

Petrie Island Turtle Nesting Survey Report - 2006

**Ottawa Stewardship Council (OSC)
Friends of Petrie Island (FOPI)
Ontario Ministry of Natural Resources (OMNR)
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Ministry of Natural Resources
Ministère des Richesses naturelles

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NOTE: Ce rapport scientifique est seulement disponible en anglais.

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Thanks to you all for your efforts and interest in the protection of the natural resources of Petrie Island.

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Introduction

Petrie Island, on the Ottawa River, was identified as lacking turtle population nesting information by the Ottawa Stewardship Council (OSC) and the Friends of Petrie Island (FOPI) as a result of various observations of potential human (recent picnic area, trails, and beach development and maintenance) and natural (by wildlife nest predation) impacts on the various turtle species' recruitment. Although several years of basking turtle counts have historically been conducted on Petrie Island by FOPI, no scientific assessments of the turtle populations or their critical habitats have ever been undertaken at the site.

Historically, the beach park area was a sand excavation operation which consisted of various piles of sand that were continuously being moved or trucked away. In discussion with the operator and workers it was common to find turtle eggs in many of these piles and other high spots. Most of the eggs would be destroyed by machinery or trucked away but hatchlings were found by FOPI members over the years before the beach construction. Since the park was completed in 2003/04/05 turtles continue to lay their eggs in this area. In 2005, 14 snapping turtle hatchlings were recorded in late August. The public has been very supportive in protecting turtles, stopping to let them cross the road and reporting hatchling sightings.

This report summarizes the results of the Petrie Island Turtle Nesting Survey and will enable the Petrie Island property manager (i.e. City of Ottawa, through review and recommendation from the Petrie Island Advisory Committee - PIAC) to determine a proper course of action to either mitigate or cease any activities negatively impacting the critical / sensitive nesting habitat on the island.

PROJECT PURPOSE

To survey the turtle populations nesting at Petrie Island, to protect all nesting turtle species and their nesting habitat, with special emphasis on the Species at Risk.

BACKGROUND

- a) **Why needed** – Human impact (such as roads, development, and wetland drainage) has resulted in 2 out of 5 confirmed turtle species at Petrie Island being designated as Species at Risk by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

The Turtles of Petrie Island

Blanding's Turtle *Emydoidea Blandingii* – Status: **Threatened**
Northern Map Turtle *Graptemys Geographica* – Status: **Special Concern**
Snapping Turtle *Chelydra Serpentina Serpentina* – Status Under Review
Midland Painted Turtle *Chrysemys Picta Marginata* – Status: Not Assessed
Red-eared Slider *Trachemys scripta* – Status: Non-Native
* Spiny Soft Shell Turtle *Apalone Spinifera Spinifera* – Status: **Endangered**

The number of turtle species that are at risk continues to rise with increasing human pressure. Blanding's turtles were added to the COSEWIC list in May 2005 and Snapping turtles are currently under review. This latter fact alone is an indication that human impact is increasing.

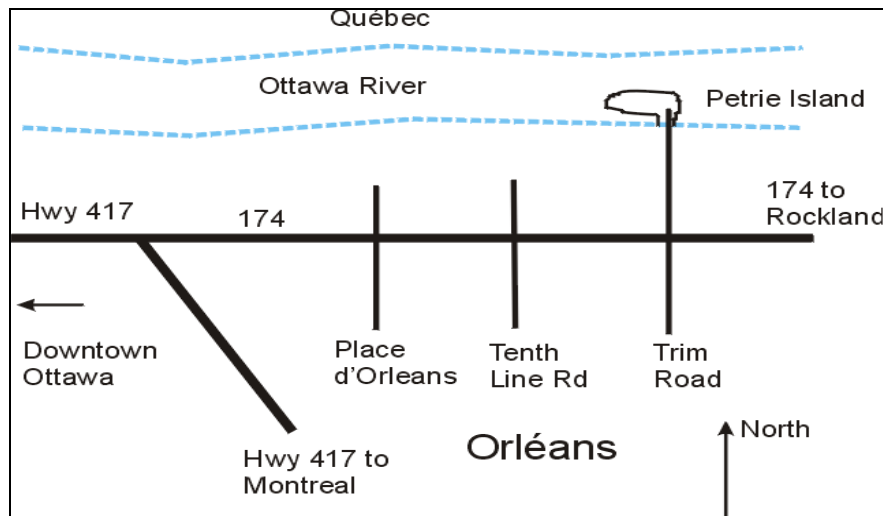
- b) **Benefits** – The presence of Species at Risk in an area, is an indication that the surrounding ecosystem is under a significant amount of stress. By protecting Species at Risk and assisting their recovery, we can insure that sensitive areas can function as part of a healthy ecosystem.

* **Historically known to inhabit the Ottawa River – potentially present.**

SCOPE (DELIVERABLES, MEASURABLE CRITERIA)

- Friends of Petrie Island have conducted generic turtle basking counts over the last several years and continue to do so at present.
- This survey will focus on determining where the populations' breeding turtles are nesting, in an attempt to further protect these significant wildlife habitat areas and resulting recruitment.

Study Area



Petrie Island ($45^{\circ}30' 75^{\circ}29'$) is situated on the Ottawa River, approx. 2 kms downstream of the City of Orleans (Ottawa). The Island is accessible from Trim Rd., off Hwy. 174 (previously referred to as Hwy 17 – TransCanada). Petrie Island has a total surface area of approx. 111ha (275 ac.) and a shoreline perimeter of approx. 12 km. Water levels around the Island are controlled by the Carillon dam, operated by Quebec Hydro.

Petrie Island is subjected to a variety of stresses acting upon its ecosystem. Historical Sand Dredging and Stock Piling activities and significant picnic area, trails, beach and parking lot development and maintenance (~270 parking spaces) may have resulted in physical alterations to the shoreline and the near shore riparian zone. These activities have potentially decreased the amount of near shore turtle nesting habitat.

Considerable (undocumented anecdotal) deleterious activities have been exerted on the Island's nesting turtle habitat over the years. The impact of water level controls has not been evaluated on Petrie Island's turtle nesting habitat.

Method

Nesting Turtle Population Assessment:

- Walk entire grid areas, looking for turtle signs (i.e. actual turtle, nesting turtle, turtle tracks, depredated nests, etc.)
- If unit is available, GPS the site of (if not, record the grid based on nearby physical features – e.g. 25m north of trail, we will then GPS a location in that vicinity): **a nesting turtle (digging and laying eggs); a fresh nest with turtle tracks returning to the water (likely indicating a successful nesting attempt); depredated nests (with shells)** – but then covering the dug-up (depredated) nest, smoothing out the ground to avoid double-counting.

- Take pictures (especially of Blandings turtles, Northern Map turtles and Spiny Soft Shell turtles).
- Complete entire survey form (**Appendix A**) for each outing, regardless of turtle activity.

Observation Sites: Areas of interest will be confined to two general areas within Petrie Island. Area 1 – Critical Grids (concerns due to picnic area, trail, parking lot, and beach development) is comprised of grid points J24-J32, K24-K32, L27-L31, M30 (see map in **Appendix B**). Area 2 – Others (concerns due to repeated predation impacting *VTE species) consists of grid points K21-K23, L14-L22, M14-M18 (see map in **Appendix B**). Observations of *VTE turtles in these areas can lead to better land use decisions in the future.

Observation Methods: Observation methods will consist of information logging of element occurrence for all turtle species, and the information will be tabled per site. Information on specific sites will be documented on maps and grids using the GPS system. Hopefully we will be able to cover all of them on a daily basis, especially during peak nesting periods. If this can't be done, we will need to draw random grid lines for each day. With this system, we will survey twice daily. Once in the early morning (dawn-~9am) and the late evening (~5pm-9pm). While surveying we will need to GPS all nesting sites, regardless of the nesting success.

* **VTE = Vulnerable, Threatened, Endangered (i.e. Species at Risk)**

The Petrie Island Turtle Nesting Survey was conducted from June 5th to June 23rd, 2006.

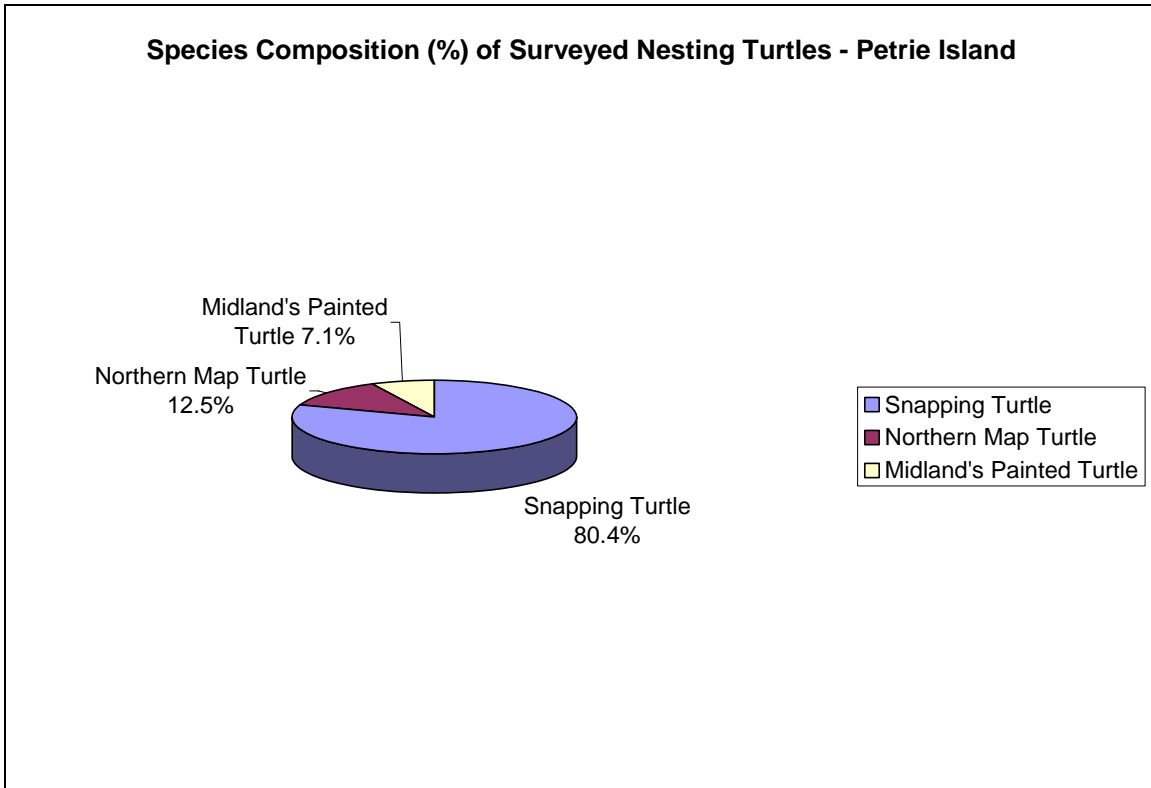
Data analysis

There is always a need for local information, such as historical abundance levels or habitat limitations, to properly interpret results. The status of the combined turtle populations nesting at Petrie Island were evaluated using the element occurrence-per-time unit-effort data, expressed as the average number of turtles observed / hour surveyed (during active turtle nesting periods). This specific data will be used as an effort baseline for future turtle nesting assessments at Petrie Island, but more importantly, the data collected will be used to provide critical spatial information to direct future activities and land uses at Petrie Island.

Results and Analysis

Petrie Island Turtle Population Nesting Assessment

Petrie Island supports nesting habitat for several turtle species. Three (3) of the four (4) native species known to use the Island for nesting, were observed during the survey (Table 1). The Snapping Turtle species made up the majority, 45 individuals (80.4%) of the total nesting observations. The Midland's Painted Turtle species, 4 individuals (7.1%) made up the smallest proportion of the total nesting observations, and the Northern Map Turtle species, 7 individuals (12.5%) accounted for the remainder.



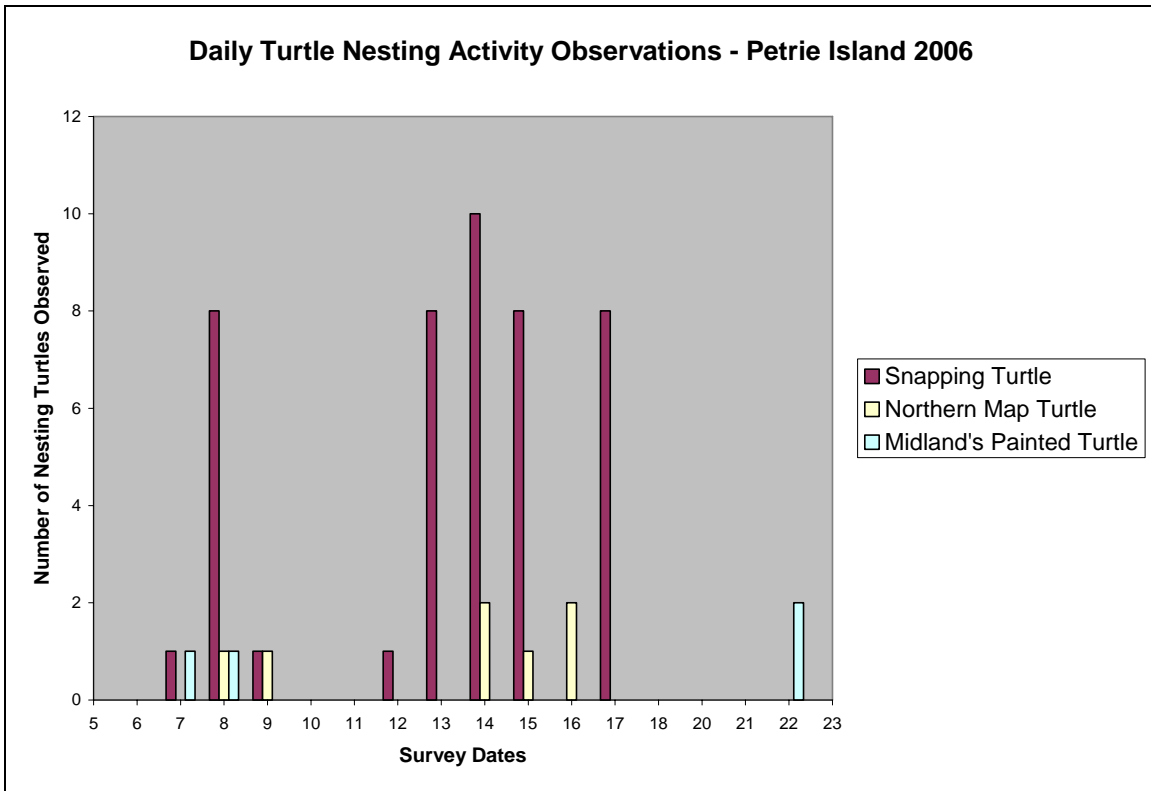


Table 1: 2006 Petrie Island Summary of Daily Nesting Turtle Observations

DATE	HOURS SURVEYED		# OF TURTLES OBSERVED					# OF DEPREDATED NESTS OBSERVED
	AM	PM	S	P	M	B	SS	
June 5	1							
June 6		1						
June 7	0.5		1	1				1
June 8	3.75		8	1	1			48
June 9	1.75	1	1		1			14
June 10	1.25							9
June 11		1						9
June 12	1.5		1					1
June 13	2.25		8					3
June 14	1.75	1	10		2			13
June 15	2.5		8		1			11
June 16	1				2			
June 17	2		8					2
June 18	2							5
June 20	1.5							17
June 21	1.75							15
June 22	1.25	1		2				1
June 23	3							9
TOTAL:	28.75	5	45	4	7	0	0	158

Table 2: The 2006 Petrie Island Nesting Turtle Population Assessment (Entire Active Nesting Period).

Turtle Species	Element Occurrence-per-time unit-effort (per hour)*	Percentage of Total Catch
Snapping Turtle	2.22	80.4%
Northern Map Turtle	0.35	12.5%
Midland's Painted Turtle	0.20	7.1%
All species combined	2.77	100%

*Calculated during active nesting period only (i.e. minimum of 1 active element occurrence per day).

Table 3: The 2006 Petrie Island Nesting Turtle Population Assessment (Peak Period Only).

Turtle Species	Element Occurrence-per-time unit-effort (per hour)*	Percentage of Total Catch
Snapping Turtle	3.43	89.4%
Northern Map Turtle	0.33	8.5%
Midland's Painted Turtle	0.08	2.1%
All species combined	3.84	100%

*Calculated during active nesting peak period only (i.e. minimum of 3 active element occurrence per day).

Summary / Discussion

The survey results would indicate the following summary comments and associated discussion:

- The majority of nesting activity took place in critical nesting habitats located in the following grids: M12, M13, M14, M15, M30, L12, L13, L14, L15, L16, L17, L19, L20, L21, L27, L28, L30, K24, K27, K28, K30, K31, J30, J31 (for the most part, along the natural sandy river/wetland shorelines; along Bill Holland Trail and on the beach's "bowl" area).
- The majority of nesting activity took place at the following peak dates: June 8 and from June 13-17. An interesting observation was that between June 8 and 13, a cold front weather system came through the area, considerably reducing the morning (and day time) air temperatures and resulting nesting activity. The morning air temperatures were recorded as the following:

Dates	June 8	June 9	June 10	June 11	June 12	June 13	June 14	June 15
Morning Air Temp. (°C)	17	14	8	14 (day-time temp.)	13	17	13 but warming up fast	13 – 18
Weather	Cloudy	Cloudy	Cloudy and Windy.	Cloudy	Cloudy	Cloudy	Sunny	Sunny

This would seem to indicate an Air Temperature threshold for turtle nesting activity of **approximately 16 - 17°C**.

- Most of the survey efforts were conducted in the morning (85%) but based on the results of the observations, most of the recorded nesting activity took place in the morning (and by all indications, overnight, based on the number of depredated nests found – which was significantly more than the observed nesting activity recorded). The lack of evening nesting observations could be an adapted turtle nesting behaviour to avoid most of the day time human activity / disturbance, also explaining the turtles' preference for pre-dawn and early morning nesting activity.
- No Blandings or Spiny Softshell turtles were observed nesting on the Island. But one Blandings turtle was observed nesting in early June 2006 and in other years (B. Bower – personal comments). This year's nesting turtle survey was initiated a full week late (B. Bower – personal comments).
- The depredated nests were recorded in an effort to delineate all of the spatial nesting habitat locations. No accurate effort analysis or missed nesting activity could be conducted with this information. However, an interesting deduction from this information collected was that the predators (i.e. mainly raccoons) seem to dig up the same turtle nests on more than one occasion, following the peak nesting period of June 13-17, when day time nesting activity was essentially non-existent, with unlikely above average overnight nesting activity. Several

depredated nest observations were recorded for up to 5 days (June 18 – 23) following the peak nesting period.

- The following field survey observations, some also alluded to above, were provided by one of the lead surveyors, Richard Burnford:

1. It is believed that we captured a significant portion of the nesting season, however, as Bill Bower noted, turtles had been observed nesting for about a week or so prior to the start of the survey.
2. As a general rule, the sites were surveyed in the early morning hours and in the evening. The survey concentrated on those areas (as shown on the survey form) that were considered likely nesting areas, i.e. the beach and surrounding areas, the nature trails, and a small sandy hilly area in the "conservation area." Staff were also asked to report activity elsewhere on the Island.
3. It was not feasible to verify whether or not all turtles exhibiting nesting behaviour (e.g. digging) were actually nesting. Snapping turtles in particular were often observed digging several "test pits" before laying eggs. It is possible that some of these test pits were recorded as nests.
4. It was usually not feasible (due to the inexperience of some of the observers) to make a definitive identification of the type of turtle where nests were subject to predation. With experience, it was possible to differentiate between snapping turtle nests and map/painted turtle nests. This is reflected in the log. *Report author's note: this differentiation will be added to future surveys in order to get a relative turtle species ratio nesting on the island.*
5. The GPS provided did not have the capability to download data directly onto a computer or map database. There is some potential for error in the recording of GPS coordinates. *Report author's note: the GIS mapping technician has addressed this issue.*
6. The 100m grid squares on the Petrie Island map (as per attachment) have no direct correlation with true map coordinates. Where location is recorded using grid squares, this is an approximation only. *Report author's note: These outliers (i.e. points showing up relatively far from typical / known nesting areas) have been deleted from the mapping.*
7. Weather - several unseasonably chilly days seemed to have an impact on the nesting.
8. Human disturbance:
 - there was well drilling on the sand mound in grid squares K27/K28 on one day (several large trucks and other machinery on the mound). Several days prior, turtles had been observed nesting in this area.
 - there was a commercial film production on the small beach in grid square M30 over a period of two days (vehicles, boats, generators etc.) during the survey.
 - maintenance of the beach, including raking and screening generally commenced at 7:30am each day. While it is understood that the screener has a depth control which may have minimised the potential for disturbing nests, the screener leaves a top layer of approx. 4 inches of very soft sand in its wake. It is not known if this layer of soft sand may be an obstacle for turtles.

Management Recommendations

1. Present survey results to PIAC (and City of Ottawa).
2. Use the nesting location information to modify activities and land uses (beach maintenance operations and future development).
3. Conduct the same nesting survey for three (3) consecutive years (i.e. 2007 and 2008). Initiate survey by June 1 every year (based on the historical start of the Island's turtle nesting period (B. Bower – personal comments). Incorporate a few overnight (under the cover of darkness), early morning survey times, during peak nesting activity periods.
4. Develop and implement turtle nest protection measures or diversions (i.e. predator baiting) at the Island's west end nesting habitat locations, targeting more sensitive species as a priority, and others as appropriate.
5. In future years, signage (i.e. information board) should be considered and studies should continue in the fall, looking for hatchlings, nests and tracks.

References

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Recovery Strategy for Species at Risk Turtles in Ontario (DRAFT). 82pp.
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