

Nest Site Creation and Maintenance as an Effective Tool in Species Recovery



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Where and Why?

- **The successful creation and maintenance of new nesting sites for the spiny softshell turtle has been ongoing for over a decade in Ontario**
- **Due to growth of invasive vegetation and changes in spring sediment dispersal, this work must be conducted yearly to ensure nesting areas are available and successful oviposition occurs**



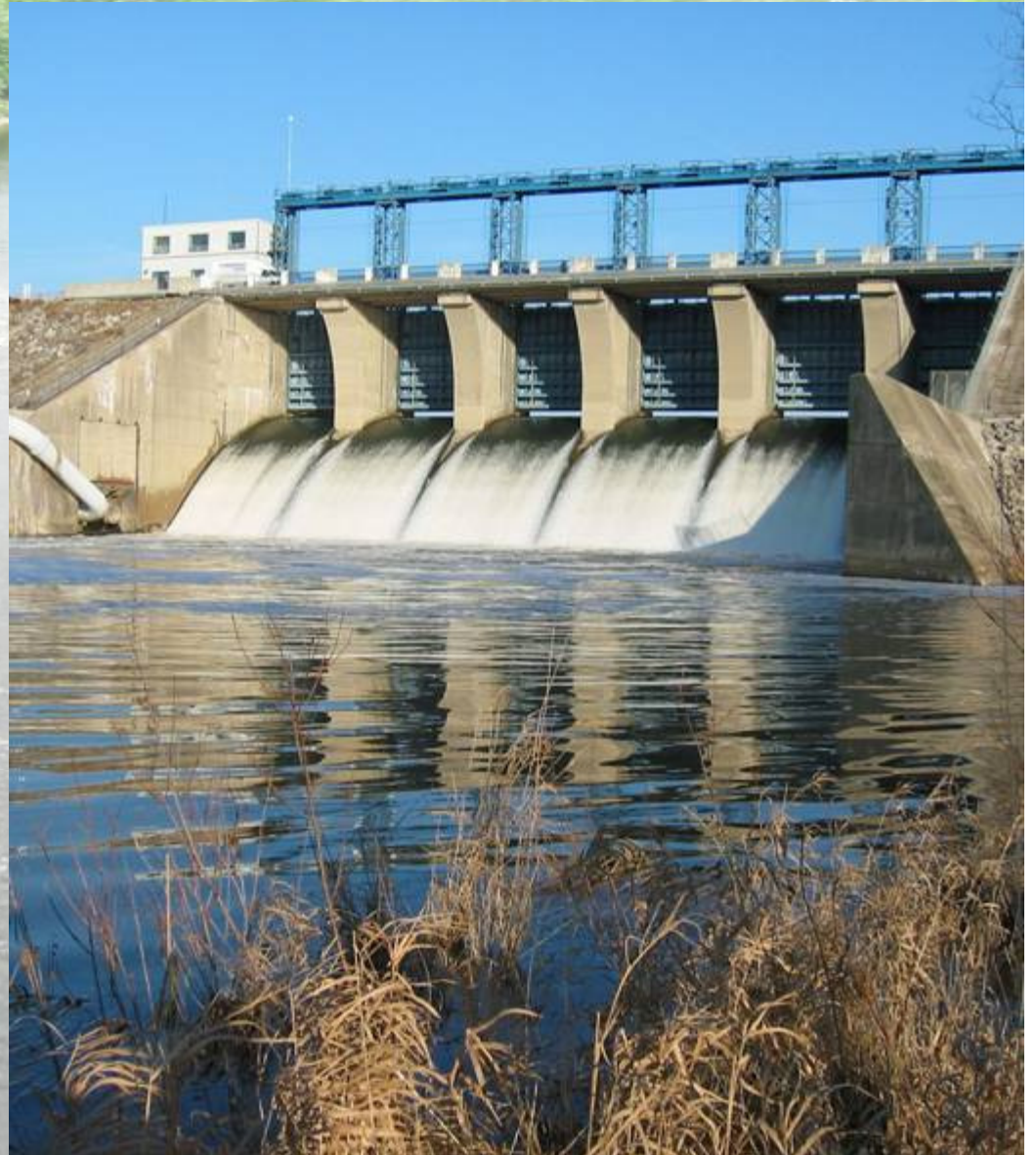
Habitat Loss and Degradation

- **Maintenance and creation of turtle nesting habitat has been a key strategy in spiny softshell turtle recovery in Ontario**
- **In one of only three large communal spiny softshell nesting grounds in Canada, the quality of oviposition habitat continues to decline**
- **Environmental and human-caused factors have increasingly caused the degradation or loss of nesting habitat along the Thames River**



Limiting Factors Affecting Nest Sites

- Dam discharge flow rates
- Changes in sediment dispersal
- Limited Scouring downstream of dam or urban centre



Erosion Control Structures

- **Concrete walls**
- **Rip rap**
- **Gabion baskets**
- **Sheet piling**
- **Geotextile**



- **Unfenced cattle**
- **ATV use**
- **Horses**
- **Foot traffic**
- **Certain agricultural practices**
- **Land use changes**



Invasive plant species have changed the micro-habitat conditions necessary for successful egg incubation and hatching.





- **Hard-packed lanes and roads provide some of the only nesting areas at some locales**

- **Eggs at these sites often perish due to compaction, desiccation, depredation, excessive heat or the young are run over upon hatching**



Recently Disturbed Sites

- Disturbed sites often attract gravid females
- Eggs often lost as work continues at site
- Disturbed soil gives false sense of security for nesting females
- Vegetation quickly moves in, or substrate becomes dry and hard, often killing the eggs
- Site in photos attracted two spiny softshell turtles



**To reach the site,
both females
scaled a barrier
wall made of
flagstone and
concrete**

**Appropriate
nesting sites in
this area are non-
existent**



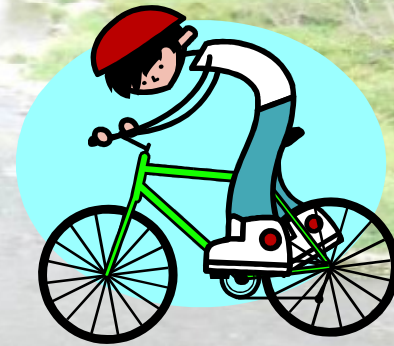
Lack of Nesting Sites

- No local nesting areas exist in the area the photo was taken
- Over 10 female softshell turtles nested in a clay bank, all nests failed
- Similar situations occur throughout many regions devoid of appropriate nest sites



Human Use

- A series of nest sites were created within relatively remote areas of the City of London
- All sites were heavily disturbed
- Hiking and bike use were persistent, causing total loss of all sites due to compaction or constant disturbance
- Signs were posted, but torn down
- Barriers were put up, but used as bike ramps or burned





Selection

- In areas where appropriate environmental conditions occur, multiple animals will use the same oviposition site
- For the spiny softshell, only three large communal nesting grounds are known in Canada



What to look for?

For softshells:

- Areas must be free of vegetation
- Substrate primarily sand or sand and gravel
- Receive direct sunlight
- Must know average summer flood line
- Choose areas less likely to suffer from severe drought
- Sites away from human use



Construction of Nest Sites Along the Thames River

- No motorized vehicle access
- All equipment must be carried
- Use of local substrate for construction
- Must be visible to turtles, difficult to see for humans!
- Must be maintained during incubation



Site overgrown with vegetation



Removal of vegetation, including roots



**Site must be adjacent to river or lake
(softshells usually nest within 2 to 10m from water)**



Leave a small visual barrier of vegetation, but create lanes leading to the water. There must be some view of the site from water.



Dig out organic soils and retrieve appropriate substrate from nearby. Choose your site adjacent to necessary fill.



Continue to grade gravel and sand mixture with a rake, making the mixture relatively uniform, removing organic materials and larger rocks.



- **The mound is visible from the river**

- **Provides multiple angles for nesting**

- **The area around the nest mound was kept free of vegetation, but no additional substrate was added (to observe nest selection)**

- **Over 30 nests were laid on the mound, no eggs were laid in the open areas beside the mound**



If You Build It They Will Come
(maybe)



Caution

- **Choose substrate carefully, obtain samples from successful sites to compare**
- **Some nest sites created in other areas of Ontario have resulted in failure due to lack of maintenance or poor choice of substrate**
- **Carefully inspect substrate type purchased from suppliers (ie. gravel pits)**
- **Fine sediment, clay, large gravel may cause failure by drying out the site, or sealing in eggs like cement**
- **A mix of gravel and sand is effective for softshell turtles, providing moisture retention and radiant heat**

**Even sites
that look
good in June,
may be
overtaken by
invasive
vegetation by
July**



A photograph of a wetland area. In the foreground, there is a dense field of green, leafy plants. To the left, a pond is visible, surrounded by tall grasses and reeds. In the background, there is a line of trees and a forested hillside under a bright sky.

- We have found a complete loss of nests if sites are left to grow over

- Incubation temperatures decrease and roots destroy eggs within the nest chamber

Nest Site Maintenance

- **Maintenance of both artificially created nests and existing, but degraded, nest sites**
- **Raking large cobble away**
- **Removal of vegetation**
- **Planting native vegetation as a visual barrier (to humans), post-oviposition**
- **Regular visits to assess for flooding, drought or other threats**





What's good for the goose is good for...?

- **Not all turtles are created equally**
- **Site design is dependent on species needs**
- **Hard-shelled eggs retain moisture more efficiently during drought conditions**
- **Some species prefer areas free of vegetation, others choose sites with vegetation**



Nest Protection Options are Available



...but that talk is on Wednesday