertidal Marsh                | 15                    |
| white-crowned sparrow     | Intertidal Marsh                | 5                     |
| northern harrier          | Intertidal Marsh                | 1                     |
| western sandpiper         | Unvegetated Intertidal          | 50                    |
| Canada geese              | Open Water                      | 100                   |
| mallard                   | Open Water                      | 70                    |
| Savannah sparrow          | Intertidal Marsh                | 2                     |
| common raven              | Fly-over/Conifer Forest         | 2                     |
| Eurasian collared-dove    | Conifer Forest/Intertidal Marsh | 2                     |
| sharp-shinned hawk        | Conifer Forest                  | 1                     |
| merlin                    | Fly-over/Intertidal Marsh       | 1                     |
| chestnut-backed chickadee | Conifer Forest                  | 50                    |
| orange-crowned warbler    | Conifer Forest                  | 3                     |
| bald eagle                | Fly-over/Conifer Forest         | 4                     |
| dark-eyed junco           | Conifer Forest                  | 5                     |
| great blue heron          | Freshwater Emergent Wetland     | 1                     |
| herring gull              | Open Water                      | 5                     |
| greater yellowlegs        | Unvegetated Intertidal          | 10                    |

**Survey Area A5** (western and southern portions)**Date and time:** 9/25/2023, 8:40am – 12:00pm**Conditions:** partially cloudy/foggy, 50°F

| <b>Species</b>         | <b>Habitat Association</b>         | <b>Approximate Abundance</b> |
|------------------------|------------------------------------|------------------------------|
| American robin         | Coastal Meadow                     | 2                            |
| Bald eagle             | Fly-over                           | 3                            |
| Steller's jay          | Scrub-Shrub Wetland                | 2                            |
| common raven           | Fly-over                           | 2                            |
| common yellowthroat    | Scrub-Shrub Wetland/Coastal Meadow | 1                            |
| Lincoln's sparrow      | Scrub-Shrub Wetland/Coastal Meadow | 2                            |
| Pacific wren           | Scrub-Shrub Wetland                | 3                            |
| orange-crowned warbler | Scrub-Shrub Wetland                | 3                            |
| ruby-crowned kinglet   | Scrub-Shrub Wetland                | 2                            |
| song sparrow           | Coastal Meadow                     | 2                            |
| red-winged blackbird   | Coastal Meadow                     | 15                           |
| Wilson's snipe         | Intertidal Marsh                   | 2                            |
| Savannah sparrow       | Intertidal Marsh                   | 3                            |
| northern harrier       | Intertidal Marsh                   | 1                            |
| merlin                 | Intertidal Marsh                   | 1                            |
| white-crowned sparrow  | Intertidal Marsh/Coastal Meadow    | 2                            |
| American crow          | Fly-over                           | 5                            |
| mallard                | Fly-over                           | 40                           |
| northern shoveler      | Fly-over                           | 2                            |
| American wigeon        | Fly-over                           | 30                           |
| American pipit         | Unvegetated Intertidal             | 30                           |

**Survey Area A5** (eastern portion)**Date and time:** 9/26/2023, 3:30pm – 5:00 pm**Conditions:** light rain, 45°F

| <b>Species</b>        | <b>Habitat Association</b>      | <b>Approximate Abundance</b> |
|-----------------------|---------------------------------|------------------------------|
| Song sparrow          | Scrub-shrub Wetland             | 5                            |
| Steller's jay         | Conifer Forest                  | 2                            |
| Pacific wren          | Coastal Meadow/Conifer Forest   | 5                            |
| red-winged blackbird  | Intertidal Marsh                | 20                           |
| dark-eyed junco       | Conifer Forest                  | 5                            |
| white-crowned sparrow | Intertidal Marsh/Conifer Forest | 5                            |
| northern pintail      | Open Water                      | 2                            |
| glaucous-winged gull  | Unvegetated Intertidal          | 10                           |
| American pipit        | Intertidal Marsh                | 5                            |
| bald eagle            | Fly-over                        | 2                            |
| Savannah sparrow      | Coastal Meadow                  | 3                            |
| cackling goose        | Fly-over                        | 5                            |

## Survey Area A6

Date and time: 9/21/2023, 4:45pm – 5:45pm

Conditions: overcast, light rain, 45°F

| Species        | Habitat Association | Approximate Abundance |
|----------------|---------------------|-----------------------|
| common raven   | Conifer Forest      | 1                     |
| American robin | Conifer Forest      | 2                     |

## Survey Area A7

Date and time: 9/22/2023, 9:15am – 11:30am

Conditions: overcast, 45°F

| Species              | Habitat Association  | Approximate Abundance |
|----------------------|--|-----------------------|
| common raven         | Intertidal Marsh   | 5                     |
| bald eagle           | Intertidal Marsh/Conifer Forest/<br>Unvegetated Intertidal | 15                    |
| Canada goose         | Intertidal Marsh/Open Water                                | 60                    |
| glaucous-winged gull | Fly-over/Unvegetated Intertidal                            | 10                    |
| ruby-crowned kinglet | Conifer Forest   | 5                     |
| song sparrow         | Intertidal Marsh/Conifer Forest                            | 2                     |
| fox sparrow          | Intertidal Marsh   | 1                     |
| northern harrier     | Intertidal Marsh   | 1                     |
| green-winged teal    | Open Water   | 30                    |
| short-billed gull    | Unvegetated Intertidal/Open Water                          | 50                    |
| herring gull         | Unvegetated Intertidal/Open Water                          | 200                   |
| California gull      | Unvegetated Intertidal/Open Water                          | 100                   |
| glaucous-winged gull | Unvegetated Intertidal/Open Water                          | 100                   |
| Bonaparte's gull     | Unvegetated Intertidal/Open Water                          | 50                    |
| Wilson's snipe       | Intertidal Marsh   | 1                     |
| merlin               | Intertidal Marsh   | 1                     |

## Survey Area A6/A8

Date and time: 9/20/2023, 9:00am – 12:30pm

Conditions: overcast, periodic light rain, 45°F

| Species                | Habitat Association               | Approximate Abundance |
|------------------------|-----------------------------------|-----------------------|
| dark-eyed junco        | Conifer Forest                    | 2                     |
| common raven           | Fly-over                          | 2                     |
| bald eagle             | Unvegetated Intertidal            | 20                    |
| short-billed gull      | Unvegetated Intertidal/Open Water | 20                    |
| herring gull           | Unvegetated Intertidal/Open Water | 20                    |
| glaucous-winged gull   | Unvegetated Intertidal/Open Water | 20                    |
| northern pintail       | Unvegetated Intertidal/Open Water | 5                     |
| American wigeon        | Unvegetated Intertidal/Open Water | 10                    |
| Canada geese           | Unvegetated Intertidal            | 40                    |
| Steller's jay          | Conifer Forest                    | 2                     |
| ruby-crowned kinglet   | Conifer Forest                    | 5                     |
| merlin                 | Unvegetated Intertidal            | 1                     |
| lesser yellowlegs      | Unvegetated Intertidal            | 3                     |
| American robin         | Conifer Forest                    | 1                     |
| golden-crowned sparrow | Conifer Forest                    | 2                     |

## Survey Area A9

Date and time: 9/28/2023, 7:00am – 11:00am

Conditions: partially cloudy, 45°F

| Species               | Habitat Association                   | Approximate Abundance |
|-----------------------|---------------------------------------|-----------------------|
| American robin        | Disturbed (in alders along riprap)    | 3                     |
| bald eagle            | Fly-over/Unvegetated Intertidal       | 10                    |
| song sparrow          | Disturbed (in alders along riprap)    | 1                     |
| green-winged teal     | Unvegetated Intertidal                | 9                     |
| American crow         | Fly-over                              | 5                     |
| Bonaparte's gull      | Unvegetated Intertidal/Open Water     | 10                    |
| Herring gull          | Unvegetated Intertidal/Open Water     | 20                    |
| short-billed gull     | Unvegetated Intertidal/Open Water     | 20                    |
| glaucous-winged gull  | Unvegetated Intertidal/Open Water     | 10                    |
| mallard               | Fly-over                              | 15                    |
| least sandpiper       | Unvegetated Intertidal                | 2                     |
| green-winged teal     | Unvegetated Intertidal                | 20                    |
| common raven          | Fly-over                              | 5                     |
| western sandpiper     | Unvegetated Intertidal                | 15                    |
| greater yellowlegs    | Unvegetated Intertidal                | 2                     |
| pectoral sandpiper    | Unvegetated Intertidal                | 1                     |
| American pipit        | Intertidal Marsh                      | 3                     |
| white-crowned sparrow | Disturbed (in alders along riprap)    | 1                     |
| rock pigeon           | Disturbed (along riprap near highway) | 1                     |

## Survey Area A10

Date and time: 9/19/2023, 9:15am – 11:05am

Conditions: partially sunny, 55°F

| Species              | Habitat Association                                      | Approximate Abundance |
|----------------------|--|-----------------------|
| American crow        | Fly-over/Scrub-Shrub Wetland                             | 20                    |
| common raven         | Fly-over/ Scrub-Shrub Wetland/<br>Unvegetated Intertidal | 20                    |
| short-billed gull    | Unvegetated Intertidal/Open Water                        | 20                    |
| herring gull         | Unvegetated Intertidal/Open Water                        | 40                    |
| Bonaparte's gull     | Unvegetated Intertidal/Open Water                        | 20                    |
| California gull      | Unvegetated Intertidal/Open Water                        | 10                    |
| glaucous-winged gull | Unvegetated Intertidal/Open Water                        | 40                    |
| bald eagle           | Fly-over/ Unvegetated Intertidal                         | 20                    |
| merlin               | Fly-over/ Scrub-Shrub Wetland                            | 1                     |
| Steller's jay        | Scrub-Shrub Wetland                                      | 1                     |
| green-winged teal    | Unvegetated Intertidal/Open Water                        | 20                    |
| song sparrow         | Intertidal Marsh/ Scrub-Shrub Wetland                    | 1                     |
| yellow warbler       | Scrub-Shrub Wetland                                      | 1                     |
| European starling    | Fly-over/ Unvegetated Intertidal                         | 100                   |
| American dipper      | Intertidal Marsh   | 1                     |

## Survey Area A11

Date and time: 9/19/2023, 12:00pm – 1:00pm

Conditions: sunny, 55°F

| Species                | Habitat Association | Approximate Abundance |
|------------------------|---------------------|-----------------------|
| Lincoln's sparrow      | Intertidal Marsh    | 15                    |
| Pacific wren           | Forested Wetland    | 1                     |
| Savannah sparrow       | Intertidal Marsh    | 15                    |
| Wilson's snipe         | Intertidal Marsh    | 1                     |
| golden-crowned sparrow | Intertidal Marsh    | 1                     |
| song sparrow           | Conifer Forest      | 1                     |



## Survey Area A12

**Date and time:** 9/25/2023, 6:20pm – 7:00pm

**Conditions:** partially sunny, 50°F

| <b>Species</b>    | <b>Habitat Association</b>       | <b>Approximate Abundance</b> |
|-------------------|----------------------------------|------------------------------|
| mallard           | Open Water                       | 40                           |
| American crow     | Conifer Forest                   | 5                            |
| bald eagle        | Fly-over/ Unvegetated Intertidal | 15                           |
| short-billed gull | Unvegetated Intertidal           | 5                            |
| herring gull      | Unvegetated Intertidal           | 5                            |
| American pipit    | Unvegetated Intertidal           | 2                            |
| European starling | Disturbed                        | 30                           |

## Survey Area A13

**Date and time:** 9/19/2023, 8:00am – 8:30am

**Conditions:** partially sunny 50°F

**Date and time:** 9/28/2023, 3:30pm – 4:45pm

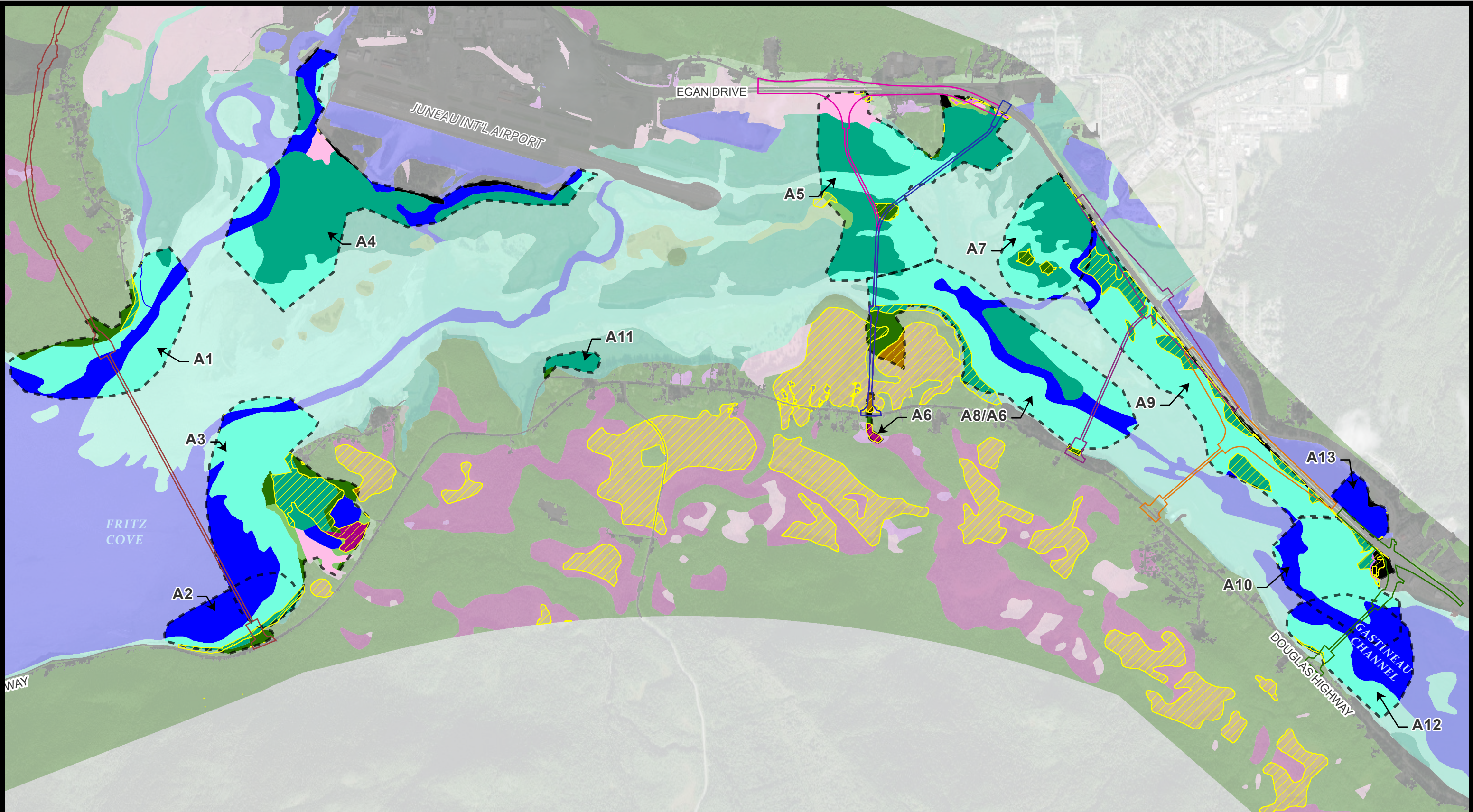
**Conditions:** overcast, light rain, 45°F

| <b>Species</b>   | <b>Habitat Association</b>        | <b>Approximate Abundance</b> |
|------------------|-----------------------------------|------------------------------|
| northern harrier | Disturbed (perched on light pole) | 1                            |
| hooded merganser | Open Water                        | 1                            |
| bald eagle       | Disturbed (perched on light pole) | 2                            |
| song sparrow     | Conifer Forest                    | 1                            |
| ring-necked duck | Open Water                        | 10                           |
| lesser scaup     | Open Water                        | 10                           |

# **Attachment 4**

Revisions to Preliminary  
Habitat Type Mapping from  
the Wildlife and Fish  
Resources Technical  
Memorandum

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|                      |                                  |                             |                     |
|----------------------|----------------------------------|-----------------------------|---------------------|
| <b>ALTERNATIVES</b>  |                                  | SURVEY AREAS                | Scrub-Shrub Wetland |
| Mendenhall Peninsula | REVISED HABITAT MAPPING          | Forested Wetland            | Coastal Meadow      |
| Sunny Point West     | <b>HABITAT TYPES<sup>1</sup></b> | Bogs and Fens (muskeg)      | Coniferous Forest   |
| Sunny Point East     | Unvegetated Intertidal           | Open Water                  | Disturbed           |
| Vanderbilt           | Intertidal Marsh                 | Freshwater Emergent Wetland |                     |
| Twin Lakes           |                                  |                             |                     |
| Salmon Creek         |                                  |                             |                     |

**Sources:**  
 1: ORIGINAL HABITAT TYPE MAPPING WAS MADE UP OF THE FOLLOWING DATASETS: FWS NATIONAL WETLAND INVENTORY, USFS TONGASS NATIONAL FOREST COVER TYPE MAPPING. THIS LAYER HAS BEEN REVISED IN THE SURVEY AREAS BASED ON FIELD OBSERVATIONS IN OCTOBER 2023

**BIRD SURVEY AREAS AND HABITAT TYPES**  
 SEC 25 - 27, 34 - 36, T 40S, R 65E; SEC 30 - 34, T 40S, R 66E  
 SEC 1 - 12, 15 - 17, T 41S, R 66E;  
 SEC 4 - 10, 15 - 17, 21 - 23, 27 T 41S, R 67E  
 COPPER RIVER MERIDIAN, ALASKA



**STATE OF ALASKA**  
 DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES  
 DOT&PF PROJECT NO. SFHWY00299/0003259  
 JUNEAU DOUGLAS SECOND CROSSING PEL STUDY  
 CITY AND BOROUGH OF JUNEAU, ALASKA  
 DECEMBER 12, 2023 FIGURE 1

Imagery Credits: World Imagery, Maxar, Microsoft

# **Attachment 5**

Common and Scientific Names  
of Species Mentioned in this  
Report

## Common Names and Scientific Names of Species Mentioned in this Report

### Animals

| Common Name               | Scientific Name                     |
|---------------------------|-------------------------------------|
| American crow             | <i>Corvus brachyrhynchos</i>        |
| American dipper           | <i>Cinclus mexicanus</i>            |
| American pipit            | <i>Anthus rubescens</i>             |
| American robin            | <i>Turdus migratorius</i>           |
| American wigeon           | <i>Mareca americana</i>             |
| bald eagle                | <i>Haliaeetus leucocephalus</i>     |
| belted kingfisher         | <i>Megaceryle alcyon</i>            |
| black-billed magpie       | <i>Pica hudsonia</i>                |
| Bonaparte's gull          | <i>Chroicocephalus philadelphia</i> |
| cackling goose            | <i>Branta hutchinsii</i>            |
| California gull           | <i>Larus californicus</i>           |
| Canada goose              | <i>Branta canadensis</i>            |
| chestnut-backed chickadee | <i>Poecile rufescens</i>            |
| common raven              | <i>Corvus corax</i>                 |
| common yellowthroat       | <i>Geothlypis trichas</i>           |
| dark-eyed junco           | <i>Junco hyemalis</i>               |
| Eurasian collared-dove    | <i>Streptopelia decaocto</i>        |
| European starling         | <i>Sturnus vulgaris</i>             |
| fox sparrow               | <i>Passerella iliaca</i>            |
| glaucous-winged gull      | <i>Larus glaucescens</i>            |
| golden-crowned sparrow    | <i>Zonotrichia atricapilla</i>      |
| great blue heron          | <i>Ardea herodias</i>               |
| greater yellowlegs        | <i>Tringa melanoleuca</i>           |
| green-winged teal         | <i>Anas crecca</i>                  |
| herring gull              | <i>Larus argentatus</i>             |
| hooded merganser          | <i>Lophodytes cucullatus</i>        |
| horned grebe              | <i>Podiceps auritus</i>             |
| least sandpiper           | <i>Calidris minutilla</i>           |
| lesser scaup              | <i>Aythya affinis</i>               |

| Common Name              | Scientific Name                  |
|--------------------------|----------------------------------|
| lesser yellowlegs        | <i>Tringa flavipes</i>           |
| Lincoln's sparrow        | <i>Melospiza lincolnii</i>       |
| mallard                  | <i>Anas platyrhynchos</i>        |
| merlin                   | <i>Falco columbarius</i>         |
| North American porcupine | <i>Erethizon dorsatum</i>        |
| northern harrier         | <i>Circus hudsonius</i>          |
| northern pintail         | <i>Anas acuta</i>                |
| northern shoveler        | <i>Spatula clypeata</i>          |
| orange-crowned warbler   | <i>Leiothlypis celata</i>        |
| Pacific wren             | <i>Troglodytes pacificus</i>     |
| pectoral sandpiper       | <i>Calidris melanotos</i>        |
| red-necked grebe         | <i>Podiceps grisegena</i>        |
| red-winged blackbird     | <i>Agelaius phoeniceus</i>       |
| ring-necked duck         | <i>Aythya collaris</i>           |
| rock pigeon              | <i>Columba livia</i>             |
| ruby-crowned kinglet     | <i>Corthylio calendula</i>       |
| Savannah sparrow         | <i>Passerculus sandwichensis</i> |
| sharp-shinned hawk       | <i>Accipiter striatus</i>        |
| short-billed gull        | <i>Larus brachyrhynchus</i>      |
| song sparrow             | <i>Melospiza melodia</i>         |
| spotted sandpiper        | <i>Actitis macularius</i>        |
| Steller's jay            | <i>Cyanocitta stelleri</i>       |
| varied thrush            | <i>Ixoreus naevius</i>           |
| vole                     | <i>Microtus spp.</i>             |
| western sandpiper        | <i>Calidris mauri</i>            |
| western toad             | <i>Anaxyrus boreas</i>           |
| white-crowned sparrow    | <i>Zonotrichia leucophrys</i>    |
| Wilson's snipe           | <i>Gallinago delicata</i>        |
| yellow warbler           | <i>Setophaga petechia</i>        |

Avian nomenclature drawn from the American Ornithological Society checklist of North American birds (Chesser et al. 2023).

## Common Names and Scientific Names of Species Mentioned in this Report

### Plants

| Common Name            | Scientific Name                              |
|------------------------|--|
| arrowgrass             | <i>Triglochin maritimum</i>                  |
| Barclay willow         | <i>Salix barclayi</i>                        |
| beach pea              | <i>Lathyrus japonica var. maritimus</i>      |
| beach rye              | <i>Leymus mollis</i>                         |
| black cottonwood       | <i>Populus balsamifera</i>                   |
| bluejoint reedgrass    | <i>Calamagrostis canadensis</i>              |
| bog cranberry          | <i>Vaccinium oxycoccos</i>                   |
| bog rosemary           | <i>Andromeda polifolia</i>                   |
| bunchberry             | <i>Cornus canadensis</i>                     |
| Canadian sandspurry    | <i>Spergularia canadensis</i>                |
| cleavers               | <i>Galium trifidum</i>                       |
| cow parsnip            | <i>Heracleum maximum</i>                     |
| crowberry              | <i>Empetrum nigrum</i>                       |
| devil's club           | <i>Oplopanax horridus</i>                    |
| Douglas' water-hemlock | <i>Cicuta douglasii</i>                      |
| eelgrass               | <i>Zostera marina</i>                        |
| fool's huckleberry     | <i>Menziesia ferruginea</i>                  |
| fernleaf goldthread    | <i>Coptis aspleniifolia</i>                  |
| fewflower sedge        | <i>Carex pauciflora</i>                      |
| fireweed               | <i>Chamerion angustifolium</i>               |
| five-leaf bramble      | <i>Rubus pedatus</i>                         |
| foxtail barley         | <i>Hordeum jubatum</i>                       |
| Gmelin's saltweed      | <i>Atriplex gmelinii</i>                     |
| goosetongue            | <i>Plantago maritima</i>                     |
| green algae species    | <i>Vaucheria spp.,<br/>Enteromorpha spp.</i> |
| hemlock parsley        | <i>Conioselinum gmelinii</i>                 |
| kneeling angelica      | <i>Angelica genuflexa</i>                    |
| Labrador tea           | <i>Ledum palustre</i>                        |
| lady fern              | <i>Athyrium cyclosorum</i>                   |

| Common Name                 | Scientific Name                   |
|-----------------------------|-----------------------------------|
| lingonberry                 | <i>Vaccinium vitis-idaea</i>      |
| low chickweed               | <i>Stellaria humifusa</i>         |
| Lyngbye's sedge             | <i>Carex lyngbyei</i>             |
| marsh cinquefoil            | <i>Comarum palustre</i>           |
| Nootka lupine               | <i>Lupinus nootkatensis</i>       |
| northern grass-of-Parnassus | <i>Parnassia palustris</i>        |
| oval-leaved blueberry       | <i>Vaccinium ovalifolium</i>      |
| Pacific alkali grass        | <i>Puccinellia nutkaensis</i>     |
| Pacific water-parsley       | <i>Oenanthe sarmentosa</i>        |
| red fescue                  | <i>Festuca rubra</i>              |
| rockweed                    | <i>Fucus vesiculosus</i>          |
| sea milkwort                | <i>Glaux maritima</i>             |
| seabeach sandwort           | <i>Honckenya peploides</i>        |
| seablite                    | <i>Suaeda calceoliformis</i>      |
| shore pine                  | <i>Pinus contorta</i>             |
| silverweed                  | <i>Potentilla anserina</i>        |
| Sitka alder                 | <i>Alnus viridis ssp. sinuata</i> |
| Sitka spruce                | <i>Picea sitchensis</i>           |
| Sitka willow                | <i>Salix sitchensis</i>           |
| sphagnum moss               | <i>Sphagnum species</i>           |
| sweet gale                  | <i>Myrica gale</i>                |
| tall cottongrass            | <i>Eriophorum angustifolium</i>   |
| tufted clubrush             | <i>Trichophorum cespitosum</i>    |
| tufted hairgrass            | <i>Deschampsia cespitosa</i>      |
| western hemlock             | <i>Tsuga heterophylla</i>         |
| western redcedar            | <i>Thuja plicata</i>              |
| yarrow                      | <i>Achillea millefolium</i>       |
| yellow marsh-marigold       | <i>Caltha palustris</i>           |
| yellow skunk cabbage        | <i>Lysichiton americanus</i>      |