JERICHO PARK

VANCOUVER, BRITISH COLUMBIA

BIRDS AND HABITAT SURVEY, 2020-2021

WITH A COMPARISON WITH 2006-2007

compiled by M. Church & J.M. Ryder

for

The Jericho Stewardship Group

May, 2023

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This survey of birds and habitat in Jericho Park was carried out by volunteer birders from the Jericho Stewardship Group and Nature Vancouver, including Ian Burgess, Alex Chlupova, Janna Chlupova, Susan Fisher, Jared Grummer, Sue Kay, Nan Kee, Liam Irwin, Dominic Janus, Alan Mckenzie, Pirmin Nietlisbach, Catherine Phillips, Julian Phillips, Bev Ramey, Bill Ramey, Jo Rogers, Alan Smith and Linda Wong. In total, these observers spent about 320 person-hours carrying out 275 surveys, plus at least 140 hrs of travel time, a total donation of more than 460 hours. Our sincere thanks to them all. The survey was designed by June Ryder following the protocols of the earlier 2006-07 survey. Susan Fisher facilitated this survey and collected the data sheets. Analysis was carried out by the authors of this report.

The Jericho Stewardship Group would like to thank June Ryder and Mike Church for the many hours they have devoted to compiling this report. We are also grateful to Rémi Torrenta of Bird Studies Canada for the regional perspective he provided, and to Mark Habdas for the front cover design and photos.

SUMMARY

Surveys of birds and their use of habitat were conducted in Jericho Park by Nature Vancouver volunteers from March 2006 to June 2007 and again from June 2020 through August 2021 by birders from the Jericho Stewardship Group and Nature Vancouver. The park was subdivided into polygons based broadly on habitat types. Data were collected twice each month by 15 minute point counts at two observation stations in each polygon. Data recorded were principally bird species and numbers. Some notes on bird behaviour were also compiled in 2006-07. Similar observations were taken on only a partial set of the observing periods in the present survey and have not been analyzed.

In this report a comparative analysis is presented of bird numbers in the park and in each polygon in 2006-07 and in 2020-21, that is, after a 14-year interval. Both surveys followed the methodology described in the 2006-07 report.

(1) INTRODUCTION

The objectives of this survey were:

- to identify changes in characteristic numbers of birds in the park after a 14-year interval;
- to determine how intensively the various habitats are being used by birds, by species and numbers.

The results of the surveys have implications for park planning, including habitat modification.

(2) SETTING UP THE SURVEY

Jericho Park was subdivided into the same 11 survey polygons originally defined for the 2006-07 survey, based broadly on habitat type. Surveys did not include the beach, shoreline and waters of English Bay. Data were collected by volunteers who conducted point counts at two stations in each polygon approximately twice each month from June 2020 through August 2021. For comparisons between the two surveys the records for the common period of 1-year running from June to the following May were compared. This choice of a common annual period for comparison was constrained by the start and stop dates of the actual surveys in the two periods.

(2.1) Delimiting the Survey Polygons[1]

The original plan (from the project proposal, November 2005) was to subdivide the park into habitat units (sub-areas), and use these as the basis for bird surveys. Habitat units were initially delimited according to vegetation structure: primarily presence and extent of trees, understorey, shrubs, meadows, cut grass, continuity of canopy, age (size) of trees, predominant plant species, dominant trees, common understorey shrubs including blackberry, grass and herbs, pond and marsh vegetation, and presence of secondary features – e.g., veterans, snags, pathways, edges.

Initial mapping of habitat units was carried out by air photo interpretation and ground truthing by J.M. Ryder. However, this resulted in the subdivision of the park into 44 small polygons, each relatively homogeneous with regard to vegetation and habitat characteristics but together forming a pattern too complex to serve as the basis for the bird survey. Therefore, these small polygons were grouped to form 11 larger polygons with boundaries that could be clearly identified on the ground and hence readily located by the survey volunteers. These polygons are not internally homogeneous but include combinations of related habitat types, e.g., different degrees of canopy closure, different densities and species of deciduous and coniferous trees. Some mostly open polygons (meadows, ponds, lawns) include small clumps of shrubs and trees, and bird observations in these polygons include records from the edges of adjoining woodlands. The polygons are described below and shown in Figure 1. Informal descriptive names were used for ease of reference.

[1] This section is reproduced (with revisions) from the 2006-07 report. The term “polygon” refers to an area with an irregular boundary.

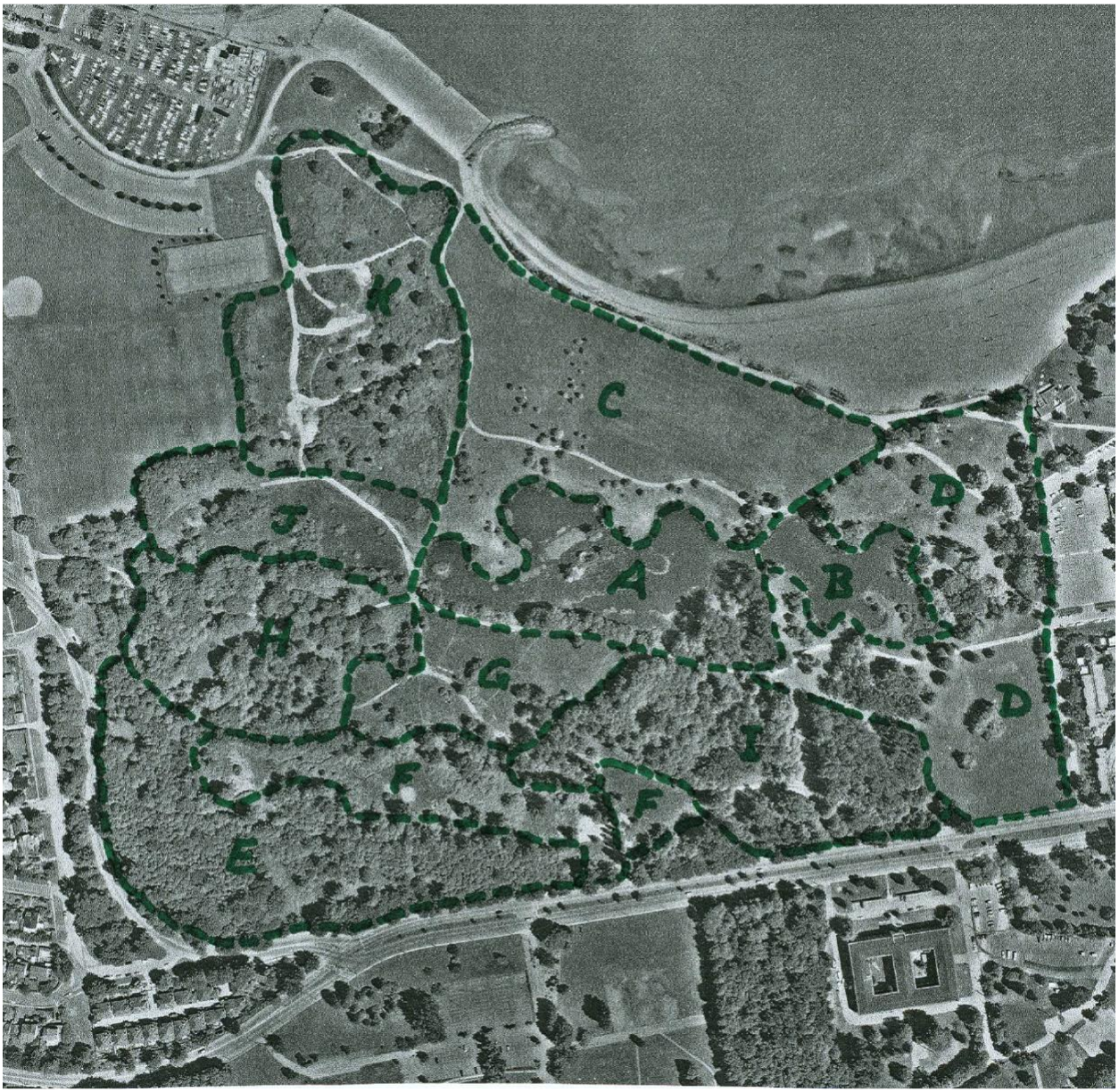

Figure 1. Air photograph of Jericho Park with survey polygons and observation stations marked, Scale approximately 1:7000. SRS photo 6068-11, 11 June, 1999. Scale 1:5000.

(2.2) Description of Survey Polygons

Polygon A: West Pond
Open water is bordered by a broad fringe of cattails that occupies about half of the original pond area. (In summer and fall, cattails significantly restrict visibility with regard to bird observations.) Two islands are covered by blackberry, and one supports a tall birch, common hawthorn and a few other shrubs. The pond is bordered to the south by a row of trees (red alder, Douglas maple, black cottonwood, fir, cherry) and shrubs (blackberry, rose, red osier dogwood, etc.), and to the west by a few willows. The water is relatively shallow so that when water levels are low (late summer/early fall) a significant area of marginal mudflat is exposed.

Polygon B: East Pond
This pond is mostly open water. It is deeper than West Pond, so drawdown exposes relatively little marginal mud. The south shore has a narrow fringe of cattails. Elsewhere the water is bordered by short grass and a few scattered trees, mostly willow.

Polygon C: Great Lawn
An extensive area of short (mowed) grass with a smaller area of scattered young trees, mostly oak. The polygon is bordered to the north by English Bay beaches and to the south by East and West ponds.

Polygon D: East Lawn
This is a large area of short (mowed) grass with some groupings of mature trees, mostly deciduous. In limited areas these form a continuous canopy, while elsewhere they are scattered more widely. Species include oak, willow, maple, horse chestnut, common hawthorn, Lombardy poplar and others. Shrubs are restricted to a very small area adjacent to East Pond.

Polygon E: Big Woods
The woodland consists predominantly of deciduous trees (mostly alder, some black cottonwood, and maple especially near 4th Ave) with an almost continuous canopy. The western part of the area has scattered young cedar and a few other conifers (western redcedar, western hemlock) and black cottonwood. The understorey includes young trees with some patches of dense maple saplings, blackberry, minor salmonberry, holly, laurel and other shrubs.

Polygon F: Small Meadows
These are two relatively small openings with long (uncut) grass, including scattered herbs (lupine, fireweed, horsetail and other weedy species) and widely scattered small trees (e.g., elderberry, vine maple); parts of the openings and edges are occupied by blackberry and Japanese knotweed. The meadows are bordered by trees of various species, mostly native and deciduous (black cottonwood, red alder, mountain ash), but also some non-native or domestic trees (e.g., fruit trees). The area is crossed by many informal pathways.

Polygon G: Big Meadows
These are larger openings with long grass and lupine, thistle, scattered small trees and clumps of shrubs (rose, common hawthorn, domestic fruit, snowberry, crabapple, Pacific ninebark, red flowering currant), some oak saplings, and two small groups of mature deciduous trees (Douglas-fir, red alder).

Polygon H: Hillside Woods
This is chiefly deciduous woodland, mostly red alder, but also including black cottonwood, vine maple, bigleaf maple and common hawthorn, and with some young cedars to the east near the main pathway. Understorey consists of blackberry (and trailing blackberry), thimbleberry, salmonberry, young trees, Japanese knotweed, and some ivy.

Polygon I: Wet Woods
This woodland is chiefly deciduous, with abundant black cottonwood, red alder, bigleaf maple especially near 4th Ave., and some smaller trees (e.g., common hawthorn). There are scattered young cedar 6-12 m high and a few mature conifers (e.g., Douglas-fir). The understorey includes blackberry (widespread), young trees, holly, laurel, ivy, snowberry and swordfern.

Polygon J: Marsh
A comparatively open area that is an intermittent wetland (dry in summer) with scattered Pacific (and other) willow, long grass, a clump of black cottonwood near the west end. It is bordered to the north by extensive blackberry, and to the south by a woodland edge.

Polygon K: Blackberry Hills
This area is a mosaic of blackberry and long grass, with isolated small trees (including common hawthorn, oak, cherry, mountain ash). Tall black cottonwood and red alder are scattered along the edges of the polygon.

(2.3) Observation Stations

Two observation stations were established in each survey polygon; their locations are shown in Figure 2.1. Station locations were selected in habitat and vegetation typical of the polygon and at places where visibility was good in several directions. For practical purposes, the stations were also located at points that could be readily identified by the volunteer observers. Other considerations included locating the two stations far enough apart to minimize the possibility of double counting birds, and sufficiently far from the edges of a polygon that birds outside the polygon were generally not visible or audible from the station.

Observation stations for the pond and marsh polygons were located on the margins of these features at points from which relatively large areas of pond or marsh could be seen.

(2.4) Survey Design

A polygon survey consisted of two 15-minute point counts, one at each observation station. Observers stood quietly at each station. Although squeaking or pishing may have resulted in more sightings, we did not attempt to attract birds by this means because we wanted to observe their natural behaviour. All birds seen at or heard from the station within the 15-minute time frame were recorded (except birds recognized as having been noted at the previous station in the same polygon); observers used their best judgement to avoid double-counting of “loud” birds (such as Swainson’s Thrush) or “prominent” ones (such as Bald Eagle). However, this discrimination may often have been impossible for foraging small birds. The time spent completing a survey for one polygon was 30 minutes plus the time required (a few minutes) for walking between Station 1 and Station 2.

(2.5) Quality and Consistency of the Surveys

Measures were designed to encourage consistency and quality, as follows:

- to maintain consistency each team of volunteer observers was assigned responsibility for one survey polygon, which they were to survey once each month;
- each survey was carried out by two (rarely three) observers;
- each team was also responsible for surveying one (or two) additional polygons each month, i.e., the polygons regularly surveyed monthly by one other of the teams. This arrangement was intended to facilitate identification of any major discrepancies between the two monthly surveys of a polygon.

(2.6) Survey Schedule

Observers were asked to carry out a survey of their assigned polygon in each half of the month and surveys of other polygons in the second half. A rota was established for surveys of other polygons, giving each volunteer a chance to survey each of the 11 polygons at least once.

The date and hour of each survey were left up to the observers, with the following guidelines for scheduling the time of their surveys:

- select conditions conducive to birds being active and visible, i.e., avoid surveying during heavy or prolonged rain, falling snow, strong wind;
- do the surveys during mornings within 3 hours of sunrise, which is the period of most intense bird activity;
- avoid doing surveys during the Jericho Folk Festival or other noisy events.

Through experience, we quickly determined that many more birds were present during mornings than evenings, so most surveys were completed in the early morning.

Surveys in 2006-07 were carried out over a time span of 16 months between March 2006 and June 2007, thereby including two breeding seasons and the intervening winter. In 2020-21 surveys were carried out between June 2020 and August 2021, encompassing the same seasons. However, the differences in start and finish months constrained the definition of a common one-year period for comparisons to June 2020 through May 2021. The delay in starting the new survey was due to the COVID pandemic.

(3) DATA COLLECTION

(3.1) Data Form

The 2006-07 data form (Figure 2) was used again. For each polygon survey, information routinely collected on the form included date and timing/duration of survey, weather observations, and names of observers (Table 3.1).

Table 3.1 Jericho Park Birds and Habitat Survey: Data Form Headings

Polygon	Stations	Date	Time (24 hr) (for polygon)	Temp °C	Cloud %	Precip.	Wind (Beaufort)
	1 & 2		Start	St.	St.		Force
			Finish	Fin.	Fin.		Dir

Each observation on the data form (i.e., each of the numbered lines) refers either to a single bird, or to multiple birds (2 or more) if a flock was observed in which all the birds occupied the same habitat (generally speaking), exhibited similar behaviour(s), and apparently were travelling together. **Each line of the form will be referred to as a *record*. Each individual bird noted on the data form will be referred to as a *sighting* or a *count*.** Thus line #1 on the data form below (Table 3.2) indicates *one record* and *three sightings* of Black-capped Chickadee.

Table 3.2 Jericho Park Birds and Habitat Survey: Data entry

Obs.#	Species	No.	Habitat 1	Habitat 2	Behav 1	Behav 2	Behav 3	Write-ins and other notes (use space below if necessary)
1	BCCH	3						
2	AMRO	1						
3	NOCR	4						

For point counts at observation stations, each record then consists of bird species and number of birds in the group. Additional columns on the data sheet refer to observed behaviour and habitat details of the birds. These data were collected on only some of the individual surveys. *We suppose that ecological details have not changed significantly since 2006, hence these observations have not been analyzed for the 2020-21 period*.

Data have been entered into an EXCEL spreadsheet. The data base consists of about 4100 rows of data, i.e., about 4100 records.

(4) SURVEYS CONDUCTED

Between June, 2020 and the end of August,2021, volunteer birders conducted 279 surveys in Jericho Park, recording 558 individual stations. Cumulative survey time was 163 hours (at estimated 35 minutes per survey), or about 326 person-hours (at 2 persons per survey). As noted above (Section 2.7), surveys did not entirely conform to the original plan of two per polygon per month, but were spaced more irregularly. Nevertheless, the surveys completed averaged 18.6 per month for 15 months, or 1.7 surveys per polygon per month, which is fairly close to the 2 per month originally planned.

Data Form

Polygon	Stations	Date	Time (24 hr) (for polygon)	Temp °C	Cloud %	Precip.	Wind (Beaufort)
	1 & 2		Start	St.	St.		Force
			Finish	Fin.	Fin.		Dir

Observers:_____

Obs.#	Species	No.	Habitat 1	Habitat 2	Behav 1	Behav 2	Behav 3	Write-ins and other notes (use space below if necessary)
1								
2								
3								
4								
5								
26								
27								
28								
29								
30								

Notes Record additional info relevant to survey, e.g., conditions hindering/helping your observations, other bird behaviour, bird interactions, unusual species seen in other polygons, etc. (Use back of page too.)

Figure 2. Field data form (truncated): grey columns were not always recorded in 2020-21 and have not been included in the present analysis.

The date on which each polygon was surveyed is shown in Table 4.1. Due to the unforeseen variations in timing of the surveys, some polygons were surveyed more frequently than others. These discrepancies resulted in relatively more bird sightings and possibly more bird species in the more frequently surveyed polygons, but this does not compromise the objective of the survey.

The total number of surveys conducted in each polygon ranged from 20 to 29 (Table 4.1). Polygon G is an extreme outlier at 20 visits: the next lowest was 23 (Polygon K). For the year between June and May which formed the basis for the period to period comparison, the numbers of surveys were 244 in 2006-07 (18 to 28) and 229 in 2020-21 (18 to 23).

(In Table 4.1 a vertical pair indicates a single visit to stations 1 and 2 within a polygon – hence a single survey visit to the polygon. A horizontal pair (triplet) indicates two (three) visits to the polygon within the month.)

Table 4.1. SURVEY DATES (2020-21)

Date\Polygon	A	B	C	D	E	F	G	H	I	J	K	Month Total
20-Jun	14, 28	21, 28	15, 28	26,	7, 15	14,	14, 28	13, 28	13,	13, 18	14, 16, 18	20
	10, 20	21, 28	15, 28	26,	7, 15	14,	14, 28	13, 28	13,	13, 18	14, 16, 18	
Jul	26	26	3, 26	5, 26	5, 15	5, 20, 27	5, 25	5, 27	5,	5, 13	5,	19
	26	26	3, 26	5, 26	5, 15	5, 20, 27	5, 25	5, 37	5,	5, 13	5,	
Aug	7, 15, 30	30, 31	8, 22	14, 30	30,	29, 31	18, 22	15, 18	15, 29	22, 31	8, 15	22
	7, 15, 30	30,	8, 22	14, 30	30,	29, 31	18, 22	15, 18	15, 29	22, 31	8, 15	
Sep	27	8, 15, 27	2, 29	15,	15, 27	27,	1, 29	7, 15	7, 15	27, 29		18
	27	8, 15, 27	2, 29	15,	15, 27	27,	1, 29	7, 15	7, 15	27, 29		
Oct	17,		15, 15	15, 26	4, 15	31,	17,	15, 31	15,	15, 26	4, 31	16
	17,		15, 15	15, 26	4, 15	31,	7,	15, 31	15,	15, 26	4, 31	
Nov	29,	21,	7, 11	7, 10	10, 27	7, 29	21,	7,	7, 28	27,	7, 10	17
	29,	21,	7, 11	7, 10	10, 27	7, 29	21,	7,	7, 28	27,	7, 10	
Dec	15, 29	10, 31	4, 19	4,	4,	28, 31	19,	4, 29	4,	2, 28	5, 7	18
	15,	10, 31	4, 19	4,	4,	28, 31	19,		4,	2, 28	5, 7	
21-Jan	14, 31	14, 31	1, 27	9, 14	9, 14	6, 27	1,	9, 23	6, 31	1, 31	22, 23	21
	14, 31	14, 31	1, 27	9, 14	9, 14	6, 27	1,		6, 31	1, 31	22, 23	
Feb	26,	8,	5, 8	8, 28	6, 8	17, 28	6, 17	7, 17	17, 20	7,	20,	18
	26,	8,	5, 8	8, 28	6, 8	17, 28	6, 17		17, 20	7,	20,	
Mar	20, 27	27, 30	8, 21	10, 20	10, 28	27, 28	9, 27	7, 9	8, 9	8, 14	14,	21
	20, 27	27, 30	8, 21	10, 20	10, 28	27, 28	9, 27	7, 9	8, 9	8, 14	14,	
Apr	25,	18, 25	8, 25	12, 21	12, 22	22,		2,	2, 14	4,	6,	15
	25,	18, 25	8, 25	12, 21	12, 22	22,		2,	2, 14	4,	6,	
May	20, 30	8, 30	4,	10, 30	10, 24	2, 10, 30	4, 10	8, 30	8, 22	9, 20	2, 8, 8	23
	20, 30	8, 30	4,	10, 30	10, 24	2, 10, 30	4, 10	8, 30	8, 22	9, 20	2, 8, 8	
June	3, 27	27, 30	5, 8	8, 27	8, 27	22,	8,	5, 8	3, 27	30,	5, 5	19
	3, 27	27, 30	5, 8	8, 27	8, 27	22,	8,	5, 8	3, 27	30,	5, 5	
July	14, 25	25,	1, 13	15,	15, 25, 29	25,		14, 15	15,	1,		14
	14, 25	25,	1, 13	15,	15, 25, 29	25,		14, 15	15,	1,		
21-Aug	29,	8, 29	8, 9	6,	6, 6	21, 29	29,	9, 21	6,	1, 6, 21	25,	18
	29,	8, 29	8, 9	6,	6, 6	21, 29	29,	9, 21	6,	1, 6, 21	25,	
Total by month	24	25	29	25	29	26	20	28	24	26	23	279

Since the survey commenced in June, 2020 and ended at the end of August, 2021, it encompasses two summers (June-August) and may contain some bias toward that period. But it is a period of late breeding and family rearing when birds are largely sedentary (i.e., no major migratory movements) and the local population is largely the same from year to year. Hence the species list is expected not to be significantly affected by the survey period; however, numbers of summer birds may be inflated in comparison with the other seasons. This effect is eliminated for the inter-period comparison because the lists are restricted to the common annual period June (start) to May following (end).

(5) SURVEY RESULTS: INVENTORY

(5.1) Inventory for Jericho Park: 2020-21

During the 2020-21 surveys birds of 100 species were found in Jericho Park (excluding the beaches and waters of English Bay). These are listed in order of abundance in Table 5.1 along with the number of records (i.e., how many times this species was recorded, whether single birds or groups of birds). For example, note that the *records* for the common water birds are much less in number than the *numbers* (*sightings*) because these birds were normally recorded in flocks rather than as individuals.

Bear in mind that the numbers given for sightings and records are the totals for all of the surveys. Since any individual bird may have been seen several times during repeated surveys of a polygon, these numbers do not represent the absolute numbers of birds within the Park.

(Table 5.1 Begins on the following page)

Table 5.1. Total species counts, 2020-21, in rank order

Code	Name	No. Records	No. Birds	Rank		
AMCR	American Crow	389	2065	1		
PISI	Pine Siskin	98	1911	2		
AMWI	American Wigeon	57	1605	3		
MALL	Mallard	184	1601	4		
CAGO	Canada Goose	117	1546	5		
BCCH	Black-capped Chickadee	377	1147	6		
RWBL	Red-winged Blackbird	125	675	7		
AMRO	American Robin	210	520	8		
AMGO	American Goldfinch	100	394	9		
GWGU	Glaucous-winged Gull	175	382	10		
ANHU	Anna's Hummingbird	234	358	11		
SPTO	Spotted Towhee	222	355	12		
SOSP	Song Sparrow	205	332	13		
BASW	Barn Swallow	53	287	14		
HOFI	House Finch	65	258	15		
EUST	European Starling	30	225	16		
BUSH	Bushtit	41	218	17		
NOFL	Northern Flicker	148	196	18		
PAWR	Pacific Wren	110	175	19		
DEJU	Dark-eyed Junco	55	162	20		
DCCO	Double-crested Cormorant	18	133	21		
GBHE	Great Blue Heron	90	122	22		
RCKI	Ruby-crowned Kinglet	62	117	23		
RBNU	Red-breasted Nuthatch	91	113	24		
GCKI	Golden-crowned Kinglet	49	108	25		
RBGU	Ring-billed Gull	29	88	26		
PSFL	Pacific-slope Flycatcher	61	88	27		
BRCR	Brown Creeper	55	78	28		
TRSW	Tree Swallow	27	75	29		
BEWR	Bewick's Wren	44	48	30		
BAEA	Bald Eagle	36	47	31		
YRWA	Yellow-rumped Warbler	16	47	32		**continued**

Table 5.1 continued. Total species counts, 2020-21, in rank order

Code	Name	No. Records	No. Birds	Rank		
SWTH	Swainson's Thrush	35	46	33		
DOWO	Downy Woodpecker	36	42	34		
GCSP	Golden-crowned Sparrow	18	41	35		
CBCH	Chestnut-backed Chickadee	18	40	36		
VATH	Varied Thrush	26	40	37		
FOSP	Fox Sparrow	25	36	38		
WAVI	Warbling Vireo	29	35	39		
WIWA	Wilson's Warbler	20	33	40		
MEGU	Mew Gull	2	32	41		
OCWA	Orange-crowned Warbler	11	31	42		
WCSP	White-crowned Sparrow	20	30	43		
CCGO	Cackling Goose	4	29	44		
CORA	Common Raven	17	27	45		
BHCO	Brown-headed Cowbird	16	27	46		
BHGR	Black-headed Grosbeak	21	24	47		
PUFI	Purple Finch	9	22	48		
BUFF	Bufflehead	13	20	49		
PIWO	Pileated Woodpecker	18	20	50		
WIFL	Willow Flycatcher	14	19	51		
RNDU	Ring-necked Duck	9	18	52		
AMCO	American Coot	10	18	53		
CEWA	Cedar Waxwing	8	17	54		
BTGW	Black-throated Grey Warbler	12	17	55		
COHA	Cooper's Hawk	14	16	56		
HETH	Hermit Thrush	13	15	57		
VGSW	Violet-green Swallow	9	14	58		
HOME	Hooded Merganser	8	13	59		
BADO	Barred Owl (end note)	8	10	60		
ROPI	Rock Pigeon	2	10	61		
WODU	Wood Duck	5	9	62		
PECO	Pelagic Cormorant	2	9	63		
WWPE	Western Wood Pewee	8	9	64		**continued**

Table 5.1 continued. Total species counts, 2020-21, in rank order

Code	Name	No. Records	No. Birds	Rank		
STJA	Steller's Jay	6	9	65		
GWTE	Green-winged Teal	6	8	66		
RUHU	Rufous Hummingbird	6	8	67		
BEKI	Belted Kingfisher	7	7	68		
BLSW	Black Swift	2	6	69		
WESA	Western Sandpiper	1	5	70		
HUVI	Hutton's Vireo	5	5	71		
YEWA	Yellow Warbler	5	5	72		
SAVS	Savannah Sparrow	3	5	73		
GUSP	Gull sp	4	4	74		
BTPI	Band-tailed Pigeon	2	4	75		
WETA	Western Tanager	3	4	76		
MERL	Merlin	3	3	77		
KILL	Killdeer	2	3	78		
WISN	Wilson's Snipe	2	3	79		
MAWR	Marsh Wren	2	3	80		
TOWA	Townsend's Warbler	1	3	81		
GADW	Gadwall	1	2	82		
NOSL	Northern Shoveler	2	2	83		
COGO	Common Goldeneye	1	2	84		
RBME	Red-breasted merganser	1	2	85		
PEFA	Peregrine Falcon	2	2	86		
VIRA	Virginia Rail	2	2	87		
CATE	Caspian Tern	2	2	88		
LISP	Lincoln's Sparrow	2	2	89		
RECR	Red Crossbill	1	2	90		
BWTE	Blue-winged Teal	1	1	91		
OSPR	Osprey	1	1	92		
LEYE	Lesser Yellowlegs	1	1	93		
SAND	Sandpiper sp	1	1	94		
CAGU	California Gull	1	1	95		
HEGU	Herring Gull	1	1	96		**continued**

Table 5.1 continued. Total species counts, 2020-21, in rank order

Code	Name	No. Records	No. Birds	Rank	Code	Name
ECDO	European Collared Dove	1	1	97		
HAWO	Hairy Woodpecker	1	1	98		
WTSP	White-throated Sparrow	1	1	99		
YHBL	Yellow-headed Blackbird	1	1	100		
GWFG	Greater White-fronted Goose	0	0			
SNGO	Snow Goose	0	0	zeros represent birds observed		
EUWI	Eurasian Wigeon	0	0	in 2006-07 but not in 2020-21.		
CITE	Cinnamon Teal	0	0			
NOPI	Northern Pintail	0	0			
GRSC	Greater Scaup	0	0			
LESC	Lesser Scaup	0	0			
PBGR	Pied-billed Grebe	0	0			
AMBI	American Bittern	0	0			
NOHA	Northern Harrier	0	0			
SSHA	Sharp-shinned Hawk	0	0			
RTHA	Red-tailed Hawk	0	0			
GRYE	Greater Yellowlegs	0	0			
SBDO	Short-billed Dowitcher	0	0			
LBDO	Long-billed Dowitcher	0	0			
THGU	Thayer's Gull	0	0			
OSFL	Olive-sided Flycatcher	0	0			
CAVI	Cassin's Vireo	0	0			
REVI	Red-eyed Vireo	0	0			
NRWS	Northern Rough-winged Swallow	0	0			
AMPI	American Pipit	0	0			
COYE	Common Yellowthroat	0	0			
LALO	Lapland Longspur	0	0			
HOSP	House Sparrow	0	0			**end**

Re Barred Owl: Three of the owl sightings were reported as Barn Owl (BAOW) rather than Barred Owl (BADO). While Barred Owls are known to be present in the park, there is no record of Barn Owl ever having been reported in Jericho Park (e-bird search). It is supposed that the apparent claim for Barn Owl is a consequence of confusion over the correct mnemonic title for “Barred Owl” (BAOW could designate “Barred Owl” if not pre-empted for “Barn Owl”). The “Barn Owl” sightings have been assigned to Barred Owl.

The ten most abundantly observed birds (by number) are listed in Table 5.2. This and other tables of bird numbers are constructed with the 2006-07 results leading. That is because those data are the reference numbers against which changes in 2020-21 will be compared. Therefore the 2006-07 record is listed in strict rank order. As ranks changed between the two dates, the 2020-21 results are not in strict order. As three birds fell out of the top ten between dates, a total of thirteen species is listed. The two common wintering ducks, Mallard and American Wigeon, headed the 2006-07 list but were replaced by American Crow in 2020-21 – even though the numbers of all three species declined. For Pine Siskin, which rose from 14th rank to second place, 2020-21 was an irruptive winter; Rock Pigeon, on the other hand, fell from 6th to 60th place: it was scarcely observed in the park in 2020-21 for reasons unknown, possibly raptor predation. The decline in Barn Swallow numbers and rank and rise of Canada Goose reflect regional trends. House Finch likely declined due to the effect of *Mycoplasma conjunctivitis* (House Finch eye disease).

Water birds are perhaps surprisingly prominent amongst the most common birds. However, the ponds and marsh represent attractive habitat for these birds, which commonly congregate in large numbers in winter. Further, the adjacent sea represents attractive escape terrain.

Table 5.2. The most abundant birds

Rank 2006	Species	Number 2006	Rank 2020	Number 2020
1	Mallard	4331	4	1601
2	American Wigeon	3402	3	1605
3	American Crow	2866	1	2065
4	Red-winged Blackbird	890	7	675
5	Black-capped Chickadee	869	6	1147
6	Rock Pigeon	688	60	10
7	House Finch	666	15	258
8	American Robin	568	8	520
9	Barn Swallow	520	14	287
10	American Goldfinch	519	9	394
14	Pine Siskin	339	2	1911
13	Canada Goose	356	5	1546
15	Glaucous-winged Gull	326	10	382

(6) Comparison of 2006-07 and 2020-21 surveys

Table 5.3 compares total numbers of birds seen in each of the survey periods. The lists are given in taxonomic order to facilitate finding the numbers for an individual species. *The data represent total numbers observed over the common annual period 1 June – 31 May of the following year*, hence they cover exactly one annual period, but not a single calendar year. Consequently, they vary from the numbers given in Table 5.1 and in Tables B5.1 and B5.2 of Ryder (2011: the report of the 2006-07 survey).

Table 6.1. Comparison of bird numbers, 2006-07 to 2020-21

		2020-2021		2006-2007		$\Delta\% = 100(N_{20} - N_{06})/N_{06}$		$R = N_{20}/N_{06}$	
Code	**Species**	**Records**	**No. birds**	**Records**	**No. birds**	**Records**	**No. birds**	**Records**	**No. birds**
GWFG	Greater White-fronted Goose	0	0	4	9	-1.00	-1.00	0.00	0.00
SNGO	Snow Goose	0	0	1	20	-1.00	-1.00	0.00	0.00
CAGO	Canada Goose	116	1545	22	338	4.27	3.57	5.27	4.57
CCGO	Cackling Goose	4	29	0	0	*	*	*	*
WODU	Wood Duck	5	9	0	0	*	*	*	*
GADW	Gadwall	1	2	0	0	*	*	*	*
EUWI	Eurasian Wigeon	0	0	10	10	-1.00	-1.00	0.00	0.00
AMWI	American Wigeon	57	1605	71	2766	-0.20	-0.42	0.80	0.58
EUAM	Eurasian x American Wigeon	0	0	1	1	-1.00	-1.00	0.00	0.00
MALL	Mallard	177	1503	188	3609	-0.06	-0.58	0.94	0.42
MALX	Mallard x Domestic	0	0	15	41	-1.00	-1.00	0.00	0.00
CITE	Cinnamon Teal	0	0	1	2	-1.00	-1.00	0.00	0.00
NOSL	Northern Shoveler	2	2	12	37	-0.83	-0.95	0.17	0.05
NOPI	Northern Pintail	0	0	3	3	-1.00	-1.00	0.00	0.00
GWTE	Green-winged Teal	6	8	7	50	-0.14	-0.84	0.86	0.16
BWTE	Blue-winged Teal	1	1	0	0	*	*	*	*
RNDU	Ring-necked Duck	9	18	5	13	0.80	0.38	1.80	1.38
GRSC	Greater Scaup	0	0	1	1	-1.00	-1.00	0.00	0.00
LESC	Lesser Scaup	0	0	18	90	-1.00	-1.00	0.00	0.00
COGO	Common Goldeneye	1	2	0	0	*	*	*	*
BUFF	Bufflehead	13	20	21	56	-0.38	-0.64	0.62	0.36
RBME	Red-breasted merganser	1	2	0	0	*	*	*	*
HOME	Hooded Merganser	8	13	1	1	7.00	12.00	8.00	13.00
PBGR	Pied-billed Grebe	0	0	5	5	-1.00	-1.00	0.00	0.00
PECO	Pelagic Cormorant	2	9	0	0	*	*	*	*
DCCO	Double-crested Cormorant	17	128	3	9	4.67	13.22	5.67	14.22
AMBI	American Bittern	0	0	1	1	-1.00	-1.00	0.00	0.00
GBHE	Great Blue Heron	85	113	52	62	0.63	0.82	1.63	1.82
OSPR	Osprey	1	1	0	0	*	*	*	*
BAEA	Bald Eagle	36	47	31	35	0.16	0.34	1.16	1.34
NOHA	Northern Harrier	0	0	2	2	-1.00	-1.00	0.00	0.00
SSHA	Sharp-shinned Hawk	0	0	2	2	-1.00	-1.00	0.00	0.00
COHA	Cooper's Hawk	12	14	14	14	-0.14	0.00	0.86	1.00
RTHA	Red-tailed Hawk	0	0	1	1	-1.00	-1.00	0.00	0.00
MERL	Merlin	3	3	3	3	0.00	0.00	1.00	1.00
PEFA	Peregrine Falcon	2	2	1	1	1.00	1.00	2.00	2.00
VIRA	Virginia Rail	2	2	1	1	1.00	1.00	2.00	2.00
									continued

Table 6.1 continued. Comparison of Bird Numbers, 2006-07 to 2020-21

		2020-2021		2006-2007		$\Delta\% = 100(N_{20} - N_{06})/N_{06}$		$R = N_{20}/N_{06}$	
Code	**Species**	**Records**	**No. birds**	**Records**	**No. birds**	**Records**	**No. birds**	**Records**	**No. birds**
AMCO	American Coot	6	10	17	24	-0.65	-0.58	0.35	0.42
KILL	Killdeer	2	3	1	2	1.00	0.50	2.00	1.50
GRYE	Greater Yellowlegs	0	0	2	3	-1.00	-1.00	0.00	0.00
LEYE	Lesser Yellowlegs	1	1	0	0	*	*	*	*
WESA	Western Sandpiper	1	5	1	1	0.00	4.00	1.00	5.00
SAND	Sandpiper sp	1	1	0	0	*	*	*	*
SBDO	Short-billed Dowitcher	0	0	1	1	-1.00	-1.00	0.00	0.00
LBDO	Long-billed Dowitcher	0	0	1	1	-1.00	-1.00	0.00	0.00
WISN	Wilson's Snipe	2	3	2	2	0.00	0.50	1.00	1.50
MEGU	Mew Gull	2	32	4	5	-0.50	5.40	0.50	6.40
RBGU	Ring-billed Gull	29	88	42	99	-0.31	-0.11	0.69	0.89
CAGU	California Gull	1	1	0	0	*	#DIV/0!	*	*
HEGU	Herring Gull	1	1	0	0	*	#DIV/0!	*	*
THGU	Thayer's Gull	0	0	1	1	-1.00	-1.00	0.00	0.00
GWGU	Glaucous-winged Gull	174	381	127	249	0.37	0.53	1.37	1.53
GUSP	Gull sp	4	4	0	0	*	*	*	*
CATE	Caspian Tern	2	2	3	7	-0.33	-0.71	0.67	0.29
ROPI	Rock Pigeon	2	10	78	491	-0.97	-0.98	0.03	0.02
BTPI	Band-tailed Pigeon	2	4	1	8	1.00	-0.50	2.00	0.50
ECDO	European Collared Dove	1	1	0	0	*	*	*	*
BADO	Barred Owl	8	10	0	0	*	*	*	*
BLSW	Black Swift	2	6	1	7	1.00	-0.14	2.00	0.86
ANHU	Anna's Hummingbird	226	342	0	0	*	*	*	*
RUHU	Rufous Hummingbird	6	8	5	6	0.20	0.33	1.20	1.33
BEKI	Belted Kingfisher	6	6	9	10	-0.33	-0.40	0.67	0.60
DOWO	Downy Woodpecker	35	41	13	15	1.69	1.73	2.69	2.73
HAWO	Hairy Woodpecker	1	1	0	0	*	*	*	*
NOFL	Northern Flicker	146	193	66	81	1.21	1.38	2.21	2.38
PIWO	Pileated Woodpecker	18	20	1	1	17.00	19.00	18.00	20.00
OSFL	Olive-sided Flycatcher	0	0	2	2	-1.00	-1.00	0.00	0.00
WWPE	Western Wood Pewee	8	9	3	3	1.67	2.00	2.67	3.00
WIFL	Willow Flycatcher	14	19	13	15	0.08	0.27	1.08	1.27
PSFL	Pacific-slope Flycatcher	60	86	13	14	3.62	5.14	4.62	6.14
CAVI	Cassin's Vireo	0	0	3	6	-1.00	-1.00	0.00	0.00
HUVI	Hutton's Vireo	4	4	2	3	1.00	0.33	2.00	1.33
REVI	Red-eyed Vireo	0	0	3	3	-1.00	-1.00	0.00	0.00
WAVI	Warbling Vireo	28	34	10	11	1.80	2.09	2.80	3.09
STJA	Steller's Jay	6	9	19	49	-0.68	-0.82	0.32	0.18
									continued

Table 6.1 continued. Comparison of Bird Numbers, 2006-07 to 2021

		2020-2021		2006-2007		$\Delta\% = 100(N_{20} - N_{06})/N_{06}$		$R = N_{20}/N_{06}$	
Code	**Species**	**Records**	**No. birds**	**Records**	**No. birds**	**Records**	**No. birds**	**Records**	**No. birds**
AMCR	American Crow	384	2049	539	2252	-0.29	-0.09	0.71	0.91
CORA	Common Raven	17	27	48	63	-0.65	-0.57	0.35	0.43
TRSW	Tree Swallow	23	48	9	16	1.56	2.00	2.56	3.00
VGSW	Violet-green Swallow	7	10	32	87	-0.78	-0.89	0.22	0.11
NRWS	Northern Rough-winged Swallow	0	0	1	2	-1.00	-1.00	0.00	0.00
BASW	Barn Swallow	49	262	63	281	-0.22	-0.07	0.78	0.93
BCCH	Black-capped Chickadee	370	1128	289	673	0.28	0.68	1.28	1.68
CBCH	Chestnut-backed Chickadee	18	40	0	0	*	*	*	*
BUSH	Bushtit	38	198	42	188	-0.10	0.05	0.90	1.05
RBNU	Red-breasted Nuthatch	91	113	3	3	29.33	36.67	30.33	37.67
BRCR	Brown Creeper	55	78	20	26	1.75	2.00	2.75	3.00
BEWR	Bewick's Wren	42	46	12	13	2.50	2.54	3.50	3.54
PAWR	Pacific Wren	109	173	142	216	-0.23	-0.20	0.77	0.80
MAWR	Marsh Wren	2	3	4	4	-0.50	-0.25	0.50	0.75
GCKI	Golden-crowned Kinglet	49	108	43	128	0.14	-0.16	1.14	0.84
RCKI	Ruby-crowned Kinglet	62	117	54	83	0.15	0.41	1.15	1.41
SWTH	Swainson's Thrush	35	46	27	35	0.30	0.31	1.30	1.31
HETH	Hermit Thrush	13	15	2	2	5.50	6.50	6.50	7.50
AMRO	American Robin	208	518	209	363	0.00	0.43	1.00	1.43
VATH	Varied Thrush	26	40	12	18	1.17	1.22	2.17	2.22
EUST	European Starling	29	222	38	166	-0.24	0.34	0.76	1.34
AMPI	American Pipit	0	0	1	40	-1.00	-1.00	0.00	0.00
CEWA	Cedar Waxwing	8	17	17	50	-0.53	-0.66	0.47	0.34
OCWA	Orange-crowned Warbler	11	31	8	19	0.38	0.63	1.38	1.63
YEWA	Yellow Warbler	5	5	12	19	-0.58	-0.74	0.42	0.26
TOWA	Townsend's Warbler	1	3	0	0	*	*	*	*
YRWA	Yellow-rumped Warbler	16	47	13	28	0.23	0.68	1.23	1.68
BTGW	Black-throated Grey Warbler	11	16	1	1	10.00	15.00	11.00	16.00
COYE	Common Yellowthroat	0	0	14	18	-1.00	-1.00	0.00	0.00
WIWA	Wilson's Warbler	20	33	11	21	0.82	0.57	1.82	1.57
WETA	Western Tanager	3	4	8	10	-0.63	-0.60	0.38	0.40
SPTO	Spotted Towhee	219	351	167	208	0.31	0.69	1.31	1.69
SAVS	Savannah Sparrow	3	5	11	48	-0.73	-0.90	0.27	0.10
FOSP	Fox Sparrow	25	36	47	74	-0.47	-0.51	0.53	0.49
									continued

Table 6.1 continued. Comparison of Bird Numbers, 2006-07 to 2021

		2020-2021		2006-2007			$\Delta\% = 100(N_{20} - N_{06})/N_{06}$			$R = N_{20}/N_{06}$	
Code	**Species**	**Records**	**No. birds**	**Records**	**No. birds**		**Records**	**No. birds**		**Records**	**No. birds**
SOSP	Song Sparrow	202	328	268	376		-0.25	-0.13		0.75	0.87
LISP	Lincoln's Sparrow	2	2	5	6		-0.60	-0.67		0.40	0.33
WCSP	White-crowned Sparrow	20	30	18	35		0.11	-0.14		1.11	0.86
GCSP	Golden-crowned Sparrow	18	41	20	49		-0.10	-0.16		0.90	0.84
WTSP	White-throated Sparrow	1	1	0	0		*	*		*	*
DEJU	Dark-eyed Junco	55	162	77	238		-0.29	-0.32		0.71	0.68
LALO	Lapland Longspur	0	0	1	1		-1.00	-1.00		0.00	0.00
BHGR	Black-headed Grosbeak	20	23	1	1		19.00	22.00		20.00	23.00
RWBL	Red-winged Blackbird	122	649	163	606		-0.25	0.07		0.75	1.07
YHBL	Yellow-headed Blackbird	1	1	0	0		*	*		*	*
BHCO	Brown-headed Cowbird	13	22	13	20		0.00	0.10		1.00	1.10
RECR	Red Crossbill	1	2	0	0		*	*		*	*
PUFI	Purple Finch	9	22	0	0		*	*		*	*
HOFI	House Finch	59	231	154	574		-0.62	-0.60		0.38	0.40
PISI	Pine Siskin	97	1910	13	339		6.46	4.63		7.46	5.63
AMGO	American Goldfinch	94	365	146	439		-0.36	-0.17		0.64	0.83
HOSP	House Sparrow	0	0	5	7		-1.00	-1.00		0.00	0.00
Total		4022	15990	3723	16148		0.08	-0.01		1.08	0.99
											end
						*** = new bird in 2020-21**					

Comparison of gains and losses from one period to the next can be made using any of several indices. In Table 3 we report ratio of numbers in 2020-21 to the numbers in 2006-07; i.e.,

$$R = N_{20}/N_{06}$$

In which N_{20} is the number of birds of a species observed in the 2020-21annual period and N_{06} is the corresponding count for the 2006-07 annual period. If $R < 1.0$, the numbers have declined from 2006 to 2020, and if $R > 1$ the numbers have increased. $R = 0.0$ indicates a bird present in 2006-07 that was not seen in 2020-21 while an asterisk indicates a bird present in 2020-21 that was not seen in 2006-07 (resulting in a ratio of infinity). We also compute the percentage change in 2020-21, based on the 2006-07 counts as the reference values:

$$\Delta\% = 100 \times (N_{20} - N_{06})/N_{06}$$

In this index, a negative value indicates a decline in numbers over the inter-survey period, while a positive value indicates an increase in numbers. An asterisk again indicates a bird not seen in 2006-07, but a zero now indicates no change in numbers. There is no upper limit to the range of

numbers. The practical limit in our results is 3667, for Red-breasted Nuthatch, which increased from 3 individuals to 113, an increase of nearly 38x. Most large positive changes are based on increase from very few individuals recorded in 2006-07.

To gain some appreciation of the significance of the observed changes, we consider values of *R*, the ratio of numbers. First, though, if $N < 3$, implying that, at most, two birds of a given species – possibly a single pair – were seen in each survey, then the number is too small to draw any conclusion about the bird's occurrence in the park. Most such cases entailed no sighting at all in one or other of the surveys. These birds are listed as "singular sightings".

Singular sightings. Number of species = 28.

Gadwall	Red-tailed Hawk	Thayer's Gull
Eurasian x American Wigeon	Peregrine Falcon	European Collared Dove
Cinnamon Teal	Virginia Rail	Hairy Woodpecker
Blue-winged Teal	Lesser Yellowlegs	Olive-sided Flycatcher
Greater Scaup	Sandpiper sp.	Northern Rough-winged Swallow
Common Goldeneye	Short-billed Dowitcher	White-throated Sparrow
Red-breasted Merganser	Long-billed Dowitcher	Lapland Longspur
Osprey	California Gull	Yellow-headed Blackbird
Northern Harrier	Herring Gull	Red Crossbill
Sharp-shinned Hawk		

The first two columns in the foregoing box are mainly seabirds and shorebirds that occur along the park beaches (not surveyed), and local raptors that hunt through the park. Virginia Rail and American Bittern occur in the Marsh but are difficult to detect. None of the birds is rare locally.

Another group of birds for which trends of occurrence cannot firmly be established are ones not seen in one of the surveys, though present in numbers greater than two in the other.

Absent from 2020-21 survey. Number of species = 11

Greater White-fronted Goose	Northern Pintail	American Pipit
Snow Goose	Lesser Scaup	Common Yellowthroat
Eurasian Wigeon	Pied-billed Grebe	House Sparrow
Mallard x Domestic Duck	Greater Yellowlegs	

This list constitutes birds with a ratio of 0.0 or -100%, that is, seen in 2006-07 but completely absent in 2020-21. The list combines more waterbirds, some for which the park provides little or no preferred habitat, and some locally off-range species. It is likely that all of them will be seen again, although the House Sparrow, in decline throughout the region, may not.

The following groups utilize the ratio $R = N_{20}/N_{06}$ to classify changes in the occurrence of individual species over the 14-year intersurvey period.

***R* ≤ 0.10; severe decline, ≥ 90%.** Number of species = 2

Northern Shoveler	Rock Pigeon

Northern Shoveler occurs irregularly on the ponds. In 2006-07, 37 birds were seen while only 2 in 2020-21. It is possible that the filling in of the ponds with vegetation may account for this

result. The collapse of the pigeon population (*R* = 0.02) is surprising: the birds may be deliberately avoiding the major predators that occur around the park, albeit in limited numbers.

***R* ≤ 0.33; major decline, ≥ 67%.** Number of species = 6

Green-winged Teal	Steller's Jay	Savannah Sparrow
Caspian Tern	Violet-green Swallow	Lincoln's Sparrow

The case of Green-winged Teal is similar to that of the Northern Shoveler, above (neither species is in general regional decline). The major decline of Caspian Tern is related to the difficulty these birds are experiencing in maintaining nesting sites around Vancouver, given the intensity of predation by gulls. Terns are in general regional decline. Violet-green Swallow reflects the difficulty all swallows are experiencing over insect food sources; they are in general decline regionally, but the possibility for bias exists in its numbers, introduced by mistaken identification of the birds as the more common Tree Swallow. Savannah Sparrow (*R* = 0.104) barely escapes being classified as in severe decline. Lincoln's Sparrow (*R*= 0.33), on the other hand, classifies right on the upper boundary of this class. Both sparrows are ground dwellers that may be disturbed by the volume of human traffic and off-leash dogs in the park and have probably been affected by the aggressive removal of blackberry. Savannah Sparrow is increasing in the Lower Mainland, while Lincoln's Sparrow is increasing in general (BSC = Bird Studies Canada; written advice).

***R* ≤ 0.67: significant decline, ≥ 33%.** Number of species = 11

American Wigeon	Band-tailed Pigeon	Western Tanager
Mallard	Belted Kingfisher	Fox Sparrow
Bufflehead	Common Raven	House Finch
American Coot	Cedar Waxwing	

American Wigeon and Mallard were both counted in the thousands and were the most abundant birds in 2006-07. As the result of declining numbers they each dropped two places in 2020-21. Conversely Buffleheads and American Coots numbered in the dozens in both surveys. All four species conform with the trend for most waterfowl to have declined between surveys. Buffleheads, however, are increasing regionally (BSC). The seven passerines represent a diverse range of lifestyles and foraging needs. House Finch numbers may have been affected by eye disease. Cedar Waxwing, an irruptive species subject to large variations in year-to-year numbers, is declining locally, as are Band-tailed Pigeon and Fox Sparrow, whereas Western Tanager is increasing (BSC).

***R* ≤ 0,9: modest decline, ≥ 10%.** Number of species = 10

Ring-billed Gull	Golden-crowned Kinglet	Golden-crowned Sparrow
Black Swift	Song Sparrow	Dark-eyed Junco
Pacific Winter Wren	White-crowned Sparrow	American Goldfinch
Marsh Wren		

Ring-billed Gull is a coastal species that intrudes into the park from the beaches; its numbers during the surveys was of order 100. Black Swift is a strictly aerial feeder that flies over the field area, mostly high. Its numbers in the surveys are of order 10 and the ratio (0.86) cannot be regarded as meaningful. The balance of birds in this group are small, common seed-eaters. Their modest decline may reflect response to human and canine traffic in the park or an outcome of vegetation manipulation in the park (blackberry removal and more extensive mowing of rough grassland).

$0.9 < R \leq 1.1$: no significant change. Number of species = 7

Cooper's Hawk	Barn Swallow	Red-winged Blackbird
Merlin	Bushtit	Brown-headed Cowbird
American Crow		

The two raptors have small but absolutely stable numbers (R = 1.00). American Crow, despite a 9% loss of numbers rose in rank to be the most abundant bird in 2020-21. The remaining three passerines all increased slightly, the Cowbird in modest numbers. The persistence in the park in relatively abundant numbers of Barn Swallow is a welcome result given their sharp decline regionally (BSC).

***R* ≤ 1.33: modest increase.** Number of species = 4

Rufous Hummingbird	Hutton's Vireo	Swainson's Thrush
Willow Flycatcher		

Rufous Hummingbird is a migratory transient present mostly in spring. Hutton's Vireo is a resident passerine near the limit of its range, while the remaining two birds are migrant. All three may be influenced by increasing soft food resources in an increasingly favourable climate.

***R* ≤ 1.67: significant increase.** Number of species = 9

Ring-necked Duck	Wilson's Snipe	European Starling
Bald Eagle	Glaucous-winged Gull	Orange-crowned Warbler
Killdeer	American Robin	Wilson's Warbler

Ring-necked Duck turns up in small but increasing numbers on the ponds in winter. Bald Eagle nests along the English Bay shore; the number of sightings of this iconic bird is certainly elevated well beyond the number of individuals actually present, which may be as few as one or two pairs. Killdeer and Wilson's Snipe are present in the minimum number acceptable for analysis; the actual change of numbers is trivial. Glaucous-winged Gull is the common local seagull; it has a propensity to stray inland and is common in and over the park. Its 50% increase indicates a favourable climate and adequate food resources. American Robin and European Starling are relatively large passerines that are among the most successful adapters to urban landscapes so their substantial gains and total numbers are not surprising. The remaining birds

are warblers seen frequently during spring migration and present in moderate numbers in summer as breeding birds. Favourable climate promotes the observed increase in numbers.

***R* ≤ 2.0: major increase.** Number of species = 4

Great Blue Heron	Yellow-rumped Warbler	Spotted Towhee
Black-capped Chickadee		

***R* > *2.0*: doubling and greater.** Number of species = 18

Canada Goose	Western Wood Pewee	Bewick's Wren
Hooded Merganser	Pacific Slope Flycatcher	Hermit Thrush
Double-crested Cormorant	Warbling Vireo	Varied Thrush
Downy Woodpecker	Tree Swallow	Black-throated Grey Warbler
Northern Flicker	Red-breasted Nuthatch	Black-headed Grosbeak
Pileated Woodpecker	Brown Creeper	Pine Siskin

The propensity for urban populations of Canada Goose to expand aggressively is well-known. Hooded Merganser, found in small numbers on the ponds in winter, expanded from a base of one individual in 2006-07: its classification as a rapidly expanding species is probably greatly exaggerated. Nevertheless, this duck does exhibit a propensity to turn up on urban ponds. The ponds may be becoming more attractive for Great Blue Herons because of the increase in vegetation both in and around them. Three woodpeckers have expanded numbers aggressively, possibly reflecting an increase in suitable trees. The balance of rapidly expanding species are passerines, including neotropical migrants and primarily small residents. Improved climate and food resources are likely bases for these expansions. The chickadees, in particular, may be benefiting from feeders. Tree Swallows notably defied the trend of the other swallows. Pine Siskin probably experienced a significant irruptive winter in 2020-21.

New birds. Number of species = 10

Cackling Goose	Barred Owl	Chestnut-backed Chickadee
Wood Duck	Anna's Hummingbird	Townsend's Warbler
Pelagic Cormorant	Red-eyed Vireo	Purple Finch

These birds were "new" to the survey in 2020-21. It is likely that the 2006-07 observers simply were not out at a time to see the owls, or did not detect their roosts. Two birds (Cackling Goose and Anna's Hummingbird) were unusual in Vancouver in 2006-07 but the latter, at least, is now well-established. Chestnut-backed Chickadees, while apparently declining regionally (BSC), occur in vagrant flocks in Vancouver – missing them is simply bad luck. Pelagic Cormorant, a "flyover" bird, may deliberately have been ignored in 2006-07. None of the birds is new to Vancouver or completely unexpected in Jericho Park.

(7) OBSERVATIONS BY INDIVIDUAL POLYGON

In the following tables observations are summarized for each survey period and comparisons are made for individual species using the index N_{20}/N_{06}. Species are listed in rank order based on the 2020-21 data. The symbol (*) has the same meaning as in previous tables.

Rank order permits distinguishing between birds common in the polygon – presumably birds that prefer the particular habitats offered by the polygon – and transient birds that one would not expect to find there often. Brief notes discuss the distinction further.

Table 7.1. Polygon A: West Pond

Code	Species	2020-21	2006-07	N_{20}/N_{06}	
MALL	Mallard	301	462	0.652	
AMCR	American Crow	169	145	1.166	
RWBL	Red-winged Blackbird	154	197	0.782	
CAGO	Canada Goose	145	0	*	
PISI	Pine Siskin	145	0	*	
AMWI	American Wigeon	93	449	0.207	
AMGO	American Goldfinch	89	35	2.543	
SOSP	Song Sparrow	67	39	1.718	
BCCH	Black-capped Chickadee	55	5	11.000	
HOFI	House Finch	40	81	0.494	
BASW	Barn Swallow	35	64	0.547	
SPTO	Spotted Towhee	35	10	3.500	
DEJU	Dark-eyed Junco	31	21	1.476	
AMRO	American Robin	28	19	1.474	
GBHE	Great Blue Heron	26	26	1.000	
GWGU	Glaucous-winged Gull	22	13	1.692	
EUST	European Starling	21	4	5.250	
ANHU	Anna's Hummingbird	15	0	*	
BUFF	Bufflehead	14	21	0.667	
RCKI	Ruby-crowned Kinglet	14	4	3.500	
RNDU	Ring-necked Duck	13	6	2.167	
NOFL	Northern Flicker	12	7	1.714	
FOSP	Fox Sparrow	10	2	5.000	
GCSP	Golden-crowned Sparrow	10	0	*	
TRSW	Tree Swallow	8	7	1.143	
BUSH	Bushtit	8	2	4.000	
BAEA	Bald Eagle	7	1	7.000	
RBNU	Red-breasted Nuthatch	7	0	*	
WCSP	White-crowned Sparrow	5	14	0.357	
GWTE	Green-winged Teal	4	2	2.000	
AMCO	American Coot	4	12	0.333	
WAVI	Warbling Vireo	4	3	1.333	
VGSW	Violet-green Swallow	4	8	0.500	
WISN	Wilson's Snipe	3	2	1.500	
BEKI	Belted Kingfisher	3	2	1.500	
WIFL	Willow Flycatcher	3	4	0.750	
BEWR	Bewick's Wren	3	0	*	
GCKI	Golden-crowned Kinglet	3	11	0.273	
HETH	Hermit Thrush	3	0	*	
CEWA	Cedar Waxwing	3	19	0.158	**continued**

Table 7.1 continued. Polygon A: West Pond

Code	Species	2020-21	2006-07	N_{20}/N_{06}	
OCWA	Orange-crowned Warbler	3	10	0.300	
YRWA	Yellow-rumped Warbler	3	1	3.000	
BHCO	Brown-headed Cowbird	3	2	1.500	
GADW	Gadwall	2	0	*	
HOME	Hooded Merganser	2	1	2.000	
VIRA	Virginia Rail	2	0	*	
RBGU	Ring-billed Gull	2	10	0.200	
DOWO	Downy Woodpecker	2	1	2.000	
BTGW	Black-throated Grey Warbler	2	0	*	
WIWA	Wilson's Warbler	2	0	*	
LISP	Lincoln's Sparrow	2	0	*	
PUFI	Purple Finch	2	0	*	
WODU	Wood Duck	1	0	*	
NOSL	Northern Shoveler	1	4	0.250	
BWTE	Blue-winged Teal	1	0	*	
COHA	Cooper's Hawk	1	1	1.000	
ECDO	European Collared Dove	1	0	*	
RUHU	Rufous Hummingbird	1	0	*	
STJA	Steller's Jay	1	2	0.500	
CBCH	Chestnut-backed Chickadee	1	0	*	
PAWR	Pacific Wren	1	2	0.500	
MAWR	Marsh Wren	1	3	0.333	
YEWA	Yellow Warbler	1	7	0.143	
WTSP	White-throated Sparrow	1	0	*	
BHGR	Black-headed Grosbeak	1	0	*	
GWFG	Greater White-fronted Goose	0	1	0.000	
EUWI	Eurasian Wigeon	0	2	0.000	
NOPI	Northern Pintail	0	1	0.000	
LESC	Lesser Scaup	0	19	0.000	
PBGR	Pied-billed Grebe	0	3	0.000	
DCCO	Double-crested Cormorant	0	2	0.000	
GRYE	Greater Yellowlegs	0	2	0.000	
MEGU	Mew Gull	0	1	0.000	
CATE	Caspian Tern	0	3	0.000	
ROPI	Rock Pigeon	0	27	0.000	
OSFL	Olive-sided Flycatcher	0	1	0.000	
CORA	Common Raven	0	6	0.000	
COYE	Common Yellowthroat	0	8	0.000	
WETA	Western Tanager	0	1	0.000	
SAVS	Savannah Sparrow	0	1	0.000	**continued**

Table 7.1 continued. Polygon A: West Pond

Totals	**80 species**	**1656**	**1819**	**0.910**	**end**

West Pond (Table 7.1) possibly includes the widest range of vegetation species in the park, with extensive areas of bulrush and other pond weed, as well as open water, and areas of shrub and tree species, especially along the southern edge. Correspondingly, it has the most diverse range of bird species in the park. Freshwater birds (Mallard; American Wigeon; Canada Goose; Red-winged Blackbird) lead the list, while coastal saltwater birds (Glaucous-winged Gull, Bufflehead) visit in considerable numbers. At the same time, a set of frequently associated small woodland birds (American Goldfinch; Song Sparrow; Black-capped Chickadee; House Finch; Dark-eyed Junco; Spotted Towhee) are prominent residents. Great Blue Heron is a prominent forager in the pond and, in the past decade, Anna's Hummingbird has become a notable forager here, but Marsh Wren is surprisingly scarce (competition form the Blackbirds?). In summer, Barn Swallows nest around the pond. Total numbers of birds declined slightly between the two surveys.

Table 7.2. Polygon B: East Pond

Code	Species	2020-21	2006-07	N_{20}/N_{06}	
MALL	Mallard	750	2798	0.268	
AMWI	American Wigeon	445	797	0.558	
PISI	Pine Siskin	247		*	
CAGO	Canada Goose	167	86	1.942	
AMCR	American Crow	148	223	0.664	
RWBL	Red-winged Blackbird	128	164	0.780	
BCCH	Black-capped Chickadee	67	9	7.444	
GWGU	Glaucous-winged Gull	37	33	1.121	
AMRO	American Robin	35	9	3.889	
BASW	Barn Swallow	31	79	0.392	
DEJU	Dark-eyed Junco	27	3	9.000	
ANHU	Anna's Hummingbird	24		*	
SOSP	Song Sparrow	24	16	1.500	
GBHE	Great Blue Heron	19	18	1.056	
DCCO	Double-crested Cormorant	18		*	
BUSH	Bushtit	14	17	0.824	
HOME	Hooded Merganser	11		*	
NOFL	Northern Flicker	11	6	1.833	
RCKI	Ruby-crowned Kinglet	11	2	5.500	
YRWA	Yellow-rumped Warbler	11		*	
SPTO	Spotted Towhee	9	1	9.000	
AMGO	American Goldfinch	9	11	0.818	
PAWR	Pacific Wren	6	3	2.000	
TRSW	Tree Swallow	5	2	2.500	
WIWA	Wilson's Warbler	5		*	
RNDU	Ring-necked Duck	4	7	0.571	
RBGU	Ring-billed Gull	4	17	0.235	
GCKI	Golden-crowned Kinglet	4		*	
WODU	Wood Duck	3	1	3.000	
GCSP	Golden-crowned Sparrow	3	4	0.750	
CCGO	Cackling Goose	2		*	
GWTE	Green-winged Teal	2	48	0.042	
BUFF	Bufflehead	2	35	0.057	
BAEA	Bald Eagle	2	2	1.000	
COHA	Cooper's Hawk	2	2	1.000	
RBNU	Red-breasted Nurhatch	2	1	2.000	
BRCR	Brown Creeper	2	2	1.000	
MAWR	Marsh Wren	2	1	2.000	
EUST	European Starling	2		*	
NOSL	Northern Shoveler	1	25	0.040	**continued**

Table 7.2 continued. Polygon B: East Pond

Code	Species	2006-07	2020-21	N_{20}/N_{06}	
PEFA	Peregrine falcon	1		*	
CATE	Caspian Tern	1		*	
BTPI	Band-tailed Pigeon	1	8	0.125	
BEKI	Belted Kingfisher	1	6	0.167	
DOWO	Downy Woodpecker	1	1	1.000	
VATH	Varied Thrush	1		*	
WCSP	White-crowned Sparrow	1	1	1.000	
BHGR	Black-headed Grosbeak	1		*	
HOFI	House Finch	1	6	0.167	
GWFG	Greater White-fronted Goose	0	1	0.000	
EUWI	Eurasian Wigeon	0	5	0.000	
NOPI	Northern Pintail	0	2	0.000	
LESC	Lesser Scaup	0	75	0.000	
PBGR	Pied-billed Grebe	0	2	0.000	
NOHA	Northern Harrier	0	1	0.000	
VIRA	Virginia Rail	0		*	
AMCO	American Coot	0	12	0.000	
GRYE	Greater Yellowlegs	0	1	0.000	
WESA	Western Sandpiper	0	1	0.000	
SBDO	Short-billed Dowitcher	0	10	0.000	
LBDO	Long-billed Dowitcher	0	1	0.000	
MEGU	Mew Gull	0	1	0.000	
ROPI	Rock Pigeon	0	362	0.000	
HUVI	Hutton's Vireo	0	1	0.000	
STJA	Steller's Jay	0	1	0.000	
CORA	Common Raven	0	5	0.000	
VGSW	Violet-green Swallow	0	32	0.000	
NRWS	Northern Rough-winged Swallow	0	2	0.000	
OCWA	Orange-crowned Warbler	0	1	0.000	
YEWA	Yellow Warbler	0	6	0.000	
COYE	Common Yellowthroat	0	2	0.000	
FOSP	Fox Sparrow	0	3	0.000	
LISP	Lincoln's Sparrow	0	2	0.000	
BHCO	Brown-headed Cowbird	0	1	0.000	
HOSP	House Sparrow	0	3	0.000	
Totals	**75 species**	**2305**	**4977**	**0.463**	**end**

Commentary on East Pond on the following page.

East Pond (Table 7.2) has shores more generally exposed to approach by people and animals, though there is a secluded arm in the southeast corner. This may explain its slightly lower species numbers. The common species are very similar to those in West Pond. A significant number of Double-crested Cormorants was recorded here in 2020-21: of the three local cormorants, this is the one most likely one to be found on fresh water, though the birds certainly were only brief visitors and most sightings probably were ‘flyovers’. A notable occurrence was the disappearance of Rock Pigeons from this area and from the park between 2006-07 (362 sightings in this unit) and 2020-21 (0). Visitors from the adjacent seashore (dowitchers, yellowlegs, sandpipers) were more numerous (though certainly not common) in this end of the ponds, possibly due to the occurrence of more open shore. A remarkable 26 species encountered in 2006-07 – mostly in small numbers (but note Rock Pigeon, Lesser Scaup and Violet-green Swallow) – were entirely absent in 2020-21. Losses include a number of water birds that are scarce in urban areas, but also a number of passerines that one might expect to find in pond-edge bushes. Overall loss of numbers was greater than 50% in this unit.

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Table 7.3. Polygon C: Great Lawn

Code	Species	2020-21	2006-07	N20/N06	
CAGO	Canada Goose	620	41	15.122	
AMCR	American Crow	544	475	1.145	
AMWI	American Wigeon	484	905	0.535	
RWBL	Red-winged Blackbird	233	21	11.095	
PISI	Pine Siskin	174	30	5.800	
BASW	Barn Swallow	117	59	1.983	
MALL	Mallard	116	35	3.314	
GWGU	Glaucous-winged Gull	96	54	1.778	
EUST	European Starling	92	101	0.911	
RBGU	Ring-billed Gull	61	22	2.773	
DCCO	Double-crested Cormorant	58		*	
MEGU	Mew Gull	32	3	10.667	
AMGO	American Goldfinch	23	17	1.353	
BCCH	Black-capped Chickadee	21	5	4.200	
ANHU	Anna's Hummingbird	14		*	
AMRO	American Robin	12	28	0.429	
GBHE	Great Blue Heron	11	3	3.667	
NOFL	Northern Flicker	11	8	1.375	
CORA	Common Raven	9	3	3.000	
PECO	Pelagic Cormorant	8		*	
CCGO	Cackling Goose	7		*	
HOFI	House Finch	7	30	0.233	
VGSW	Violet-green Swallow	6	16	0.375	
COHA	Cooper's Hawk	5	1	5.000	
RCKI	Ruby-crowned Kinglet	5		*	
BAEA	Bald Eagle	4	7	0.571	
STJA	Steller's Jay	4		*	
TRSW	Tree Swallow	4	3	1.333	
GCSP	Golden-crowned Sparrow	3		*	
COGO	Common Goldeneye	2		*	
RBME	Red-breasted Merganser	2		*	
SOSP	Song Sparrow	2	1	2.000	
WCSP	White-crowned Sparrow	2		*	
BHCO	Brown-headed Cowbird	2	2	1.000	
RNDU	Ring-necked Duck	1		*	
BUFF	Bufflehead	1		*	
KILL	Killdeer	1		*	
SAND	sandpiper sp.	1		*	
HEGU	Herring Gull	1		*	**continued**

Table 7.3 continued. Polygon C: Great Lawn

Code	Species	2020-21	2006-07	N_{20}/N_{06}	
BUSH	Bushtit	1		*	
YRWA	Yellow-rumped Warbler	1	17	0.059	
SPTO	Spotted Towhee	1		*	
DEJU	Dark-eyed Junco	1	2	0.500	
YHBL	Yellow-headed Blackbird	1		*	
GWFG	Greater White-fronted Goose	0	7	0.000	
SNGO	Snow Goose	0	11	0.000	
EUWI	Eurasian Wigeon	0	2	0.000	
NOHA	Northern Harrier	0	1	0.000	
SSHA	Sharp-shinned Hawk	0	1	0.000	
PEFA	Peregrine Falcon	0	1	0.000	
CATE	Caspian Tern	0	3	0.000	
ROPI	Rock Pigeon	0	49	0.000	
AMPI	American Pipit	0	40	0.000	
CEWA	Cedar Waxwing	0	1	0.000	
OCWA	Orange-crowned Warbler	0	2	0.000	
COYE	Common Yellowthroat	0	1	0.000	
WETA	Western Tanager	0	1	0.000	
SAVS	Savannah Sparrow	0	43	0.000	
LALO	Lapland Longspur	0	1	0.000	
Totals	**59 species**	**2801**	**2053**	**1.364**	**end**

The Great Lawn is mainly open grassland that is regularly mowed, hence birds that occupy it are mainly large or aggressive species and some that maintain collective safety in flocks. Leading species include Canada Goose, Mallard and Wigeon, all of which graze in substantial flocks and can rapidly escape to adjacent water – the ponds or the sea if necessary; similarly gulls (three species). Only 18 species were represented through the year by 10 or more individuals (compare 24 species at West Pond). American Crow, Red-winged Blackbird and European Starling are aggressive, ground-feeding passerines that also use flock behavior for safety. Barn Swallows conduct their aerial foraging over the open ground, relying on other birds, animals or humans to raise insects from the surface. Perhaps surprisingly, Black-capped Chickadee, American Goldfinch and Anna's Hummingbird also turn up among the 10+ visitors to this habitat unit. Total numbers increased by about one-third, largely through the increases in numbers of Canada Goose, Red-winged Blackbird and an irruption of Pine Siskins.

Table 7.4. Polygon D: East Lawn

Code	Species	2020-21	2006-07	N_{20}/N_{06}	
AMWI	American Wigeon	501	424	1.182	
AMCR	American Crow	317	302	1.050	
CAGO	Canada Goose	306	40	7.650	
PISI	Pine Siskin	219		*	
MALL	Mallard	126	124	1.016	
BCCH	Black-capped Chickadee	90	49	1.837	
GWGU	Glaucous-winged Gull	78	20	3.900	
BUSH	Bushtit	45	6	7.500	
DEJU	Dark-eyed Junco	40	35	1.143	
AMRO	American Robin	36	19	1.895	
NOFL	Northern Flicker	33	13	2.538	
RWBL	Red-winged Blackbird	32	43	0.744	
ANHU	Anna's Hummingbird	25		*	
EUST	European Starling	23	7	3.286	
YRWA	Yellow-rumped Warbler	15		*	
RBGU	Ring-billed Gull	14	5	2.800	
ROPI	Rock Pigeon	10	65	0.154	
SOSP	Song Sparrow	9	3	3.000	
BRCR	Brown Creeper	7	4	1.750	
GCKI	Golden-crowned Kinglet	6	14	0.429	
GBHE	Great Blue Heron	5	1	5.000	
HOFI	House Finch	5	16	0.313	
RBNU	Red-breasted Nurhatch	4		*	
PUFI	Purple Finch	4		*	
BAEA	Bald Eagle	3		*	
BTPI	Band-tailed Pigeon	3		*	
DOWO	Downy Woodpecker	3	1	3.000	
WIFL	Willow Flycatcher	3	1	3.000	
RCKI	Ruby-crowned Kinglet	3	3	1.000	
SPTO	Spotted Towhee	3	1	3.000	
PIWO	Pileated Woodpecker	2	1	2.000	
CORA	Common Raven	2	5	0.400	
FOSP	Fox Sparrow	2		*	
WCSP	White-crowned Sparrow	2		*	
AMGO	American Goldfinch	2	7	0.286	
BUFF	Bufflehead	1		*	
DCCO	Double-crested Cormorant	1		*	
CAGU	California Gull	1		*	
PSFL	Pacific-slope Flycatcher	1		*	
BEWR	Bewick's Wren	1		*	

Table 7.4 continued. Polygon D: East Lawn

Code	Species	2020-21	2006-07	N_{20}/N_{06}	
SWTH	Swainson's Thrush	1		*	
BHCO	Brown-headed Cowbird	1	2	0.500	
EUWI	Eurasian Wigeon	0	1	0.000	
NOSL	Northern Shoveler	0	7	0.000	
LESC	Lesser Scaup	0	1	0.000	
VIRA	Virginia Rail	0	1	0.000	
GUSP	Gull sp	0	3	0.000	
BEKI	Belted Kingfisher	0	1	0.000	
TRSW	Tree Swallow	0	1	0.000	
VGSW	Violet-green Swallow	0	12	0.000	
BASW	Barn Swallow	0	18	0.000	
PAWR	Pacific Wren	0	1	0.000	
HETH	Hermit Thrush	0	1	0.000	
WIWA	Wilson's Warbler	0	3	0.000	
HOSP	House Sparrow	0	4	0.000	
Totals	**55 species**	**1985**	**1265**	**1.569**	**end**

East Lawn is a mown grassland that occupies the southeast corner of the park. However, it includes a grove of mature deciduous trees south of East Pond. Leading species (17 with a count of 10 and greater) are largely the same as those of the Great Lawn. Dark-eyed Juncos and Bushtits join the group of small, flocking passerines, probably in consequence of the fragment of forest included in the unit. The number of Canada Geese substantially increased. Conversely, 13 species of 2007-07 failed to appear in 2020-21, including Violet-green and Barn Swallows. The latter is surprising considering its increase in numbers over the Great Lawn. Total number of individuals increased by nearly 60%, almost entirely due to the increasing numbers of Canada Geese and that Siskin irruption.

Table 7.5. Polygon E: Big Woods

Code	Species	2020-21	2006-07	*N20/N06*	
PISI	Pine Siskin	153	90	1.700	
BCCH	Black-capped Chickadee	120	126	0.952	
PAWR	Pacific Wren	49	46	1.065	
AMCR	American Crow	46	110	0.418	
AMRO	American Robin	38	23	1.652	
BUSH	Bushtit	35	9	3.889	
SOSP	Song Sparrow	28	37	0.757	
GCKI	Golden-crowned Kinglet	25	27	0.926	
SPTO	Spotted Towhee	20	10	2.000	
ANHU	Anna's Hummingbird	17		*	
NOFL	Northern Flicker	16	8	2.000	
RBNU	Red-breasted Nuthatch	15		*	
BRCR	Brown Creeper	15	4	3.750	
RCKI	Ruby-crowned Kinglet	14	15	0.933	
PSFL	Pacific-slope Flycatcher	11	5	2.200	
DOWO	Downy Woodpecker	10	2	5.000	
SWTH	Swainson's Thrush	9	11	0.818	
GWGU	Glaucous-winged Gull	6	6	1.000	
CBCH	Chestnut-backed Chickadee	5		*	
WAVI	Warbling Vireo	4	6	0.667	
HETH	Hermit Thrush	4		*	
VATH	Varied Thrush	4	4	1.000	
DEJU	Dark-eyed Junco	3	38	0.079	
MALL	Mallard	2	5	0.400	
BAEA	Bald Eagle	2	2	1.000	
WIFL	Willow Flycatcher	2		*	
HUVI	Hutton's Vireo	2		*	
CORA	Common Raven	2	10	0.200	
BEWR	Bewick's Wren	2	3	0.667	
WIWA	Wilson's Warbler	2		*	
AMGO	American Goldfinch	2	17	0.118	
COHA	Cooper's Hawk	1	1	1.000	
PIWO	Pileated Woodpecker	1		*	
STJA	Steller's Jay	1	4	0.250	
CEWA	Cedar Waxwing	1		*	
OCWA	Orange-crowned Warbler	1		*	
BTGW	Black-throated Grey Warbler	1	1	1.000	
SNGO	Snow Goose	0	20	0.000	
GBHE	Great Blue Heron	0	2	0.000	
SSHA	Sharp-shinned Hawk	0	1	0.000	**continued**

Table 7.5 continued. Polygon E: Big Woods

Code	Species	2020-21	2006-07	N_{20}/N_{06}	
WWPE	Western Wood Pewee	0	1	0.000	
REVI	Red-eyed Vireo	0	2	0.000	
BASW	Barn Swallow	0	2	0.000	
YRWA	Yellow-rumped Warbler	0	1	0.000	
WETA	Western Tanager	0	5	0.000	
FOSP	Fox Sparrow	0	4	0.000	
RWBL	Red-winged Blackbird	0	1	0.000	
BHCO	Brown-headed Cowbird	0	1	0.000	
HOFI	House Finch	0	18	0.000	
Totals	**49 species**	**675**	**678**	**0.996**	**end**

Big Woods occupies the southwest extremity of the park, with frontage on Fourth Avenue and Northwest Marine Drive. Trees consist of closely growing, even-aged, young conifers (planted) and scattered large deciduous trees with a border of these trees along the road fronts. Sixteen species were observed in numbers of ten or more, all common passerines. A core assemblage of small woodland passerines is common to all of the wooded polygons (see following lists). It includes Black-capped Chickadee, Pacific Wren, Song Sparrow, Gold-crowned Kinglet, Ruby-crowned Kinglet, Red-breasted Nuthatch, Brown Creeper and Dark-eyed Junco. Woodpeckers, though sparse in number, are also part of the 'core group' .Pine Siskin heads the 2020-21 list by virtue of a major irruption. Other common species vary from American Crow to Anna's Hummingbird, and includes both woodpeckers and flycatchers. Lesser sightings include waterfowl (Glaucous-winged Gull and Mallard) and additional thrushes, warblers and most of the raptors found in the park, including Bald Eagle. Twelve species observed in 2006-07 were absent in 2020-21, amongst which only three or four would be regarded as typical woodland birds. On the other hand, 12 species appeared – mainly typical woodland birds – that were not observed in 2006-07.

Table 7.6. Polygon F: Small Meadows

Code	Species	2020-21	2006-07	N_{20}/N_{06}	
PISI	Pine Siskin	322	20	16.100	
BCCH	Black-capped Chickadee	143	84	1.702	
AMCR	American Crow	54	114	0.474	
AMRO	American Robin	50	18	2.778	
SPTO	Spotted Towhee	46	17	2.706	
ANHU	Anna's Hummingbird	41		*	
PAWR	Pacific Wren	36	35	1.029	
RBNU	Red-breasted Nuthatch	26		*	
BUSH	Bushtit	25	29	0.862	
SOSP	Song Sparrow	25	59	0.424	
CAGO	Canada Goose	21	5	4.200	
DCCO	Double-crested Cormorant	20		*	
GWGU	Glaucous-winged Gull	18	11	1.636	
GCKI	Golden-crowned Kinglet	18	8	2.250	
NOFL	Northern Flicker	16	10	1.600	
PSFL	Pacific-slope Flycatcher	15	2	7.500	
VATH	Varied Thrush	11	6	1.833	
BRCR	Brown Creeper	10		*	
EUST	European Starling	10	2	5.000	
AMGO	American Goldfinch	10	26	0.385	
CBCH	Chestnut-backed Chickadee	9		*	
TRSW	Tree Swallow	7		*	
SWTH	Swainson's Thrush	7	3	2.333	
MALL	Mallard	6	14	0.429	
BAEA	Bald Eagle	6	3	2.000	
WAVI	Warbling Vireo	5	2	2.500	
HOFI	House Finch	5	23	0.217	
RCKI	Ruby-crowned Kinglet	4	16	0.250	
BADO	Barred Owl	4		*	
WODU	Wood Duck	3		*	
DOWO	Downy Woodpecker	3		*	
PIWO	Pileated Woodpecker	3		*	
TOWA	Townsend's Warbler	3		*	
RUHU	Rufous Hummingbird	2		*	
BEWR	Bewick's Wren	2	1	2.000	
RWBL	Red-winged Blackbird	2	9	0.222	
RECR	Red Crossbill	2		*	
PECO	Pelagic Cormorant	1		*	
MERL	Merlin	1		*	
CORA	Common Raven	1	2	0.500	**continued**

Table 7.6 continued. Polygon F: Small Meadows

Code	Species	2020-21	2006-07	N_{20}/N_{06}	
HETH	Hermit Thrush	1		*	
YRWA	Yellow-rumped Warbler	1		*	
WIWA	Wilson's Warbler	1	7	0.143	
WCSP	White-crowned Sparrow	1	3	0.333	
DEJU	Dark-eyed Junco	1	37	0.027	
BHGR	Black-headed Grosbeak	1		*	
COHA	Cooper's Hawk	0	1	0.000	
ROPI	Rock Pigeon	0	2	0.000	
BLSW	Black Swift	0	7	0.000	
WIFL	Willow Flycatcher	0	1	0.000	
STJA	Steller's Jay	0	9	0.000	
YEWA	Yellow Warbler	0	1	0.000	
SAVS	Savannah Sparrow	0	1	0.000	
FOSP	Fox Sparrow	0	7	0.000	
GCSP	Golden-crowned Sparrow	0	7	0.000	
BHCO	Brown-headed Cowbird	0	1	0.000	
Totals	**56 species**	**1005**	**603**	**1.667**	**end**

Small Meadows is a group of small open areas fringed by deciduous trees and shrubs immediately north of the Big Woods. Twenty species were represented by 10 or more individuals. They are dominantly the locally common woodland passerines, but some water-oriented species were also observed, including Glaucous-winged Gull, Double-crested Cormorant and Canada Goose (the first two entirely ‘flyovers’). Also observed in smaller numbers were Mallard and Wood Duck. Barred Owls were observed in this polygon. Ten species recorded in 2006-07 were absent in 2020-21, notably including three species of sparrow and Rock Pigeon. In contrast, there were 18 gains, including significant numbers of Red-breasted Nuthatch and Chestnut-backed Chickadee. Pine Siskin was the most common bird, followed by Black-capped Chickadee and American Crow, the latter two common throughout the park. Total numbers increased by two-thirds in 2020-21.

Table 7.7. Polygon G: Big Meadow

Code	Species	2020-21	2006-07	N_{20}/N_{06}	
PISI	Pine Siskin	233	30	7.767	
BCCH	Black-capped Chickadee	114	83	1.373	
AMCR	American Crow	96	192	0.500	
AMRO	American Robin	63	23	2.739	
ANHU	Anna's Hummingbird	45		*	
SPTO	Spotted Towhee	35	23	1.522	
SOSP	Song Sparrow	28	33	0.848	
RWBL	Red-winged Blackbird	24	61	0.393	
PAWR	Pacific Wren	19	22	0.864	
RBNU	Red-breasted Nuthatch	17	1	17.000	
BUSH	Bushtit	16	17	0.941	
DEJU	Dark-eyed Junco	16	45	0.356	
NOFL	Northern Flicker	15	16	0.938	
GWGU	Glaucous-winged Gull	14	13	1.077	
RCKI	Ruby-crowned Kinglet	14	20	0.700	
GCKI	Golden-crowned Kinglet	11	7	1.571	
MALL	Mallard	8	15	0.533	
OCWA	Orange-crowned Warbler	7	1	7.000	
BEWR	Bewick's Wren	6	2	3.000	
AMGO	American Goldfinch	6	57	0.105	
PSFL	Pacific-slope Flycatcher	5	1	5.000	
CBCH	Chestnut-backed Chickadee	5		*	
BHGR	Black-headed Grosbeak	5		*	
CAGO	Canada Goose	4		*	
GUSP	Gull sp	4		*	
DOWO	Downy Woodpecker	4		*	
WAVI	Warbling Vireo	4		*	
BRCR	Brown Creeper	4	1	4.000	
WIWA	Wilson's Warbler	4	3	1.333	
WCSP	White-crowned Sparrow	4		*	
BHCO	Brown-headed Cowbird	4	1	4.000	
HOFI	House Finch	4	45	0.089	
BAEA	Bald Eagle	3	8	0.375	
WWPE	Western Wood Pewee	3		*	
HETH	Hermit Thrush	3		*	
BTGW	Black-throated Grey Warbler	3		*	
FOSP	Fox Sparrow	3	4	0.750	
PIWO	Pileated Woodpecker	2		*	
CORA	Common Raven	2	9	0.222	
GWTE	Green-winged Teal	1		*	**continued**

Table 7.7 continued. Polygon G: Big Meadow

Code	Species	2020-21	2006-07	N_{20}/N_{06}	
DCCO	Double-crested Cormorant	1		*	
GBHE	Great Blue Heron	1	3	0.333	
BADO	Barred Owl	1		*	
BEKI	Belted Kingfisher	1	1	1.000	
WIFL	Willow Flycatcher	1	3	0.333	
STJA	Steller's Jay	1	16	0.063	
SWTH	Swainson's Thrush	1	3	0.333	
VATH	Varied Thrush	1	3	0.333	
WETA	Western Tanager	1		*	
GCSP	Golden-crowned Sparrow	1	5	0.200	
COHA	Cooper's Hawk	0	4	0.000	
MERL	Merlin	0	1	0.000	
ROPI	Rock Pigeon	0	2	0.000	
BASW	Barn Swallow	0	17	0.000	
EUST	European Starling	0	1	0.000	
CEWA	Cedar Waxwing	0	14	0.000	
YRWA	Yellow-rumped Warbler	0	2	0.000	
COYE	Common Yellowthroat	0	1	0.000	
LISP	Lincoln's Sparrow	0	1	0.000	
Totals	**59 species**	**868**	**810**	**1.072**	**end**

Big Meadow occupies the hillside north of Small Meadows and lies between Small Meadows and West Pond. The species list is very similar to that of Small Meadows. Mallards are present in modest numbers in both units, where some have their nests. A Barred Owl was observed. Nine species observed in 2006-07 were absent in 2020-21, while 16 species were first observed in the latter period. These numbers are also similar to the 'turnover' in Small Meadows. However, the gain in numbers in this unit was only 7%, in contrast to the major gain in Small Meadows. Big Meadow is open to the attentions of walkers and their dogs on the main trail along the south side of West Pond whereas Small Meadows is relatively isolated.

Table 7.8. Polygon H: Hillside Woods

Code	Species	2020-21	2006-07	N_{20}/N_{06}	
BCCH	Black-capped Chickadee	107	99	1.081	
PISI	Pine Siskin	95	6	15.833	
AMCR	American Crow	56	119	0.471	
AMRO	American Robin	36	39	0.923	
SOSP	Song Sparrow	27	26	1.038	
GCKI	Golden-crowned Kinglet	20	23	0.870	
SPTO	Spotted Towhee	18	15	1.200	
PAWR	Pacific Wren	16	37	0.432	
NOFL	Northern Flicker	12	4	3.000	
MALL	Mallard	11	29	0.379	
GWGU	Glaucous-winged Gull	10	9	1.111	
ANHU	Anna's Hummingbird	10		*	
CBCH	Chestnut-backed Chickadee	10		*	
DEJU	Dark-eyed Junco	9	6	1.500	
RBNU	Red-breasted Nuthatch	8		*	
VATH	Varied Thrush	8	4	2.000	
BRCR	Brown Creeper	7	2	3.500	
AMGO	American Goldfinch	7	88	0.080	
PIWO	Pileated Woodpecker	6		*	
RCKI	Ruby-crowned Kinglet	6	13	0.462	
DOWO	Downy Woodpecker	5	5	1.000	
PSFL	Pacific-slope Flycatcher	5	1	5.000	
BTGW	Black-throated Grey Warbler	5		*	
CAGO	Canada Goose	4	125	0.032	
GBHE	Great Blue Heron	3	1	3.000	
COHA	Cooper's Hawk	3	2	1.500	
WAVI	Warbling Vireo	3		*	
SWTH	Swainson's Thrush	3	5	0.600	
TRSW	Tree Swallow	2		*	
BEWR	Bewick's Wren	2	5	0.400	
YRWA	Yellow-rumped Warbler	2	4	0.500	
BHGR	Black-headed Grosbeak	2		*	
PUFI	Purple Finch	2		*	
BAEA	Bald Eagle	1	1	1.000	
RUHU	Rufous Hummingbird	1		*	
HUVI	Hutton's Vireo	1		*	
HETH	Hermit Thrush	1		*	
FOSP	Fox Sparrow	1	3	0.333	
DCCO	Double-crested Cormorant	0	1	0.000	
RTHA	Red-tailed Hawk	0	1	0.000	**continued**

Table 7.8 continued. Polygon H: Hillside Woods

Code	Species	2020-21	2006-07	N_{20}/N_{06}	
STJA	Steller's Jay	0	1	0.000	
CORA	Common Raven	0	8	0.000	
CEWA	Cedar Waxwing	0	1	0.000	
WETA	Western Tanager	0	1	0.000	
RWBL	Red-winged Blackbird	0	2	0.000	
HOFI	House Finch	0	28	0.000	
Totals	**46 species**	**525**	**714**	**0.735**	**end**

Hillside Woods lies to the west of Big Meadow and north of the westward portions of Small Meadows and Big Woods. The species list is similar to that of those units, consisting mainly of woodland passerines both resident and migrant, though there were fewer total species present. Black-capped Chickadee replaced the irruptive Pine Siskins as the most common bird in 2020-21 (in 2006-07 Chickadees followed Canada Goose and American Crow). Nine species were lost in 2020-21 while 12 were gained. Despite this turnover the total numbers in 2020-21 were about 25% fewer than in 2006-07.

Table 7.9. Polygon I: Wet Woods

Code	Species	2020-21	2006-07	N_{20}/N_{06}	
AMCR	American Crow	93	124	0.750	
BCCH	Black-capped Chickadee	77	115	0.670	
PISI	Pine Siskin	49		*	
AMRO	American Robin	33	20	1.650	
ANHU	Anna's Hummingbird	30		*	
MALL	Mallard	28		*	
GWGU	Glaucous-winged Gull	28	4	7.000	
SPTO	Spotted Towhee	23	41	0.561	
PAWR	Pacific Wren	22	66	0.333	
SOSP	Song Sparrow	19	44	0.432	
CAGO	Canada Goose	18	1	18.000	
BUSH	Bushtit	10	28	0.357	
GCKI	Golden-crowned Kinglet	10	24	0.417	
RCKI	Ruby-crowned Kinglet	10	10	1.000	
VATH	Varied Thrush	10		*	
DEJU	Dark-eyed Junco	9	14	0.643	
NOFL	Northern Flicker	7	3	2.333	
RBNU	Red-breasted Nuthatch	7	1	7.000	
YRWA	Yellow-rumped Warbler	6	2	3.000	
RWBL	Red-winged Blackbird	6	14	0.429	
BRCR	Brown Creeper	5	10	0.500	
PSFL	Pacific-slope Flycatcher	3	5	0.600	
BEWR	Bewick's Wren	3	1	3.000	
WIWA	Wilson's Warbler	3	1	3.000	
BAEA	Bald Eagle	2	1	2.000	
RUHU	Rufous Hummingbird	2		*	
CORA	Common Raven	2	7	0.286	
BTGW	Black-throated Grey Warbler	2		*	
GBHE	Great Blue Heron	1		*	
COHA	Cooper's Hawk	1		*	
DOWO	Downy Woodpecker	1	5	0.200	
PIWO	Pileated Woodpecker	1		*	
WIFL	Willow Flycatcher	1		*	
HUVI	Hutton's Vireo	1	1	1.000	
CBCH	Chestnut-backed Chickadee	1		*	
SWTH	Swainson's Thrush	1	12	0.083	
HETH	Hermit Thrush	1	1	1.000	
FOSP	Fox Sparrow	1	8	0.125	
PUFI	Purple Finch	1		*	
HOFI	House Finch	0	2	0.000	**continued**

Table 7.9 continued. Polygon I: Wet Woods

Code	Species	2020-21	2006-07	N_{20}/N_{06}	
ROPI	Rock Pigeon	0	1	0.000	
WWPE	Western Wood Pewee	0	2	0.000	
CAVI	Cassin's Vireo	0	2	0.000	
VGSW	Violet-green Swallow	0	5	0.000	
BASW	Barn Swallow	0	4	0.000	
YEWA	Yellow Warbler	0	1	0.000	
WCSP	White-crowned Sparrow	0	1	0.000	
GCSP	Golden-crowned Sparrow	0	4	0.000	
Totals	**49 species**	**529**	**588**	**0.900**	**end**

Wet Woods lies east of Hillside Woods and Small Meadows, and extends to the boundary of East Lawn. It also has a common boundary with Big Meadow to the northwest. It consists of mature deciduous forest with poor drainage. Again, the species list is the typical woodland list. American Crow heads the list and the three water-oriented species (Mallard; Canada Goose; Glaucous-winged Gull) appear among the 15 species with 10 or more individuals counted. Nine species observed in 2006-07 were not observed in 2020-21, but 12 species were added in the later survey. Despite that, there was a 10% loss of total numbers.

Table 7.10. Polygon J: Marsh

Code	Species	2020-21	2006-07	*N20/N06*	
BCCH	Black-capped Chickadee	98	74	1.324	
AMCR	American Crow	96	249	0.386	
MALL	Mallard	84	53	1.585	
HOFI	House Finch	58	89	0.652	
AMRO	American Robin	50	88	0.568	
PISI	Pine Siskin	47	140	0.336	
SOSP	Song Sparrow	45	67	0.672	
SPTO	Spotted Towhee	38	31	1.226	
CAGO	Canada Goose	33		*	
AMGO	American Goldfinch	29	73	0.397	
RCKI	Ruby-crowned Kinglet	26	10	2.600	
ANHU	Anna's Hummingbird	23		*	
AMWI	American Wigeon	20	10	2.000	
NOFL	Northern Flicker	20	5	4.000	
PAWR	Pacific Wren	18	3	6.000	
RWBL	Red-winged Blackbird	16	63	0.254	
GBHE	Great Blue Heron	13	1	13.000	
BUSH	Bushtit	12	33	0.364	
WIWA	Wilson's Warbler	12	4	3.000	
BEWR	Bewick's Wren	11		*	
DEJU	Dark-eyed Junco	11	20	0.550	
GWGU	Glaucous-winged Gull	10	46	0.217	
FOSP	Fox Sparrow	9	21	0.429	
GCSP	Golden-crowned Sparrow	8	4	2.000	
WIFL	Willow Flycatcher	7	5	1.400	
RBNU	Red-breasted Nurhatch	7		*	
DOWO	Downy Woodpecker	5		*	
PSFL	Pacific-slope Flycatcher	5		*	
WAVI	Warbling Vireo	5	1	5.000	
GCKI	Golden-crowned Kinglet	5		*	
EUST	European Starling	5	31	0.161	
BHCO	Brown-headed Cowbird	5	1	5.000	
WWPE	Western Wood Pewee	4		*	
CORA	Common Raven	4	5	0.800	
VATH	Varied Thrush	4	1	4.000	
BAEA	Bald Eagle	3	6	0.500	
TRSW	Tree Swallow	3	2	1.500	
CEWA	Cedar Waxwing	3	10	0.300	
YEWA	Yellow Warbler	3	4	0.750	
SAVS	Savannah Sparrow	3		*	**continued**

Table 7.10 continued. Polygon J: Marsh

WODU	Wood Duck	2		*	
SWTH	Swainson's Thrush	2		*	
OCWA	Orange-crowned Warbler	2	3	0.667	
WCSP	White-crowned Sparrow	2	3	0.667	
BHGR	Black-headed Grosbeak	2		*	
DCCO	Double-crested Cormorant	1	6	0.167	
OSPR	Osprey	1		*	
HAWO	Hairy Woodpecker	1		*	
BASW	Barn Swallow	1	14	0.071	
BRCR	Brown Creeper	1		*	
YRWA	Yellow-rumped Warbler	1	1	1.000	
CITE	Cinnamon Teal	0	2	0.000	
MERL	Merlin	0	1	0.000	
RBGU	Ring-billed Gull	0	2	0.000	
CATE	Caspian Tern	0	1	0.000	
ROPI	Rock Pigeon	0	1	0.000	
RUHU	Rufous Hummingbird	0	3	0.000	
OSFL	Olive-sided Flycatcher	0	1	0.000	
CAVI	Cassin's Vireo	0	2	0.000	
REVI	Red-eyed Vireo	0	1	0.000	
STJA	Steller's Jay	0	1	0.000	
VGSW	Violet-green Swallow	0	7	0.000	
COYE	Common Yellowthroat	0	4	0.000	
WETA	Western Tanager	0	2	0.000	
LISP	Lincoln's Sparrow	0	2	0.000	
Totals	**65 species**	**875**	**1207**	**0.725**	**end**

The Marsh lies north of Hillside Woods. Partly covered with mature deciduous trees and partly seasonally open water with tall shrubs, it arguably could be classified as a swamp. Certainly in winter it is swamp-like. With forest, shrub and seasonal open water it presents a variety of habitats and has a high species count. Twenty-one species were recorded in numbers of 10 or more individuals in 2020-21. They included the group of core woodland passerines and a significant group of water-oriented birds, including Mallard (a nesting species), American Wigeon, Canada Goose, Great Blue Heron, Red-winged Blackbird (nesting) and Glaucous-winged Gull. Blac-capped Chickadee and American Crow are the leading individual species. Fourteen species were lost between the two surveys and 15 gained, so the actual number of species present through a year is probably more like 50. Between the two surveys 28% of total numbers were lost. It is possible that summer drought is one driver of change in the avifauna.

Table 7.11. Polygon K: Blackberry Hills

Code	Species	2020-21	2006-07	N_{20}/N_{06}	
PISI	Pine Siskin	225	11	20.455	
AMCR	American Crow	161	240	0.671	
AMGO	American Goldfinch	132	104	1.269	
CAGO	Canada Goose	129	40	3.225	
AMRO	American Robin	84	93	0.903	
BCCH	Black-capped Chickadee	78	36	2.167	
HOFI	House Finch	77	236	0.326	
SPTO	Spotted Towhee	64	37	1.730	
AMWI	American Wigeon	62		*	
EUST	European Starling	58	31	1.871	
RWBL	Red-winged Blackbird	34	34	1.000	
ANHU	Anna's Hummingbird	32		*	
GWGU	Glaucous-winged Gull	30	41	0.732	
MALL	Mallard	19	18	1.056	
NOFL	Northern Flicker	17	3	5.667	
SOSP	Song Sparrow	17	49	0.347	
GCSP	Golden-crowned Sparrow	16	25	0.640	
BUSH	Bushtit	15	46	0.326	
GBHE	Great Blue Heron	14	6	2.333	
DEJU	Dark-eyed Junco	14	12	1.167	
DCCO	Double-crested Cormorant	13		*	
PUFI	Purple Finch	13		*	
RBNU	Red-breasted Nuthatch	12		*	
BAEA	Bald Eagle	11	4	2.750	
RCKI	Ruby-crowned Kinglet	10	1	10.000	
OCWA	Orange-crowned Warbler	10	2	5.000	
FOSP	Fox Sparrow	10	22	0.455	
TRSW	Tree Swallow	9		*	
BASW	Barn Swallow	8	31	0.258	
BEWR	Bewick's Wren	7	1	7.000	
YRWA	Yellow-rumped Warbler	7		*	
WCSP	White-crowned Sparrow	6	14	0.429	
BHCO	Brown-headed Cowbird	6	9	0.667	
PAWR	Pacific Wren	5	4	1.250	
GCKI	Golden-crowned Kinglet	5	3	1.667	
RBGU	Ring-billed Gull	3	43	0.070	
CORA	Common Raven	3	2	1.500	
RUHU	Rufous Hummingbird	2	3	0.667	
DOWO	Downy Woodpecker	2	1	2.000	
WWPE	Western Wood Pewee	2		*	

Table 7.11 continued. Polygon K: Blackberry Hills

Code	Species	2020-21	2006-07	N_{20}/N_{06}	
CBCH	Chestnut-backed Chickadee	2		*	
BRCR	Brown Creeper	2	2	1.000	
HETH	Hermit Thrush	2		*	
WIWA	Wilson's Warbler	2		*	
BUFF	Bufflehead	1		*	
COHA	Cooper's Hawk	1	2	0.500	
MERL	Merlin	1	1	1.000	
PEFA	Peregrine Falcon	1		*	
BEKI	Belted Kingfisher	1		*	
PIWO	Pileated Woodpecker	1		*	
WAVI	Warbling Vireo	1		*	
SWTH	Swainson's Thrush	1		*	
VATH	Varied Thrush	1		*	
SAVS	Savannah Sparrow	1	3	0.333	
OSPR	Osprey	0	1	0.000	
WIFL	Willow Flycatcher	0	1	0.000	
CAVI	Cassin's Vireo	0	2	0.000	
STJA	Steller's Jay	0	15	0.000	
VGSW	Violet-green Swallow	0	7	0.000	
CEWA	Cedar Waxwing	0	5	0.000	
COYE	Common Yellowthroat	0	2	0.000	
LISP	Lincoln's Sparrow	0	1	0.000	
Totals	**62 species**	**1440**	**1244**	**1.158**	**end**

Blackberry Hills lies north of the Marsh and west of the Great Lawn. It has areas of grouped shrubs separated by open patches. Part of the area has been subject to major efforts to suppress blackberry, an important winter cover for small passerines. With 62 species, 27 of which were recorded in numbers of 10 or greater, it is one of the more important birding areas in the park. Pine Siskin was most abundant, followed by the ubiquitous American Crow. The area also records the greatest concentration of American Goldfinch. Overall, th familiar group of woodland passerines and waterbirds characterizes the polygon. Eight species observed in 2006-07 were absent in 2020-21, but 18 new species appeared in the later survey. Total numbers increased by 16%, but the result can be assignewd entirely to the Siskin irruption of 2020-21.

(7) REFERENCE

Ryder, J.M. 2011. Jericho Park, Vancouver, British Columbia. Birds and Habitat Survey, 2006-2007. Vols. A and B: 25 + tables.