



# **Fall Migration at the Rocky Point Bird Observatory in 2005**

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## **Introduction**

In 2005, the 12th year of fall migration monitoring was conducted at the Rocky Point Bird Observatory (RPBO), located in Metchosin, on Vancouver Island, B.C. A record-high season banding total was observed; with 4619 individuals of 58 species banded between July 21st and October 18th. Within this conventional 90-day period, RPBO personnel were capable of adequately monitoring migratory passerines on 83 days. Adequate monitoring refers to a daily data-sample which is of a sufficient size to undergo statistical analyses. The Canadian Migration Monitoring Network has established coverage codes in order to describe the degree of data collection achieved on a particular day; on a scale ranging from 0 to 5. These 83 days of adequate monitoring received a coverage code of either 4 or 5, while five of the remaining seven days received a coverage code of either 2 or 3. The cause of insufficient sampling on these specified days was inclement weather conditions impeding the safe operation of mist-nets. October 13th and 14th were completely omitted from sampling procedures due to the requirements of the Department of National Defence.

Details regarding the Rocky Point monitoring site, data-collection standards, and coverage-codes are described within the Field Protocol for Migration Monitoring at Rocky Point Bird Observatory, Version 1.42, 2005.

In addition to migration monitoring, Rocky Point contributed to three separate studies conducted by the B.C. Center for Disease Control, Simon Fraser University, and a collaborative project between CWS and the University of Guelph. These research projects employed the use of blood sampling and/or feather sampling techniques.

In all, the contribution of 390 person-days by forty-nine volunteers and one staff-member resulted in the banding of 4615 individual birds, of 57 species and forms. Since the observatory's inception in 1994, this is the highest season banding total to date.

## **A Synopsis of the Fall Migration in 2005**

Data collection procedures for the Rocky Point migration monitoring program were initiated on July 21st, 2005.

### **July**

Predominantly clear skies and mild weather prevailed during the first week of banding. White-crowned Sparrows, Wilson's Warblers, and Common Yellowthroats were among the most abundant songbird migrants recorded during this period, reaching respective highs of 11 banded/47 Estimated Total (ET), 23/35, and 5/22 (banding and ET highs not restricted to the same day). Post-breeding dispersal of MacGillivray's Warblers and Swainson's Thrushes was apparent, with the first capture of these species on the 23rd (they did not breed in the immediate vicinity of the netting-parcel). A season-high ET of 34 Brown Creepers was recorded on this date, which can also be attributed to the local dispersal of fledged young. Heavily moulting Orange-crowned and Wilson's Warblers were noted during this time as well, indicating that such local species were indeed concluding breeding activities and preparing for the fall flight south. American Goldfinches were observed in large family flocks, comprised mostly of juveniles, with a high ET of 32 on the 25th of July. A high banding total of 64 birds on this same date was a surprising event to experience in July. Of particular interest to personnel on July 22nd was a vocalizing Marbled Murrelet as it passed high over Building 100, originating from an unknown inland location as it took a seaward-bound flight.

During late July, White-crowned Sparrows and Wilson's Warblers continued to be the most prominent migrant passerines at Rocky Point. The presence of many more post-breeding dispersers and early fall-migrants brought additional record totals for the season. High passerine activity in the vicinity of net 12 on July 30 yielded season-highs of 150 Chestnut-backed Chickadees and 30 House Wrens. The first of a mere two Chipping Sparrows banded during the entire fall (an all-time low) was caught on July 29th.

At net-opening on July 28th, a thick layer of fog was noticed resting on Juan de Fuca strait waters, three kilometres to the southwest of Bentinck Island. Later at noon, the fog dissipated along with the increase of south-easterly winds. This pattern of early-morning low visibility would become a routine occurrence for the majority of August. Such a phenomenon is unexpected during the first half of the monitoring pulse, and is generally unwelcome to observers attempting to record seabirds. However, a clear interval on the 31st of July granted the daily-log 240 offshore Bonaparte's Gulls, a number which again proved to be a record Daily Species Total for the monitoring period.

**Table 1.** Total of all birds banded at RPBO in 2005, by species.

<b>Species</b>	<b>Banded</b>	<b>Species</b>	<b>Banded</b>
Sora	1	<u>Cedar Waxwing</u>	9
Sharp-shinned Hawk	5	Orange-crowned Warbler	249
Cooper's Hawk	1	<u>Yellow Warbler</u>	310
<u>Downy Woodpecker</u>	4	<u>Audubon's Warbler</u>	24
Hairy Woodpecker	1	<u>Myrtle Warbler</u>	58
<u>Red-shafted Flicker</u>	4	Unidentified Yellow-rumped Warbler	1
<u>Willow Flycatcher</u>	80	<u>Black-throated Gray Warbler</u>	8
Hammond's Flycatcher	22	Townsend's Warbler	4
Dusky Flycatcher	1	American Redstart	1
Pacific-slope Flycatcher	313	Northern Waterthrush	2
Hutton's Vireo	5	<u>MacGillivray's Warbler</u>	68
Warbling Vireo	21	<u>Common Yellowthroat</u>	113
Steller's Jay	14	<u>Wilson's Warbler</u>	313
Violet-green Swallow	1	Western Tanager	1
N. Rough-winged Swallow	1	Spotted Towhee	121
<u>Chestnut-backed Chickadee</u>	144	Chipping Sparrow	2
Common Bushtit	31	Savannah Sparrow	98
Red-breasted Nuthatch	4	Fox Sparrow	191
Brown Creeper	12	Song Sparrow	127
Bewick's Wren	24	<u>Lincoln's Sparrow</u>	196
House Wren	30	Swamp Sparrow	1
<u>Winter Wren</u>	295	White-throated Sparrow	3
Marsh Wren	9	<u>"Puget Sound" White-crowned Sparrow</u>	112
Golden-crowned Kinglet	142	"Gambel's" White-crowned Sparrow	1
<u>Ruby-crowned Kinglet</u>	835	White-crowned Sparrow	6
Swainson's Thrush	90	Golden-crowned Sparrow	113
<u>Hermit Thrush</u>	143	<u>Oregon Junco</u>	94
American Robin	18	Red-winged Blackbird	4

Brown-headed Cowbird	6		
Purple Finch	19	<b>Total Banded</b>	<b>4615</b>
American Goldfinch	109	<b>Species &amp; Forms</b>	<b>57</b>

**Bold ---- first banding record for species at RPBO.**

Underline ---- season-high banding total for species.

## August

Meteorological conditions during the first week of August remained stagnant. A cloud cover of zero, light south-easterly wind, and daybreak visibility ranging from <1 to >10 kilometres was the norm. A daily average of 35 birds mist-netted and banded was recorded during this time, mirroring the monotonous weather. 75 species on August 6th represented the highest census total of the week. Within this number was included a single Ruby-crowned Kinglet, arriving over a month earlier than its congeners. Coincidentally, exactly one individual Ruby-crowned Kinglet has been observed previously in early August of 2004 and late July of 2003.

Wilson's Warblers continued their southward migration in steady numbers, peaking at 11 banded/30 ET on August 3rd. Flycatchers made a marked appearance on the 5th with ET's of 4 Olive-sided Flycatchers, 1 Western Wood-Pewee, 2 Willow Flycatchers, 2 Hammond's Flycatchers and 21 Pacific-slope Flycatchers; although the latter species peaked with an ET of 33 on the 1st. Both a Downy and a Hairy Woodpecker banded on August 3rd provided an excellent opportunity for in-hand comparison.

Shorebirds made a show of abundance on August 1st and 2nd. On August 1st, ET's reached a record for diversity with the following species: Greater Yellowlegs (5), Western Sandpiper (70), Least Sandpiper (35), Semipalmated Sandpiper (1), and Long-billed Dowitcher (1). Along with the aforementioned species, a high of 7 Short-billed Dowitchers were present on the 2nd. Clear views of the Juan de Fuca Strait provided some of the sole opportunities for seabird observation during the first half of the entire season. An active day for alcids was witnessed on the 8th of August; with 302 Common Murres, 30 Pigeon Guillemots, and 1575 Rhinoceros Auklets recorded.

Weather did not alter a large degree during the second week of August, although a prevailing westerly wind was of note. It was evident that banding totals for mid-August were not akin to those of previous years, when during the second week an average of almost 50 birds banded per day was experienced. This is an interesting fact, considering the monotony of the climate. Warbler abundance began to heighten, with notable increases in Orange-crowned and Yellow Warblers. MacGillivray's Warblers reached a season-high of 12 individuals ET'd on the 12th of August. On the following day, numerous vireos appeared with ET's of 2 Cassin's Vireos, 3 Hutton's Vireos, and 11 Warbling Vireos. Flycatchers continued to make a notable occurrence, particularly on the 11th of August: Willow Flycatcher 6 banded/12 ET and Pacific-slope Flycatcher 13 banded/40 ET (season high). A total of 50 American Goldfinches was a season-high on this same date.

**Table 2.** Banding totals, net hours, and birds/net hour at RPBO in 2005, by date.

<b>Period</b>	<b>Banded</b>	<b>Net Hours</b>	<b>Birds/Net Hours</b>
Jul 21-Jul 27	285	538	0.53
Jul 28-Aug 3	221	511	0.43
Aug 4-Aug 10	313	511	0.61
Aug 11-Aug 17	286	530	0.54
Aug 18-Aug 24	262	516	0.51
Aug 25-Aug 31	250	503	0.5
Sep 1-Sep 7	314	533	0.59
Sep 8-Sep 14	580	531	1.09
Sep 15- Sep 21	915	542	1.69
Sep 22-Sep 28	379	533	0.71
Sep 29-Oct 5	321	426	0.75
Oct 6-Oct 12	292	481	0.61
Oct 15-Oct 18	197	222	0.89
Total	4615	6377	0.73

Mist-netting efforts began the 3rd week of August with 61 individuals banded on the 15th, yet dropped down to an inactive 15 on the 19th. This was an inexplicable lull for personnel, as a low-pressure system bringing rain and a tardy net-opening on the 17th was expected to catalyze an influx of migrants in the days to follow, but never occurred. A strong push of 22 Yellow Warblers captured on the 15th confirmed this species as the prominent neo-tropical migrant of the week. An American Kestrel on the 17th was a first for the season, while a Sora captured and banded on the following day provided a novel handling experience for volunteers. Despite limited seabird activity all week, 60 Red-necked Phalaropes were encountered on the 21st.

Increasingly stronger winds during the last week of August limited the operation of the nets 1 and 2, due to the lack of vegetative cover in their vicinity. Rain showers on a couple of days also caused temporary interruptions in the netting effort. Consequently, banding totals were slightly dampened in light of these impediments; with an average of 43 birds banded within the remaining ten days of the month. Reminiscent of late July/early August was a high total of Common Yellowthroats on the 22nd, with 10 banded and 30 ET'd, as was an additional wave of shorebirds; 2 Semipalmated Plovers, 25 Surfbirds, 10 Western and 17 Least Sandpipers were among eleven species recorded.

**Table 3.** The 10 most abundant species banded in 2005 compared to previous years' totals.

Rank	Species	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994
1	Ruby-crowned Kinglet	835	467	441	466	186	295	199	156	159	232	79	70
2	Pacific-slope Flycatcher	313	303	317	271	187	228	228	209	91	54	79	52
3	Wilson's Warbler	313	180	228	231	225	177	257	153	53	37	58	70
4	Yellow Warbler	310	265	147	114	109	139	106	57	101	38	45	44
5	Winter Wren	295	168	281	177	204	265	61	135	102	106	64	75
6	Orange-crowned Warbler	249	271	160	150	220	125	185	117	109	82	67	66
7	Lincoln's Sparrow	196	197	194	148	102	171	154	160	138	120	124	151
8	Fox Sparrow	191	256	231	95	70	79	40	46	51	58	32	29
9	Chestnut-backed Chickadee	144	79	59	93	53	69	50	53	56	25	35	49
10	Hermit Thrush	143	139	131	53	43	52	37	32	96	85	57	18

An increasingly higher presence of Lincoln's Sparrows was also noticed on the 22nd, 14 banded and 32 ET'd. Savannah Sparrows conformed to a similar trend on August 24th, with an ET high of 22. Overcast weather during the latter part of the week appeared to be conducive to waterfowl migration. A flock of 30 Greater White-fronted Geese was seen flying high over the banding shack on the 28th, as well as 30 Northern Pintails undertaking an offshore voyage a few kilometres away. Black-throated Gray Warblers broke the previous season high, with the 7th banded on the 29th. As if to hint the imminence of September, both the first Golden-crowned Sparrow and Hermit Thrush of the fall was captured on the 30th of August. Also noted on this day was a season high for Western Tanager, with 6 birds observed flocking near the banding shack. A similar record-high occurrence was noted during late August in 2004 and 2003, with 8 and 5 tanagers observed respectively.

## September

Bird activity remained quiet for the first few days of the month. A high count of 3 Black Swifts on the 3rd proved to be the lowest total among the past three years. A record total of 300 Vaux's Swifts, on the other hand, appeared as a churning cloud of avian acrobatics on September 7th. The highest count of 2004 was likewise on this date, with 250 individuals; while in 2003 the record-high was held later in the month, with 140 on September 21st. On the passerine front, an apparent increase in migrant movement excited Rocky Point personnel on the 5th, reaching a daily species total of 101 for the only time. Despite the maximum amount of mist-netting effort being achieved (78 net-hours), a final tally of 61 birds banded did not appear to represent the magnitude of the day's activity. Perhaps the nature of the

subjects encountered that day will help to describe the scene: Hammond's Flycatcher, Orange-crowned Warbler, Yellow Warbler and Common Yellowthroat all seemed to have risen somewhat in numbers, but the majority of the abundance was portrayed by a record 115 Savannah Sparrows ET'd that day, along with 50 White-crowned Sparrows. Individuals of such species were everywhere to be seen; in the broom, gorse, and open fields alike. So many, in fact, that there was apparently not enough time to count them all within the constraints of a time-limited census. This may in turn justify the lower-than-expected captures, as few of the mist-nets are placed in such habitat; although nets 1 and 2 did manage to catch a record 14 Savannahs. Visible migration proceeded into the morning, with good numbers of American Pipits and Yellow-rumped Warblers passing high overhead. Numbers lowered for the next few days, but a similar diversity was conserved.

On September 9th, at least 40 Swainson's Thrushes were heard streaming overhead in the crepuscular sky. It was a sign that migration was well underway. Among the 95 birds banded that day, Yellow Warblers (22 banded/45 ET) and Hermit Thrushes (14/19) were the most abundant species mist-netted. Banding totals peaked over the weekend at 135 birds. During these two days (10th and 11th), strong representations were recorded for the following species: Golden-crowned Kinglet (cumulative ET of 115), Ruby-crowned Kinglet (127), American Pipit (64), Orange-crowned Warbler (116), Fox Sparrow (66), Lincoln's Sparrow (76), White-crowned Sparrow (67), and Golden-crowned Sparrow (51). After a relative hiatus, flycatcher numbers also returned on the 11th, with Willow (1 banded/3 ET), Hammond's (2/5), and Pacific-slope Flycatchers (14/27). The 11th hosted a diverse array of raptors; a Golden Eagle and a season-high of 3 Broad-winged Hawks were among the 14 species encountered.

The following four days maintained an average of 85 birds banded. On the 16th, however, totals jumped abruptly. The next 3 days would prove to be the busiest period of migration monitoring for 2005. 497 birds were collectively banded between the 16th, 17th, and 18th; neatly coinciding with the conventionally recognized peak for fall migration on southern Vancouver Island. Pacific-slope Flycatchers (cumulative banding total of 54), Winter Wrens (54), Ruby-crowned Kinglets (146), Orange-crowned Warblers (19), Yellow Warblers (22), Fox Sparrows (41), and Oregon Junco (19) were among the most abundant species captured. An impressive 208 birds were banded on the 17th alone, which is currently acknowledged as the highest standard-period banding total in the history of RPBO. Raptor movements, however, did not receive such an adequate documentation during this time, due to heavy fog and mainly overcast skies concealing their whereabouts.

Several record totals were attained on the 20th. Red-tailed Hawks reached a season high of 40; as did American Kestrel (2), Peregrine Falcon (3), Red-shafted Flicker (20), Steller's Jay (56), and Evening Grosbeak (13). In comparison to the last two years (2004 and 2003), single-day highs peaked for Sharp-shinned Hawk (50), Spotted Towhee (80), Song Sparrow (46), Oregon Junco (60), and Purple Finch (18). Winter Wrens and Ruby-crowned Kinglets reached an all-time high ET for RPBO, with 103 and 453, respectively. Incidentally, season-highs for this pair of species arrived later during the preceding two falls. Kinglets peaked at 110 on October 4th, 2004 and 105 on October 15th, 2003, while wrens were at their most populous with 38 on October 5th, 2004 and 48 on September 22nd, 2003.

Waterfowl diversity was especially noticeable on the 23rd: 2 American Wigeon, 1 Northern Shoveler, and 6 Red-breasted Mergansers were among the 9 species counted.

A daily average of 41 birds banded during the last week of September reflected a drop in migrant activity, and the loss of one banding day on the 29th due to rain. Windy conditions also obliged the untimely closure of nets 1 and 2. Despite these impediments, a daily species total of 66 confirmed the fact that fewer birds were to be found in the area.

"Kettling" Turkey Vultures represented a high of 450 for the fall on the 27th; a noticeable decrease compared to 760 in 2004 and 520 in 2003. Another sharp drop from 2004 was documented for Golden-crowned Sparrows, who reached a low 67 individuals on September 21st; in comparison to 139 on September 19th of the previous year.

**Table 4.** Season-high Estimated Totals (ET's) for select species in 2005 compared to season-high ET's in 2004 and 2003, including date.

Species	High ET 2005	Date	High ET 2004	Date	High ET 2003	Date
Vaux's Swift	300	7-Sep	250	7-Sep	140	21-Sep
Rufous Hummingbird	10	7-Aug	9	20-Jul	16	2-Aug
Northern Flicker	20	20-Sep	25	6-Oct	20	28-Sep
Pacific-slope Flycatcher	40	11-Aug	38	17-Aug	45	4-Aug
Warbling Vireo	13	27-Aug	14	14-Sep	11	13-Aug
Steller's Jay	56	20-Sep	75	6-Oct	25	24-Sep
Purple Martin	6	9-Aug	16	27-Aug	8	26-Aug
Violet-green Swallow	62	10-Aug	52	4-Aug	100	22-Jul
N. Rough-winged Swallow	36	23-Jul	26	1-Aug	18	24-Jul
Barn Swallow	28	10-Aug	32	4-Aug	30	22-Jul
Winter Wren	103	20-Sep	38	5-Oct	48	22-Sep
Golden-crowned Kinglet	113	16-Oct	150	5-Oct	200	24-Sep
Ruby-crowned Kinglet	453	20-Sep	110	4-Oct	105	15-Oct
Hermit Thrush	28	20-Sep	15	6-Sep	35	13-Oct
American Robin	325	9-Oct	360	10-Oct	380	28-Sep
Varied Thrush	25	30-Sep	90	16-Oct	35	24-Sep
American Pipit	44	10-Sep	85	26-Sep	150	29-Sep
Orange-crowned	86	10-Sep	110	26-Aug	50	20-Sep

Warbler						
Yellow Warbler	45	9-Sep	70	26-Aug	110	20-Sep
Yellow-rumped Warbler	100	4-Oct	180	28-Sep	580	24-Sep
Townsend's Warbler	17	10-Aug	17	5-Aug	20	16-Aug
MacGillivray's Warbler	12	12-Aug	8	1-Sep	10	29-Jul
Wilson's Warbler	35	25-Jul	29	5-Aug	35	10-Aug
Spotted Towhee	80	20-Sep	33	29-Sep	35	24-Sep
Savannah Sparrow	115	5-Sep	60	26-Sep	100	16-Sep
Fox Sparrow	48	10-Sep	35	5-Oct	80	20-Sep
Song Sparrow	46	20-Sep	22	16-Sep	32	29-Jul
Lincoln's Sparrow	53	10-Sep	50	3-Sep	44	16-Sep
White-crowned Sparrow	65	28-Jul	80	4-Aug	65	29-Jul
Golden-crowned Sparrow	67	21-Sep	139	19-Sep	66	17-Sep
"Oregon" Junco	60	20-Sep	57	3-Aug	46	27-Sep
Pine Siskin	15	27-Sep	425	3-Oct	220	15-Oct

## October

Banding totals ranged from 93 to 26 birds in the first week of October. Abundant songbirds included Winter Wrens, Golden-crowned and Ruby-crowned Kinglets, American Robins, Yellow-rumped Warblers (season-high of 127), Fox and Golden-crowned Sparrows. A net-full of Audubon's (6) and Myrtle Warblers (17) on the 4th of October was a pleasant surprise. Although the offshore fog was finally within its expected period of encroachment, it did just the opposite and maintained a fair distance from Bentinck Island. This permitted some seabird observation, but strong winds and high seas were in turn the new limiting factor. The best pelagic finds of the week were 2 Sooty Shearwaters on the 2nd and another on the 5th. A Western Grebe frequenting Pedder Bay on the 4th was among only 3 birds seen in the fall of 2005. 2004 and 2003 witnessed more of this species, with highs of 16 and 10 respectively. Cormorant numbers were up on the 5th, with Daily Species Totals of 162 Brandt's, 182 Double-crested, and 57 Pelagic; along with a season-peak of 375 Heermann's Gulls. A high of 6 Harlequin Ducks on the 7th added to the water-bird diversity of the week.

The remaining eleven days of migration monitoring at Rocky Point were reduced to only 8 full days of data collection. The Department of National Defence required the use of their property on the 13th and 14th, and a constant drizzle on the morning of the 17th provided a

meagre bird census, with 43 species tallied. Songbird diversity from the preceding week was carried over (along with Hermit Thrushes), although in diminishing numbers. Locally wintering species observed their season-highs as the cold weather drew nearer and autumn came to a close: Canada Goose, 84 on the 18th; Golden-crowned Kinglet, 113 on the 16th; American Robin, 325 on the 9th. A total of 57 Winter Wrens and 159 Ruby-crowned Kinglets were banded from the 8th to the 18th, confirming these two species as the most commonly captured birds during this period. The season wrapped up with an average of 53 birds newly processed for the last eight days. On the 18th of October 76 birds were banded; a decent total considering the late date. A final push of 320 Band-tailed Pigeons witnessed on this same day was the season-high.

Monitoring activities were concluded on the 18th of October.

A total of 178 species were detected during the fall of 2005 at the Rocky Point Bird Observatory. There were two additions to the Rocky Point list (Buff-breasted Sandpiper and Tropical Kingbird).

A total of 57 species and forms were banded during the fall season. 2005 was a record year for abundance at Rocky Point, challenging personnel to process unprecedented numbers of migrants. This year's record of 4615 individuals exceeded the second highest season banding total in 2004 by 496 birds. The number of species banded was the fifth lowest since the observatory began monitoring in 1994.

**Table 5.** Coverage effort at RPBO in 2005 compared to 2004, 2003, and 2002.

<b>Year</b>	<b>Coverage period</b>	<b>Days</b>	<b>Banded</b>	<b>Net hours</b>	<b>Birds/net hour</b>
2005	Jul 21-Oct 18	88	4615	6377	0.73
2004	Jul 21-Oct 18	90	4119	6286	0.66
2003	Jul 20-Oct 18	91	3774	6689	0.56
2002	Jul 20-Oct 21	90	3153	6501	0.49

## **Unusual Sightings at RPBO in 2005 for the Period July 21st --- October 18th**

**Sooty Shearwater** --- 2 birds on Oct 2nd; a single bird on Oct 5th.

**Snow Goose** --- 10 individuals on Oct 15th.

**Wood Duck** --- a pair on Sep 11th.

**Broad-winged Hawk** --- a single bird on Sep 1st was the earliest record for RPBO, single sightings continued on Sep 9th, 15th, and 26th; 2 birds on Sep 8th, 14th, 19th; a season-high of 3 individuals on Sep 10th, 11th, 20th.

**Golden Eagle** --- a single bird on Sep 10th.

**Sandhill Crane** --- a single bird on Sep 28th and Oct 9th; 2 birds on Oct 1st, 4th; season high of 50 individuals on Sep 30th.

**Solitary Sandpiper** --- a single bird on Aug 12th, 28th, Sep 10th; 2 birds on Aug 13th.

**Wandering Tattler** --- a single bird on August 11th.

**Semipalmated Sandpiper** --- a single bird on Jul 23rd, Aug 1st, 2nd, 3rd, 20th.

**Baird's Sandpiper** --- a single bird on Aug 10th; 2 individuals on Aug 11th; 3 birds on Aug 23rd.

**Pectoral Sandpiper** --- a single bird on Sep 5th, Sep 11th; 2 birds on Aug 14th, Sep 10th.

**Buff-breasted Sandpiper** --- an individual observed on Aug 19th; the first of this species sighted at RPBO.

**Parasitic Jaeger** --- a single bird on Jul 22nd.

**Black-legged Kittiwake** --- a single bird on Oct 16th.

**Common Tern** --- an individual on Sep 10th; 2 birds on Aug 10th; a season-high of 6 individuals on Aug 6th.

**Ancient Murrelet** --- 2 bird on Oct 16th.

**Tufted Puffin** --- an individual on Jul 25th, Aug 7; 2 birds on Aug 1st.

**Barn Owl** --- a recently predated bird encountered on-site in early October.

**Anna's Hummingbird** --- a single bird on Sep 19th, 30th.

**Lewis's Woodpecker** --- a single bird sighted on Sep 6th.

**Least Flycatcher** --- an individual on Sep 20th; only RPBO's second record.

**Hammond's Flycatcher** --- a late individual on Oct 10th.

**Dusky Flycatcher** --- an individual banded on Sep 17th; a single bird observed on Sep 18th.

**Pacific-slope Flycatcher** --- a late individual on Oct 12th.

**Ash-throated Flycatcher** --- a single bird on Sep 5th, 6th.

**Tropical Kingbird** --- an individual on Oct 8th, RPBO's first.

**Townsend's Solitaire** --- a single bird on Sep 9th, 10th, 12th.

**Nashville Warbler** ---an individual on Sep 22nd.

**American Redstart** --- one bird banded on Aug 28th, only RPBO's second record.

**Northern Waterthrush** --- a single bird heard on Aug 30th; individuals banded on Sep 1st, Sep 23rd.

**Clay-coloured Sparrow** --- a single bird observed on Sep 21st.

**Vesper Sparrow** --- an individual bird on Sep 14th; RPBO's second record.

**Swamp Sparrow** --- one bird banded on Oct 11th, an individual observed on Oct 15th.

**Fox Sparrow** --- an early individual banded on Jul 21st.

**White-throated Sparrow** --- individuals banded on Sep 15th, 24th, 16th; a different bird also seen on Sep 24th.

**Gambel's White-crowned Sparrow** -- a singing individual on August 11th, and another banded on Sep 16th.

**Lapland Longspur** --- a single bird on Sep 10th.

**Western Meadowlark** --- a single bird on Sep 10th, Oct 11th.

**White-winged Crossbill** --- 2 individuals on Oct 16th.

## **Volunteer Effort**

Forty-nine volunteers contributed a total of 300 person-days to the fall 2005 migration monitoring program at Rocky Point. This year, long-distance "migrants" visited from Calgary and Washington State.

### **25+ Days**

David Allinson

### **15-25 Days**

Ann Nightingale, Ed Pellizzon, Chris Saunders, Rick Schortinghuis

### **7-14 Days**

Bill Dancer, Alana Demko, Denise Gubersky, David Kelly, Marilyn Lambert, Dominique Lejour, Megan Lyden, Agnes Lynn, Cheryl Mackie, Susanne Maidment, Mary Robichaud, Steve Stobart

### **1-6 Days**

Tracy Anderson, Alan Burger, Dannie Carsen, Aziza Cooper, Wendy Easton, Erin Fleming, Lea French, Barry Gatten, Jeremy Gatten, Pierre Geoffray, Rob Gowan, Robert Hadley, Andrew Harcombe, Chris Harris, Naira Johnson, Adrian Koolman, Seabrooke Leckie, Mike McGrenere, Marcy McKay, Guy Monty, Jessica Murray, Susan Pellizzon, Leah Ramsay, David Robichaud, Robin Robinson, Donna Ross, Margaret Sheperd, Andy Stewart, Clive Strauss, Kary Weston, Bruce Whittington

## **Additional Projects**

From July 25th to August 29th, RPBO hosted an investigation for the presence of West Nile virus in the province of British Columbia, conducted by the B.C. Center for Disease Control. A field-technician was present to collect blood and feather pulp samples from designated migrant species. These samples were then sent to Vancouver for laboratory analysis. Ticks encountered on captured birds were also collected for a separate project regarding Lyme disease.

From September 23rd to October 2nd, RPBO assisted an additional study by an independent researcher from the Simon Fraser University, which also involved the use of blood sampling. The goal was to describe a relationship between the glucose levels and fat reserves on neo-tropical migrants.

From September to October 2005, Rocky Point personnel contributed 135 feather samples from 39 species to a national DNA bar-coding effort. This was a collaborative project between CWS and Paul Hebert, at the University of Guelph.

## Recommendations

The main purpose for monitoring birds is to comprehend the state of populations and factors which influence the health of their populations. This knowledge can be applied to make informed land management decisions and subsequently promote the conservation of biodiversity. To gain such an understanding, it is paramount that the information collected be of the highest quality attainable. Therefore, in order to maximize the use of migration counts for estimating population changes, the standardization of counting methods is necessary. This process will contribute to removing extraneous variation derived from variable observer effort and sampling procedures (Hussell and Ralph 2005). The Rocky Point Bird Observatory can enhance its future data-set by expanding the standardization of sampling procedures to a higher level. This applies for both banding and census methods.

Quality of data collected at RPBO can be heightened by the establishment of unique mist-netting and banding standards, to which all personnel must comply. This could involve adherence to National Banding Council (NABC) guidelines, or a different set of rules recognized by RPBO. In either case, a full workshop, or shorter, multiple training sessions can be used to teach personnel appropriate procedures. It is imperative that proper extraction, handling, and mist-net operation techniques be fully understood by all personnel participating in mist-netting efforts. During the 6-hour monitoring period at RPBO, the Bander-In-Charge (BIC) is occupied with banding, extracting, or training volunteers. As a result, it is not possible for him/her to confirm that every extraction conducted by an unattended volunteer (with stated experience) actually meets appropriate standards. In order to ensure that the proper standards are observed by everyone in the field, personnel can be denied unsupervised performance of capture and banding techniques until they are capable of meeting specified requirements. A policy of this kind will ensure person and bird welfare, improve data integrity, and maximize the overall efficiency of monitoring procedures.

The Field Protocol for Migration Monitoring at Rocky Point Bird Observatory (RPBO 2004) states that the census route should be conducted for a minimum of 80 minutes and a maximum of 100 minutes. In my experience with migration monitoring, Rocky Point currently uses the longest distance for a transect-route. The need to sample such a large area can compromise the adequate detection of birds. It is also difficult to eliminate observer variation on the location and timing of an individual's stopping points along the designated route. Sampling design is critical to the effectiveness of a monitoring program because it determines the quality of the resulting parameter estimates (Carlson and Schmiegelow 2002). Migration count results at RPBO can be improved by employing a survey technique which further minimizes variation potential. An effective method may be to reduce the size of the study-plot and the amount of observation time. I recommend the Area Search method, described by Geupel et al. (2003).

## **Acknowledgements**

It has been a pleasure to share the season with such a friendly and enthusiastic migration crew in 2005. Thank you to the members of the board who accommodated me so generously and ensured my comfort (and occasionally even my nutrition!) during my sojourn at Rocky Point. Special thanks to Ann Nightingale for assisting with computerization and proofing of the 2005 data, and to David Allinson and Paul Levesque for help regarding the preparation of this report.

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**Appendix A. Seasonal occurrence of avian species observed at Rocky Point from July 21st to October 18th, 2005; by month**

<b>Geese through to Bald Eagle</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Oystercatcher through to Glaucous-winged Gull</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>
Greater White-fronted Goose		*			Black Oystercatcher	*	*	*	*
Snow Goose				*	Greater Yellowlegs	*	*	*	*
Canada Goose	*	*	*	*	Lesser Yellowlegs	*	*		
Wood Duck			*		Solitary Sandpiper		*	*	
American Wigeon		*	*	*	Wandering Tattler		*		
Mallard	*	*	*	*	Spotted Sandpiper	*	*	*	
Northern Shoveler			*		Whimbrel		*		
Northern Pintail		*	*	*	Black Turnstone	*	*	*	*
Am. Green-winged Teal		*	*	*	Surfbird	*	*	*	*
Harlequin Duck	*	*	*	*	Semipalmated Sandpiper	*	*		
Surf Scoter	*	*	*	*	Western Sandpiper	*	*	*	
White-winged Scoter	*	*	*	*	Least Sandpiper	*	*	*	
Common Merganser		*	*	*	Baird's Sandpiper		*		
Red-breasted Merganser			*	*	Pectoral Sandpiper		*	*	
California Quail	*	*	*	*	Dunlin		*		
Red-throated Loon				*	Buff-breasted Sandpiper		*		
Pacific Loon		*	*	*	Short-billed Dowitcher		*	*	
Common Loon	*	*	*	*	Long-billed Dowitcher	*	*	*	
Horned Grebe			*		Common Snipe		*	*	*
Red-necked Grebe		*	*	*	Red-necked Phalarope		*	*	
Western Grebe			*	*	Parasitic Jaeger	*			
Sooty Shearwater				*	Bonaparte's Gull	*	*	*	*
Brandt's Cormorant	*	*	*	*	Heermann's Gull	*	*	*	*
Double-crested Cormorant	*	*	*	*	Mew Gull	*	*	*	*
Pelagic Cormorant	*	*	*	*	Ring-billed Gull		*	*	
Great Blue Heron	*	*	*	*	California Gull	*	*	*	*
Turkey Vulture	*	*	*	*	Thayer's Gull			*	*
Osprey	*	*	*		Western Gull		*	*	
Bald Eagle	*	*	*	*	Glaucous-winged Gull	*	*	*	*

<b>Harrier through to Kinglets</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Kittiwake through to Finches and Crossbills</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>
Northern Harrier	*	*	*	*	Black-legged Kittiwake				*
Sharp-shinned Hawk	*	*	*	*	Caspian Tern	*	*		
Cooper's Hawk	*	*	*	*	Common Tern		*	*	
Broad-winged Hawk			*		Common Murre	*	*	*	*
Red-tailed Hawk	*	*	*	*	Pigeon Guillemot	*	*	*	*
Golden Eagle			*		Marbled Murrelet	*	*	*	*
American Kestrel		*	*	*	Ancient Murrelet				*
Merlin	*	*	*	*	Rhinoceros Auklet	*	*	*	*
Peregrine Falcon		*	*	*	Tufted Puffin		*		
Virginia Rail	*	*	*	*	Rock Pigeon		*	*	
Sora		*	*	*	Band-tailed Pigeon	*	*	*	*
Sandhill Crane			*	*	Great-horned Owl	*	*	*	*
Black-bellied Plover	*				Northern Pygmy-Owl				*
Semipalmated Plover	*	*	*		Barred Owl	*	*	*	*
Killdeer	*	*	*	*	Northern Saw-whet Owl			*	*
Common Nighthawk	*	*			Townsend's Solitaire			*	
Black Swift		*	*		Swainson's Thrush	*	*	*	*
Vaux's Swift		*	*		Hermit Thrush		*	*	*
Anna's Hummingbird			*		American Robin	*	*	*	*
Rufous Hummingbird	*	*	*		Varied Thrush		*	*	*
Belted Kingfisher	*	*	*	*	European Starling	*	*	*	*
Lewis's Woodpecker			*		American Pipit		*	*	*
Red-breasted Sapsucker		*	*	*	Cedar Waxwing	*	*	*	*
Downy Woodpecker	*	*	*	*	Orange-crowned Warbler	*	*	*	*
Hairy Woodpecker	*	*	*	*	Nashville Warbler			*	
Northern Flicker	*	*	*	*	Yellow Warbler	*	*	*	*
Pileated Woodpecker	*	*	*	*	Yellow-rumped Warbler	*	*	*	*
Olive-sided Flycatcher	*	*	*		Black-throated Gray Warbler	*	*	*	
Western Wood-Pewee		*			Townsend's Warbler	*	*	*	*
"Traill's" Flycatcher	*	*	*		American Redstart		*		
Least Flycatcher			*		Northern Waterthrush		*	*	

Hammond's Flycatcher	*	*	*	*	MacGillivray's Warbler	*	*	*	
Dusky Flycatcher			*		Common Yellowthroat	*	*	*	*
Pacific-slope Flycatcher	*	*	*	*	Wilson's Warbler	*	*	*	*
Ash-throated Flycatcher			*		Western Tanager	*	*	*	
Tropical Kingbird				*	Spotted Towhee	*	*	*	*
Cassin's Vireo	*	*	*		Chipping Sparrow	*	*	*	
Hutton's Vireo	*	*	*	*	Clay-coloured Sparrow			*	
Warbling Vireo	*	*	*	*	Vesper Sparrow			*	
Steller's Jay	*	*	*	*	Savannah Sparrow	*	*	*	*
Clark's Nutcracker		*			Fox Sparrow	*	*	*	*
Northwestern Crow	*	*	*	*	Song Sparrow	*	*	*	*
Common Raven	*	*	*	*	Lincoln's Sparrow		*	*	*
Horned Lark			*		Swamp Sparrow				*
Purple Martin		*	*		White-throated Sparrow			*	*
Tree Swallow	*	*			White-crowned Sparrow	*	*	*	*
Violet-green Swallow	*	*	*		Golden-crowned Sparrow		*	*	*
N. Rough-winged Swallow	*	*	*		Dark-eyed Junco	*	*	*	*
Cliff Swallow	*	*			Lapland Longspur			*	
Barn Swallow	*	*	*		Black-headed Grosbeak	*	*	*	
Chestnut-backed Chickadee	*	*	*	*	Red-winged Blackbird	*	*	*	*
Bushtit	*	*	*	*	Western Meadowlark			*	*
Red-breasted Nuthatch	*	*	*	*	Brewer's Blackbird			*	*
Brown Creeper	*	*	*	*	Brown-headed Cowbird	*	*	*	
Bewick's Wren	*	*	*	*	Purple Finch	*	*	*	*
House Wren	*	*	*	*	House Finch	*	*	*	*
Winter Wren	*	*	*	*	Red Crossbill	*	*	*	*
Marsh Wren	*	*	*	*	White-winged Crossbill				*
Golden-crowned Kinglet	*	*	*	*	Pine Siskin	*	*	*	*
Ruby-crowned Kinglet		*	*	*	American Goldfinch	*	*	*	*
					Evening Grosbeak	*	*	*	*
					<b>Total Species — 178</b>				
					<b>Total Species/Month</b>	107	144	151	113