The Breeding Birds of
Tommy Thompson Park
Project

Willow Flycatcher nest- Tommy Thompson Park, summer 2005

Toronto and Region Conservation

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March 2006

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Introduction

Study Area

Tommy Thompson Park

Tommy Thompson Park (TTP) is the largest area of existing natural habitat on the central Toronto waterfront. From the late 1950's until present day, a combination of lake-filling and dredging activities created the current configuration of the park. Through natural succession the spit has been colonized by an impressive variety of plant and animal communities. Tommy Thompson Park has been designated as an Environmentally Significant Area (ESA) and in 2001, was designated a globally significant Important Bird Area (IBA) by Birdlife International for its concentration of nesting colonial waterbirds and migratory value. Considerable effort by all three levels of government is being focused on the revitalization of Toronto's waterfront. The implementation of the Tommy Thompson Park Master Plan is a key piece of the proposed Lake Ontario Park, which will be a major part of the city's plan for a green waterfront. The geographical location of the park and its natural features make it very attractive for large numbers of migrating birds, butterflies and nesting waterbirds.

Habitat Features

Overview

Tommy Thompson Park is a five-kilometer peninsula extending in a southwestern direction into Lake Ontario. The entire area encompasses more than 250 hectares which includes the vegetated peninsular branches and the aquatic embayments and containment cells. The sandy soil and exposure to erosive winds and wave action keep the area in a relatively stable stage of succession although soil quality is slowly improving over time. A notable climate factor is that Tommy Thompson Park receives 30% less snowfall than mainland areas and is cooler in summer and winter than the mainland due to proximity to Lake Ontario. There is a high diversity of vegetation communities within Tommy Thompson Park, due to the variable habitat, the disturbance level, and the age of the different sections of the landmass. The dominant vegetation communities within are dry, moist, and wet meadows followed by, deciduous swamps, poplar deciduous forests, meadow marshes, sand dunes, manicured areas, and lastly beach/bar communities. The smaller vegetation communities consist of thickets, shallow marshes, savannahs, cultural woodlands, shallow aquatic areas, forb sand barrens and lastly coastal fens.

Meadows

Meadows at Tommy Thompson Park are characterized by a mix of grasses and wildflowers. Cultural meadows receive a lot of sun and are open sites. They are hot and become dry when rain is infrequent. Wildflowers adapt by having deep taproots, both to compete with the grasses and to access water during periods of drought. The matting, tight-knit roots of the grasses, in combination with the deep roots of the wildflowers, combined helps to keep weedy plants to a minimum. There are three types of vegetation communities that are found within the cultural meadows that are dependent on the moisture regime; they are dry, moist, and wet.

Dry Meadow

The canopy of the meadow is open with grasses and forbs being the dominant vegetation. A large proportion of the vegetation is non-native plant species. The dry cultural meadows are characterized by their dry, and often sandy or stony substrate. Representative vegetation includes mossy stonecrop (*Sedum acre*), thistle, common mullein (*Verbascum thapsus*), rough-fruited cinquefoil (*Potentilla recta*), catnip (*Nepeta cataria*), Foxtail barley (*Hordeum jubatum*), horseweed (*Conyza canadensis*), Pineapple weed (*Matricaria matricarioides*), canada wild rye (*Elymus canadensis*). Other plant species often found on the dry fields of the spit include white sweet clover, mustard species and willow seedlings.

Moist Meadow

Moister areas of the cultural meadow run along both sides of the main access roads. These fields typically have somewhat rocky soil that is moist due to poor drainage, and are covered by a variety of wildflowers and grasses. As the summer progresses, the predominant colours change, as new flowers come into bloom.

Sweet clovers are very abundant throughout the spit, with yellow sweet clover (*Melilotus officinalis*) flowering in late spring, and the more common white variety flowering in early summer. Wild carrot (*Daucus carota*) and yarrow (*Achillea millefolium*) are also prevalent. Clumps of tansies (*Tanacetum vulgare*) bearing clusters of buttonlike yellow flowers are scattered throughout most fields, and in some years are dominant near the lighthouse at the tip of the spit. At this location, they create a sea of yellow in late July.

Three goldenrod species are found in moist fields. Canada goldenrod (*Solidago canadensis*), the most abundant, has dense, sharply toothed leaves, a plume like shape, yellow flowers, and a smooth stem near the base. The sea-rocket (*Cakile edentula*) and Asters (*Aster sp.*) can also be found.

Wet Meadow

Wet cultural meadows tend to be soaked during spring to mid-summer, and subsequently dry up slightly in the late summer. A fairly large wet cultural meadow is located on peninsula D, while a smaller wet cultural meadow in peninsula A acts as ground cover for the immature poplar deciduous forest. Straight, unbranched-stemmed horsetail species are found commonly in the wet cultural meadows. The species include variegated scouring rush (*Equisetum variegatum*), and scouring rush (*E. hyemale*). Sedges and rushes are also common. In June and July, the yellowish-green flowers of the bog twayblade (*Liparis loeselii*) bloom in wet cultural meadows. By early August, both boneset (*Eupatorium perfoliatum.*) and nodding ladies tresses (*Spiranthes cernua*) are in flower.

Deciduous Forest

This plant community is the most mature community on the spit, yet it is still at a young stage since the spit is less than fifty years old. The canopy is patchy or relatively open in nature. The forest is dominated by eastern cottonwood (*Populus deltoids*); trembling aspen (*P. tremuloides*), large-toothed aspen (*P. grandidentata*), balsam poplar (*P. balsamifera*), and Sassafras (*Sassafras albidum*) are also found in the canopy of the forest. The understorey varies from sparse in peninsulas A and B, to dense in peninsula C, as a result of the coastal bird density. Species in this canopy layer include the sandbar willow (*Salix exigua*) and red-osier dogwood (*Cornus stolonifera*).

The groundcover of the immature forest varies with changing moisture regimes. Where deciduous trees predominate, soil on the forest floor is rich with leaf litter and organic material. Therefore the soil is generally moist because the soil retains moisture and the tree leaf cover keeps the sunlight from drying out the soil. Plants receive abundant sunlight in the spring and filtered light in the summer. The abundant sunlight in the spring supports many spring wildflowers. Once the trees leaf-out, the forest floor receives much less sunlight and most wildflowers wither away until the next spring. In wetter areas, a lush carpet of field horsetails (*Equisetum arvense*) covers the forest floor. The first spring flower to appear in the more open forest is sweet coltsfoot (*Tussilago farfara*). Surprisingly, showy lady's slipper (*Cypripedium reginae*) grows in one forest location just at the edge of a road. Bittersweet nightshade (*Solanum dulcamara*), a vinelike plant, is also scattered throughout the forest.

The stinging nettle (*Urtica diocia*) is abundant in areas with high nitrogen levels, often former or present nesting areas for the gulls. Silverweed (*Potentilla anserina*), a member of the Rose family, is also found throughout forested areas. Other species occurring sporadically include hedge bindweed (*Calystegia sepium*) and goldenrods (*Solidago*).

Sand Dune

Sand dunes are found lining the shores of the peninsulas as well as in the interiors. Sand dunes are found on the dry, sandy areas of peninsulas A and B due to the coastal bird colonies, which retard the vegetation growth and prohibit plant establishment. The vegetation cover varies from patchy and barren to continuous meadow in the open sand dunes. The dominant vegetation in the open sand dunes is flat-stemmed bluegrass or canada bluegrass (*Poa compressa*). In the shrub sand dunes the vegetation cover varies from patchy and barren to continuous

thicket. The vegetation cover varies from savannah to forest in the treed sand dunes. The greater the percent tree-cover the more stable the sand dune is. In areas in which groundcover does allow shrubs or trees to grow, the species vary with the availability of water. There are two woody plant species that are commonly found within the sand dunes, which include sandbar willow (*Salix exigua*) and Eastern cottonwood (*Populus deltoides*). In the more stable dune areas various grass and sedge species are found underneath the shrub cover in the understorey such as common mallow (*Malva neglecta*) and lamb's quarters (*Chenopodium album*). Also commonly seen in this area are tumbleweeds (*Amaranthus graecizans*), purslane (*Portulaca oleracea*), and sour or curled dock (*Rumex crispus*). Common Juniper (*Juniperus communis*) is found sparsely throughout the sand dune community.

Beach/Bar

The beach habitat is quite varied. It ranges between a transition zone into water to a transition zone into poplar deciduous forest or cultural meadow. The beach may be concrete where all the soil has been removed by wave action or it may be a sand beach. The transition between the water and the vegetated land may take place quickly - over a few meters or slowly in the more protected areas. At the water's edge, winter ice scrapes along the shore, cleaning off exposed soil and plants. Therefore, there is commonly a zone devoid of plants within several meters of the shoreline. Those plants that do grow on the concrete have a foothold in cracks in the rock. Trees are not common on the beach. Shrubs are short or creep along the ground. The absence of tall shrubs and trees means that wildflowers in this habitat are exposed to full sun and wind.

Wetlands

Wetlands are areas that are permanently or seasonally waterlogged. The wetland is covered or saturated by water for at least part of the year. Wetlands include lakes, rivers, marshes, swamps, bogs and fens. These areas are characterized by standing or moving water. Beaver dams, roads, or natural hills may form a barrier behind which water collects. A lake may form in depressions in the land. Wetlands hold or slow the movement of water. This is important where communities occur close to a wetland. The wet areas also form a habitat that is home to many plants, birds, fish and animals. Some plants in wet areas, such as water lilies, have adapted to the standing water by developing leaves that float. Other plants occupy the shoreline where their roots can access plenty of water, but the roots are not actually covered by water.

Swamps usually have standing water in small pools. In the spring, or during wet seasons, standing or slow-moving water covers the land for at least part of the year. There are two main types of deciduous swamps found in Tommy Thompson Park, in the first type, trees dominate the canopy, and in the other a mixture of mostly shrubs with a few tree species dominates the canopy.

There are two types of marshes at Tommy Thompson Park, meadow and shallow marshes. Meadow marshes are slightly drier than shallow marshes, which are more similar to shallow aquatic plant communities.

Meadow marshes are vegetation communities with very little tree or shrub cover. Meadow Marshes are relatively dry marshes and therefore contain a mixture of meadow and wetland species. Emergent and submergent aquatic plants dominate them. The dominant plant cover is made up of common reeds (*Phragmites australis*), redtop grass (*Agrostis gigantea*), rush species (*Juncus sp.*), and purple loosestrife (*Lythrum salicaria*).

Shallow marshes are vegetation communities with very little tree or shrub cover. They are dominated by emergent and submergent aquatic plants. The dominant plant cover is made up of narrow-leaved cattail (*Typha angustifolia*), common reed, bulrush species (*Scirpus sp.*), and purple loosestrife.

Project Background

Toronto and Region Conservation (TRCA) has put forth significant effort into annual assessments of nesting colonial waterbirds at Tommy Thompson Park. This is due to the significance of the site for continentally and globally significant populations of several waterbird species which include; Common Tern, Caspian Tern, Ring-billed Gull, Black-crowned Night Heron and Double-crested Cormorant. Comparatively little effort has been put toward other bird species. The project detailed in this report was initiated as a method of monitoring and documenting other nesting species for the site.

Rationale

The Breeding Birds of Tommy Thompson Park project is organized around monitoring of breeding bird density and diversity in response to changes in habitat due to natural succession and restoration. Annual surveys of breeding non-colonial waterbird species at TTP will provide the following:

- Relative abundance data
- Detailed and accurate nest records
- A measurement of breeding bird abundance and diversity in relation to landscape level change
- Assessment of nesting success including parasitism and predation rates
- Data that can help steer habitat restoration work

This project is appropriate for TRCA because the labour and material cost is low, expertise is readily available and also because monitoring of avian response to habitat restoration efforts is lacking. The Tommy Thompson Park Bird Research Station through volunteers and some staff support will carry out the project annually in spring and summer.

Methods

A combination of variable circular plot (VCP) counts, nest searching and casual observations were employed from April – July 2005 (VCP counts restricted to June and July). Variable circular plot counts are the most recognized method for assessing breeding bird density and were employed for the recently completed Ontario Breeding Bird Atlas (OBBA). Nest searching and monitoring provides valuable data on breeding success, nesting ecology and relative density of nesting attempts. Relevant casual observations were also recorded to augment the monitoring. All data collected for this project were submitted to the OBBA and the Ontario Nest Records Scheme (OSNA). A thorough habitat index for all VCP count stations should be completed in 2006 and then repeated every 5-10 years.

Results

Variable Circular Plot (VCP) Counts

Protocol

The specific protocol for the counts during summer 2005 at Tommy Thompson Park was; 5-minute length VCP counts. The VCP counting method has been widely promoted by biologists over the more popular point count method. VCP counts are much more applicable to analysis and have less bias. Analysis in this report is limited however this survey protocol ensures that future analysis will be efficient. Locations were targeted based on proportion of individual habitat types within the entire land area. Stations were visited on a rotational schedule such that time of day and season were equally represented. All counts were conducted between 7:00am and 9:40am. The protocol involved recording of start time, finish time (5min), date, visit number and UTM location. Temperature, cloud cover % and wind speed were also recorded. Counts were completed on days with fair weather conditions meaning that visibility was high, wind speed was low to moderate (0-15kph) and precipitation was absent. All birds detected were estimated to the following distance parameters: <10m, 10-20m, 20-30m, 30-50m, 50-100m and >100m. Any flyovers and any birds detected beyond 100m were recorded in separate columns. The circumstance of each detection was also noted (e.g. observed, singing, territorial Dispute, family group).

Station locations were distributed in the following manner; four in forest habitats, four in meadow communities (wet and dry) and a single station was placed in an extensive shrub thicket (termed “shrubland”) which is bordered by forest. Each station was visited on six occasions between June 23 and July 8. A breakdown of station information is presented below in table 1 and detection codes are found in table 2.

Table 1. VCP Station Information

Station	UTM Zone	Easting	Northing	Location/Habitat Type	
1	17	635198	4834430	Baselands	Wet Meadow
2	17	635219	4834206	Baselands	Forest
3	17	634948	4834140	Baselands	Dry Meadow
4	17	635276	4833959	Baselands	Dry Meadow
5	17	635101	4832683	Causeway	Shrubland
6	17	634332	4832165	Peninsula D	Forest
7	17	634726	4831138	Toplands	Wet Meadow
8	17	634220	4831453	Peninsula B	Forest
9	17	634208	4831715	Peninsula C	Forest

Table 2. Detection Codes for VCP counts

Code	Detail
S	Singing
C	Calling
CA	Alarm Calling
FEMALE	Female Observed
MALE	Male Observed
FAM	Family Observed
TD	Territorial Dispute
CF	Carrying Food/Fecal Sac
JUV	Juvenile
NEST	Nest Detected
P	Pair Observed
O	Single Individual Observed Unknown Sex/Age

VCP Results

Analysis of VCP count data presented here is a basic summation of results. More sophisticated analysis using DISTANCE software will be necessary in the future when more data is collected to make the effort worthwhile.

A total of 34 species were detected for all counts during summer 2005. The species list (table 3) includes flyover species such as; Common Loon and Unidentified Dowitcher which were not local breeders but rather early migrants and therefore should be ignored.

Table 3. VCP Species List, summer 2005 (*denotes presumed migrant species)

Species		
AMGO	COGR	NRWS
AMKE	COLO*	RWBL
AMRO	COYE	SAVS
BANS	EAKI	SOSP
BAOR	EAWP	SPSA
BARS	EUST	TRES
BCCH	GRCA	UNDO*
BEKI	HOFI	WAVI
BHCO	KILL	WIFL
BRTH	MODO	YWAR
CEDW	NOCA	
CLSW	NOFL	

The derivation of meaningful comparisons between count stations is difficult given the inherent variables between sites that include human disturbance and habitat type and quality. Therefore it would be dubious to state that meadow station 3 is more productive than meadow station 7 because the two sites broadly differ (e.g. station 3 is bordered by forest and thus includes many non-meadow species). However the comparisons do point to some general trends that are worth noting as an introduction to breeding bird communities of Tommy Thompson Park.

The station with the highest overall diversity (22 species) was station 3 located in the west baselands meadow area bordered by Unwin Avenue. As a group the baselands stations (1-4) possessed the highest species richness for the entire study area. Not surprisingly, the weakest station was station 9 located on peninsula C within the Double-crested Cormorant colony. Station 8 was placed in the mature forested area between peninsula C and B. It was believed that this site would be productive given the unique vegetation community and the dense understory. However this station was next to last in terms of species richness and abundance. Perhaps the proximity of this location to the colonial waterbird nesting areas was a limiting factor. In terms of total station abundance (excluding flyovers) station 6 (located in the mature forest on peninsula D) ranked at the top of the list followed closely by stations 4 (dry Meadow-baselands), 5 (shrubland-neck) and 3 (dry meadow-baselands). After these stations there was a significant drop-off in total station abundance. Stations 7, 8 and 9 respectively ranked at the bottom of the list in both species richness and abundance (see fig.1).

Table 4. Total Abundance and Species Richness per Station

Station	Density	Station	Diversity
6	124	3	22
4	120	4	20
5	118	1	19
3	116	2	19
1	74	5	19
2	67	6	19
7	60	7	15
8	39	8	10
9	23	9	6

The graph in figure 1 exhibits an interesting spatial trend. Both the number of species and individuals decline after station 7 (roughly 3.5km along the spit). Species richness is basically uniform extending from the baselands to peninsula D. Overall abundance per station is more variable, ranging from low in the forest and wet meadow of the baselands and then sharply increasing moving southwest along the peninsula to a peak around stations 5 and 6 (roughly halfway down the landmass).

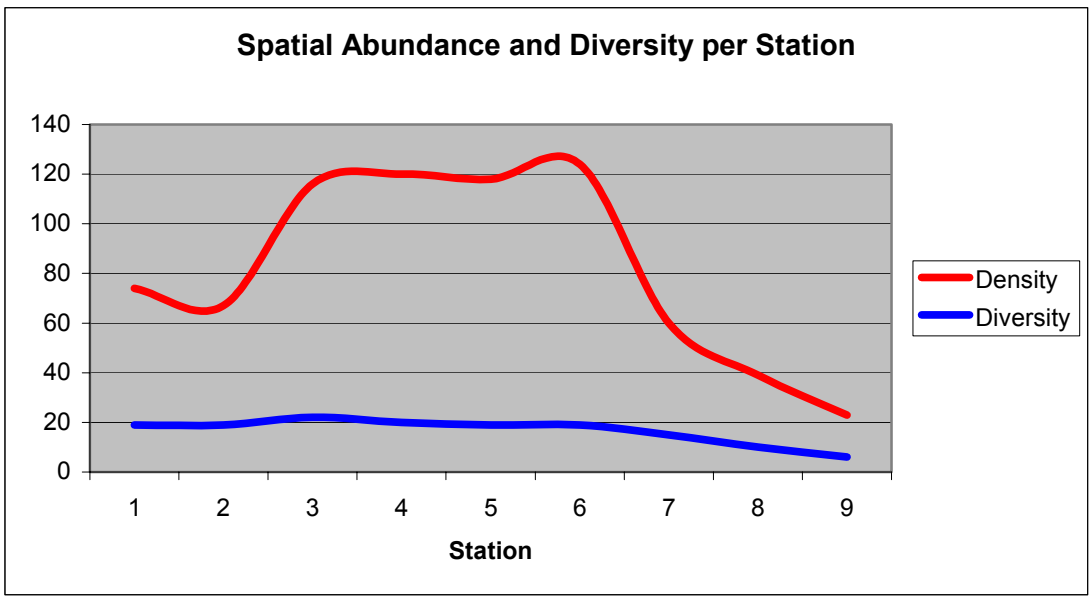

Figure 1. Spatial Abundance and Species Richness per Station

The most valuable aspect of this project will be its ability to reveal changes in breeding bird abundance and diversity over time at the station, habitat and total area level. Breeding avifauna will respond to changes in habitat distribution, composition and structure due to natural succession and habitat restoration. At present the breeding bird communities (non-colonial waterbirds) are typical of early successional environments. Dominant species include Red-winged Blackbird, Song Sparrow, Yellow Warbler and European Starling all of which require basic habitat conditions to thrive. A summary of abundance per species detected by VCP counts are presented below in table 5.

Table 5. Total birds detected within 100m

Species	Total Birds Detected <100m		
RWBL	151	SAVS	13
YWAR	127	CEDW	9
SOSP	98	SPSA	7
EUST	92	BRTH	5
WIFL	35	KILL	5
WAVI	34	TRES	5
BAOR	30	NOFL	3
AMRO	27	BARS	2
GRCA	22	COYE	2
AMGO	19	NOCA	2
COGR	18	AMKE	1
BHCO	16	BCCH	1
EAKI	15	BEKI	1

Nest Searching

Protocol

The nest searching survey method is valuable to bird conservation because it provides indicators of breeding success and parasitism/predation rates. The protocol used in 2005 involved exhaustive area searches of as much of the TTP area as possible permitted by available time and staff. All nests discovered were recorded on uniquely numbered cards for the Ontario Nest Records Scheme (ONRS). Rationale for the ONRS is as follows:

- monitoring clutch size, hatching success, fledging success, predation rates, and other factors over time, to determine whether sufficient young are being produced to maintain healthy populations;
- providing information on egg laying dates to help identify safe periods for management activities such as harvesting hay or timber;
- documenting the effects of climate change on breeding birds (e.g., changes in nesting dates, nesting success, or distribution);
- evaluating the impact of Brown-headed Cowbirds and various predators on nesting success of songbirds;
- documenting basic breeding biology such as nesting habitat, nest site selection, incubation period, renesting, additional broods, etc.;
- documenting the breeding distribution of each species in Ontario.

Results

Exhaustive area searches of terrestrial habitats at TTP in summer 2005 yielded 72 nests. This total includes 22 nests of colonial swallow species, namely Barn Swallow and Bank Swallow. Active nests of 20 species were detected. Underrepresented from this species list are: Savannah Sparrow, Killdeer, American Goldfinch, Common Grackle and Cedar Waxwing. Efforts will be made to adjust our search methodology to sample these species in future years. In 2005, insufficient attention was given to ground nesting meadow species which is responsible for the absence of Savannah Sparrow and

Killdeer and paucity of results for Song Sparrow. Cedar Waxwing was noticeably hard to find in summer 2005 as previously mentioned. Common Grackle and American Goldfinch simply eluded us in 2005. The nest records gathered are significant in that they provide the first assessment of breeding bird productivity at Tommy Thompson Park for most common nesting species (excluding colonial-waterbird species).

In terms of nest productivity, 16 of 28 nests with known outcomes failed while 12 were successful in fledging young. The remaining 45 nests have unknown outcomes. It is a difficult task to monitor some 72 nests that are concurrently active. Nevertheless it would be ideal to determine nest outcome on a higher percentage of the nest records in future years. Recruitment of more volunteers into the project would help considerably.

Of the 16 nests reported as failed at least 4 were due to predation. All 4 predated nests belonged to either Gadwall (3) or Mallard (1). There were very few casual observations of ducklings at TTP in summer 2005 with the exception of Canvasback in late spring.

Brown-headed Cowbird parasitism has become a major issue for small landbird populations in more open habitats and forest fragments. The rate of parasitism among known host species at TTP in 2005 was 24%. Only 21 nests were found of known host species where the nest contents could be seen clearly enough to determine whether parasitism had occurred (i.e. excluding Bank Swallow). A total of 5 nests were found with cowbird eggs, 1 Red-winged Blackbird, 1 Song Sparrow, 1 Willow Flycatcher and 2 Yellow Warbler. Hopefully with more personnel we will be able to find more nests in 2006 and therefore achieve a higher sample size for more acute determination of parasitism rates.

All 72 nest records will be the first installment to a database of breeding bird ecology at Tommy Thompson Park. Future data collection will do much to strengthen our understanding of such factors as: habitat preferences, egg laying dates, fledging dates etc. This database will be instructive as a means of measuring habitat conditions in the present tense and as a tool for steering land management. A complete list of nest records for 2005 is presented in appendix B.

Casual Observations

Given the substantial size of TTP it became clear that casual observations would be important in filling the gaps left by the more standardized VCP counts and nest searching surveys. The ultimate goal of the project was to determine the breeding status of avifauna for the park which meant that any observations suggesting breeding would be essential (e.g. singing, territorial disputes, food or nest material carrying etc.). These observations were carefully recorded and submitted to the Ontario Breeding Bird Atlas.

The Overall Picture

Historically, a total of 66 species have bred at Tommy Thompson Park. A few of these breeding records are rare and isolated and are unlikely to recur with any regularity (e.g. Wilson's Phalarope and Northern Bobwhite). A complete historical breeding bird species list is presented below in the section titled "Species Accounts" (species in bold).

During summer 2005, 67 species were detected at Tommy Thompson Park through VCP counts, nest searching and casual observations. Of these, 22 were designated as possible breeders, 10 as probable and 35 species were confirmed breeders. No new confirmed breeding species were added to the TTP breeding list although 12 new species were listed as either possible (11) or probable (1). Current habitat conditions are appropriate for nesting by some of these species so it is anticipated that the list of known breeding species will grow in the near future.

Table 6. 2005 Breeding Bird Status by Species (species in red are unconfirmed breeders for TTP)

Ref	CONFIRMED	PROBABLE	POSSIBLE
1	American Robin	American Goldfinch	American Crow
2	American Woodcock	Belted Kingfisher	American Kestrel
3	Baltimore Oriole	Black-billed Cuckoo	American Redstart
4	Bank Swallow	Brown Thrasher	American Black Duck
5	Barn Swallow	Cedar Waxwing	Blue Jay
6	Black-capped Chickadee	Chipping Sparrow	Blue-winged Teal
7	Black-crowned Night Heron	Common Yellowthroat	Cliff Swallow
8	Brown-headed Cowbird	House Wren	Downy Woodpecker
9	Canada Goose	Mourning Dove	Eastern Wood Pewee
10	Canvasback	North. Rough-winged Swallow	Field Sparrow
11	Caspian Tern		Great-blue Heron
12	Common Grackle		Great-crested Flycatcher
13	Common Tern		Green-winged Teal
14	Double-crested Cormorant		Hooded Merganser
15	Eastern Kingbird		House Finch
16	European Starling		Indigo Bunting
17	Gadwall		Least Flycatcher
18	Gray Catbird		Mourning Warbler
19	Great Egret		Northern Harrier
20	Herring Gull		Orchard Oriole
21	House Sparrow		Red-eyed Vireo
22	Killdeer		Rock Pigeon
23	Mallard		
24	Mute Swan		
25	Northern Cardinal		
26	Northern Flicker		
27	Red-winged Blackbird		
28	Ring-billed Gull		
29	Savannah Sparrow		
30	Song Sparrow		
31	Spotted Sandpiper		
32	Tree Swallow		
33	Warbling Vireo		
34	Willow Flycatcher		
35	Yellow Warbler		

Possible Status	Species observed in breeding season (no evidence of breeding)
	Singing male present or breeding calls heard in breeding season in suitable nesting habitat
	Species observed in breeding season in suitable nesting habitat
Probable Status	Nest building or excavation of nest hole
	Pair observed in their breeding season in suitable nesting habitat
	Permanent territory presumed through registration of territorial song on at least 2 days, one week or more apart at the same place
Confirmed Status	Adults leaving or entering nest site in circumstances indicating occupied nest
	Adult carrying food for young
	Recently fledged young or downy young
	Nest containing eggs
	Nest with young seen or heard

Species Accounts

The following species accounts include species that were listed as possible, probable or confirmed in 2005 and also historically confirmed breeders (marked in bold). Species highlighted in red were detected in 2005 but have not yet been classified as confirmed breeders.

American Crow (2005-possible) Known to have bred historically at TTP although no nesting evidence was obtained in 2005 beyond observation of the species in suitable habitat during the breeding season.

American Goldfinch (2005-probable) This species is a regular nester at TTP although no nests were discovered in 2005. Listed as probable in 2005 based on observations of adults carrying nesting material and frequent detection on point counts.

American Kestrel (2005-possible) Known to have bred historically at TTP although no nesting evidence was obtained in 2005 beyond observation of the species in suitable habitat during the breeding season. A single bird was observed on several occasions in the toplands area throughout the summer period.

American Redstart (2005-possible) One singing male detected on peninsula D on June 17 most certainly did not breed although this could be a possible breeder in TTP forests in the future.

American Robin (2005-confirmed) Common nesting species in forested areas throughout TTP. A total of 3 nests were recorded only one of which was confirmed as successful. The earliest nesting in 2005 was April 29 for a nest found near goldfish pond containing 3 eggs. The first fledged American Robin was observed on May 27.

American Woodcock (2005-confirmed) Confirmed breeding status attained by the capture of juvenile birds in May-2005 at TTPBRS. Regular nester in forested areas throughout TTP.

American Black Duck (2005-possible) Known to have bred historically at TTP although no nesting evidence was obtained in 2005 beyond observation of the species in suitable habitat during the breeding season.

Baltimore Oriole (2005-confirmed) Common nesting species in forest areas of TTP. A total of 5 nests were recorded, all at tops of mature Cottonwoods. 4 of 5 nests were successful in fledging young. Nests were easily located by the distinctive calls of begging young which began on June 20. One nest on peninsula D is being detailed in an article for the American Birding Association magazine “Birding”. This pair fed honeysuckle berries to the young which resulted in the first ever described case of diet-induced plumage variation in the species.

Bank Swallow (2005-confirmed) Bank Swallows took up residence in the recently constructed sand bank feature in cell 1. A total of 17 nest holes were excavated and at least 15 of these were occupied. Six of these nests were found with incubating adults. Nesting success was difficult to determine although chicks were visible in two of the nests at one stage.

Barn Swallow (2005-confirmed) Barn Swallows are regular nesters at TTP under the eaves of buildings, particularly the trailers located near the port authority booth. Seven nests were discovered here of which two successfully fledged young.

Belted Kingfisher (2005-probable) Known to have bred historically at TTP although no nesting evidence was obtained in 2005 beyond observation of the species in suitable habitat during the breeding season.

Black-billed Cuckoo (2005-probable) Known to have bred historically at TTP although no nesting evidence was obtained in 2005 beyond observation of a pair in suitable habitat during the breeding season. A pair was observed on July 13 in the baselands.

Black-capped Chickadee (2005-confirmed) A regular but uncommon nester at TTP. Only 1 nest was detected with 7 eggs on May 16 which was in a cavity of a low snag on peninsula D. The nest was successful. This same pair attempted a second brood close-by.

Black-crowned Night Heron (2005-confirmed) An abundant nesting colonial-waterbird species at TTP. An estimated 30% of the Canada-wide population of Black-crowned Night Heron breeds here.

Blue Jay (2005-possible) No nesting evidence was obtained in 2005 beyond observation of the species in suitable habitat during the breeding season.

Blue-gray Gnatcatcher- Known to have bred historically, species not detected in 2005 within TTP although a TTPBRS volunteer did find a nest close by along the north side of Unwin Avenue.

Blue-winged Teal (2005-possible) Known to have bred historically at TTP although no nesting evidence was obtained in 2005 beyond observation of the species in suitable habitat during the breeding season. The first of two observations occurred on June 14 in the eastern extreme of embayment D. A second sighting occurred on June 15 in cell 1.

Brown Thrasher (2005-probable) Brown Thrasher is a regular but uncommon nester at TTP. Only one nest was found on June 14 (peninsula D) which had recently been abandoned. This species was detected on point counts in the baselands (stations 1,2 and 3) and was observed frequently on peninsula D (alarm calling on July 26).

Brown-headed Cowbird (2005-confirmed) Brown-headed Cowbird is a common species throughout TTP during summer where it was noted to have parasitized Yellow Warbler, Song Sparrow, Red-winged Blackbird and Willow Flycatcher.

Canada Goose (2005-confirmed) Canada Goose is a common breeder at TTP along shoreline edges of embayments and containment cells.

Canvasback (2005-confirmed) Canvasback has bred almost annually in the triangle pond area at TTP in recent years. An adult female with 9 ducklings was observed in June 13. A family group of just 3 birds was observed on August 20 near peninsula D.

Caspian Tern (2005-confirmed) A regular nesting colonial-waterbird species at TTP.

Cedar Waxwing (2005-probable) Normally a regular nester at TTP, this species was scarce in summer 2005. No nests were found and very few birds were observed.

Chipping Sparrow (2005-probable) No nesting evidence was obtained in 2005 beyond observation of a pair in suitable habitat during the breeding season. A pair was observed on the roadside between goldfish pond and the lighthouse on June 15.

Cliff Swallow (2005-possible) No nesting evidence was obtained in 2005 beyond observation of the species in suitable habitat during the breeding season

Common Grackle (2005-confirmed) Common Grackle is an annual but uncommon nester at TTP. Adults carrying food and nesting material were observed in spring and early summer. The only nest found was an empty one on peninsula D on July 26.

Common Tern (2005-confirmed) An abundant nesting colonial-waterbird species at TTP.

Common Yellowthroat (2005-probable) Singing individuals were recorded on two occasions in the baselands and on one occasion near peninsula B. These records appear to have been of males that established territories but were unable to find a mate.

Double-crested Cormorant (2005-confirmed) An abundant nesting colonial-waterbird species at TTP.

Downy Woodpecker (2005-possible) Possibly an annual nester but irregular. The only records in summer 2005 were two young Downy Woodpeckers observed in the baselands on July 19. These birds are presumed to be locally dispersing individuals.

Eastern Kingbird (2005-confirmed) A regular breeder at TTP along forest edges where meadow and shrubs are present. A total of three nests were found, the first on June 14 (baselands). All nests found were successful to at least chick stage.

Eastern Meadowlark- Known to have bred historically, species not detected in 2005.

Eastern Wood Pewee (2005-possible) No nesting evidence was obtained in 2005 beyond observation of the species in suitable habitat during the breeding season. A single bird was heard singing on peninsula D, June 13.

European Starling (2005-confirmed) Starlings are an abundant species at TTP although their breeding density is difficult to estimate. The species is known to nest in man-made structures and natural cavities throughout the area. Several nest sites were located but were not documented or monitored.

Field Sparrow (2005-possible) This species has not bred historically at TTP. A single bird was observed and heard singing near the goldfish pond on June 13.

Gadwall (2005-confirmed) Gadwall is a surprisingly common nesting species at TTP. A total of four nests were catalogued, three of which were predated.

Gray Catbird (2005-confirmed) Gray Catbird is a regular nester at TTP, preferring dense shrubs with some tree cover. Three nests were found, 2 of which were successful to chick stage. A nest with 3 eggs was recorded on June 22 and later failed for unknown reasons.

Great black-backed Gull (2005-possible) Has bred at TTP in the past although nesting evidence in 2005 was not obtained.

Great Egret (2005-confirmed) TRCA staff confirmed two nests on peninsula C.

Great-blue Heron- Known to have bred historically, species not detected in 2005.

Great-crested Flycatcher (2005-possible) Has not historically bred at TTP. An individual was sighted on June 30 in the baselands. No other evidence for this species was obtained.

Green Heron- Known to have bred historically, species not detected in 2005.

Green-winged Teal- (2005-possible) Known to have bred historically at TTP although no nesting evidence was obtained in 2005 beyond observation of the species in suitable habitat during the breeding season. A single bird was observed off the endikement tip on June 30.

Herring Gull (2005-confirmed) A common nesting colonial-waterbird species at TTP.

Hooded Merganser (2005-possible) Frequent observations of groups of Hooded Merganser were made throughout summer 2005 although no nesting evidence was obtained.

Horned Lark- Known to have bred historically, species not detected in 2005.

House Finch (2005-possible) A single House Finch was heard singing in the baselands forest on June 14 but was never heard or observed again.

House Sparrow (2005-confirmed) House Sparrow is a regular but uncommon nester at TTP. A pair took residence in an old Barn Swallow nest under the eave of the port authority garage. Also observed frequently in the Tree Swallow grid in cell 1.

House Wren (2005-probable) This is probably an annually nesting species at TTP although the best evidence collected in 2005 was a nest building male on peninsula D in May. Otherwise the species was very scarce.

Indigo Bunting (2005-possible) A female was observed and heard alarm calling on June 14 in the shrub thickets to the north of the wet forest of the baselands. Subsequent trips to the area were unsuccessful in re-locating the bird.

Killdeer (2005-confirmed) Killdeer is a common nesting species at TTP in open areas with low vegetation. The first sign of nesting in 2005 was a fledged juvenile found dead on the road on May 23. No nests of this species were found.

Least Flycatcher (2005-possible) Known to have bred at TTP in 2003 although no nesting evidence was obtained in 2005 beyond observation of the species in suitable habitat during the breeding season. A single singing bird was recorded on June 17 on peninsula D.

Mallard (2005-confirmed) Mallard is a regular nester at TTP. The only nest detected was on April 29 on peninsula C, a nest containing 6 eggs.

Mourning Dove- (2005-probable) Known to have bred historically at TTP although no confirmed nesting evidence was obtained in 2005. A bird was observed nest building on peninsula D in May 2005.

Mourning Warbler (2005-possible) No nesting evidence was obtained in 2005 beyond observation of the species in suitable habitat during the breeding season.

Mute Swan (2005-confirmed) A nest in cell 1 was discovered and monitored by TRCA staff.

Northern Rough-winged Swallow (2005-probable) Known to have bred historically at TTP although no nesting evidence was obtained in 2005 beyond observation of the species in suitable habitat during the breeding season. A sudden surge of 40-45 individuals on June 30 could have been locally dispersing birds.

Northern Bobwhite- Known to have bred historically, species not detected in 2005.

Northern Cardinal (2005-confirmed) Northern Cardinal is an uncommon but annually nesting species at TTP. Two nests were found, the first on May 25 had one egg but later failed. Another nest was found on peninsula D which also later failed. Juvenile cardinals were observed in late summer on peninsula D, which suggests that a second attempt was successful.

Northern Flicker (2005-confirmed) Northern Flicker is a regular but uncommon nesting species at TTP. A total of two nests were recorded, one in cell 1 and another in the toplands. Both nests are believed to have been successful although concrete evidence of fledged young was not obtained.

Northern Harrier (2005-possible) Known to have bred historically at TTP although no nesting evidence was obtained in 2005 beyond observation of the species in suitable habitat during the breeding season.

Orchard Oriole (2005-possible) A single male was observed near the goldfish pond on June 20.

Red-eyed Vireo (2005-possible) A singing individual near the embayment D lookout on June 23 was unusual. The bird was not heard or seen again.

Redhead- Known to have bred historically, species not detected in 2005

Red-winged Blackbird (2005-confirmed) A common breeding species throughout the TTP area. The most abundant species on point count surveys. A total of five nests were documented although more were known.

Ring-billed Gull (2005-confirmed) An abundant nesting colonial-waterbird species at TTP.

Ring-necked Pheasant- Known to have bred historically, species not detected in 2005.

Rock Pigeon (2005-possible) Known to have bred historically at TTP although no nesting evidence was obtained in 2005 beyond observation of the species in suitable habitat during the breeding season.

Savannah Sparrow (2005-confirmed) Savannah Sparrow is a common nester in open areas of TTP with substantial ground cover, particularly in the baselands, along the causeway and in some areas of the toplands. Insufficient attention was paid to ground nesting meadow species in summer 2005. No nests were found although the species was present in high numbers. Breeding was confirmed by observations of adults entering and leaving nest sites.

Song Sparrow (2005-confirmed) Song Sparrow is one of the most abundant nesting species at TTP. Insufficient attention was paid to ground nesting meadow species in summer 2005 and therefore only one nest was located which was parasitized and later predated.

Sora- Known to have bred historically, species not detected in 2005.

Spotted Sandpiper (2005-confirmed) A common nester at TTP in open areas near water. Two nests with eggs were monitored on peninsula D and believed to have been successful. Observations of juveniles were frequent throughout the summer period.

Tree Swallow (2005-confirmed) Tree Swallow is a common breeder at TTP. In 2005 many nest boxes were occupied however only 4 nests were documented and monitored.

Virginia Rail- Known to have bred historically, species not detected in 2005.

Warbling Vireo (2005-confirmed) A common nesting species in forested areas of TTP. Warbling Vireos are found throughout TTP although nests were difficult to find. Only one nest was discovered on peninsula D although the number of pairs estimated for the area was 6. Two more nests were discovered in late fall after leaf-fall within 70m of the first nest.

Willow Flycatcher (2005-confirmed) Willow Flycatcher is a common nesting species in more open areas with dense shrubs. Two nests were located, the first on June 29 and the last on July 13 between cell 2 and 3.

Wilson's Phalarope- Known to have bred historically, species not detected in 2005.

Yellow Warbler (2005-confirmed) Yellow Warblers are common to abundant at TTP. Yellow Warbler colonies exist on peninsula D and in the shrubland area of the causeway (near main road junction on north side). A total of eight nests were found without much effort. This species is frequently parasitized at TTP by Brown-headed Cowbirds.

Recommendations

The first year of *The Breeding Birds of Tommy Thompson Park* project was a success as we were able to gather a representative and scientifically based sample of breeding avifauna for the park. Recommendations for future operations include:

- One or more wetland VCP stations should be added
- Nest searching should be extended to include wetland areas
- Nest searching in pre-defined grids that are representative of major habitat types would be more instructive than random exhaustive area searching method.
- Efforts should be made to document more nests to increase sample size.
- The determination of a higher percentage of individual nest outcomes would be beneficial
- More attention is required for ground nesting meadow species
- A thorough habitat assessment for each VCP station will be needed to correlate changes in bird populations with habitat change over time.
- Nest searching effort should be quantified
- More personnel are needed to complete fieldwork
- Banding data from TTPBRS in late spring and early fall would compliment analysis in future reports.
- All staff of TRCA who encounter nests at TTP should inform the author for inclusion in project results.
- A brief protocol would provide useful reference for volunteer assistants

Acknowledgement

*TTPBRS stalwart volunteer, Ian Sturdee contributed many hours to the first year of this project. Seabrooke Leckie also helped with nest searching in late spring/early summer. Thanks are due to both of them for their support in 2005.

Photo Credits: cover-Willow Flycatcher nest (Derbyshire), page 2-peninsula D forest (Leckie), page 3-Spotted Sandpiper nest (Derbyshire), page 6-Bank Swallow nest cavity (Derbyshire), page 7-Red-winged Blackbird nest (Derbyshire), page 7-American Robin nest contents (Derbyshire), page 8-Red-winged Blackbird nest contents (Derbyshire) and page 8-Gray Catbird chicks (Sturdee).

Appendices

Appendix A. VCP Station Species Lists

Station	Species
1	AMGO
	AMRO
	BAOR
	BARS
	BHCO
	BRTH
	COYE
	EAKI
	EUST
	GRCA
	HOFI
	NOCA
	RWBL
	SAVS
	SOSP
	TRES
	WAVI
	WIFL
	YWAR
2	AMGO
	AMRO
	BANS
	BAOR
	BEKI
	BHCO
	BRTH
	COGR
	EAWP
	GRCA
	KILL
	NOFL
	NRWS
	RWBL
	SOSP
	TRES
	WAVI
	WIFL
	YWAR
3	AMGO
	AMKE
	AMRO
	BANS
	BAOR
	BARS
	BHCO
	BRTH
	CEDW
	COGR
	EAKI
	EUST
	GRCA

Station	Species
3	KILL
	NOCA
	NRWS
	RWBL
	SOSP
	TRES
	WAVI
	WIFL
	YWAR
4	AMGO
	AMRO
	BANS
	BARS
	BHCO
	COLO
	EAKI
	EUST
	HOFI
	KILL
	MODO
	NRWS
	RWBL
	SAVS
	SOSP
	SPSA
	TRES
	WAVI
	WIFL
	YWAR
5	AMGO
	BANS
	BAOR
	BARS
	BHCO
	CEDW
	COGR
	EAKI
	EUST
	GRCA
	KILL
	NRWS
	RWBL
	SOSP
	TRES
	UNDO
	WAVI
	WIFL
	YWAR
6	AMGO
	AMRO
	BAOR

Station	Species
6	BCCH
	BEKI
	BHCO
	CEDW
	COGR
	EAKI
	EUST
	GRCA
	NOFL
	NRWS
	RWBL
	SOSP
	TRES
	WAVI
	WIFL
	YWAR
7	AMGO
	BANS
	BAOR
	BARS
	BHCO
	CLSW
	COGR
	KILL
	NRWS
	RWBL
	SAVS
	SOSP
	SPSA
	TRES
	YWAR
8	AMGO
	BAOR
	CEDW
	COGR
	EAKI
	GRCA
	RWBL
	SOSP
	WAVI
	YWAR
9	BAOR
	EUST
	RWBL
	SOSP
	TRES

Appendix B. Summary of 2005 TTP nest records

Species	Card #	Location	UTM	NAD	Parasitized?	Success
AMRO		D			-	?
AMRO	167203	Goldfish Pond			-	?
AMRO	167229	D	634394-4831896	27	-	failed
BANS	169141	Cell 1	635099-4832130	83	-	?
BANS	169141	Cell 1	635099-4832130	83	-	?
BANS	169141	Cell 1	635099-4832130	83	-	?
BANS	169141	Cell 1	635099-4832130	83	-	?
BANS	169141	Cell 1	635099-4832130	83	-	?
BANS	169141	Cell 1	635099-4832130	83	-	?
BANS	169141	Cell 1	635099-4832130	83	-	fledged
BANS	169141	Cell 1	635099-4832130	83	-	?
BANS	169141	Cell 1	635099-4832130	83	-	?
BANS	169141	Cell 1	635099-4832130	83	-	?
BANS	169141	Cell 1	635099-4832130	83	-	?
BANS	169141	Cell 1	635099-4832130	83	-	?
BANS	169141	Cell 1	635099-4832130	83	-	fledged
BANS	169141	Cell 1	635099-4832130	83	-	?
BANS	169141	Cell 1	635099-4832130	83	-	?
BAOR	169140	D	634296-4832133	83	-	fledged
BAOR	167238	C	634390-4831479	83	-	fledged
BAOR	167226	C	634210-4831418	27	-	?
BAOR	167227	B	634248-4831220	83	-	?
BAOR	169154	A	633859-4830934	83	-	fledged
BARS	167206	Neck	635382-4833715	27	-	?
BARS	167207	Neck	635382-4833715	27	-	?
BARS	167208	Neck	635382-4833715	27	-	?
BARS	167209	Neck	635382-4833715	27	-	?
BARS	167210	Neck	635382-4833715	27	-	?
BARS	167211	Neck	635382-4833715	27	-	?
BARS	167212	Neck	635382-4833715	27	-	?
BCCH	169148	D	634293-4832236	83	-	?
BCCH	167232	D	634529-4832022	27	no	fledged
BRTH	167216	D	634512-4832076	27	-	failed
EAKI	167204	Base	635360-4833969	27	-	?
EAKI	167237	C	634353-4831453	83	-	?
EAKI	169146	Finger	635155-4831760	83	-	?
GADW	165780	Tri-Pond Meadow	634433-4831409	83	-	predated
GADW	167199	D	634720-4832180	27	-	predated
GADW	167224	Toplands	634132-4830709	27	-	?
GADW	192002	Neck	635167-4832674	83	-	predated
GRCA	167236	Neck	635151-4832624	83	-	failed
GRCA	167247	D	634210-4831825	27	-	failed
GRCA	167239	Base			-	fledged
HOSP	167211	Neck	635387-4833718	27	-	?
MALL	167233	D	634583-4832107	27	-	predated
NOCA	167228	D	634300-4831941	27	no	failed
NOCA	167202	Base			-	failed
NOFL	167221	Toplands	634043-4830716	27	-	?
NOFL	169144	Cell 1	635225-4832508	83	-	?
RWBL	167213	Neck	635057-4832308	27		?
RWBL	167214	D	634812-4831876	27	yes	failed
RWBL	167215	D	634872-4832024	27	no	?
RWBL	167231	D	634560-4832005	27	no	failed
RWBL	169145	Finger	635136-4831750	83	no	failed
SOSP	167201	Toplands	634402-4830953	27	yes	failed
SPSA	167200	D	634549-4832123	27	-	?
SPSA	167230	D	634201-4831870	27	-	?
TRES	169142	Base	635332-4834412	83	no	fledged
TRES	167235	Cell 1	635060-4832395	83	no	?

Species	Card #	Location	UTM	NAD	Parasitized?	Success
TRES	169139	D	634661-4832322	83	-	?
TRES	165781	C	634215-4831410	83	-	fledged
WAVI	167198	D	634706-4832126	27	-	?
WIFL	192155	Neck	635167-4832674	83	yes	?
WIFL	169133	Finger	635150-4831758	83	no	?
YWAR		D			yes	?
YWAR	167223	D	634437-4832004	27	no	?
YWAR	167218	D	634322-4831954	27	no	?
YWAR	167219	D	634266-4831944	27	no	fledged
YWAR	167220	D	634200-4831881	27	no	fledged
YWAR	167222	D	634483-4832015	27	yes	failed
YWAR	167197	D	634717-4832174	27	-	?
YWAR	169147	Base	635075-4834180	83	no	fledged