

Birds 'n' Bogs Citizen Science Program

Annual Report 2013

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Photo: Doyle Dowdell



Abstract

In the spring of 2013, the Birds ‘n’ Bogs citizen science program was initiated through Audubon Alaska and the Department of Geography and Environmental Studies at the University of Alaska Anchorage. This program relied on citizen scientists to perform a series of surveys for target species across a set of predetermined wetlands in Anchorage and the Matanuska Valley to monitor distribution and abundance of boreal birds. Twenty-five participants surveyed thirty-two wetlands totaling over fifty-seven person-hours. These data were then compiled using Geographic Information Systems (ArcGIS) to create maps showing locations of the target species through time. Observers saw a total of 108 Lesser Yellowlegs, 22 Greater Yellowlegs, 2 Olive-Sided Flycatchers, 23 Solitary Sandpipers, 30 Rusty Blackbirds, about 339 Tree Swallows, and about 89 Violet-Green Swallows. This survey represented a commendable effort by all participants and we anticipate repeating and expanding the effort in 2014, with the goal of establishing a long-standing monitoring program for declining boreal bird species.

Introduction

In the spring of 2013, Audubon Alaska and the Geography and Environmental Studies Department at the University of Alaska Anchorage initiated a novel citizen science program called “Birds ‘n’ Bogs.” The goal of this program is to document distribution of boreal birds—primarily Lesser Yellowlegs (*Tringa flavipes*), Greater Yellowlegs (*Tringa melanoleuca*), Solitary Sandpiper (*Tringa solitaria*), Rusty Blackbirds (*Euphagus carolinus*), Olive-Sided Flycatchers (*Contopus cooperi*), Tree Swallows (*Tachycineta bicolor*) and Violet-Green Swallows (*Tachycineta thalassina*)—in wetland habitats of Anchorage and the Matanuska Valley.

This citizen science program represents an important effort because boreal wetland birds are among North America’s most rapidly declining avifauna (Greenberg et al. 2011). In North America, Rusty Blackbirds and Solitary Sandpipers have declined at a rate of 6.2 % per year, Lesser Yellowlegs at 5.3%, and Olive-Sided Flycatchers at 3.5% (Bart et al. 2007, Ottema and Ramcharan 2009, Greenberg et al. 2011, Sauer et al. 2011) since the 1960’s. Although these species are typically thought of as common, they are rapidly becoming less abundant and are now rare or absent from some locations. For this reason, a number of boreal species are now considered to be of conservation concern both in Alaska and nationally (Brown et al. 2001; Rich

et al. 2004; COSEWIC 2006, 2007; U.S. Fish and Wildlife Service 2008; Kirchhoff and Padula 2010).

Boreal ecosystems are also disappearing or changing both globally and locally, which in turn can impact the birds that utilize these habitats. In particular, bogs and wetlands on which many boreal species depend are threatened in some places due to residential, commercial, or agricultural developments (Clay 2012). Incidental evidence suggests that bog and wetland habitat within the urban Anchorage area (Anchorage Bowl) is declining due to development. Other threats to boreal wetlands in Southcentral Alaska include extraction and development of oil and gas resources and hydropower development projects such as the Susitna Dam Project. Of additional concern for boreal bird species are the uncertain effects of climate change on breeding habitat and breeding success. The boreal forest in particular is already impacted by higher temperatures, shifting seasons, more frequent and intense forest fires, and insect outbreaks (Clay 2012).

Methods

In 2013, the Birds ‘n’ Bogs program enlisted citizen scientists to perform a series of surveys for seven target bird species across a set of predetermined wetlands in Anchorage and the Matanuska Valley. Target species included Lesser Yellowlegs (LEYE), Greater Yellowlegs (GRYE), Solitary Sandpipers (SOSA), Rusty Blackbirds (RUBL), Olive-Sided Flycatchers (OSFL), Tree Swallows (TRES), and Violet-Green Swallows (VGSW). Before any surveys were conducted, participants attended a training session that briefed them on the target species and survey protocols.

Data collection efforts were split into two survey windows. The first survey window was May 15–25, targeting birds that were setting up breeding territories. In this first window, participants were asked to divide their survey effort across three time periods: early (May 15–18), middle (May 19–21), and late (May 22–25). Participants surveyed their chosen wetlands either before 8:00 AM or between 6:00 and 10:00 PM for at least twenty minutes per time period. Surveys entailed walking around the perimeter of the wetland or standing and listening for calls and songs. Participants recorded any activity or lack of activity on pre-made data sheets.

The second survey window was June 10–25, this year targeting only Lesser Yellowlegs with young. Participants were asked to visit their wetlands at any time of the day to search for

adults with broods. As it is easy to detect brooding Lesser Yellowlegs (based on bird behavior and calls), participants only needed to walk or stand near their wetland during this survey window.

If geolocators or bands were seen on Lesser Yellowlegs individuals (from a previous study on migration patterns) in either survey window, participants were asked to call project primary investigators immediately to enable possible recovery of the geolocator from the previous study.

The survey sites in Anchorage included Potter Marsh, Bear Valley, Waldron Lake, Basher Lakes, Point Woronzof, Sand Lake, DeLong Lake, Taku Lake, Baxter Bog, Bayshore Lake, Westchester Lagoon, Minnesota and 100th Avenue, C Street and Klatt, Rabbit Creek, Elmore Bog, Anchorage Coastal Refuge East and West, Moose Alley, Goose Lake and Jewel Lake (Figure 1). In the Matanuska Valley, survey sites included Finger Lake Campground, Matanuska Townsite Road, 49th Street and Colony Drive, the Palmer Hay Flats State Game Refuge, and Trapper Creek (see individual results maps for specific locations).

After the surveys were completed, the results from the two survey windows were compiled to examine the distribution and abundance of the species sightings using ArcGIS.

Results

Twenty-five volunteers conducted surveys at 32 wetland sites for a total of 57.3 person-hours of survey time. Within the first survey window, May 15–18, there was a total of 22.8 survey hours at all 32 sites. During May 19–21 there was a total of 16.1 survey hours at 25 sites. During May 22–25 there was a total of 18.4 survey hours at 29 sites.

Overall, the three most abundant bird species observed during the first survey window were LEYE, TRES, and VGSW. More individuals were observed in the early (May 15–18) time period than in any other time period. (See Table 1 for a breakdown of species by time period. A complete list of all species recorded during the first survey window in 2013 can be found in Appendix 1.) In the second survey window, LEYE with broods were recorded at Goose Lake, Basher Lakes, Anchorage Coastal Refuge East, Potter Marsh, and Point Woronzof (see Figure 1 for locations of study sites).

Notably, 2013 was characterized by a late and cold spring. At the time the first surveys were conducted, most of the local bogs and lakes were still frozen over. It is unknown how this

affected our data, although additional years of data will assist us in determining temporal trends of this nature.

Table 1. Total number of target bird species seen and heard in the Greater Anchorage area May 15-25 2013. LEYE = Lesser Yellowlegs, GRYE = Greater Yellowlegs, OSFL = Olive-Sided Flycatcher, RUBL = Rusty Blackbird, SOSA = Solitary Sandpiper, TRES = Tree Swallow, and VGSW = Violet-Green Swallow. A number followed by a + indicates at least that many individuals were seen or heard but more may have been present.

Species	LEYE	GEYE	OSFL	RUBL	SOSA	TRES	VGSW
Early Period							
Seen	43	6	0	8	5	138+	35+
Heard	18+	0	0	1	4	0	0
Middle Period							
Seen	23	4	1	6	10	73+	12+
Heard	9	1	0	0	0	0	0
Late Period							
Seen	10	0	1	8	2	128+	40+
Heard	5	0	0	7	2	0	2

While surveying for birds, Birds ‘n’ Bogs participants found more than just birds. At Moose Alley, a moose with a newborn calf prevented a participant from surveying part of the site during one visit. A moose was also an obstacle when a participant surveying Waldron Lake was charged by a protective cow; the participant did not finish the survey on that day. At the Anchorage Coastal Refuge West, a black bear with two cubs was sighted during one survey.

Results of the ArcGIS data display showed that between May 15 and May 25, LEYE were detected widely across the Anchorage Bowl, but became less frequently detected in later survey periods (Figure 2). GRYE were not detected in the Anchorage Bowl in any survey period. SOSA were widely distributed in the early survey period across Anchorage but were infrequently detected in other survey periods, and tended to move west across the Anchorage Bowl (Figure 3). RUBL were most frequently observed at Potter Marsh but also at “Moose Alley” (a fenced

bog between West Northern Lights Boulevard, Lake Hood Drive, and Postmark Drive; Figure 4). OSFL were infrequently observed only in the middle and late survey periods in the east side of Anchorage (Figure 5). TRES and VGSW were widely distributed across all survey periods and locations (Figures 6 and 7). In all figures, overlapping symbols denote sightings of a given species at a particular location in >1 survey period.

In the Matanuska Valley, GRYE were observed as well as LEYE (Figures 8 and 9). SOSA, RUBL, and TRES were also observed in several places in the Matanuska Valley but trends were more difficult to ascertain due to a lack of information spanning all wetlands in the valley (Figures 10 and 11). One participant also surveyed the Trapper Creek area (further north than the Matanuska Valley) and observed all three target shorebird species (Figure 12).

As expected, this year's surveys show that the study species become more difficult to find as birds begin to incubate eggs and cease breeding displays.

Discussion and Future Plans

As this is the first year for the Birds 'n' Bogs citizen science program, we will use this information as a baseline for future surveys, the results of which will enable us to assess preferred wetlands and distribution patterns for each species within the Anchorage Bowl. This year gave us much insight into ways to improve survey protocols and select locations for future efforts.

We also learned that shorebird habitat in the Matanuska Valley is abundant and diverse and would require substantial additional effort to survey as thoroughly as participants accomplished in the Anchorage Bowl. However, because we did observe a number of our target species, we believe a systematic survey of all wetlands in the Matanuska Valley (as was done for the Anchorage Bowl) would yield valuable data on boreal species in these habitats, which could then be compared over time and with Anchorage data.

Plans for next year include repeating this year's citizen science-based data collection effort (with some changes in methods) to gain more knowledge on local distribution and abundance, preferred breeding locations, and possible conservation concerns for the target species. We also plan to use historical data to begin looking at changing wetland habitat conditions at least for the Anchorage Bowl. We will compare these historical data with data that we will be collecting in the years to come on wetland extent, condition, and surrounding

landscape context. Lastly, we hope to expand the citizen science program to include other Anchorage and Matanuska Valley residents, UAA students, and families with young children who may be interested in observing these species in their natural habitats.

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Literature Cited

- Bart, J., S. C. Brown, B. Harrington, and R. Morrison. 2007. Survey trends of North American shorebirds: population declines or shifting distributions? *Journal of Avian Biology* 38:73–82.
- Brown, S., C. Hickey, B. Harrington, and R. Gill (editors). 2001. United States Shorebird Conservation Plan, 2nd ed. Manomet Center for Conservation Sciences, Manomet, Massachusetts.
- Clay, R. P., A. J. Lesterhuis, and S. Centrón. 2012. Conservation Plan for the Lesser Yellowlegs (*Tringa flavipes*). Version 1.0. Manomet Center for Conservation Sciences, Manomet, Massachusetts.
- COSEWIC. 2006. COSEWIC assessment and status report on the Rusty Blackbird *Euphagus carolinus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa, Ontario.
- COSEWIC. 2007. COSEWIC assessment and status report on the Olive-sided Flycatcher *Contopus cooperi* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa, Ontario.
- Greenberg, R., D. W. Demarest, S. M. Matsuoka, C. Mettke-Hofmann, M. L. Avery, P. J. Blancher, D. Evers, P. B. Hamel, K. A. Hobson, J. Luscier, D. K. Niven, L. L. Powell, and D. Shaw. 2011. Understanding declines in Rusty Blackbirds. *Studies in Avian Biology* 41:107–125.
- Kirchhoff, M. and V. Padula. 2010. The Audubon Alaska WatchList 2010. Audubon Alaska. Anchorage, Alaska.
- Ottema, O. H. and S. Ramcharan. 2009. Dramatic decline of Lesser Yellowlegs *Tringa flavipes* in Suriname. *Wader Study Group Bulletin* 116: 87–88.
- Rich, T. D., C. J. Beardmore, H. Berlanga, P. J. Blancher, M. S. W. Bradstreet, G. S. Butcher, D. W. Demarest, E. H. Dunn, W. C. Hunter, E. E. Inigo-Elias, J. A. Kennedy, A. M. Martell, A. O. Punjabi, D. N. Pashley, K. V. Rosenberg, C. M. Rustay, J. S. Wendt, and T. C. Will. 2004. Partners in Flight North American Landbird Conservation Plan. Cornell Laboratory of Ornithology, Ithaca, New York.
- Sauer, J. R., J. E. Hines, J. E. Fallon, K. L. Pardieck, D. J. Ziolkowski, Jr., and W. A. Link. 2011. The North American Breeding Bird Survey, results and analysis 1966–2010. Version12.07.2011. U.S. Geological Survey, Patuxent Wildlife Research Center. Laurel, Maryland.
- U.S. Fish and Wildlife Service. 2008. Birds of Conservation Concern 2008. Division of Migratory Bird Management. Arlington, Virginia.



Figure 1. Wetlands surveyed in the Anchorage Bowl in May and June 2013.

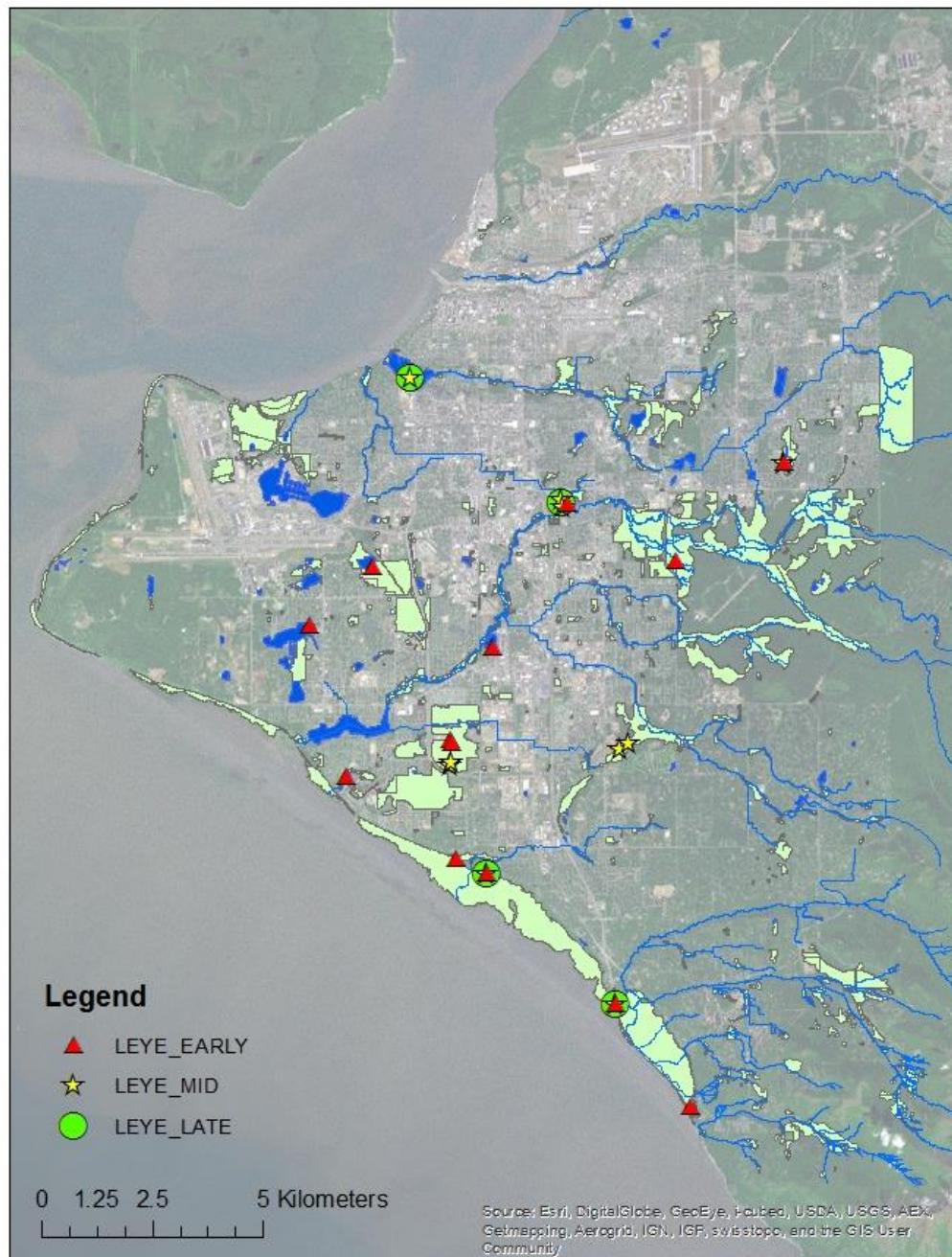


Figure 2. Lesser Yellowlegs observations in the Anchorage Bowl in May 2013.

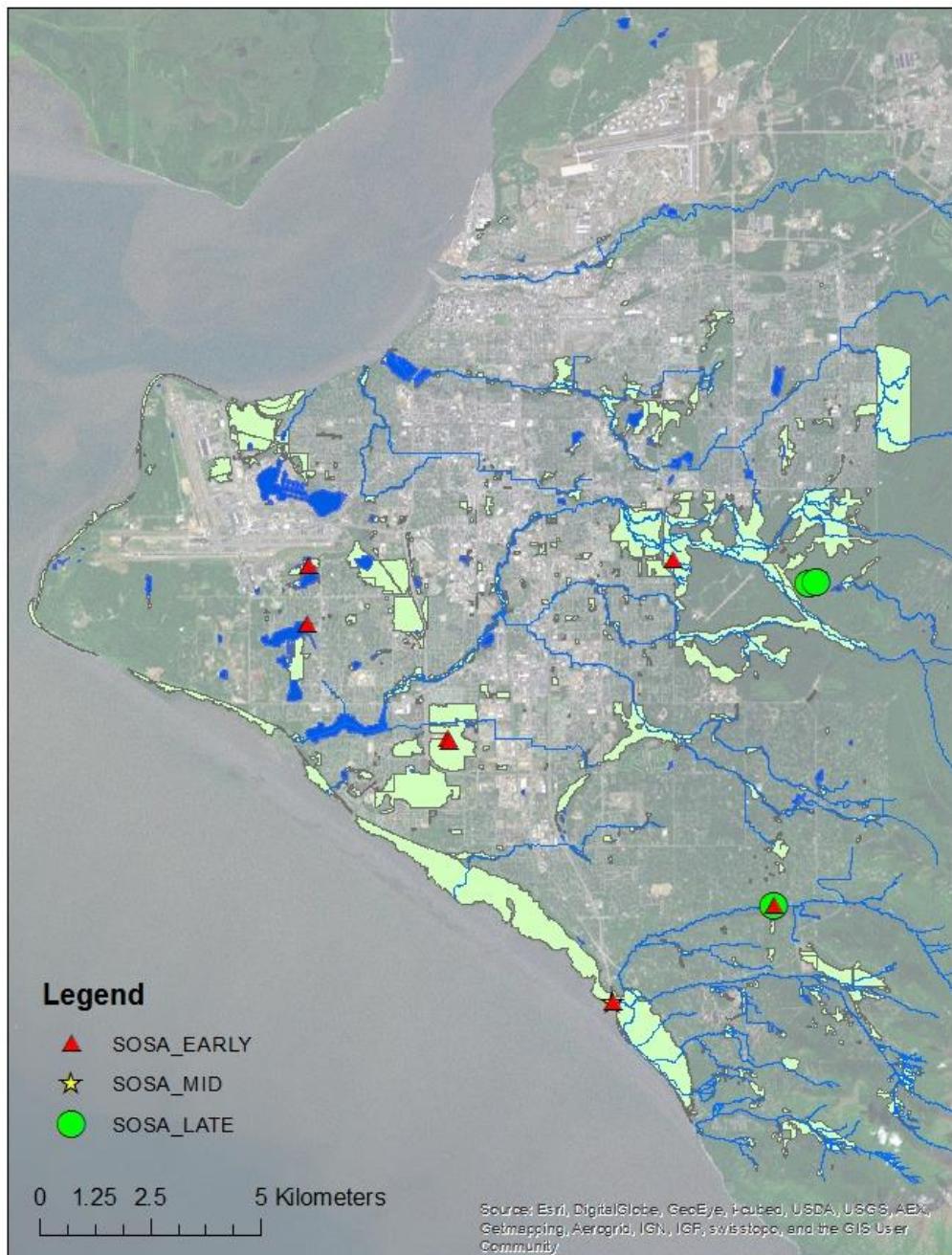


Figure 3. Solitary Sandpiper observations in the Anchorage Bowl in May 2013.

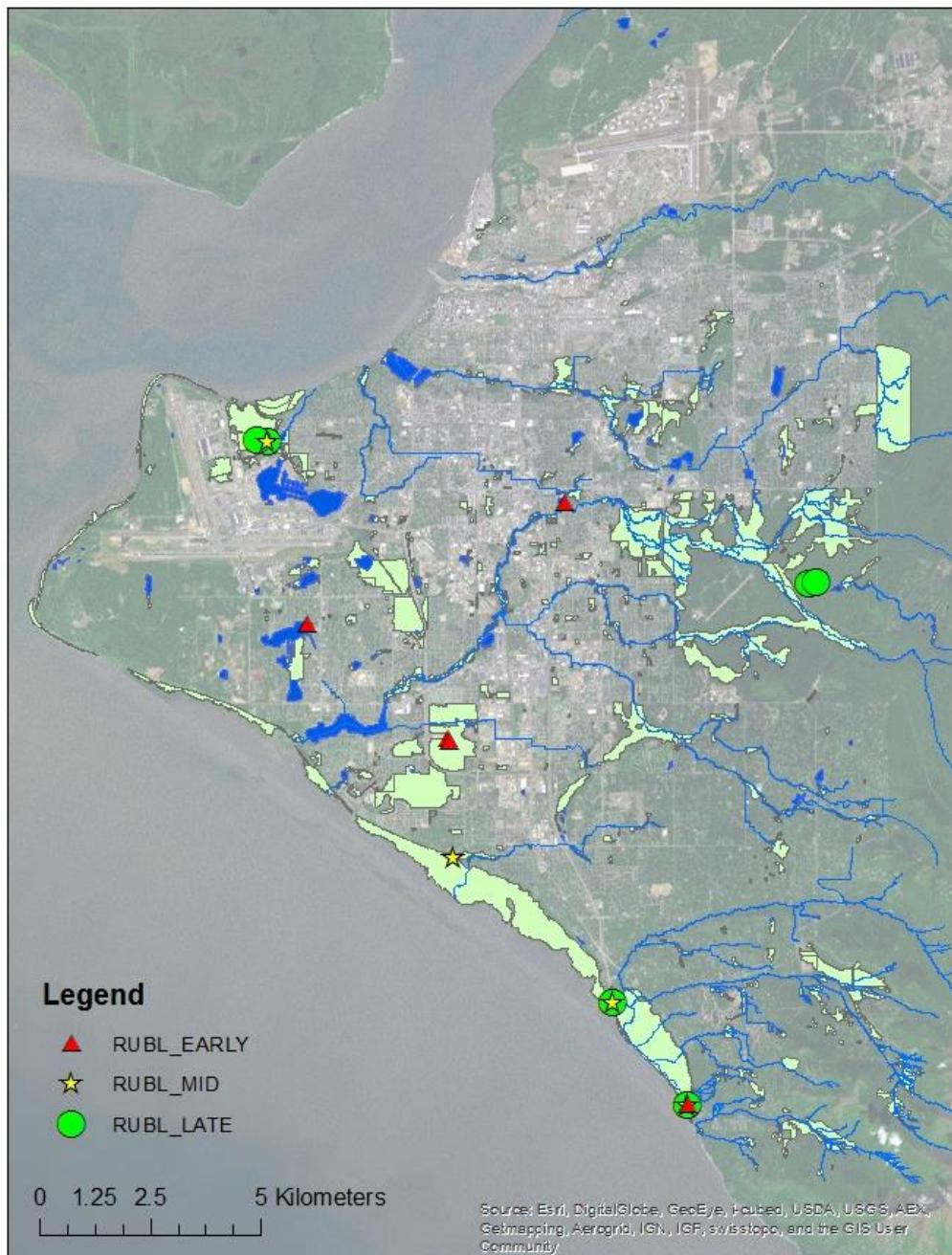


Figure 4. Rusty Blackbird observations in the Anchorage Bowl in May 2013.

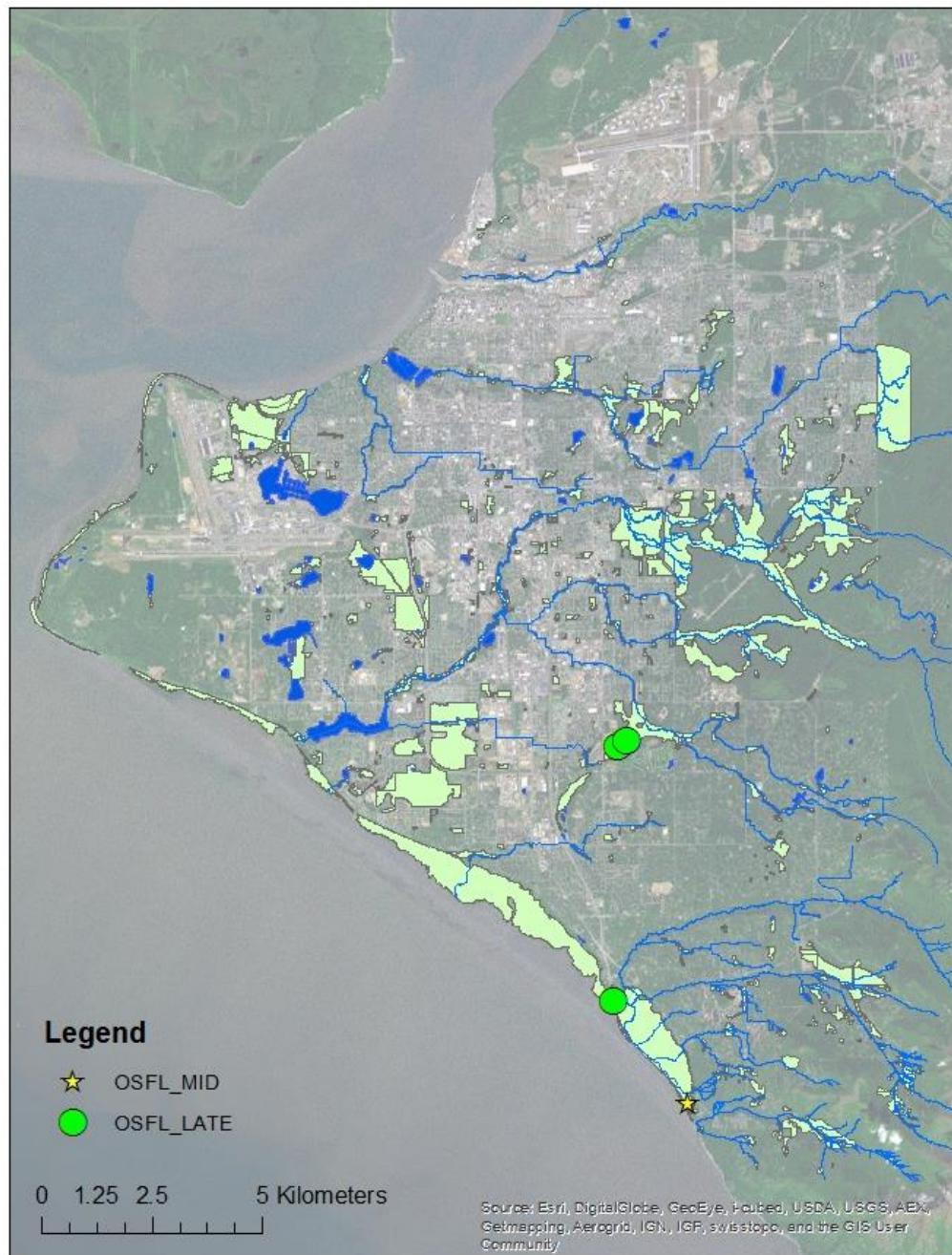
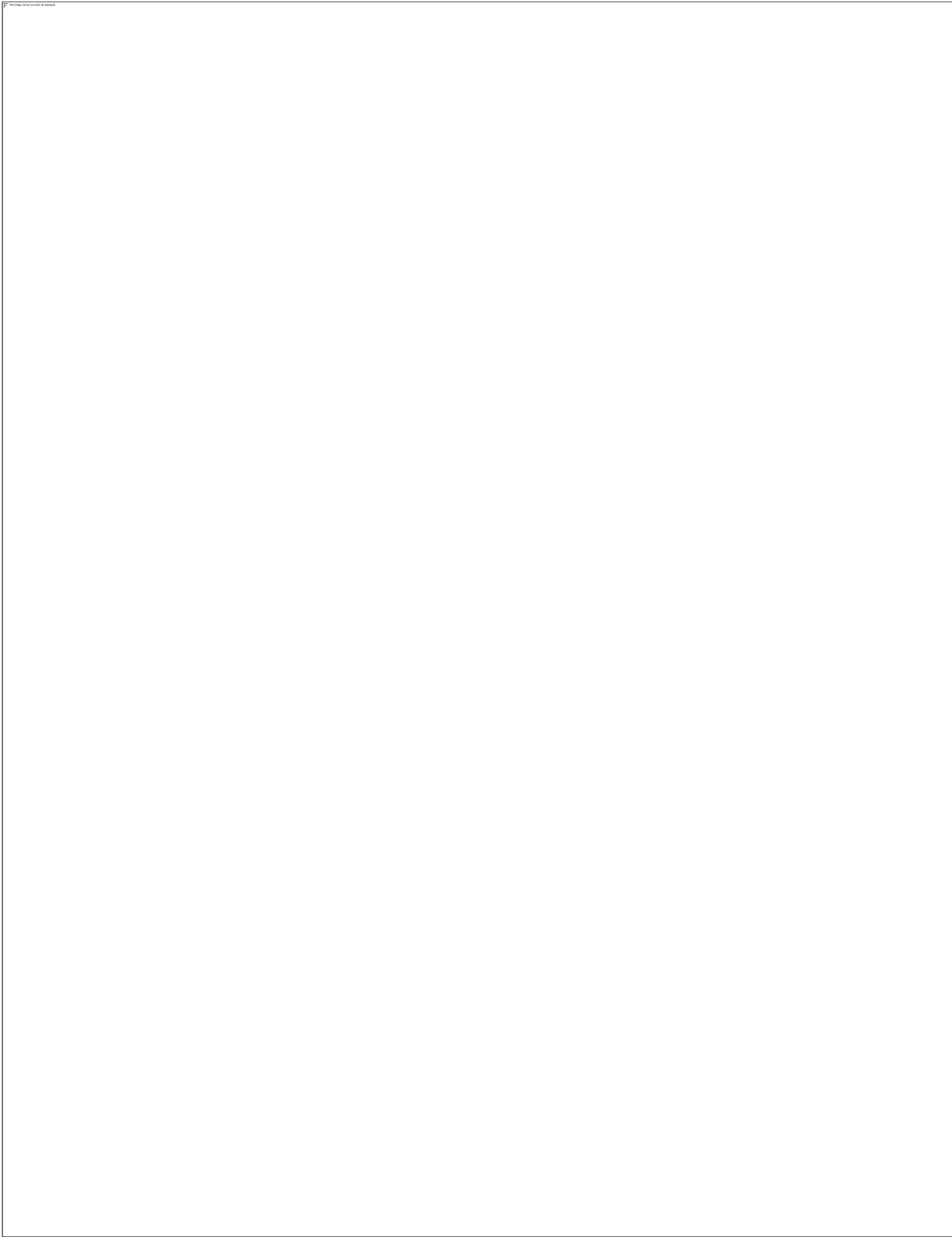


Figure 5. Olive-sided Flycatcher observations in the Anchorage Bowl in May 2013.



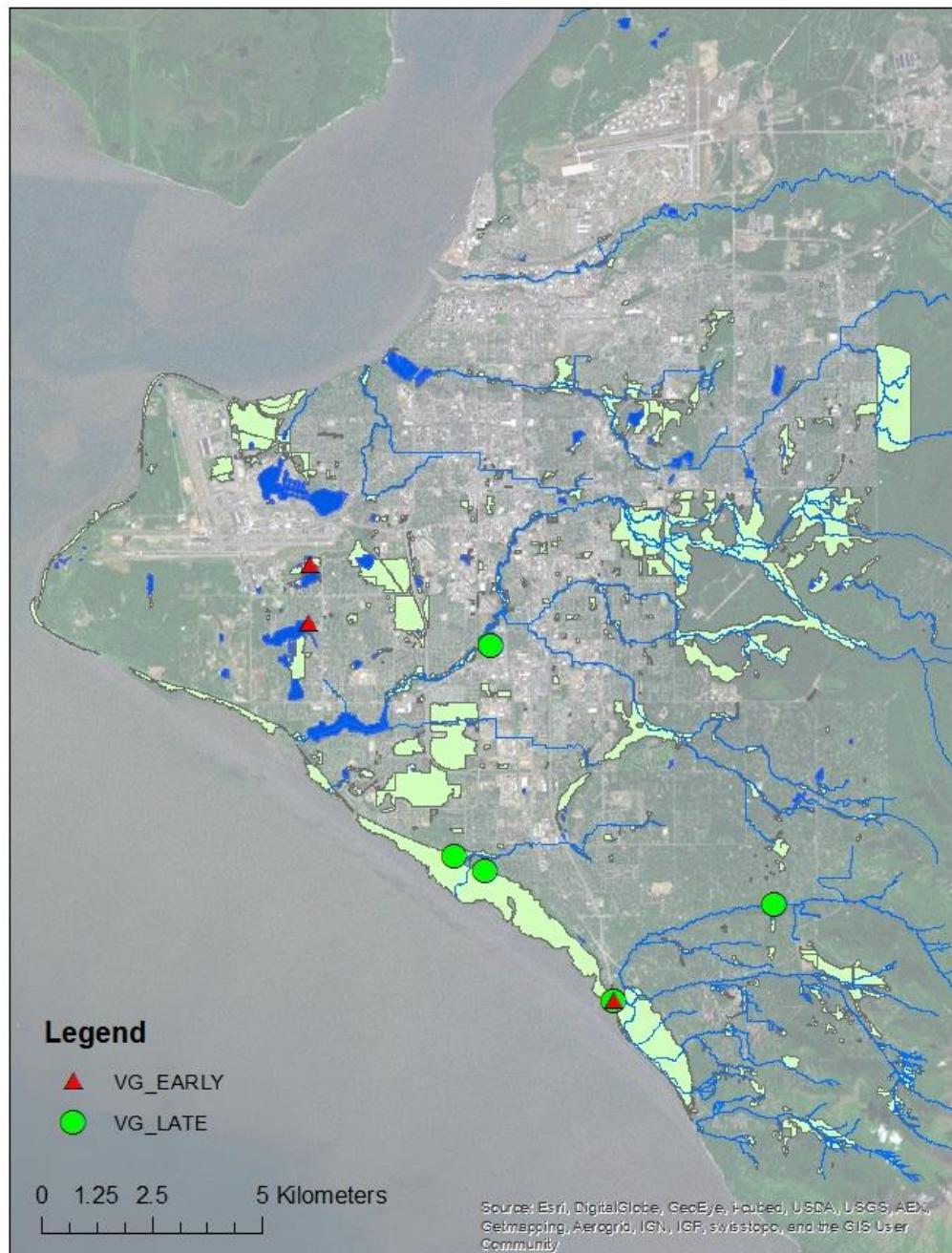


Figure 7. Violet-Green Swallow observations in the Anchorage Bowl in May 2013.



Figure 8. Lesser Yellowlegs observations in the Matanuska Valley in May 2013.



Figure 9. Greater Yellowlegs observations in the Matanuska Valley in May 2013.

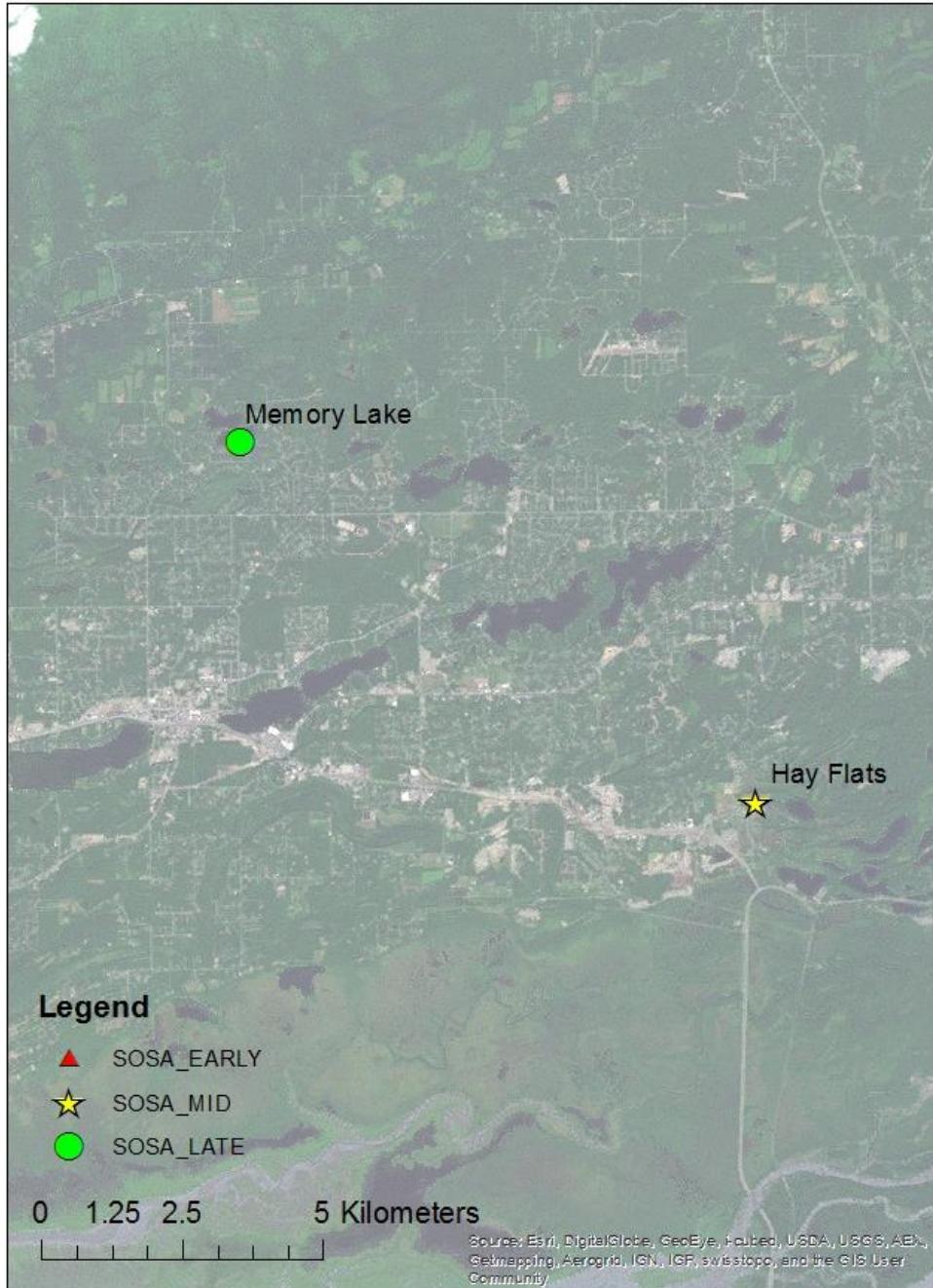


Figure 10. Solitary Sandpiper observations in the Matanuska Valley in May 2013.

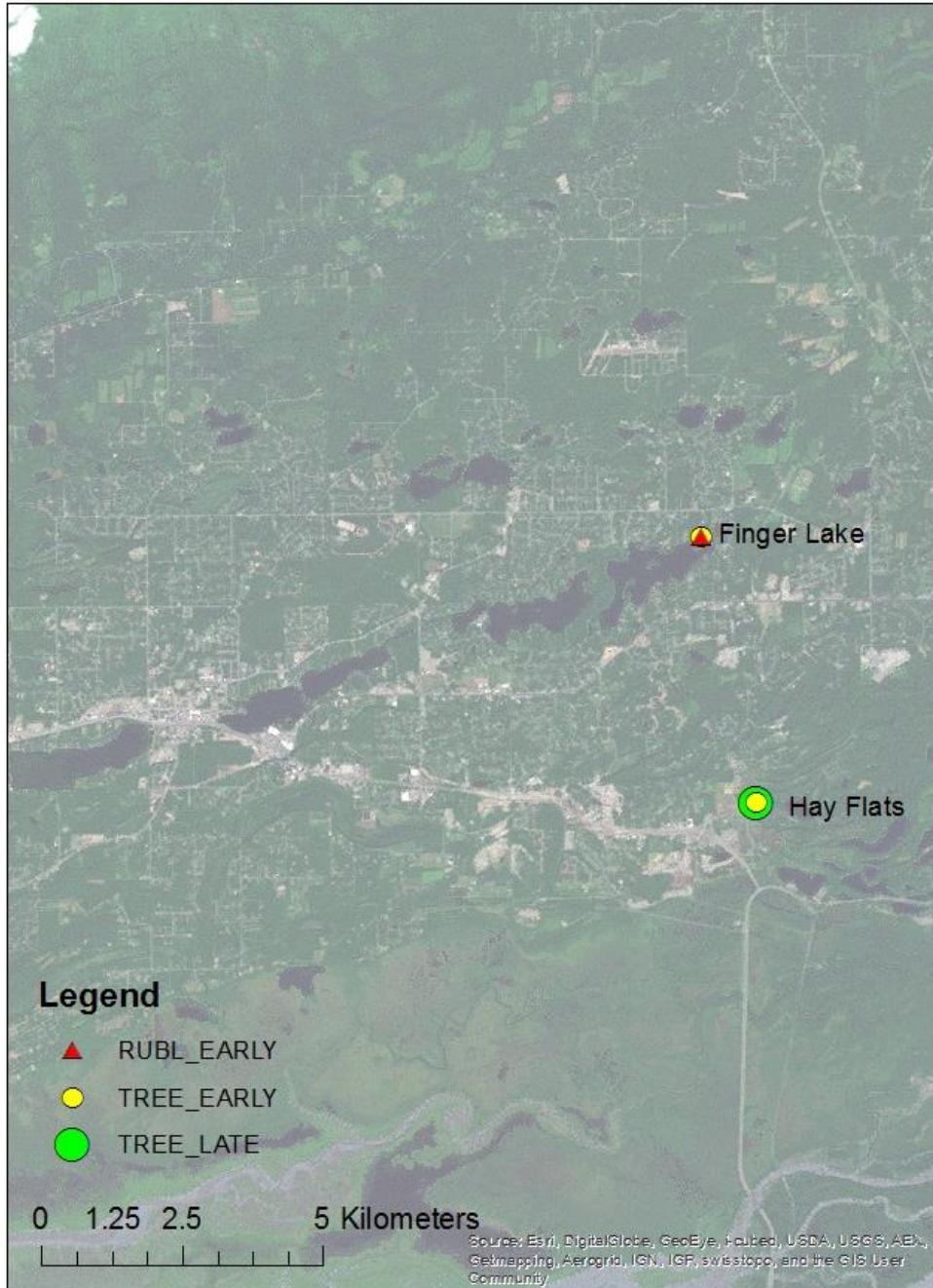


Figure 11. Passerine observations in the Matanuska Valley in May 2013.

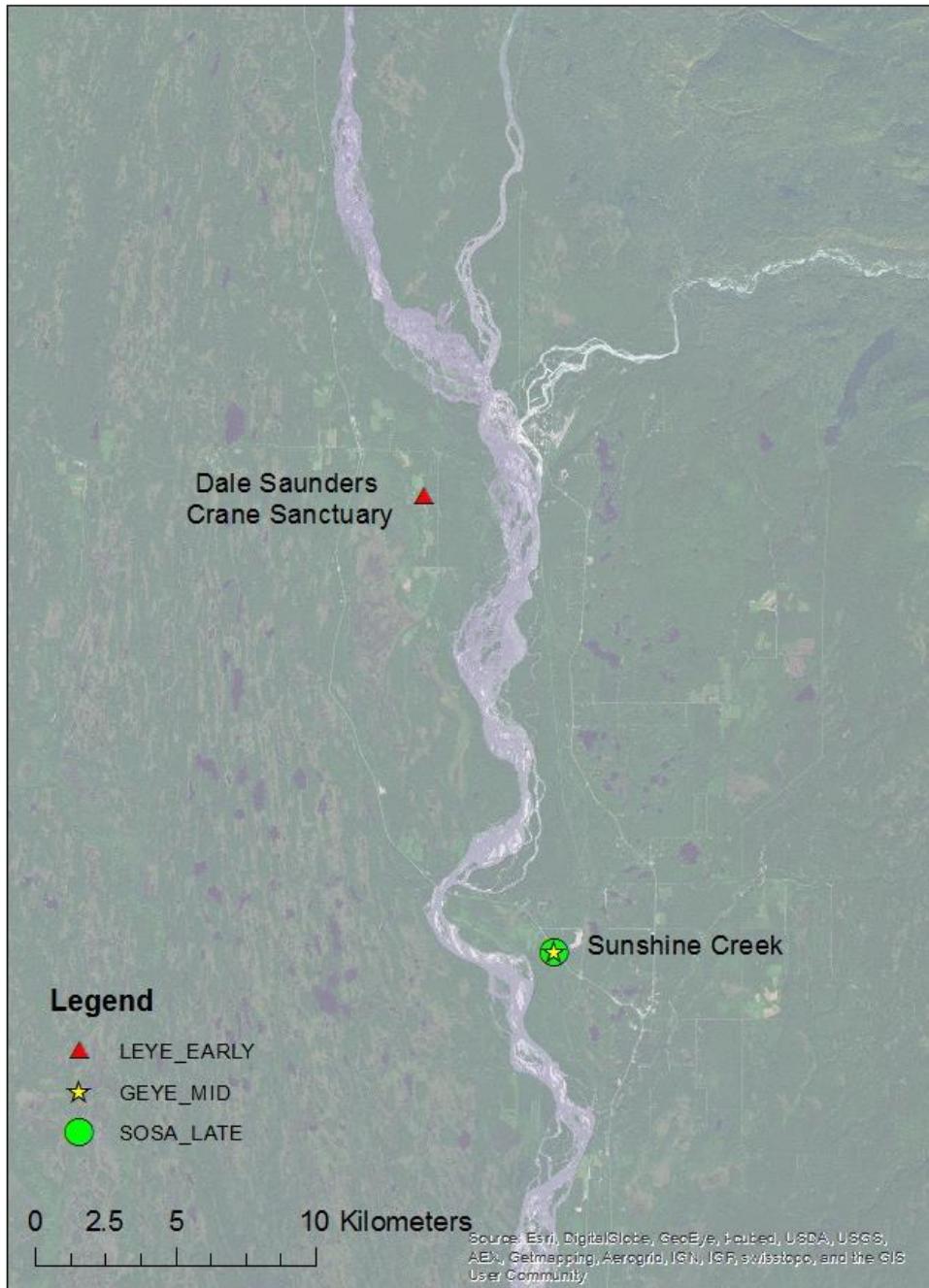


Figure 12. Shorebird observations at Trapper Creek in May 2013.

Appendix 1: Species List for First Survey Window

Birds 'n' Bogs 2013

This list includes all species (other than target species) recorded at survey sites. Species appear in taxonomic order.

Common Name	Scientific Name
Common Loon	<i>Gavia immer</i>
Red-necked Grebe	<i>Podiceps grisegena</i>
Snow Goose	<i>Chen caerulescens</i>
Canada Goose	<i>Branta canadensis</i>
Green-winged Teal	<i>Anas crecca</i>
Mallard	<i>Anas platyrhynchos</i>
Northern Pintail	<i>Anas acuta</i>
Northern Shoveler	<i>Anas clypeata</i>
American Wigeon	<i>Anas americana</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Northern Harrier	<i>Circus cyaneus</i>
American Kestrel	<i>Falco sparverius</i>
Sandhill Crane	<i>Grus canadensis</i>
Black-bellied Plover	<i>Pluvialis squatarola</i>
Semipalmated Plover	<i>Charadrius semipalmatus</i>
Whimbrel	<i>Numenius phaeopus</i>
Semipalmated Sandpiper	<i>Calidris pusilla</i>
Least Sandpiper	<i>Calidris minutilla</i>
Pectoral Sandpiper	<i>Calidris melanotos</i>
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>
Wilson's Snipe	<i>Gallinago delicata</i>
Wilson's Phalarope	<i>Phalaropus tricolor</i>
Long-tailed Jaeger	<i>Stercorarius longicaudus</i>
Short-eared Owl	<i>Asio flammeus</i>
Gray Jay	<i>Perisoreus canadensis</i>
Black-billed Magpie	<i>Pica hudsonia</i>
Common Raven	<i>Corvus corax</i>
Boreal Chickadee	<i>Poecile hudsonicus</i>
Ruby-crowned Kinglet	<i>Regulus calendula</i>
American Robin	<i>Turdus migratorius</i>
Yellow-rumped Warbler	<i>Setophaga coronata</i>
Lincoln's Sparrow	<i>Melospiza lincolni</i>
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>
Dark-eyed Junco	<i>Junco hyemalis</i>
Common Redpoll	<i>Acanthis flammea</i>