

Ross Island migratory bird surveys



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Background

Ross Island is one of 12 “Important Bird Areas” (IBAs)¹ in the Portland area. More than 50 bird species are believed to use Ross Island annually. In recent years the island has hosted a great blue heron rookery supporting as many as 66 nests. Bald eagles have successfully nested on the island as well. Three listed fish species (chinook, coho, and steelhead) use its associated shallow-water habitat. Its location in an urban stretch of the Willamette River and its close proximity to the Oaks Bottom Wildlife Area potentially make it an important stopover point for migratory birds using the Willamette River corridor.



Bald eagles sometimes nest on Ross Island (photo: Scott Carpenter).

Most of the 404-acre island is owned by Ross Island Sand and Gravel Company. Although mining operations ceased in 2004, gravel mined from other nearby sites is still processed at a plant located on the island. A small parcel (6.5 acres) on the north tip of the island is owned by the Port of Portland. In 2007, Robert Pamplin, owner of Ross Island Sand and Gravel Company, donated 45 acres of Ross Island and \$100,000 for restoration activities to the City of Portland. This parcel is managed by Portland Parks and

¹ An Important Bird Area (IBA) is a site that has been selected for its outstanding habitat value and the vital role it plays in hosting birds, whether for breeding, migrating, or over-wintering.

with it; a significant part of Ross Island will remain a natural area in perpetuity.

Since 2009 Willamette Riverkeeper has spearheaded habitat restoration work on Ross Island including; invasive species removal, native planting, and trash removal. This work is on-going and involves community participation. For more information and to get involved check out <http://www.willamette-riverkeeper.org>.

In 2010, with a grant from the East Multnomah Soil and Water Conservation District and in cooperation with Willamette Riverkeeper and Portland Parks & Recreation, the Audubon Society of Portland initiated a project to assess migratory bird usage of the newly designated 45 acre parcel on Ross Island. The objectives of this study were to 1) document bird species richness and relative abundance during the spring and fall migration periods; and 2) provide a baseline for future assessment of bird community response to the current habitat restoration efforts underway on the island.



Willamette Riverkeeper volunteers at an invasive plant species removal event on Ross Island (Photo: Marci Krass).

Methods

In the spring of 2011 five point count stations were established in the study area (49-acre parcel on Ross Island; see study site map below). The initial point count station was located randomly and subsequent stations were

placed systematically within the study area. Point count stations were located at least 150m from one another and each station's coordinates were entered into a GPS as well as marked with flagging so they could be easily relocated. Point count surveys were conducted in spring and fall of 2011 and 2013 (3 counts in the spring and 2 in the fall) within 15 min of sunrise (range 05:56 to 07:32am). During each count all visual and auditory detections of birds in a 5 minute period were recorded. We denoted if birds were detected greater or less than 50m from the point count station. Birds detected flying over were recorded as "associated" (using the site) or "independent" (not associated with the site). Birds detected when walking between point count stations were recorded for the species richness estimate but not for abundance estimates. One observer conducted the count while a second recorded the data. See Huff et al. (2000)² for more details on the point count methodology. We controlled for the increased spring survey effort by averaging point count estimates when comparing among seasons.

We grouped birds into guilds based on where they spend most of their time foraging in the vegetative layer of the forest. These categories are based on species life history information and criteria developed in previous studies (e.g. DeGraaf et al. 1985³).

² Huff, M.H., K.A Bettinger, H.L. Ferguson, M.J. Brown, and B. Altman. 2000. A habitat-based point count protocol for terrestrial birds, emphasizing Washington and Oregon. General Technical Report PNW-GTR-501. U.S. Department of Agriculture, US. Forest Service.

³ De Graaf, R.M., N.G. Tilghman, and S.H. Anderson. 1985. Foraging guilds of North American Birds. *Environmental Management* 9: 493-536.



Candace Larson conducting a point count on Ross Island (Photo: Joe Liebezeit).

Results

Eight volunteers contributed over 30 hours performing the point count surveys. Two staff members also conducted surveys.

We detected 44 species in the study area during spring and fall migration (see table below). Four additional species (Double-crested Cormorant, Unidentified Gull, Killdeer, and Cliff Swallow) were detected outside the study area. The most commonly detected species were Song Sparrow, Cedar Waxwing, Bewick's Wren, Black-capped Chickadee, and American Robin. Together these five species accounted for over one-half of all detections. Resident birds appear to dominate the site in both seasons accounting for 84% of all spring detections and 96% of all fall detections. It is possible some of the species we categorized as "resident" may partially consist of a small portion of migratory birds from other populations or subspecies that were passing through during migration. Thirteen species detected were long-distance Neotropical migrants (birds that typically winter south of the Tropic of Cancer). Many

Neotropical migrants are experiencing population declines including two that were detected in this study (Olive-sided Flycatcher and Wilson’s Warbler). Two other species detected are listed as species of conservation concern by the Oregon Department of Fish and Wildlife (White-breasted Nuthatch and Pileated Woodpecker).

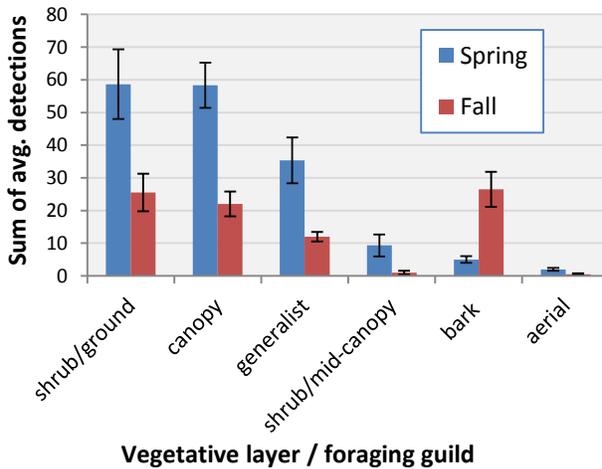


Figure. Average detections in spring and fall Ross Island point counts (± 1 St. dev.)

Species richness during the spring was higher than in the fall (34 vs. 26 species detected). Similarly, significantly more birds were detected in the spring suggesting higher overall spring abundance (see above figure). Most strikingly, American robins, cedar waxwings were frequently detected in the spring (>25 detections) but never observed in the fall. Four other species (song sparrow, house finch, American goldfinch, and spotted towhee) were detected much more commonly in the spring compared to the fall. Despite the large number of spring detections, there were two species that were detected much more frequently in the fall (black-capped chickadee and brown creeper). The bark gleaners (e.g. woodpeckers, creeper, nuthatches), as a group, were detected more in the fall (see figure). This is not unexpected as these bird species often

form family groups and mixed-species flocks this time of year.

The higher spring abundance is likely explained, in part, by local movements of resident birds. The abundance of robins and cedar waxwings in spring may be a response to local patchiness in food. Cedar waxwings, in particular, are most common in the region during spring and summer taking advantage of seasonal fruits and insects⁴. Song sparrows, the species we detected most commonly in the spring, are known for local spring influxes at sites throughout Oregon⁴. Also, spring migrants were more common than fall migrants in terms of detections (23.7 vs. 3.5 avg. detections) as well as number of species (17 vs. 5). Finally, juvenile bird detection in the spring may also have increased spring detections particularly during the later season counts.

It is possible that spring numbers were inflated to some degree because birds are most vocal in the spring (i.e. singing males) and therefore more detectable. It is also possible that the peak migration period was not covered adequately during the fall period as sampling effort was reduced.



Song sparrows were the most commonly detected bird in the spring on Ross Island (Photo: Scott Carpenter).

⁴ Marshall, D.B., M.G. Hunter, and A.L. Contreras. 2003. Birds of Oregon: A general reference. Oregon State University Press, Corvallis, OR. 768 Pp.

Next steps

This project documents significant use of Ross Island by both resident and migratory birds. Migrant use was particularly important during spring migration both in terms of abundance and species richness. Some of the species detected are of conservation concern further illustrating the value of this vital green space. As the habitat restoration efforts on the island are still in the early stages, the surveys provide baseline information on the avian community. In the near term, Portland Audubon will work with the Willamette Riverkeeper to continue habitat restoration efforts. Currently, the

biggest challenge is creating a mid-story canopy layer as poor soils on some parts of the island and intense deer browsing are making it difficult for some plants to become established. After the plantings from the habitat restoration have taken hold and matured, Portland Audubon may seek to reinstate the bird point counts in the future to assess the avian response to the habitat restoration efforts. The Bureau of Environmental Services has collected vegetation data centered on the bird point count station so it will be possible to measure vegetation change in tandem with bird community change over time.

Acknowledgements

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Title page photographs: Cottonwood tree on Ross Island (Marci Krass); lower left: Great Blue Heron (Scott Carpenter); lower right: Wilson's warbler (R.M. Liskay)



Study site map: Location of five avian point count stations on the north end of Ross Island. Image courtesy of Google Earth.

Table. Sum of species detected in all point counts (< and >50m) and all associated fly overs in both spring and fall seasons, 2011 and 2013. Species categorized into guild by the vegetative layer they spend most time foraging and whether the birds are migrants or residents.

| Species | # detections | Vegetative layer / foraging guild | migrant or resident |
|-------------------------|--------------|-----------------------------------|---------------------|
| Song Sparrow | 115 | shrub/ground | resident |
| Bewick's Wren | 62 | shrub/ground | resident |
| Spotted Towhee | 30 | shrub/ground | resident |
| Swainson's Thrush | 14 | shrub/ground | migrant |
| Common Yellowthroat | 3 | shrub/ground | migrant |
| Dark-eyed Junco | 2 | shrub/ground | migrant |
| Pacific Wren | 1 | shrub/ground | resident |
| Wilson's Warbler | 21 | shrub/mid-canopy | migrant |
| Bushtit | 5 | shrub/mid-canopy | resident |
| Yellow Warbler | 4 | shrub/mid-canopy | migrant |
| Orange-crowned Warbler | 1 | Shrub/mid-canopy | migrant |
| Cedar Waxwing | 82 | canopy | resident/migrant** |
| Black-capped Chickadee | 52 | canopy | resident |
| American Goldfinch | 30 | canopy | resident |
| Lesser Goldfinch | 20 | canopy | resident |
| Red-tailed Hawk | 9 | canopy | resident |
| Western Wood-Pewee | 7 | canopy | migrant |
| Warbling Vireo | 5 | canopy | migrant |
| Black-headed Grosbeak | 4 | canopy | migrant |
| Osprey | 2 | canopy | migrant |
| Western Tanager | 2 | canopy | migrant |
| Olive-sided Flycatcher | 1 | canopy | migrant |
| Purple Finch | 1 | canopy | resident/migrant** |
| Yellow-rumped Warbler | 1 | canopy | migrant |
| Vaux's Swift | 4 | aerial | migrant |
| Violet-green Swallow | 2 | aerial | migrant |
| Tree Swallow | 1 | aerial | migrant |
| Brown Creeper | 35 | bark | resident |
| Northern Flicker | 16 | bark | resident |
| Downy Woodpecker | 13 | bark | resident |
| White-breasted Nuthatch | 3 | bark | resident |
| Pileated Woodpecker | 1 | bark | resident |
| American Robin | 51 | generalist | resident |
| House Finch | 43 | generalist | resident |
| Anna's Hummingbird | 11 | generalist | resident |
| American Crow | 10 | generalist | resident |
| European Starling | 10 | generalist | resident |
| Brown-headed Cowbird | 3 | generalist | migrant |
| Western Scrub-Jay | 2 | generalist | resident |
| Canada Goose | 17 | n/a | resident |
| Great Blue Heron | 4 | n/a | resident |
| Belted Kingfisher | 1 | n/a | resident |
| Mallard | 1 | n/a | resident |
| Spotted Sandpiper | 1 | n/a | migrant |

*N/A = Non-forest birds omitted from guild categories

** Could be either migratory or resident.