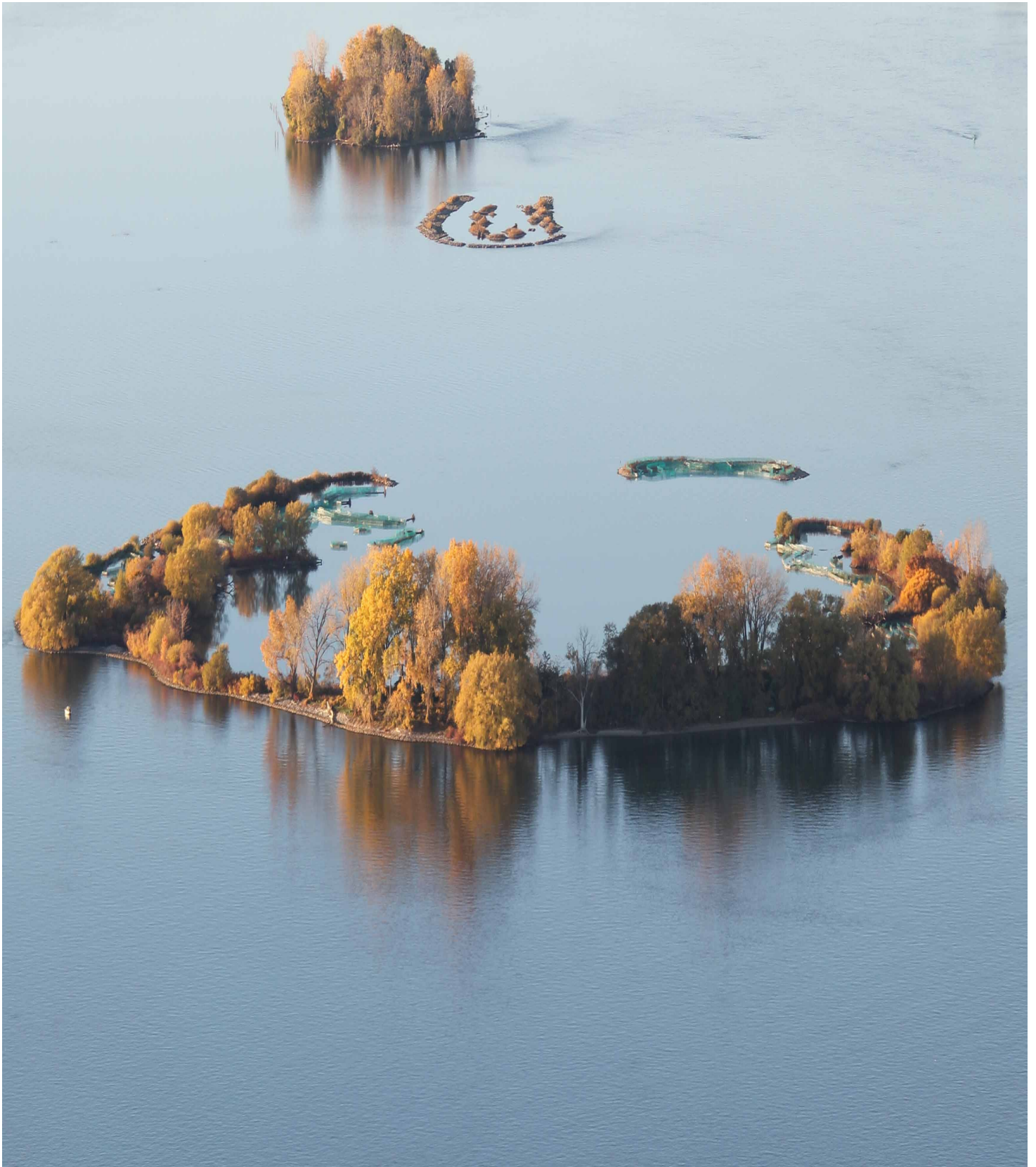


# UPPER NIAGARA RIVER ISLANDS AND WETLANDS

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East River Marsh at Beaver Island State Park (Paul Leuchner Photo)



**The Islands of the Upper Niagara River protect hundreds of acres of downstream river bottom habitat from erosion and scouring. This island stability and the clarity of the river water work together to preserve a vibrant and diverse aquatic plant community that covers hundreds of acres. These aquatic plant beds provide essential spawning habitat for native fish species and protect their young of the year. Strawberry Island is shown in the foreground. The island in the background is Motor Island and the series of small islands in the middle comprises the Strawberry Island Archipelago (Paul Leuchner Photo).**

## ***Geological History***

Prior to the onslaught of advancing glacial ice, a large body of water known to geologists as Lake Tonawanda dominated the landscape of what was to become Western and Central New York State. The outlets from this lake created waterfalls where the New York towns of Holly, Medina, Gasport, Lockport, and Lewiston now exist. All of those falls are now gone, although their deeply cut gorges are still visible. Only Niagara Falls remains. As the waters receded, Lake Tonawanda became shallower, evolving into the marshy landscape that dominated the area to the north of Grand Island. Grand Island was not yet an island, but a peninsula connected to the mainland where North Tonawanda exists today. During that time the drainage from Lake Tonawanda followed the course of the current day Tonawanda Creek but flowed ***south*** rather than north as it does today.

A formidable outcrop of Onondaga Limestone created a barrier that forced the river water to make an abrupt turn to the north. There along the west side of the peninsula, a channel was carved through the clay laden peninsula sediment establishing the present day Chippewa Channel that flows toward Niagara Falls. The Chippewa Channel is deeper than the Tonawanda Channel because it was formed earlier. *The source of this information is taken from a professional paper by Dr. Julius Pohlman that appeared in Science, An Illustrated Journal, Volume VI, July-December 1885, Society of Natural Sciences Buffalo, November 13, 1885.*

The flow pattern of what would become the modern day Niagara River was significantly altered at the end of the Wisconsin Ice Age some 12,500 years ago. As the glacial ice melted, the water level of glacial Lake Warren, the predecessor of present day Lake Erie, rose dramatically. The lake water could not escape because it was dammed up by the rock, gravel, sand and soil that formed the Buffalo-Fort Erie Moraine. About 7,000 years ago, the Moraine was breached, releasing a torrent of water and glacial debris. The rapidly flowing waters further deepened the existing Chippewa channel around the west edge of the Grand Island peninsula. At the same time, those raging waters reversed the flow back toward the mouth of Tonawanda Creek, carving a new channel through the remnants marshes and beaches of old Lake Tonawanda. Eventually this watercourse combined with the waters from the Chippewa Channel, continued to race towards Niagara Falls. Grand Island was created during this cataclysmic release of glacial melt water. This new branch of the Niagara River has persisted ever since that time and today is known as the Tonawanda Channel.

About a mile upstream or south of Grand Island there was a tilted outcrop of Camillus Shale. The angular shale beds protruded upward from the post glacial river bottom slowing the flow of the raging melt water. Sand and gravel accumulated around these outcrops and over the course of several thousand years, islands formed. During this time, Frog Island (known today as Motor Island or Pirate's Island), Rattlesnake Island, Strawberry Island and Unity Island (once known as Squaw Island) formed. All of these islands are composed of sand and gravel, while Grand Island consists of heavy clay soil indicating a different geologic origin. It is likely that the hard clay so typical of Grand Island was laid down by the comparatively placid waters draining from old Lake Tonawanda. The fine clay particles were a byproduct of the erosion of the ancient mountain ranges that once existed at the eastern end of what is now New York State.

One other point worth noting is the blue gray color of the Niagara River that is prominent on sunny or partly sunny days. It's caused by the minute particles of "rock flour" that remain colloiddally suspended since the Wisconsin Ice Age ended long ago. The rock flour was actually derived from the relentless grinding of rock fragments by glacial ice. Except for the color and consistency it looks almost like the real flour used in baking.

## ***East River Marsh***

In the late 1990's, the marsh was in deplorable condition. Most of the aquatic vegetation had been eroded away by wave action or had been buried under relentless clouds of suspended sediment. There was little fishery value; amphibian and reptile populations had declined. Waterfowl nesting and feeding was almost non-existent. All kinds of debris had accumulated in this coastal wetland, degrading water quality.

The marsh was rescued and restored in 2003 after years of relentless lobbying by a couple of Grand Island biologists. They eventually persuaded the State of New York to fund the complete restoration of this site through the New York State Environmental Bond Act Fund. The project was further enhanced with the addition of features that promoted public recreation and create opportunities for environmental education. Prominent amongst these features was a protective stone barrier or jetty that not only stabilized sediment in the adjoining marsh, but also provided enhanced waterfront public access. A sintered limestone dust trail was installed within the jetty to provide safe access to the riverfront. Floating docks were connected to the jetty to enhance fishing opportunities and provide temporary mooring for transient car top boats and small craft. A handicap accessible paddle craft launch ramp was added along with a system of nature trails that followed the edge of the restored marsh and eventually connected with the historic grounds of the River Lea home in Beaver Island State Park.

This marsh covers about 25 acres and is classified as Significant Coastal Marsh Habitat by the New York State Department of State and the New York State Department of Environmental Conservation.

The natural wetland that once occupied this site persisted for centuries. However, the last 50 years of storms, relentless boat wakes, and bad public stewardship nearly resulted in the demise of this important wetland resource. During those years of ecological trauma most of the native aquatic plant beds were destroyed. A half century of boat wakes insured that the waters of the marsh consistently exhibited a chocolate hue brought about by the constant resuspension of river bottom sediments. Lacking any kind of stabilization or protection, the vulnerable native aquatic plant beds were further decimated by wind driven waves that riled up the shallow river bottom. The suspended sediments impaired photosynthesis, which had the broader effect of degrading biological diversity. As the water quality within this stressed marsh deteriorated, fish spawning declined and the growth of nuisance algae, accelerated by nutrient loading, dominated the water surface.

Habitat impairment substantially limited the waterfowl opportunities for feeding, resting during migration and nesting. The degradation was relentless and by the end of the 20<sup>th</sup> Century functions and values of this wetland had either been compromised or lost.

In the late 1800's, during the era known as the Gilded Age, there was a lot of wealth in Western New York. In fact, the story goes that the City of Buffalo had more millionaires per capita than the rest of the United States. During the hot summer months these well to do families were eager to escape the smoke, foul odors, and relentless noise of city life. Grand Island became an attractive place for luxurious summer homes and estates, many of which were built along the edge of the East River Marsh. Most were visited only infrequently by their owners, but the larger homes were staffed year round with maids and gardeners. In 1899, renowned artist Claude Monet painted the famous oil series *The Water Lilies*. His work drew the public outdoors to experience the ambiance of nature and its scenic landscape. About that time, aquatic gardens became the rage for the rich and famous and the embellished grounds of the luxurious mansions along the edge of the East River

Marsh were no exception. Their aquatic gardens were meticulously maintained and often there was friendly rivalry amongst the master gardeners seeking to have the most attractive water garden setting. They flourished for decades, but the Great Depression ended the care and maintenance of the gardens and the luxurious seasonal homes and estates were abandoned. Over the course of time the plants in the water gardens found their way into the East River Marsh where they multiplied in number and persist even to this day.

The East River Marsh and the adjoining Niagara River Corridor was one of the first habitats to be classified an ***Important Bird Area of International Significance by the American and Canadian Audubon Societies***. The Niagara River earned this prestigious designation in 1996. Even back then significant numbers of resident and migratory bird species with global origins often needed to use this unique riverine aquatic ecosystem to complete their life cycles. The habitat demand for the river, its surrounding wetlands, and shallows by native and migratory species has grown almost exponentially since those early days. Aquatic habitat restoration is much like the classic line in the movie *The Field of Dreams* where actor Kevin Costner says, “if we build it they will come”. That has been the result with the wetlands over the past couple of decades. In keeping with that mantra, the Niagara River and its wetlands received worldwide recognition in 2019 becoming a designated a **RAMSAR Site** placing this natural resource at the same level of ecological importance as places like Chesapeake Bay and the Okefenokee Swamp that straddles the border between Georgia and Florida. If these worldwide essential habitats are eliminated by irresponsible development and land use modification, global species could disappear, severely compromising worldwide biodiversity.

The Niagara River Corridor, only 36 miles in length, is known to support 22 different gull species. Some of the gulls stopping here are resting after long migratory journeys, while others are temporary residents feeding on the abundant schools of Lake Emerald Shiner that proliferate during the months of spring and early summer. Others utilize the Niagara River and its coastal marshes for reproduction and rearing of young. In contrast, the Australia, with thousands of miles of coastline, has only 4 gull species. The biodiversity of just 36 miles of Niagara River Corridor is so ecologically valuable that it’s easy to understand why environmental enhancement projects like the East River marsh are pursued with such vigor.

### ***Importance of Wetlands***

Why are wetlands important? They are the world’s biological cities with productivity that rivals that of a South American rainforest. Wetlands provide habitat for all kinds of plants and animals, those that live in or on the water or those that live within the adjacent uplands. They support the food chain and insure that all species are able to thrive. The dense plant mats in wetlands provide a degree of erosion protection from waves and boat wakes. They filter contaminants from upland surface waters preserving water quality. Wetlands can store waters and release them slowly during flood events. Ecologically, they are the centers of biodiversity and collectively, wetlands worldwide help add stability to global levels of nitrogen, atmospheric sulfur, carbon dioxide, and methane. Wetlands are places for environmental education and passive recreation. They are one of the primary and most important components of biodiversity.

### ***Evolution of Motor Island Comes Full Circle***

Up until the early 1900’s, Frog Island was a favored place for hunting and fishing enthusiasts, impromptu summer picnics, and the occasional harvesting of hay. It was an island dotted with woodlands and wet meadows surrounded by pristine marshes. The island was abundant with wildlife, drawing in hunters and

fishermen along with notables like past Presidents Grover Cleveland and Teddy Roosevelt. Around 1910, the island began its long trek through decades of development and land use change that eventually brought it full circle to 1998 when it was designated a nature sanctuary by the State of New York.

James “Fingy” Connors was a notorious waterfront boss who earned both power and wealth exploiting the Irish immigrants who worked as “scoopers” unloading the grain ships that arrived daily in Buffalo Harbor. At that time, Fingy was a prominent millionaire. He had a passion for racing boats and naturally wanted to join the Buffalo Launch Club, a yachting club that promoted boat racing on the Niagara. The Buffalo Launch Club still exists today and is the oldest motorboat club in North America. During the early 1900s, the Buffalo Launch Club had already established its place as a hydroplane boat racing center. Their members at the time declined to accept Fingy Connors membership application for no other reason but his Irish heritage.

Undaunted, he purchased Frog Island in 1905 with the intent of establishing his own yacht club. Motor Island was cleared of vegetation, graded and reshaped so that when viewed from the air, its perimeter looked like a speedingboat heading up the Niagara River. Connors officially changed the island name from Frog Island to Motor Island in 1910. With its elaborate array of docks and viewing platforms, his new Motor Boat Club of Buffalo shifted the focal point for boat racing from the Buffalo Launch Club to Motor Island. This prompted the Launch Club board of directors to offer Fingy Connors a full membership and from that point on, both clubs worked together to promote boat racing on the river. The original Motor Boat clubhouse burned to the ground shortly after the new yacht club was opened in 1905. A second clubhouse was immediately built that persisted for a number of decades succumbing to fire set by vandals in 1973. The original yacht club persisted for a several decades but faded away during the Great Depression. In 1938, the island was sold and held in private ownership until the late 1980’s, when it was acquired by a group of investors bent on establishing a boating campground. The campground project never took off and the island was eventually sold in the early 1990s. The only remaining vestige of that failed campground project is its current islandname, Pirate’s Island.

At the downstream end of Motor Island there is an old chimney. It is all that remains of the old yacht club bunkhouse that was built in the early 1900’s. In addition to the bunkhouse, the building housed the Frog Island Bar. It was a popular watering hole often accessed by customers who were brave enough to paddle their rowboats and canoes over to the island. When Prohibition was enacted in 1920, the bar was “closed” and converted into a structure that resembled an old boat house. It may have had an innocent look but at night the interior of the building sported a fully functional bar. When the bar was open, observers were placed at each end of the island. If a patrol boat was spotted, the place was locked up. To evade detection by the authorities, the customers scurried into their boats or waded through knee deep mud to hide out in the adjacent marshes. The old bar succumbed to fire, most likely the victim of a lit cigarette or cigar improperly extinguished by an inebriated patron. The chimney is all that stands today and it is over a century old.

**Old Chimney Frog Island Bar, Motor Island (Paul Leuchner Photo)**



### ***Colonial Nesting Birds Invade Motor Island***

The future of Motor Island changed dramatically in 1988, when the first pair of wading birds decided to nest there. After fire destroyed the old clubhouse in 1973, grounds maintenance ceased on the island. Ecological succession quickly advanced and within a few years the island was overgrown with a dense array of vines, shrubs, and floodplain trees. The shrub layer consisted almost entirely of swamp dogwood and red osier dogwood. The mature trees included stands of Eastern Cottonwood, Crack Willow and Green Ash. The height of the trees was prominent providing a commanding view of the Niagara River. It's likely that these tall trees and their proximity to the fish laden waters of the Niagara lured the first nesting pair of Great Blue Herons in 1988. Their presence was recorded by a Grand Island biologist and reported to the New York State Department of Environmental Conservation (NYSDEC) for inclusion in the New York State Breeding Bird Atlas. The following year more nesting herons arrived. Their population seemed to be increasing exponentially. It wasn't long before those herons were joined by the pure white Common Egret, Black Crowned Night Heron and the Little Green Heron. The fledgling Egret colony was attacked by vandals in the early 1990's. All of the adults were killed along with their young. The vandals were never caught. At the time, everyone doubted those birds would ever return but the following year, the number of egret nests doubled. Today, there are hundreds of colonial bird nests on the island.

As the population of nesting birds increased, the owners of the island found that their campground activities and future plans for island development were curtailed by government regulatory agencies. Land use conflicts

were inevitable as the competition for nesting sites diminished opportunities for business development on the island. A couple of local biologists lobbied the State of New York for island protection and in 1998, Pirates Island was sold to the Nature Conservancy. The island was subsequently transferred to the New York State Department of Environmental Conservation and officially designated the Motor Island Wildlife Management Area.

***Please note that the public is not allowed to access the Motor Island Wildlife Management Area. This restriction includes the entire island and all of its beaches. No one is allowed to walk on the island nor is anyone allowed to beach their boats on this island. This prohibition is strictly enforced and the NYSDEC uses drones to monitor island activity and identify trespassers.***

The colonial bird nesting colony on Motor Island is the only one on the Niagara River. During the nesting season, hundreds of birds occupy the island but they all seem to be able to coexist during this crucial time of reproduction. Individual bird species nest together but they remain separate from other kinds of colonial nesting birds. Great Blue Herons establish their nests at the tops of the tallest island trees sharing those sites with the ubiquitous Double Crested Cormorant. The Cormorants have to be managed by NYSDEC biologists to minimize their threat to the heron rookery. Beneath the trees at the south (upstream) end of Motor island there is a well-developed stand of shrubs. The Common Egrets nest on the surfaces on this shrub layer and when nesting reaches its peak, observers will see more white than green. Below the Common Egret rookery is where you will find the nests of the Black Crowned Night Heron. Their nests are often evenly distributed within the shrub layer directly underneath the neighboring Egrets. At ground level, there are a few nesting Little Green Herons. Toward the end of the nesting season, the island surface becomes quite busy as dozens of immature Black Crowned Night Herons skitter back and forth during the day seeking food. At night they congregate for protection.

Around 2008, the New York Power Authority invested just over one million dollars in island habitat restoration as a condition of their relicensing of the Lewiston hydroelectric facility by the Federal Energy Regulatory Commission. The former campground buildings were removed and paved areas were eliminated along with piles of trash and metal debris. Biologically engineered shoreline habitat enhancements were added to reduce erosion and enhance habitat diversity and plantings were added to replace the mature trees that were ending their lifecycles or were occasionally brought down by beavers.

Hérons and egrets are solitary birds that you will only find in cohesive groups during the nesting season. They congregate in large groups to protect their nests from predators and to share information on the best places to forage for food. At the Motor Island heron rookery you will notice that the parents will always leave and return by way of several defined compass bearings. These bearings mark the route to the best feeding grounds. There is no romance amongst heron parents. They will mate and raise their young but when the young are in the nest the couple will distance themselves from one another. Once the young fledge (wings mature and they are able to fly), the parents leave and go their separate ways.

Tern island, which the official name has yet to be determined, was built in the early 2020's by the New York Power Authority, upon a site where a low sandbar once existed. During historic periods of low water, the shoal is often exposed, resembling a low island. Most of the time it is submerged. It was never developed. There is no record of any maritime structures like boathouses, docks or other amenities ever being located there. It does not appear in any of the detailed historic maps or nautical charts of the area. Most likely it was always a



sandbar. It probably became an ephemeral island when excavated soil from the new Erie Canal was dumped there in 1825. Most of the Erie Canal was dug by hand and loaded into wagons or wheelbarrows (the modern day wheel barrow was invented during the excavation of the Erie Canal). However, excavating the segment of the canal along the Niagara River was a bit easier because the earth could be deposited in large quantities on a barge and dumped in the shallows around Motor Island.

### ***The Old Island Rises from the River***

The new unnamed island is actually part of what is referred to as the Strawberry Island Archipelago. An archipelago is a stretch of water containing many islands. This particular island complex covers about three acres and contains a variety of aquatic habitat types. In the waters around the island there are rock strewn deep water zones interspersed with shallow water areas and submerged logs all working together to promote the establishment of a diverse food chain. The vegetated islands and their collection of securely anchored tree trunks were laid out in a way that attracts fish species as well as a host of migratory and resident bird species commonly associated with the upper Niagara River. Birds commonly observed within this collection of small islets include the Ring billed Gull, Herring Gull, Great Black backed Gull, Lesser Black backed Gull, Common Tern, Caspian Tern, Little Gull, Spotted Sandpiper, Double Crested Cormorant, Great Blue Heron and Common Egret. In the early fall and throughout the winter to early spring Bonaparte Gulls and Tundra Swans are common. Even relatively rare species of birds have been observed here like the Black-necked Stilt. They were seen in 2019 for the first time in Erie County and the Whimbrel.

***Landing is not permitted on any of the new islands. Doing so would be unsafe due to the rocky unstable island terrain.***

The new island was built over two construction seasons at a cost of 4.13 million dollars. To begin this project a staging area had to be established for heavy construction equipment and the delivery of project materials. The staging area also had to include a shelter from the weather and a restroom facility. To minimize turbidity, a silt curtain was installed around the island perimeter. The curtain did not work as well as intended and was replaced with interlocking steel sheet piling the following season. Once all of the features of the unnamed island were completed, the steel sheet piling was removed. A crew was then brought in to plant all of the native species that typically flourished in the Niagara River prior to industrialization. This is a windswept island situated in the widest area of the upper Niagara River. Like the island that existed historically, it is exposed during periods of low water and almost completely inundated during periods of high water.

In between the new island and Strawberry Island is a shallow area with submerged aquatic plant beds which are one of the principle fish spawning and nursery areas of the upper Niagara River. It is home to the Niagara Musky, one of the largest freshwater sport fish in this part of North America. These shallows also serve another purpose. The root systems of the dense plant beds stabilize the river bottom sediment so it will not migrate during the frequently intense storms that drive in from Lake Erie. This stabilization benefit insures that loose sediment is not swept into the nearby Federal navigation channel. Without this benefit, frequent dredging would be required along with all of the related adverse environmental impacts that impair water quality and habitat values.

Towards the north end of Strawberry Island, there are several new islands. Most of the funding for island construction came from the New York Power Authority and the Great Lakes Initiative. The new islands serve several purposes.

They provide a degree of protection to the downstream end of Strawberry Island, shielding and dissipating the wave energy from storms driving out of the northeast and the relentless wakes from passing small craft. Small boat wakes have been particularly damaging, causing the deepwater embayment at the center of the island to fill with sand and gravel. Prolonged disturbance of the embayment by motorboats has degraded the quality of fishery habitat that once existed here. The year the unnamed island closest to the southern tip of Strawberry Island was constructed, a flotilla of personal watercraft was observed racing in circles at high speed to create the biggest possible waves on the embayment shoreline. Considerable erosion occurred as a result of their irresponsible behavior. Motorboat operators attempting to bring large cabin cruisers into the lagoon added to its degradation prompting the New York State Department of Environmental Conservation and the New York State Office of Parks to ban all motorboat traffic within the island embayment.

The islands serve as nesting, feeding and resting areas for resident and migratory bird species, particularly the Common Tern, which is a threatened New York State seabird. Perennial native plant species have been added to these islands to provide needed cover and to enhance the species diversity of the entire Strawberry Island archipelago.

### ***Early Strawberry Island History***

The Strawberry Island of today covers about five acres. In its heyday though, the island encompassed just over 200 acres and was over two miles in length. Historically, it extended down the middle of the Niagara River from the offshore end of Hertel Avenue in Buffalo to just a few hundred feet above Motor Island. Strawberry Island attracted Native Americans who fished, hunted and foraged its lands and waters. In 1824, the island was officially surveyed by James Tanner under the direction of Simeon DeWitt, the Surveyor General of the State of New York. At that time the island was about 100 acres in size. A few years later, the island was enlarged with fill excavated from the new Erie Canal, which grew its size to about 138 acres. In the decades following the establishment of the Erie Canal, the size of Strawberry Island remained constant. Its marshes, meadows and forests were havens for native fish and wildlife species. In 1908, the island was further enlarged with sand and gravel excavated during the construction of the new Black Rock Lock by the US Army Corps of Engineers.

### ***Sand and Gravel Mining Decimates Strawberry Island***

During the early 1900's, the City of Buffalo grew rapidly. A building boom was underway creating an intense demand for concrete to build high rise buildings, streets and sidewalks. It wasn't long before the sand and gravel resources of Strawberry Island were exploited for use as concrete aggregate. In 1912, Strawberry Island was sold to the Border Island Company. A survey completed just prior to the sale noted that the size of the island was 204 acres. Sand and gravel mining began almost immediately and in the first year more than half of the island was dredged away. During that first year of sand and gravel mining operations, the island was cleared of its native vegetation and reduced to just 100 acres following the removal of 12.9 million cubic yards of its sand and gravel. In 1926 the island was sold to the Buffalo Gravel Company and mining became even more intense. The dredging of sand and gravel was halted by the US Army Corps of Engineers when it became apparent that the altered island footprint was allowing industrial pollutants in the river to enter public drinking water systems. Not to be thwarted, sand and gravel companies traded the ownership of the island back and forth eventually vacating the original stop work order issued by the Corps.

Sand and gravel mining resumed in 1938 but in 1948 it was stopped again when even more contaminated water normally deflected away by Strawberry Island found its way into municipal drinking water systems downstream. The Corps of Engineers ordered the company to halt mining operations and sued the company in Federal court under the provisions of Section 13 of the Rivers and Harbors Act of 1899. The case was settled when the company agreed to dredge only in the center of what remained of the island avoiding the island perimeter and contact with the Niagara River. From the air, the excavation took on the look of a donut hole but it was through this process that the deepwater embayment was created. Although mining on the island stopped years ago, the forces of erosion continued to imperil the island. Over the years, the downstream edge of the island eroded away, breaching the donut hole and connecting it to the Niagara River. By 1992, Strawberry Island had been diminished to a thin strand covering less than 10 acres. During the Labor Day holiday that year a group of partiers dug a channel a few feet wide through the island connecting the Niagara River to the embayment at the center. The surging waters of the Niagara coursed through this opening and by the following spring the channel was more than 40 feet wide. At the end of the summer it was no longer a channel but a serious breach nearly 80 feet wide.

### ***Efforts to Preserve Strawberry Island***

Efforts to get government funds to close the breach before the island completely washed away failed. It was only through the financial support and dedication of a local businessman and a team of volunteers that this breach was quickly repaired. Time was running out and despite cold weather the breach was closed in late December 1993, just a day before a violent storm that toppled trees and inundated most of the island. Completion of the project did not end the volunteer effort. The same team of government agency representatives, dedicated business partners, and committed members of the public stayed together to continue their restoration work even after the destructive damage to Strawberry Island had been averted. Building upon this successful repair of the island, additional environmental enhancements were sought and funded through the New York State Department of Transportation and the New York State Environmental Bond Act. Between 1994 and 2012 more than 4 million dollars were invested in the restoration and preservation of the island. After 2012, there were more opportunities to enhance species diversity and island habitat values. Although the first generation of dedicated island volunteers retired or moved on, a new crop of committed experts replaced them insuring that the preservation and enhancement of Strawberry Island would continue.

### ***Strawberry Island Eagles***

There is a Bald Eagle nest on this island. It is best observed from the center of the embayment. Look for the nest near the top of an Eastern Cottonwood tree. **Under Federal and State law all boaters must stay a minimum of 330 feet away from the base of this eagles nest.**

A pair of Bald Eagles were first observed flying around Strawberry Island during the close of 2012. Early the following year this pair of eagles was observed dismantling some vacant nests that were a part of a small colony of Double Crested Cormorant. It was an easy thing to do since the Cormorants were on a winter hiatus and would not return to the island until the spring. The eagles used all of that material to create a single aerie (nest) for their own. During 2013, this nest produced a single eaglet. The arriving Cormorants proved to be an inadvertent food supplement for this chick and those that were not preyed upon were driven off the island. In 2014, the same eagle pair produced 3 eaglets but in 2015, disaster struck. During the spring of that year the female eagle was found dead on the beach at Beaver Island State Park. There was much speculation as to how

the eagle was killed so her remains were sent to the Cornell University Ornithological Lab where a necropsy (an autopsy of an animal) was performed. The Cornell scientists surmised that the female eagle had succumbed to an attack by another species of bird with talons. Although there was no specific evidence as to the identity of the bird that attacked this female eagle there was ample reason to suspect that a Snowy Owl might have been responsible. Snowy Owls were migrating through the Niagara River corridor around the time the eagle was attacked. The male Bald Eagle continued to stay at the nesting site relentlessly searching for his lost mate (eagles mate for life, live about 25 years and use the same nesting site for their entire life span). When he departed just before winter, most thought that he would not return. However, the following spring he was not only back but he was accompanied by a female Bald Eagle who might have been widowed just as he was. It's entirely likely that they met during migration. When the male eagle brought the female back to the nesting site there was still no guarantee that she would accept the existing nest on Strawberry Island. However, that issue became moot when she was subsequently observed in the nest caring for young. Since 2016 a total of 6 Bald Eagles were produced at this nesting site except for 2019 when a gulp of cormorants mobbed the nesting site killing off the eagle young. For the period of record 2012 through and including 2020 the nest has produced 12 Bald Eagles.

### ***Strawberry Island History***

Strawberry Island was largely undeveloped until the 1880's. It was around that time that the public became interested in tourism, especially excursions that focused on the Niagara River. It was the Victorian Era and there was much public interest in observing and experiencing nature and the outdoors, most likely prompted by the contemporary artists of that era. The first tourist hotel on the Niagara River was constructed on Strawberry Island in 1882 by the O'Connor family. It operated as a tourist destination for about a decade, but was eventually closed as tourism opportunities became more diversified on neighboring Grand Island. The empty hotel did not last long. It was dismantled board by board. The lumber was hauled across the river to the Black Rock neighborhood of Buffalo where it was used to build several homes on the riverfront. During its heyday the island hotel grounds included walking trails, shady groves of trees and an interior system of ponds and canals. The latter were advertised as a way for visiting couples to experience the calm and tranquil pleasures of boating without having to subject themselves to the "harsh open waters of the Niagara River". The men of that era often wore lounge suits or dinner jackets displaying the ubiquitous straw boater hats while the women were adorned with long gowns and carried parasols. After the hotel closed, a bar remained. It had quite a raucous reputation attracting rowdy individuals as well as those with less than desirable moral values. The bar was raided and closed periodically over the next few decades finally ceasing operations for good in the 1930's. Another bar replaced it in the late 1940's but only lasted for a decade. Remnants of the original hotel and bars that remained are long gone mostly because the land they occupied had been dredged by the sand and gravel miners or had simply eroded away.

The Strawberry Island beach is composed of sand, gravel and fragments of Devonian era fossils that once occupied the tropical coral reefs that existed more than 350 million years ago. Although the geology around Strawberry Island dates back to the Silurian Period some 420 million years ago, the beach material contains fossils from the younger Devonian period. These fossils were entrained in the moving glacial ice and deposited during the formation of Strawberry Island and the upper Niagara River at the end of the Wisconsin Ice Age. The majority of the fossils on this beach are corals, although some trilobite fragments can be found especially after storm driven waves rearrange the island's sand and gravel beach deposits. Many of the fossils easily found have been worn down by the friction of glacial ice. Those that are still recognizable include the

Tabulate Coral *Pleurodictyum* and the Honeycomb Coral *Favosites*. Occasionally specimens of Rugose Horn Coral, Brachiopods and Bryozoans can also be found. At the east end of the beach, the sand has a distinctive dark red color. The source of color is caused by the deposition of minute particles of the semi-precious gemstone Garnet. Garnet is the official gemstone of the State of New York.

### ***American Toads Dominate Strawberry Island***

Strawberry Island supports a variety of life. There are the bald eagles, foraging herons and egrets, all kinds of species of waterfowl, gulls, shorebirds and perching birds. The island is also home to a large colony of American Toads. During the late summer hundreds of these toads emerge around dusk to prowl the beach and feed on insects. The toads work so intently that anyone sitting on the beach at the time of this feeding migration is ignored. This encounter provides a rare opportunity to observe how these toads use their tongues to capture and consume insect life.

A Sample of the Fauna and Flora  
East River Marsh, Motor Island and Strawberry Island  
2003-2020

## Birds

Great Blue Heron	Lesser Scaup	Bank Swallow
Tundra Swan	Northern Shoveler	Purple Martin
Swamp Sparrow	Barn Swallow	Turkey Vulture
Black Vulture	Ruddy Turnstone	Redhead Duck
Belted King Fisher	Dunlin	Black-necked Stilt (rare)
Whimbrel	Bonaparte Gull	Common Grackle
Eastern Screech Owl	Sora Rail	Red Breasted Merganser
Ringed-bill Gull	Bald Eagle	Osprey
Purple Martin	Canvasback	Double Crested Cormorant
Long-tailed Duck	Cardinal	Black Crowned Night Heron
Grey Catbird	Blue Jay	Red-winged Blackbird
Wild Turkey	Scoter	Hooded
Merganser	Common Goldeneye	Bufflehead
Red-winged Blackbird	Red-tailed Hawk	Red-shouldered Hawk
Common Grackle	Canada Goose	Little Gull
Common Egret	Little Green Heron	Common Tern
Common Loon	Caspian Tern	Blue-winged Teal
Belted King Fisher	Mallard	Common Merganser
Coopers Hawk	Downy Woodpecker	
Spotted Sandpiper		

## Fish

Largemouth Bass	Smallmouth
Bass	Northern Pike
Bowfin	Carp
Rudd	Rock Bass
Sunfish	Yellow Perch
(Musky)Crappie	Muskellunge

## Wildlife

Mink  
Muskrat  
Chipmunk  
Otter  
Beaver  
Rabbit  
Eastern Gray  
Squirrel  
Red Squirrel  
White-tailed Deer

## Amphibians

Bullfrog  
Leopard Frog  
American Toad

# Flora

Bur Reed ( <i>Sparganium</i> )	Big Duckweed ( <i>Spirodela</i> )
Smartweed ( <i>Polygonum</i> )	Swamp Milkweed ( <i>Asclepias</i> )
Marsh Marigold ( <i>Bidens</i> )	Buttonbush ( <i>Cephalanthus</i> )
Yellow Flag ( <i>Iris pseudacorus</i> )	Burr Cucumber ( <i>Sicyos</i> )
Northern Blue Flag ( <i>Iris versicolor</i> )	Water Celery
( <i>Valisneria</i> )Southern Blue Flag ( <i>Iris virginica</i> )	Marsh Mallow ( <i>Hibiscus</i> )
Arrowhead, Duck Potato ( <i>Sagittaria</i> )	Deadly Nightshade ( <i>Atropa</i>
<i>belladonna</i> )Pickerelweed ( <i>Pontedaria</i> )	Frogbit ( <i>Limnobium</i> )
Purple Loosestrife ( <i>Lythrum salicaria</i> )	White Pond Lily
( <i>Nymphaea</i> )Yellow Pond Lily ( <i>Nuphar</i> )	Watershield ( <i>Brasinea</i> )
Verbena ( <i>Verbena sp.</i> )	Marsh Mint ( <i>Mentha</i> )
Dodder ( <i>Cuscuta</i> )	Water Horehound
( <i>Lycopus</i> )Cow Parsnip ( <i>Heracleum lanatum</i> )	Water Willow ( <i>Justicia</i> )
River Bulrush ( <i>Scirpus</i> )	Soft Stemmed Rush ( <i>Juncus effusus</i> )
Waterweed ( <i>Anacharis</i> )	Water Milfoil ( <i>Myriophyllum</i> )
Stonewort ( <i>Chara</i> )	Cattail ( <i>Typha</i> )
Green Algae ( <i>Ulothrix zonata</i> )	Pondweed
( <i>Potamogeton</i> )Filamentous Green Algae ( <i>Mougeotia</i> )	Sedge ( <i>Carex</i> )
Green Algae ( <i>Spirogyra</i> )	Water Plantain ( <i>Alisima</i> )
Duckweed ( <i>Lemna</i> )	Sedge
( <i>Scirpus</i> )Manna Grass ( <i>Glyceria grandis</i> )	

## Useful Botanical Identification Mnemonics

- Sedges have edges (triangular in cross section)
- Rushes are round with solid stems
- Grasses have round hollow stems
- Mint stems are square

### **Author Notes**

*The first edition of this guide was prepared during the spring of 2019 as a quick reference for kayak ecotour guides leading groups out onto the Niagara River. During 2020 downtime imposed by the Covid 19 Pandemic I had the opportunity to update and revise the original document. Additional information on the geology, ecology and history of the Upper Niagara River around Grand Island has been added. This guide is intended to be a reference document that tour guides can use to develop their own narrative about the islands and the castof characters that added to the ambiance of Niagara River life. Much of the material contained in this second edition is based on personal observations and facts gleaned from records and documents dating as far back as the beginning of the nineteenth century.*

**Paul G. Leuchner, Biologist  
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Avian Creatures Upper Niagara River (Photos by Paul Leuchner)



**East River Marsh Egrets**



**Motor Island Great Blue Herons**



**Strawberry Island Bald Eagle**