

# **Migration Monitoring at Tommy Thompson Park: Spring 2005**



*by*

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## Introduction

In April of 2003, Toronto and Region Conservation Authority (TRCA) and Toronto Bird Observatory (TBO) established a partnership to steer and develop a pilot migration monitoring station at Tommy Thompson Park (TTP). The objectives of this endeavour were to accurately assess the significance of the park for migrating birds through research and to increase awareness of migrant ecology and conservation through education.

## Study Site

Tommy Thompson Park (TTP) is located on Toronto's waterfront, which is situated on the northwestern shore of Lake Ontario. The park (formerly Leslie Street Spit) is a man made peninsula, which extends 5 kilometers in a southwestern direction into Lake Ontario. The Toronto Harbour Commission (now known as the Toronto Port Authority) began construction of a landbase at the foot of Leslie Street in the late 1950's to expand port facilities in anticipation of increased shipping activity on the Great Lakes. From the late 1950's until present day, a combination of lakefilling and dredging activities created the current configuration of TTP. TTP has a total land base of approximately 160 hectares and a water surface area of 100 hectares composed of the western embayments and the inner disposal cells.

Through natural succession processes, much of the land area of TTP has been colonized by a variety of plant and animal communities. The geographical situation of the park and its natural features, make it very suitable for large numbers of colonial waterbirds and migrating landbirds. Overall, the Park represents the largest area of existing natural habitat on the Toronto waterfront. Tommy Thompson Park has been designated as an Environmentally Significant Area (ESA) and was designated as an Important Bird Area (IBA) by Birdlife International in 2001.

The site selected for migration monitoring is located on peninsula D which is one of several peninsulas which branch off the main spine of the spit. The habitat consists of early succession cottonwood, willow and birch. Silver Maple, alder and cedar are interspersed in low density.

## Project Partners

Toronto and Region Conservation (TRCA) was formed in 1957 for the management and conservation of natural resources in the Greater Toronto Area (GTA). Since its formation Toronto and Region Conservation has prepared and delivered programs for the management of the renewable natural resources within its watersheds. Thanks to the support of all levels of government and the valuable partnerships we have established, the Authority provides: protection, enhancement, and regeneration of natural resources on a watershed basis sound environmental information and advice to promote good land management practices, community action on environmental projects outdoor recreation opportunities on 13,000 hectares of open space, forest lands, and Conservation Areas conservation education and heritage programs through our outreach education programs, residential and day-use Outdoor Education Centres and Black Creek Pioneer Village.

Objectives of the Living City Campaign (run by TRCA) include the maintenance of healthy rivers and shorelines, regional biodiversity, sustainable communities and business excellence. Migration monitoring at Tommy Thompson Park was born out of the objectives of TRCA's Living City vision.

Toronto Bird Observatory (TBO) is a non-profit organization dedicated to bird monitoring in the Toronto region. Formed in 1978, TBO was principally active on the Toronto Islands (adjacent to TTP) where, through volunteer support, migration monitoring was the main objective.

TRCA and TBO are partners in the development and management of the Tommy Thompson Park Migration Monitoring Program. The objectives of the partnership are to collect quality scientific data that can be used for the monitoring of population changes in migratory landbirds and to foster public awareness of bird conservation and ecology through education.

## Methods

### Migration Monitoring Overview

The Breeding Bird Survey (BBS) is the principal method employed by conservation organizations to monitor bird populations. This method is effective only where breeding populations are accessible by roadside data collection. The remoteness of much of northern Canada precludes such survey methods. It is therefore necessary to monitor these populations on their southward and northward movements during migration.

### Protocol

The protocol for data collection at TTPBRS is detailed in "Operations Manual for Tommy Thompson Park Bird Research Station" version 2. The protocol employs fixed effort census and point count surveys as well as a fully standardized capture regimen.

## Spring Results

### Synopsis

#### April 1-7

We were excited to begin our third spring season on April 1<sup>st</sup> and were also pleased to find the weather to our liking. Warm temperatures on April 1 resulted in some respectable tallies of birds including: Winter Wren (4 Daily Species Total), Song Sparrow (20), Golden-crowned Kinglet (18) and Fox Sparrow (5). A total of 37 birds were banded on the first day. Wind and

various forms of precipitation forced cancellation of fieldwork on the 2<sup>nd</sup> and 3<sup>rd</sup>. Only 5 birds were banded on April 4 due to strong north winds, however, a **King Eider** was spotted on census which is the first record of this species for the project! The banding remained slow on the 5<sup>th</sup> however there were 23 **Glaucous Gull**, 3 **Iceland Gull** and a sleepy **Long-eared Owl** on this day. Migration was much more impressive on April 6 when 92 birds were banded (63 of which were kinglets!) and a host of new arrivals were detected. Decent numbers of Brown Creeper and Slate-coloured Junco were also evident. Favourable weather on the 7<sup>th</sup> resulted in 100 birds being banded (75% Golden-crowned Kinglet) and the arrival of Yellow-rumped Warbler and higher numbers of Tree Swallow. A total of 249 birds were banded during the first week of spring which was substantially higher than the 42 banded in 2004

#### **April 8-14**

April 8-14 was an "up-and-down" week at Tommy Thompson Park. Calm conditions on April 8 failed to produce any major bird numbers as only 17 birds were banded. **Glaucous Gulls** were still being seen in decent numbers as 12 were spotted on what remained of the ice in the embayment. Significant movements of migrants were evident on both the 9<sup>th</sup> and 10<sup>th</sup> as 61 and an impressive 142 birds were banded respectively. Kinglets and Creepers were the dominant species. The return of north winds on the 11<sup>th</sup> spelled the end of the kinglet and creeper waves. Daily banding totals averaged about 10 birds/day from the 11<sup>th</sup>-14<sup>th</sup>.

#### **April 15-21**

A total of 90 net hours on the 15<sup>th</sup> yielded just 3 birds banded! Northern Rough-winged Swallow and Blue-winged Teal were new arrivals on this day. A nice variety of birds were banded on the 16<sup>th</sup>, however the overall total was still low at 27. The highlight of the day was a **Silver-haired Bat** found sleeping under one of the banding lab shutters! The 17<sup>th</sup> saw the arrival of the stations first ever "**Yellow**" **Palm Warbler** (the Atlantic coast subspecies of Palm Warbler). For the first time of the spring, Ruby-crowned Kinglet totals eclipsed Golden-crowned. The 18<sup>th</sup> and 19<sup>th</sup> were quiet with approx. 20 birds banded/day. An increase in numbers of White-throated Sparrow occurred on the 19<sup>th</sup> as 30 were tallied. April 20<sup>th</sup> featured some new arrivals such as Northern Waterthrush, Brown Thrasher and Blue Jay. Eighteen birds were banded on April 21, which included a decent number of Hermit Thrush (7 banded). An **American Bittern** flew over the research station on this day which is only the second record of this species for TTPBRS.

#### **April 22-28**

Only 46 birds were banded during the period which is extremely slow for this time of year. Apparently it wasn't just us as migration monitoring stations across southern Ontario had similarly low numbers for the week. Species diversity was lower at this stage of the spring than in 2004 as new arrivals were reduced to a trickle during the period. Myrtle Warblers had been gradually increasing although the major movements of this species as well as Ruby-crowned Kinglet and White-throated Sparrow were due anytime. The highlight of the week was undoubtedly the flyover **Dickcissel** recorded on April 22! This was a first record for the bird research station.

#### **April 29-May 5**

It was eerily quiet at Tommy Thompson Park Bird Research Station for the majority of the period. Migration was almost unapparent from April 25-May 4 as birds were likely held further south by colder temperatures in the Great Lakes region. A Turkey Vulture was observed on May 1, which is an unusual species for us, and the first Common Grackles were banded on May 4. Ruby-crowned Kinglets were still coming through in small numbers although Golden-crowned Kinglets had largely departed the Toronto area.

Interestingly, most species were arriving later than normal at Tommy Thompson Park in spring 2005. Yellow Warbler first appeared on April 23 in 2004 and as of May 4 none had

appeared in 2005. However warmer air on May 5 produced several Yellow Warblers as well as the first White-crowned Sparrow, House Wren and Nashville Warbler. In all 60 birds were banded on this day, which was dominated by Hermit Thrush and White-throated Sparrow. Indeed, the birds had finally arrived!

### May 6-May 12

Birding improved considerably during this period when as many as 15 species of warbler were found over the course of the week at Tommy Thompson Park although many species were still late. A respectable 54 birds were banded on the 6<sup>th</sup> of May, which featured the arrival of Lincoln's Sparrow, Common Yellowthroat and Wood Thrush. White-throated Sparrows were coming through in good numbers as evidenced by the 27 banded on this date. That being said, we still hadn't experienced any big "White-throat" days in 2005. Highlights from the 7<sup>th</sup> included our first spring record of **Cackling Goose** as well as "**Gambel's**" **White-crowned Sparrow**. Banding totals dropped on the 8<sup>th</sup> as only 33 birds were banded however we were delighted to see the first Baltimore Oriole and Blue-headed Vireo (April 26 arrival in 2004) of the year. The morning of the 9<sup>th</sup> featured a season high for Common Loon (8 DST) and a good number of Ruby-crowned Kinglet, Yellow Warbler and White-crowned Sparrow. A shift in the weather (warm southerlies) produced a fallout on the 11<sup>th</sup> when 108 birds of 33 species were banded. A total of 14 new arrivals were detected on what was the best day of the spring to date! Record numbers of Wood Thrush (4) and Rusty Blackbird (2) were banded and the stations first ever **Orchard Oriole** was observed. Another 68 birds were banded on the 12<sup>th</sup> and the season's first Cape May Warbler, Magnolia Warbler and Red-breasted Nuthatch were found.

### May 13-19

The week started off with north winds and cool temperatures on the 13<sup>th</sup> and as a result few migrating birds were in evidence. Yellow-rumped Warbler was the most abundant species on the day (11 banded) and a captured **Blue-winged Warbler** was the highlight. A total of 58 birds were banded on the following morning which included 2 Wood Thrush, 1 Orange-crowned Warbler and 7 Western Palm Warbler. Wood Thrush numbers were much higher compared to previous years as we had already banded 7 to date in spring 2005 (only 8 total from previous years). New arrivals on the 14<sup>th</sup> included Blackburnian Warbler, Indigo Bunting and Orange-crowned Warbler. Wind direction shifted to the south on the 15<sup>th</sup> and brought in a good number of migrants into the park which was appropriate timing for TRCA's annual "**Bring Back the Birds Festival**". Twenty-two warbler species were detected on the day and high numbers were evident for Nashville, Magnolia, Chestnut-sided and Ovenbird. 18 Rose-breasted Grosbeaks were tallied which is a record one-day total for this species at TTPBRS. An unusual sighting for peninsula D were 2 Eastern Bluebirds spotted near net 9. Some 80+ visitors were given banding demonstrations and introductions to TTPBRS activities! The Doppler radar showed very heavy migration on the evening and early morning of the 18<sup>th</sup>. The result was one of our busiest days of the spring as 113 birds were banded. The diversity and abundance of birds was ideal for a visit from noted author and birder **Kenn Kaufman** and **TV Ontario (TVO)**. Swainson's Thrush, Magnolia Warbler, Black-throated Blue Warbler, American Redstart and Common Yellowthroat were the dominant species on the day. Most impressive was the unusually high number of Scarlet Tanagers of which 2 were banded and 13 were observed!

Overall it was a great week with lots of bird activity and events at TTPBRS! We still had not had a true "fallout" yet but we were slightly ahead of last years pace. Average monthly banding totals were about the same however the "boom or bust" pattern of 2004 was not evident in 2005. Rather, spring 2005 was a more consistent affair with more "average" days and fewer extremes.

## May 20-26

The week started off on a quiet note with 41 birds banded on the 20<sup>th</sup>. The highlight of the day was the 31 Grade 7 students who participated in our *Bird Studies and Conservation* program. The first Cedar Waxwings (4 DST) appeared on this day along with 2 late **Pine Warblers**. Warm conditions on the 20<sup>th</sup> led to 80 birds banded on May 21. Primary species from the nets were Swainson's Thrush (16), Ovenbird (9) and Northern Waterthrush (8). From the 22<sup>nd</sup>-25<sup>th</sup> ground level migration wound to a halt as cool and "northwindy" (new word!) weather swept over the Toronto area. A Juvenile **American Woodcock** was banded on the 22<sup>nd</sup> which is evidence of this species having bred successfully right under our noses. Migrants were scarce on the 24<sup>th</sup> as the capture totals reached a May low of 6! There were a few more birds to see on the 25<sup>th</sup> and luckily we were able to find our first **Ruby-throated Hummingbird** of the spring! Normally this species is a regular migrant at TTPBRS with 10-20 birds turning up in the nets from the first week through the third week of May. Continuing the trend of late arrivals and near "no shows" were vireos and flycatchers and a couple of warbler species. At this point of the spring census and banding totals were particularly meager in 2005 for Philadelphia, Blue-headed and Red-eyed Vireo and Black-throated Green Warbler. The northerly winds abated on the evening of the 25<sup>th</sup> which led to another influx of migrants into Tommy Thompson. 86 birds were banded on the 26<sup>th</sup> which included 9 Gray Catbird, 12 Magnolia Warbler, 2 Mourning Warbler, 1 Indigo Bunting and 6 Lincoln's Sparrow. The most unusual sighting on the day was a single **Black Tern**, a first for TTPBRS and a rare sighting in the Toronto area!

## May 27-June 2

The final week of May and first week of June are typically slower than preceding weeks for bird migration although the period is the key window for late spring species such as certain thrushes, vireos, flycatchers and a few warbler species. The absence of Philadelphia Vireo in Spring 2005 was alleviated on May 27 when our first of spring 2005 was banded. Respectable numbers of Least Flycatcher (5) and Swainson's Thrush (13) were caught and banded on this day. Given the late date the 129 birds banded on May 28 was a surprise as this ended up being our second busiest day of the spring! In 2004 our busiest day was May 10 which is more typical for southern Ontario. Primary species captured on the day were 42 Swainson's Thrush, 6 Gray-cheeked Thrush, 1 Tennessee Warbler, 18 Magnolia Warbler, 8 Wilson's Warbler and 5 Lincoln's Sparrow. An impressive 17 warbler species were also tallied which is fairly late for such diversity. Migration was strong on the 29<sup>th</sup> and 30<sup>th</sup> as 60 and 69 birds were banded respectively. The 30<sup>th</sup> featured solid totals of flycatchers including 2 Yellow-bellied, 7 Eastern Wood Pewee, 5 Alder, 5 Willow, 7 Traill's (banded) and 6 Least. A very late female **Ruby-crowned Kinglet** was banded on this day. The date was unusual as was the fact that it had a brood patch! Oddly, a **Golden-crowned Kinglet** had been observed the previous day which is also very late. Bird numbers dropped considerably on June 1 when just 8 species of warbler were detected. A single Yellow-bellied Flycatcher, 3 Mourning Warbler and 3 Wilson's were banded on the day. Also on the 1<sup>st</sup>, a lone **Common Nighthawk** was sighted just before dawn. June 2<sup>nd</sup> was equally slow as 27 birds were banded and the vast majority of activity was from local breeders. A **Yellow-billed Cuckoo** was observed on the north trail which was the first detected this spring.

## June 3-9

Given the unusually high level of bird activity from May 27-June 2 we weren't quite sure what to expect during our final week. As it turned out the remaining days of the spring season were quiet as banding totals peaked at 30 on June 5 and reached a low of just 3 on June 9. The primary species encountered in the first half of the period were Gray-cheeked and Swainson's Thrush, and Magnolia, Wilson's and Yellow Warbler. Rather suddenly on June 5 the **Yellow-bellied Flycatchers** finally arrived at the station as 7 were banded on this day followed by 7 on the 6<sup>th</sup> and 3 on the 7<sup>th</sup>. Small numbers of Traill's Flycatcher were also associated with this movement. Unfortunately a late push of **Red-eyed Vireo** didn't occur during the final week. Capture totals of this species were way down from last years total of 60 as only 3 were banded



this year. For the final few days of coverage migrating birds were hard to find as point count and census surveys yielded mostly breeding birds.

### Overview of Spring Coverage

Coverage in spring 2005 was very good as 67 of 70 target days received at least some coverage, this is in keeping with coverage in 2004 (69 of 70 days). After each field day a code (termed coverage code) is assigned based on completeness of all surveys. The optimal coverage code of 7 indicates that there were 90 total net hours, complete census and 3 completed point counts. This spring 50 days were coded with 7 while only 37 were in 2004.

A total of 2, 547 birds of 81 species were banded and 453 birds were recaptured from 5,488 net hours. An additional 1 bird was banded and 4 birds recaptured from non-standard net hours which won't be factored into this report. Netting coverage was 87% of the spring target (compared to 84% in 2004). The captures/net hour rate is an accurate calculation of migrant abundance based solely on the banding component. The rate was .46 birds/net hour for spring 2005. This rate is remarkably similar to the .47 mark posted in 2004. Census was completed on 67 days for the spring and point counts were completed on 66 days. A total of 173 species were detected in spring 2005. A summary of coverage statistics is found below in table 1.

**Table 1.** Coverage Statistics

<b>Unit</b>	<b>2005</b>	<b>2004</b>
Days with at least some coverage	67	68
Days with full coverage (Code 7)	50	37
Total Species Detected	173	172
Birds Banded	2547	2519
Birds Recaptured	468	604
Captured Unbanded	78	236
Total Captures	3093	3359
Net Hours	5492	5317
Birds banded/net hour	.46	.47

### Banding Summary and Discussion

Capturing and banding birds is an important component of the methodology at a migration monitoring site. A fully standardized banding program is a strong method of sampling bird populations, especially when utilized in concert with surveys. Banding also provides valuable information on migrant stopover rates and ecology, migrant fitness, age ratios, and is also an important aspect of our education program at TTPBRS.

Spring 2005 was our second "complete" season of monitoring during spring migration because 2003 was a pilot year with coverage not beginning until May. April of 2004 was generally quiet which was somewhat disappointing. Weather during April of that season was dominated by north winds and cold temperatures, which most likely kept migrants in a holding pattern further south. April of 2005 was an improvement in terms of migrant abundance and diversity. In fact our busiest day of the whole spring was on April 10 when 142 birds were banded. Early spring migrants such as kinglets, creepers and Hermit Thrushes were more abundant in the first half of April 2005, thanks at least in part to warmer weather than the previous year. Average temperature for the first 15 days of April was 2.8° Celsius in 2004 and was 7.5° in 2005. Table 2 provides a week-by-week comparison of banding totals for 2004 and 2005..

**Table 2.** Weekly Capture Statistics

Week	Banded 2004	Net Hours	Banded/Hour	Banded 2005	Net Hours	Banded/Net Hour
April 1-7	42	427.5	.09	252	385.5	.65
April 8-14	67	540	.12	283	598.5	.47
April 15-21	161	532.5	.30	138	600	.23
April 22-28	153	540	.28	71	330	.21
April 29-May 5	249	504.75	.49	133	534.75	.25
May 6-12	663	576	1.15	418	630	.66
May 13-19	265	598.5	.44	410	630	.65
May 20-26	575	554.25	1.03	281	602.25	.46
May 27-June 2	267	504	.52	446	592.5	.75
June 3-8	77	540	.14	115	588.75	.19
April 1-June 8	2519	5317	.47	2547	5492.25	.46

Banding totals for each species are presented in appendix A. A busier month of April is responsible for increased banding totals of early spring migrant species. In table 3 we see that Golden-crowned Kinglet came from a 29<sup>th</sup> overall rank in 2004 to number 1 in the top ten for 2005. Brown Creeper and Slate-coloured Junco made similar jumps this year.

**Table 3.** Top Ten Species Banded for 2005 vs. 2004

Rank 2005	Rank 2004	Species	Banded 2005	Species	Banded 2004
1	29	Golden-crowned Kinglet	281	White-throated Sparrow	264
2	1	White-throated Sparrow	206	Myrtle Warbler	210
3	5	Swainson's Thrush	175	Magnolia Warbler	164
4	2	Myrtle Warbler	145	Traill's Flycatcher	115
5	3	Magnolia Warbler	104	Swainson's Thrush	99
6	10	Hermit Thrush	94	Yellow Warbler	82
7	35	Brown Creeper	84	Swamp Sparrow	70
8	9	Common Yellowthroat	80	Least Flycatcher	69
9	12	Song Sparrow	78	Common Yellowthroat	68
10	21	Slate-colored Junco	67	Hermit Thrush	65
		Total	1314	Total	1206

In 2005 there was an obvious slowdown in the latter half of April and early May with respect to bird diversity and density (see table 2). Many species including Yellow Warbler and Black-throated Green Warbler arrived as much as 2-3 weeks later than in 2004. This trend continued through the remainder of the spring as the expected pushes of many species failed to materialize. Perhaps the most noticeable example is that of Red-eyed Vireo where 60 were banded in 2004 and only 3 in 2005. Decreases from 2004 results are evident for most species of warbler, vireo and flycatcher (see tables 4 and 5). However this wasn't uniform for all species as there were 32 species that were banded in record high numbers in 2005. Species such as Swainson's, Gray-cheeked and Wood Thrush, Ovenbird and Rose-breasted Grosbeak were captured in much higher densities than in 2004. It would be impossible to determine cause-and-effect relationships with these observations but it is worth noting that this is only our second year. A deeper database on spring migration at TTP is needed to accurately assess these year-to-year fluctuations.

**Table 4.** Selected species showing marked decrease/increase in 2005 (banding)

Decrease			Increase		
Species	2005	2004	Species	2005	2004
Traill's Flycatcher	43	115	Swainson's Thrush	175	99
Least Flycatcher	26	69	Hermit Thrush	94	65
Red-eyed Vireo	3	60	Gray-cheeked Thrush	42	27
Western Palm Warbler	28	53	Wood Thrush	17	5
Black-throated Green Warbler	9	36	Golden-crowned Kinglet	281	27
Blackpoll Warbler	11	29	Brown Creeper	84	23
Philadelphia Vireo	3	14	Common Grackle	23	6
Golden-winged Warbler	1	4	Tree Swallow	14	3
Pine Warbler	0	3	Ovenbird	49	28

**Table 5.** Breakdown of banding totals by family for two consecutive years.

Family	2005	2004
Empidonax Flycatchers	91	219
Catharus Thrushes (e.g. Swainson's)	375	226
Kinglets	340	88
Warblers	783	1014
Sparrows	517	526
Vireos	19	87

### Recaptures

There were two foreign recoveries for TTPBRS this spring, one of which was a bird that we banded. A Ruby-crowned Kinglet banded at TTPBRS in fall 2003 was recaptured at Rouge River Bird Observatory in Michigan in April of this year. This is only the second passerine banded at TTPBRS that has been recovered elsewhere. For the second spring in a row (actually within a year and one week of each other) a foreign banded American Redstart was recovered at TTPBRS! This bird was originally banded somewhere in the state of Georgia on September 29-2000. This redstart was in its 6<sup>th</sup> year of life when it was recaptured at Tommy Thompson Park this past spring. While this constitutes an unusually old bird for this species it is still 4 years shy of the longevity record for the species which is 10 years and 1 month!

### Foreign Recoveries

Band Number	Species	Banded	Recovered	Age	Sex	Location
2150-83410	American Redstart	Sept 29-2000	May 18-2005	ASY	M	Georgia, USA
2150-83410	American Redstart					TTPBRS
2310-75634	Ruby-crowned Kinglet	Oct 10-2003	Apr 22-2005	HY	M	TTPBRS
2310-75634	Ruby-crowned Kinglet					Dearborn, Michigan

Recapture totals by species are presented below in table 7. There was a slight drop-off in total number of "recaps" in spring 2005 versus spring 2004. It is interesting to note that we had more recapture records of Warbling Vireo than banding records this year. We can certainly deduce that the "wavies" are rather uncommon as migrants at TTP but are very common nesters. A walk on peninsula D in June and July would reveal that most of the birds one can see are banded. Being in our third year of the project we have now managed to band up to three generations for some species. An example of this is found in table 6, which shows banding and recapture information for one resident Black-capped Chickadee at the station. From the banding information alone we can determine that the bird was banded in early spring 2003 as a breeding female near net 5. The bird was subsequently recaptured in fall 2003 in the proximity of net 10

which suggests a second brood for that summer. It would appear that the bird was unsuccessful in breeding on peninsula D in 2004. However in 2005 the bird returned to nest (probably in the same tree cavity!) at net 5. This bird has subsequently been observed in summer 2005 nesting on the north trail closer to the tip area. We will watch for the young Chickadee's whose parents nested near net 5 this past spring!

**Table 6.** Female Black-capped Chickadee Banding History (Band: 2210-25673)

D	Age	Crit.	Sex	Crit.	Wing	Wt.	Fat	Mo	Day	Bndr	Year	Net	
1	1	1	5	6	62	12.0	1	5	4	PV	2003	5	
R	6	1	5	6	62	14.0	2	5	8	PV	2003	5	
R	1	1	5	6	62	10.7	0	5	29	PV	2003	5	
R	1	1	0	0	63	11.0	T	9	26	DGD	2003	10	
R	1	1	0	0	63	11.1	1	10	23	DGD	2003	10	
R	1	1	0	0	63	10.7	T	10	27	SNL	2003	10	
R	1	1	0	56	63	11.0	T	4	3	MDB	2004	7	
R	1	1	0	0	63	10.4	0	11	3	SNL	2004	1	
R	6	1	0	0	62	10.3	0	4	4	DGD	2005	04	
R	6	1	5	6			1	5	23	DGD	2005	05	Released at net: breeder near net 5
R	6	1	5	6	63	10.9	0	6	2	SNL	2005	05	
R	6	1	5	6				6	4		2005	05	Released at net
R	6	1	5	6	62	10.6	0	6	7	DGD	2005	05	

**Table 7.** Recapture Totals

Species	recap	foreign	species	recap	foreign
American Goldfinch	8	0	Magnolia Warbler	6	0
American Redstart	1	1	Mourning Warbler	2	0
American Robin	4	0	Myrtle Warbler	5	0
American Tree Sparrow	3	0	Nashville Warbler	10	0
Baltimore Oriole	2	0	Northern Cardinal	1	0
Black-and-White Warbler	4	0	Northern Waterthrush	4	0
Blackburnian Warbler	1	0	Orange-crowned Warbler	1	0
Black-capped Chickadee	18	0	Ovenbird	10	0
Black-throated Blue Warbler	4	0	Red-winged Blackbird	4	0
Blue-winged Warbler	2	0	Ruby-crowned Kinglet	12	0
Brown Creeper	3	0	Slate-colored Junco	2	0
Brown Thrasher	4	0	Song Sparrow	30	0
Brown-headed Cowbird	6	0	Swainson's Thrush	2	0
Canada Warbler	2	0	Swamp Sparrow	19	0
Chestnut-sided Warbler	4	0	Traill's Flycatcher	6	0
Common Yellowthroat	11	0	Tree Swallow	6	0
Downy Woodpecker	4	0	Veery	5	0
Eastern Kingbird	1	0	Warbling Vireo	16	0
Fox Sparrow	3	0	Western Palm Warbler	1	0
Golden-crowned Kinglet	77	0	White-throated Sparrow	19	0
Golden-winged Warbler	1	0	Wilson's Warbler	5	0
Gray Catbird	23	0	Winter Wren	3	0
Gray-cheeked Thrush	2	0	Wood Thrush	1	0
Hermit Thrush	14	0	Yellow Warbler	73	0
Least Flycatcher	6	0			
Lincoln's Sparrow	5	0	Total	456	1

## Net Productivity

A fixture of the season reports from TTPBRS is the assessment of net capture rates. This information is useful as a means of monitoring the relationship between habitat succession/change and capture totals. Ideally habitat effects on net productivity would be minimal as we want to avoid any bias on long-term trends. Looking at table 8 the capture rates this year are approximately the same as the year previous, which is a good sign and something to keep an eye on in the future. It also appears that the damage to habitat near nets 1 and 2 in winter 2004/2005 has not seriously affected capture rates. Once again the most successful nets were 11, 1, 10 and 2.

**Table 8.** Net Productivity

Net	Captured	Hours	Banded/Hour 2005	Banded/Hour 2004
1	223	367	0.61	0.55
2	192	367	0.52	0.51
3	172	361	0.48	0.5
4	161	371	0.43	0.57
5	106	371	0.29	0.34
6	161	371	0.43	0.49
7	142	370	0.38	0.5
8	183	371	0.49	0.54
9	156	361	0.43	0.5
10	211	361	0.58	0.63
11	245	361	0.68	0.74
12	165	364	0.45	0.3
13	107	364	0.29	0.25
14	116	366	0.32	0.25
15	203	368	0.55	0.37
Total	2543		0.46	0.47

**Table 9.** Net productivity by bird family

Net Block	Warblers	Vireos	Flycatchers	Thrushes	Golden-crowned Kinglet
A-(1-3)	150	6	22	80	80
B-(4,7,8)	185	3	25	16	16
C-(5,6,15)	122	3	11	84	84
D-(12-14)	84	1	9	85	85
E-(9-11)	241	6	24	108	108

## Unusual Sightings

Below are a few of the interesting sightings at the bird research station this spring. There were a total of 7 additions to the checklist. These new species bring the TTPBRS checklist to a total of 217. A few common birds have eluded us in the past three years of the project, most conspicuously absent is Broad-winged Hawk. Hopefully we can find one this coming fall.

**American Bittern-** A single bird was flushed from the embayment shoreline on April 21 (SNL, MDB) 2<sup>nd</sup> record for TTPBRS

**Cackling Goose-** Single sighting on May 7 (mob-many observers). 1<sup>st</sup> spring record

**Black Scoter-** 2 birds seen off the tip on April 4 (BK) and another bird on April 6. 1<sup>st</sup> records for TTPBRS

**King Eider-** A single on April 4<sup>th</sup> (SNL, KM). 1<sup>st</sup> record for TTPBRS

**Ruddy Duck-** A single bird on April 27 was a pleasant surprise (SNL). 1<sup>st</sup> record for TTPBRS

**Long-tailed Duck-** A late bird was observed on May 25.

**Solitary Sandpiper-** A single bird on May 16 (DGD, KM) was just the 2nd record for TTPBRS.

**Black Tern-** A rare sighting in the Toronto area, this bird was observed on census on May 26 (DSL). 1<sup>st</sup> record for TTPBRS

**Glaucous Gull-** A total of 43 birds on 5 dates beginning on April 5 and ending on April 13 (mobs).

**Iceland Gull-** At least 4 individuals on April 5-6 (mob). 1<sup>st</sup> records for TTPBRS

**Long-eared Owl-** A well camouflaged bird was found on April 5 just before the junction area (mob). 2<sup>nd</sup> record for TTPBRS

**Red-headed Woodpecker-** A single flyover on May 28 (DGD).

**Marsh Wren-** One bird heard singing away near net 9 on May 16 (SNL).

**Golden-crowned Kinglet-** A very late bird on May 29 (Mbi , DGD)

**Ruby-crowned Kinglet-** A late female on May 30 (mob)

**Eastern Bluebird-** An unusual species at Tommy Thompson Park. 2 birds observed on May 15 were noteworthy (SNL, AF).

**“Yellow” Palm Warbler-** First of the Atlantic subspecies of Palm Warbler for TTPBRS on April 17 (mobs)

**Dickcissel-** A single bird flew over on April 22 (DGD). 1<sup>st</sup> record for TTPBRS

**Orchard Oriole-** TTPBRS finally got its Orchard Oriole on May 11 (IS). 1<sup>st</sup> record TTPBRS

### Key to observers

Dan Derbyshire	DGD	Dave Langford	DSL	Ian Sturdee	IS
Mike Boyd	MDB	Kerry McGuire	KM	Bob Kortwright	BK
Attila Fust	AF	Michael Biro	Mbi	Many Observers	mob
Seabrooke Leckie	SNL				

### Species Coverage

Species coverage is a significant factor in the evaluation of a migration monitoring site. Bird Studies Canada uses a system that ranks each landbird species according to conservation priority. The rankings are based on the percentage of a species range that is covered by Breeding Bird Survey. Therefore, priority A species (highest priority) are species whose range is covered the least by the Breeding Bird Survey because of the remoteness of territories in northern Canada and Alaska. There were only two species whose monitoring status changed from 2004, American Pipit and Purple Finch. American Pipit was sampled in enough quantity this year but not last year. Purple Finch was the only species that dropped from our list of successfully monitored species. The loss of Purple Finch is unfortunate but not surprising given the irruptive nature of the species. Purple Finch is a low priority species for this project.

## Point Counts

Three Point Count stations were introduced to the monitoring scheme in spring and fall 2004. It was determined that the surveys were effective in boosting totals for many species particularly in spring. The summary presented in table 10 shows the importance of point counts for 2005 results. Once again the “mini” surveys were able to sample species completely absent from other standard methods and also able to sample good numbers of birds.

**Table 10.** Species Summary for Point Counts

<b>Species Detected Exclusively on Point Counts (not censused)</b>	<b>Species Monitored on Point Counts more than Census</b>
Turkey Vulture	Bank Swallow
Northern Harrier	Black-capped Chickadee
Indigo Bunting	Belted Kingfisher
Black-billed Cuckoo	Blue Jay
	Blue-winged Warbler
	Chimney Swift
	Eastern Kingbird
	House Wren
	Red-eyed Vireo
	Tennessee Warbler
	Wilson’s Warbler

## Personnel

Volunteer support this spring was tremendous. A total of 28 volunteers contributed 1369 hours to the spring migration monitoring program at TTPBRS! The volunteer field assistants are to be commended for the success of our daily coverage. Some of the volunteers that have passed through our program have moved on to employment opportunities in the ornithological field. Our skillful assistant Seabrooke Leckie has taken this leap and will be bander-in-charge for Vaseaux Lake Bird Observatory in British Columbia this fall! It seem’s like just yesterday that Seabrooke was extracting her first bird (and battling the ants) at net 9 in fall 2003. She has been a great help in the operation and development of TTPBRS in the past and we wish her well in her future pursuits.

**Table 11.** Volunteer Effort

<b>Name</b>	<b>Hours</b>	<b>Name</b>	<b>Hours</b>	<b>Name</b>	<b>Hours</b>
Ian Sturdee	176	Tamara Chipperfield	43	Peter Maccalum	12
Kerry McGuire	149	Pierre Robillard	42	Greg Sadowski	10
Bert Vanderzon	113.3	Teresa Carlin	37.5	Mitch Meredith	6
Norma Vanderzon	106.3	Bob Kortright	30	Peter Sturdee	6
Steve Gillis	81.3	Carol Gordon	30	Dan Derbyshire	6
Mary Boswell	77.75	Tom Flinn	24.25	Seabrooke Leckie	6
Don Johnston	77	Dave Langford	23.5	Mike Boyd	4
Attila Fust	73.5	Corina Nagy	18	Linda Stemmler	4
Richard Joos	72	Lisa Wong	17		
Jan Macdonald	54.5	Paolo Viola	12		
Richard Miller	46	Tove Christensen	12	<b>Total</b>	<b>1369</b>

## Collaborative Research Projects

Two universities contacted TTPBRS about assisting with their research projects. We participated in a study run by the University of Montreal on tick dispersal by migratory birds. Banders at the research station were asked to check birds for ticks by blowing on the feathers of the head and occasionally the entire body. If a tick was found the tick was gently removed with tweezers and placed in a labeled vial. Any ticks found were shipped to Winnipeg for processing at a lab. A total of 156 birds were scanned for ticks and 14 were found. Host species included: Swainson's Thrush, Northern Waterthrush, Song Sparrow, Magnolia Warbler, Ovenbird and White-throated Sparrow. One particular thrush had a total of 8 ticks on its body!

TTPBRS also collaborated with Queen's University on a project looking at hybridization between Blue-winged and Golden-winged Warblers. Feather samples were taken from 4 Blue-wings and 1 Golden-wing and sent to the university for processing. It was interesting to note that three of the birds showed hybrid plumage features.

## Education and Events

Banding demonstrations and interpretive talks were given to 389 people at TTPBRS in spring 2005. This figure includes park visitors, students and special groups. Only two school classes visited the research station this spring due in large part to the work-to-rule campaign which made scheduling and advertising very difficult. Other highlights were a visit by renowned birder Kenn Kaufmann as well as media pieces for TVOntario, the Toronto Star and Treehouse TV. The response from the public to what we are doing has always been tremendous and we will continue to build on this important relationship.



## Acknowledgements

The following are to be acknowledged for their contributions to the Tommy Thompson Park Migration Monitoring Program this past spring.

- Toronto and Region Conservation Authority and Toronto Bird Observatory
- All the volunteers who lent their skills and time to the birds this spring
- Ian Sturdee and Bert Vanderzon for their financial contributions towards new equipment for the lab
- Ian Sturdee, Bert and Norma Vanderzon and Seabrooke Leckie helped a great deal with net mending over the past winter
- Once again thanks are due to Tom Flinn for his editorial suggestions for this report

The author especially thanks the following for their assistance in spring 2005: Tamara Chipperfield, Seabrooke Leckie, Greg Sadowski and Ralph Toningier.

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## **Appendices**

**Appendix A. Banding Totals, spring 2005 and 2004**

<b>Species</b>	<b>2005</b>	<b>2004</b>	<b>Species</b>	<b>2005</b>	<b>2004</b>
American Goldfinch	43	54	Magnolia Warbler	104	164
American Redstart	48	50	Mourning Warbler	13	13
American Robin	21	22	Myrtle Warbler	145	210
<b>American Tree Sparrow</b>	14	13	Nashville Warbler	49	55
<b>American Woodcock</b>	6	2	Northern Cardinal	4	2
<b>Baltimore Oriole</b>	13	12	Northern Parula		2
Bay-breasted Warbler	4	8	Northern Rough-winged Swallow		2
<b>Black-and-White Warbler</b>	21	19	<b>Northern Waterthrush</b>	23	14
Blackburnian Warbler	9	13	Orange-crowned Warbler	2	5
Black-capped Chickadee	5	3	<b>Ovenbird</b>	49	28
Blackpoll Warbler	11	29	Philadelphia Vireo	3	14
Black-throated Blue Warbler	22	33	Pine Warbler		3
Black-throated Green Warbler	9	36	Purple Finch	1	1
Blue Jay	1	4	Red-breasted Nuthatch		1
Blue-gray Gnatcatcher	1	1	Red-eyed Vireo	3	60
Blue-headed Vireo	4	4	<b>Red-winged Blackbird</b>	51	50
Blue-winged Warbler	3	4	<b>Rose-breasted Grosbeak</b>	13	4
<b>Brown Creeper</b>	84	23	Ruby-crowned Kinglet	59	61
Brown Thrasher	15	26	<b>Rusty Blackbird</b>	3	1
Brown-headed Cowbird	13	20	<b>Savannah Sparrow</b>	2	
Canada Warbler	15	25	Scarlet Tanager	3	6
<b>Cape May Warbler</b>	2	1	<b>Slate-colored Junco</b>	67	47
Cedar Waxwing		1	<b>Song Sparrow</b>	78	65
Chestnut-sided Warbler	41	47	Spotted Sandpiper		1
Chipping Sparrow	5	5	<b>Swainson's Thrush</b>	175	99
<b>Common Grackle</b>	23	6	Swamp Sparrow	48	70
<b>Common Yellowthroat</b>	80	68	Tennessee Warbler	2	2
<b>Downy Woodpecker</b>	1		Traill's Flycatcher	43	115
Eastern Kingbird	2	2	<b>Tree Swallow</b>	14	3
<b>Eastern Phoebe</b>	10	5	<b>Veery</b>	47	30
Eastern Towhee	3	3	Warbling Vireo	9	9
<b>Eastern White-crowned Sparrow</b>	24	22	Western Palm Warbler	28	53
Eastern Wood-Pewee	4	5	White-breasted Nuthatch		2
European Starling	1	5	White-throated Sparrow	206	264
<b>Field Sparrow</b>	12	3	Wilson's Warbler	37	46
<b>Fox Sparrow</b>	21	10	Winter Wren	20	20
<b>Golden-crowned Kinglet</b>	281	27	<b>Wood Thrush</b>	17	5
Golden-winged Warbler	1	4	Yellow Warbler	65	82
Gray Catbird	43	51	Yellow-bellied Flycatcher	22	35
<b>Gray-cheeked Thrush</b>	42	27	<b>Yellow-bellied Sapsucker</b>	3	1
Great Crested Flycatcher	3	3	Yellow-billed Cuckoo		1
Hairy Woodpecker		1	<b>Yellow-shafted Flicker</b>	9	6
<b>Hermit Thrush</b>	94	65			
<b>House Wren</b>	8	6			
Indigo Bunting	1	3			
Least Flycatcher	26	69	<b>Total Banded</b>	<b>2547</b>	<b>2519</b>
<b>Lincoln's Sparrow</b>	40	27	<b>Species</b>	<b>81</b>	<b>87</b>

**Appendix B. Species Accounts**

<b>species</b>	<b>Total Days</b>	<b>First</b>	<b>High Count</b>	<b>High Count Date</b>
ABDU	5	06-Apr-05	2	07-Apr-05
AGWT	1	27-Apr-05	3	27-Apr-05
ALFL	10	26-May-05	4	31-May-05
AMCR	21	01-Apr-05	4	01-Apr-05
AMGO	65	05-Apr-05	14	sev
AMKE	1	06-Apr-05	1	06-Apr-05
AMPI	5	09-Apr-05	4	sev
AMRE	22	11-May-05	18	18-May-05
AMRO	67	01-Apr-05	24	20-Apr-05
AMWI	3	01-Apr-05	2	07-Apr-05
AMWO	11	01-Apr-05	2	04-Apr-05
ATSP	11	01-Apr-05	10	01-Apr-05
BANS	19	02-May-05	7	03-Jun-05
BAOR	32	08-May-05	8	15-May-05
BARS	26	13-Apr-05	19	12-May-05
BAWW	19	07-May-05	9	18-May-05
BBCU	1	29-May-05	1	29-May-05
BBPL	2	27-May-05	1	sev
BBWA	7	18-May-05	3	sev
BCCH	52	01-Apr-05	6	05-Apr-05
BEKI	18	05-Apr-05	3	06-Apr-05
BGGN	11	29-Apr-05	3	13-May-05
BHCO	67	01-Apr-05	20	27-Apr-05
BHVI	6	08-May-05	3	15-May-05
BLBW	15	15-May-05	5	28-May-05
BLJA	16	21-Apr-05	5	01-Jun-05
BLPW	13	18-May-05	5	30-May-05
BLSC	2	04-Apr-05	2	04-Apr-05
BLTE	1	26-May-05	1	26-May-05
BOGU	2	09-Apr-05	1	sev
BRCR	18	01-Apr-05	44	10-Apr-05
BRTH	35	20-Apr-05	3	07-May-05
BTBW	16	11-May-05	12	18-May-05
BTNW	16	11-May-05	5	21-May-05
BUFF	45	01-Apr-05	72	15-Apr-05
BWTE	1	15-Apr-05	1	15-Apr-05
BWWA	4	11-May-05	2	sev
CACG	1	07-May-05	1	07-May-05
CAGO	66	01-Apr-05	49	04-Jun-05
CANV	1	14-May-05	1	14-May-05
CAWA	9	15-May-05	6	sev
CEDW	7	27-May-05	10	04-Jun-05
CHSP	8	19-Apr-05	3	11-May-05
CHSW	4	17-May-05	5	24-May-05
CMWA	4	15-May-05	2	18-May-05
COGO	8	01-Apr-05	80	01-Apr-05
COGR	63	01-Apr-05	32	04-May-05
COLO	14	24-Apr-05	6	24-May-05
COME	11	05-Apr-05	4	04-May-05
COYE	26	06-May-05	13	26-May-05

Species	Total Days	First Date	High Count	High Count Date
CSWA	22	11-May-05	14	15-May-05
DOWO	16	06-Apr-05	2	18-Apr-05
EAKI	26	11-May-05	6	27-May-05
EAPH	5	06-Apr-05	4	09-Apr-05
EATO	11	05-Apr-05	2	sev
EAWP	11	19-May-05	8	28-May-05
EUST	65	01-Apr-05	16	29-Apr-05
FISP	13	10-Apr-05	3	07-May-05
FOSP	11	01-Apr-05	14	10-Apr-05
GADW	43	07-Apr-05	9	01-Jun-05
GBBG	2	06-Apr-05	2	10-Apr-05
GBHE	6	09-Apr-05	2	sev
GCFL	10	09-May-05	2	11-May-05
GCKI	24	01-Apr-05	130	07-Apr-05
GCTH	19	19-May-05	6	28-May-05
GLGU	3	06-Apr-05	1	sev
GRCA	31	08-May-05	15	26-May-05
GREG	5	17-Apr-05	2	01-Jun-05
GRSC	21	01-Apr-05	115	07-Apr-05
GRYE	4	06-Apr-05	2	27-Apr-05
GWWA	2	15-May-05	1	15-May-05
HETH	36	07-Apr-05	25	05-May-05
HOME	1	17-Apr-05	3	17-Apr-05
HOWR	15	05-May-05	3	20-May-05
INBU	2	26-May-05	1	sev
KIEI	1	04-Apr-05	1	04-Apr-05
KILL	25	01-Apr-05	3	sev
LEFL	23	07-May-05	10	27-May-05
LESC	29	01-Apr-05	72	04-Apr-05
LEYE	1	10-May-05	1	10-May-05
LISP	21	06-May-05	7	26-May-05
MALL	62	05-Apr-05	26	20-Apr-05
MAWA	25	12-May-05	22	28-May-05
MERL	1	07-Apr-05	1	07-Apr-05
MODO	15	01-Apr-05	3	16-Apr-05
MOWA	10	26-May-05	5	30-May-05
MUSW	63	01-Apr-05	15	24-Apr-05
MYWA	33	17-Apr-05	32	11-May-05
NAWA	19	05-May-05	13	18-May-05
NOCA	54	01-Apr-05	3	04-Apr-05
NOHA	4	06-Apr-05	1	29-Apr-05
NOPA	2	18-May-05	1	sev
NOPI	1	07-Apr-05	6	07-Apr-05
NOWA	14	20-Apr-05	9	21-May-05
NRWS	10	11-May-05	7	16-May-05
NSHO	3	07-Apr-05	5	27-Apr-05
OCWA	4	14-May-05	1	15-May-05
OLDS	50	01-Apr-05	500	06-Apr-05
OVEN	18	11-May-05	16	18-May-05
PEFA	2	04-May-05	1	sev
PHVI	4	27-May-05	2	28-May-05

Species	Total Days	First Date	High Count	High Count Date
PIWA	1	20-May-05	2	20-May-05
PUFI	4	07-Apr-05	2	04-May-05
RBGR	12	09-May-05	14	15-May-05
RBME	4	06-Apr-05	6	15-Apr-05
RBNU	4	12-May-05	2	sev
RCKI	31	06-Apr-05	9	17-Apr-05
REDH	3	07-Apr-05	4	22-Apr-05
REVI	13	11-May-05	6	31-May-05
RNDU	2	07-Apr-05	4	07-Apr-05
RNGR	1	07-Apr-05	2	07-Apr-05
RODO	1	09-May-05	1	09-May-05
RTHU	4	28-May-05	2	02-Jun-05
RUBL	18	01-Apr-05	3	sev
RWBL	66	01-Apr-05	54	01-Apr-05
SAVS	2	17-Apr-05	3	09-May-05
SCJU	24	01-Apr-05	53	10-Apr-05
SCTA	6	11-May-05	10	18-May-05
SOSP	67	01-Apr-05	20	sev
SPSA	32	07-May-05	7	sev
SSHA	1	19-Apr-05	1	19-Apr-05
SWSP	33	05-Apr-05	11	07-May-05
SWTH	28	11-May-05	50	28-May-05
TEWA	5	15-May-05	2	21-May-05
TRES	65	05-Apr-05	26	12-May-05
TRFL	23	11-May-05	8	05-Jun-05
TRUS	1	02-Jun-05	3	02-Jun-05
TUVU	1	01-May-05	1	01-May-05
VEER	21	10-May-05	10	sev
WAVI	32	09-May-05	16	24-May-05
WCSP	16	05-May-05	8	09-May-05
WIFL	21	20-May-05	8	28-May-05
WIWA	18	15-May-05	11	28-May-05
WIWR	16	01-Apr-05	4	sev
WODU	6	07-Apr-05	9	07-Apr-05
WOTH	13	06-May-05	6	11-May-05
WPWA	18	17-Apr-05	9	14-May-05
WTSP	44	10-Apr-05	42	07-May-05
WWSC	22	04-Apr-05	16	06-Apr-05
YBFL	10	19-May-05	8	sev
YBSA	5	10-Apr-05	2	16-Apr-05
YSFL	56	06-Apr-05	6	sev
YWAR	36	05-May-05	35	07-Jun-05

**Appendix C. Daily Totals**

<b>date</b>	<b>pks</b>	<b>band</b>	<b>recaps</b>	<b>cap</b>	<b>census</b>	<b>PC1</b>	<b>PC2</b>	<b>PC3</b>	<b>DT</b>	<b>NSB</b>	<b>NSR</b>	<b>Casual</b>	<b>dst</b>	<b>Species</b>
01-Apr-05	2	37	2	0	367	5	13	2	421	0	0	80	468	33
04-Apr-05	3	5	3	1	274	4	0	3	290	0	0	203	408	29
05-Apr-05	1	15	1	1	406	12	13	4	450	0	0	579	847	45
06-Apr-05	4	94	4	2	719	34	19	25	893	0	0	809	1312	50
07-Apr-05	12	101	12	31	603	16	25	0	756	0	0	938	1335	52
08-Apr-05	8	17	8	1	244	20	12	10	292	0	0	352	523	40
09-Apr-05	12	61	12	5	520	37	17	16	642	0	0	774	1246	44
10-Apr-05	14	142	14	4	520	67	25	28	760	0	0	445	997	46
11-Apr-05	13	23	13	0	228	19	9	4	279	0	0	387	563	42
12-Apr-05	12	8	12	0	244	8	11	9	281	0	0	1026	1170	45
13-Apr-05	9	12	9	0	264	20	10	11	315	0	0	643	752	42
14-Apr-05	6	20	6	2	237	14	18	13	296	0	0	580	704	38
15-Apr-05	4	3	4	0	403	17	13	10	437	0	0	593	732	39
16-Apr-05	4	27	4	0	484	31	25	11	557	0	0	361	799	51
17-Apr-05	2	32	2	0	425	33	25	5	499	0	0	303	697	50
18-Apr-05	4	18	4	0	269	19	19	13	316	0	0	234	480	42
19-Apr-05	6	22	6	0	290	25	29	26	356	0	0	666	885	48
20-Apr-05	1	18	1	0	284	35	0	15	314	0	1	387	562	43
21-Apr-05	6	18	6	0	219	14	19	15	270	0	0	529	694	41
22-Apr-05	2	23	2	0	175	27	28	17	247	0	0	370	498	42
24-Apr-05	0	0	0	0	334	16	0	0	345	0	0	0	345	27
25-Apr-05	2	3	0	0	178	13	17	0	203	0	0	193	320	36
26-Apr-05	2	17	2	1	160	19	20	9	212	0	1	487	589	44
27-Apr-05	6	22	6	1	232	23	16	17	278	0	0	380	510	46
28-Apr-05	4	6	2	1	130	27	21	0	166	0	0	355	418	40
29-Apr-05	4	12	4	1	155	37	23	19	209	0	0	323	441	47
30-Apr-05	0	0	0	0	158	0	0	0	158	0	0	0	158	26
01-May-05	5	22	3	0	189	23	19	30	243	0	0	134	320	39
02-May-05	7	13	7	2	131	16	17	33	194	0	0	299	412	42
03-May-05	3	9	3	0	155	19	25	20	205	0	0	323	415	39
04-May-05	4	17	2	0	244	16	15	41	305	0	0	186	402	46
05-May-05	5	60	3	0	153	20	26	27	236	0	0	437	541	47
06-May-05	5	55	5	0	160	26	21	32	240	0	0	251	389	55
07-May-05	6	62	4	2	291	43	27	24	424	0	0	294	601	57
08-May-05	6	33	6	1	186	22	14	25	251	0	0	0	251	38
09-May-05	4	30	2	0	245	19	25	27	309	0	0	203	436	58

date	pks	band	recaps	cap	census	PC1	PC2	PC3	DT	NSB	NSR	Casual	dst	Species
10-May-05	7	60	7	1	188	30	26	10	280	0	0	245	421	54
11-May-05	13	110	10	1	317	25	32	30	475	0	0	335	697	74
12-May-05	12	68	11	0	191	15	25	23	298	0	0	330	501	64
13-May-05	16	25	16	1	139	28	20	15	200	0	0	180	320	57
14-May-05	22	57	22	0	284	31	31	26	392	0	0	281	549	70
15-May-05	13	86	13	0	253	33	35	30	384	0	0	202	494	73
16-May-05	17	27	15	0	201	27	24	24	268	0	0	180	360	61
17-May-05	15	29	15	2	217	20	36	25	303	0	1	265	446	67
18-May-05	14	113	14	2	209	29	31	13	362	0	0	344	577	75
19-May-05	10	73	6	0	138	12	33	49	279	0	0	235	417	68
20-May-05	8	41	8	0	155	29	35	33	244	0	0	235	367	71
21-May-05	13	80	13	0	163	32	31	33	297	0	0	210	407	69
22-May-05	11	29	11	0	114	23	23	15	186	0	0	161	282	67
23-May-05	12	18	12	0	135	21	23	27	185	0	0	140	265	52
24-May-05	6	6	6	0	133	38	39	27	206	0	0	144	283	47
25-May-05	8	21	8	1	122	32	36	39	193	0	0	174	258	57
26-May-05	12	86	10	0	129	14	36	27	263	0	0	218	380	61
27-May-05	6	59	6	0	135	26	41	33	256	0	0	160	336	54
28-May-05	10	131	10	3	194	21	34	38	363	0	0	229	500	66
29-May-05	5	60	5	0	115	24	29	27	227	0	0	184	329	61
30-May-05	10	69	10	2	100	20	18	28	224	0	0	289	423	63
31-May-05	7	63	7	0	98	40	32	22	220	0	0	205	336	66
01-Jun-05	8	37	8	3	101	11	31	21	192	0	0	235	342	53
02-Jun-05	6	27	6	1	147	33	23	30	216	0	0	205	304	50
03-Jun-05	6	17	6	1	126	37	35	33	206	0	0	154	276	46
04-Jun-05	5	17	5	0	191	28	23	16	242	0	0	174	334	40
05-Jun-05	6	30	6	0	111	18	27	21	168	0	0	110	224	44
06-Jun-05	5	21	5	1	102	19	12	26	154	0	0	102	205	41
07-Jun-05	3	15	3	2	132	14	22	28	184	0	0	137	254	43
08-Jun-05	4	12	4	1	125	15	11	26	175	0	0	134	244	42
09-Jun-05	1	3	1	0	114	18	13	29	144	1	1	151	229	36
Total	479	2547	453	78	15155	1559	1483	1365	20435	1	4	20472	33580	3341





