

Sunrise Paddling on Lower Rideau Lake

## Rideau Paddling Guide 11

### Rideau Ferry to Edmunds Lock

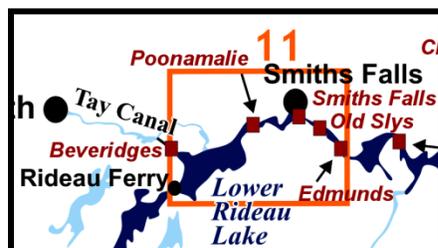
*(Lower Rideau Lake and the Rideau River)*

Rideau Canal National Historic Site and World Heritage Site, Ontario, Canada

by

**Ken W. Watson**

This has both easy lake and river paddling, with lots of marshland bordering the river in this area. There is some unsheltered open water in Lower Rideau Lake, so paddlers, particularly canoeists, should ensure that they do a weather check to make sure the winds are light prior to heading out on the lake. The map included in this guide can be enlarged (while viewing the PDF) to any level of detail you desire as an aid for travel planning.



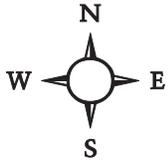
### Water Access

Water access is available at Rideau Ferry Conservation Area, Lower Beveridges Lock, Poonamalie Lock, Smiths Falls Detached Lock and Edmunds Lock. For direct access into Lower Rideau Lake there are three choices, the **Rideau Ferry Conservation Area** boat launch ramp (44° 51.400'N - 76° 08.130'W), the ramp at **Lower Beveridges Lockstation** (44° 52.465'N - 76° 08.250'W) and the ramp at **Poonamalie Lockstation** (44° 53.470'N - 76° 03.480'W). To access the area between Smiths Falls and Poonamalie (including The Swale) use the ramp at **Smiths Falls Detached Lockstation** (44° 53.755'N - 76° 01.715'W). To do the Rideau River between Smiths Falls and Edmunds, it is easiest to put in at **Edmunds Lock** (lots of parking with dock access above the lock).

### Facilities

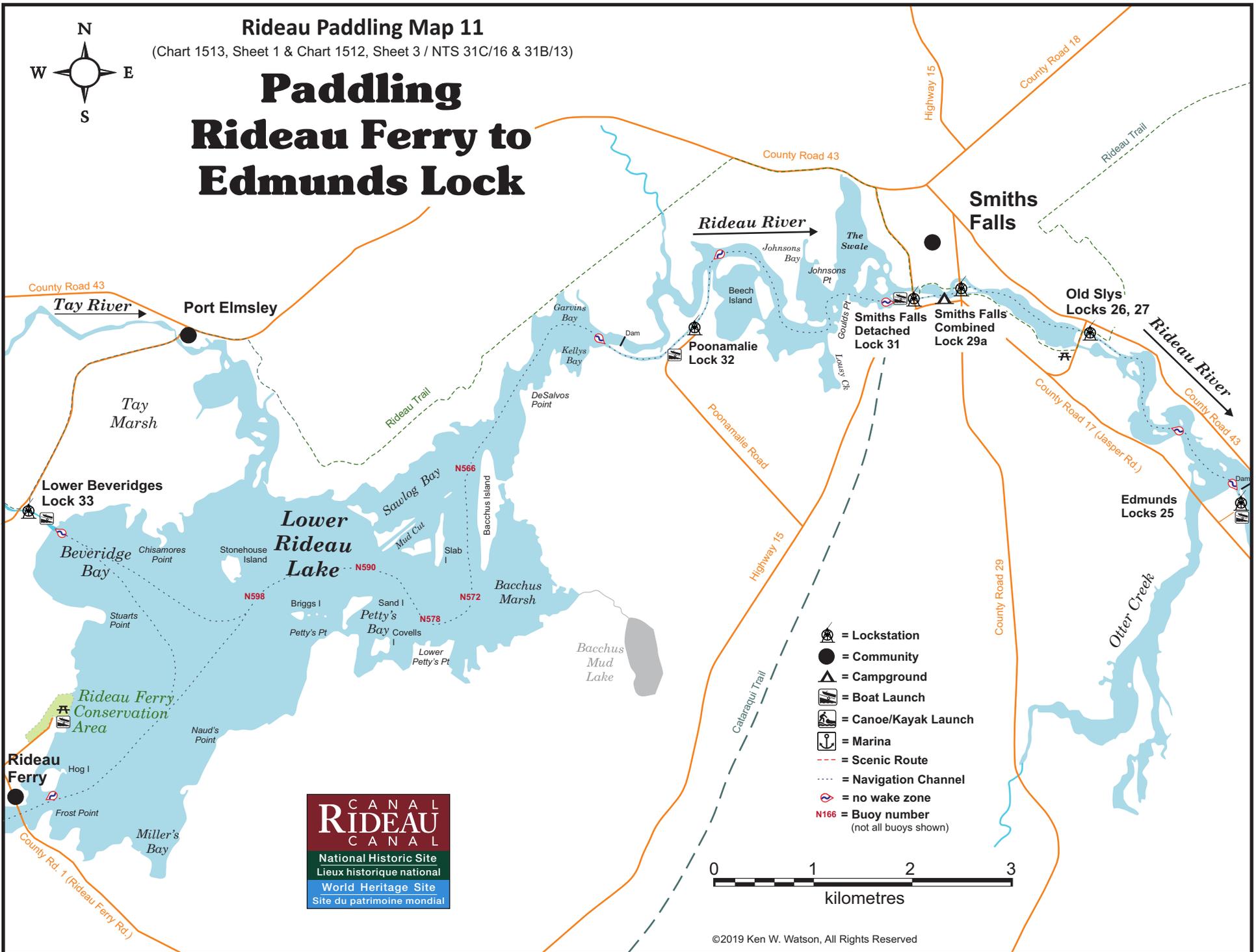
**Lodging:** If you're paddling and camping, the lockstations are a good choice for camp spots (a camping fee applies). There are hotels/motels in Smiths Falls and B&Bs in Westport, Perth and Merrickville. For information about local accommodations see: [www.smithsfalls.ca](http://www.smithsfalls.ca), [www.westportrideaulakes.on.ca](http://www.westportrideaulakes.on.ca), [www.realmerrickville.ca](http://www.realmerrickville.ca), and [www.rideau-info.com](http://www.rideau-info.com) and general lodging sites (i.e. Airbnb, bbcanada, TripAdvisor).

**Supplies:** A local source for supplies is the town of Smiths Falls which has which full facilities (grocery stores, pharmacies, hardware stores).



Rideau Paddling Map 11  
(Chart 1513, Sheet 1 & Chart 1512, Sheet 3 / NTS 31C/16 & 31B/13)

# Paddling Rideau Ferry to Edmunds Lock



- = Lockstation
- = Community
- = Campground
- = Boat Launch
- = Canoe/Kayak Launch
- = Marina
- = Scenic Route
- = Navigation Channel
- = no wake zone
- = Buoy number  
(not all buoys shown)



## **Big Boats**

You'll be sharing the Rideau with big power boats (cruisers). The Rideau is generally not a crowded waterway and often you'll find the large boats in "packs" - travelling from lock to lock - once they pass by you won't see any for awhile. Some of these boats can generate a large wave. The general rule for a paddler and large waves is to meet them head on, this can actually be fun in a kayak (not as much fun in a canoe).

The main navigation channel is shown on the map as a blue dashed line - this is where the big boats will be travelling. So, if you wish to avoid these, pick a route away from the navigation channel. Many paddlers prefer paddling near shore, it's more interesting (i.e. wildlife, cottages) and it keeps you farther away from the waves produced by big boats.

There are several "no wake" zones on the Rideau - these have been marked on the maps. Boaters within these areas are supposed to be travelling at a slow enough speed (less than 10 kph) that their boat doesn't generate any potentially damaging or dangerous waves. .

## **Wind**

A question often asked is which way does the wind blow? The prevailing wind, powered by the jet stream, is from the southwest. That's about the only rule of thumb. If a front is moving in then the wind can come from any direction. I've been on several paddles where I've been paddling into the wind on the way out in the morning and into the wind on the way back in the afternoon because the wind swung around 180 degrees (for some reason it never seems to work the other way around - at your back both ways). So, if you're going to travel the entire Rideau, going from Kingston to Ottawa improves the odds of having the wind at your back - but be prepared for anything.

## **Etiquette**

Your trip planning should include a "leave no trace" approach - carry out what you carry in. Many areas are un-serviced (no garbage cans) - so plan to be self-contained. The lockstations provide waste disposal facilities.

## **Preparation & Safety**

Please read the trip planning information on [www.rideau-info.com/canal/paddling/](http://www.rideau-info.com/canal/paddling/). While these lakes are easy paddling, normal paddling preparations should be made (all required safety gear, maps, food, water, first-aid kit, etc.). Zebra mussels are present in many areas along the Rideau, so a pair of water shoes (to avoid cut feet) is recommended.

Please take all normal safety precautions, including checking the weather forecast before you head out and making sure that someone on shore knows your planned travel route and itinerary

## **Navigation**

While the Rideau is generally easy to navigate, taking along a set of maps is a must (in addition to any GPS you might have). Although the map in this guide is an accurate 1:50,000 representation of the

## ***Rideau Paddling Guide 11: Rideau Ferry to Edmunds Lock by Ken W. Watson***

waterway (when printed to 8.5" x 11"), you may also wish to also have the 1:20,000 hydrographic chart for this section (Charts 1513 and 1512). For power boat navigation, the charts are an absolute must (the map in this guide should not be used for power boat navigation). The charts are also very handy for the paddler, since they show the Rideau in great detail, including depths (which can be helpful when looking for wildlife habitat or just interesting places to paddle).

The charts also show all the navigation buoys. These are all numbered (red buoys have even numbers, green buoys have odd numbers) and so can be used as an aid in locating yourself on the map when you're on open water. A subset of those buoy numbers have been included on the paddling guide maps.

For those wishing to go off the beaten path or want to know more of the topography and geographic features of the surrounding countryside, the 1:50,000 NTS maps for this section is 31C/16 and 31B/13.

**Note:** the Mud Cut on Lower Rideau Lake is no longer navigable by paddlers (info as of 2018).

### **The Locks**

Most Rideau lockstations offer facilities such as washrooms, water, recycling cans, waste cans and picnic tables. Most also allow camping for paddlers travelling the Rideau for a modest camping fee. Paddlers can portage the locks for free, but you owe it to yourself to lock through at least one lock in order to get the full experience of paddling the Rideau Canal. See [www.rideau-info.com/canal/](http://www.rideau-info.com/canal/) for the current fee schedule.

### **Distances:**

Circumference distances are approximate, following the main shorelines. The navigation channel is shown on the map.

- Rideau Ferry to Edmunds Lock along the navigation channel = 19.0 km (11.8 mi)
- Rideau Ferry to Poonamalie along the navigation channel = 10.6 km (6.6 mi)
- Poonamalie to Smiths Falls Detached along the navigation channel = 3.7 km (2.3 mi)
- Smiths Falls Detached to Smiths Falls Combined along the navigation channel = 0.6 km (0.4 mi)
- Smiths Falls Combined to Old Slys along the navigation channel = 1.4 km (0.9 mi)
- Old Slys to Edmunds along the navigation channel = 2.7 km (1.7 mi)
- Lower Rideau Lake – shoreline circumference = 26 km (16.2 mi)
- Poonamalie to Smiths Falls Detached – shoreline circumference = 16 km (9.9 mi)  
(this includes the shoreline along the backchannel (original Rideau River) to the dam)

### **Lower Rideau Lake**

This is the shallow east end of Rideau Lake, an area that was extensively flooded by the canal dam at Poonamalie, which raised the lake level by about 6 feet (1.8 m). The lake has a maximum depth of 25 feet (7.6 m) with an average depth of about 12 feet (3.6 m). In the pre-canal era, the start of the Rideau River was at Stonehouse Island (then a point), which was also the outlet of the Tay River. The winding

## ***Rideau Paddling Guide 11: Rideau Ferry to Edmunds Lock by Ken W. Watson***

navigation channel between Stonehouse Island and Poonamalie marks the course of the original (now drowned) river.

The land bordering the river is all privately owned except for the federal lands at the lockstations and the Rideau Ferry Conservation Area. Zebra mussels are present. Aquatic vegetation growth is present in most sheltered areas with a depth of less than 10 ft (3 m). Wildlife is abundant.

### **The Rideau River**

The Rideau River is generally a slow moving river, the only appreciable currents will be from the outflow of the canal weirs during times of high water. The main hazard are these same weirs, some with overflow dams. These are well marked on the upstream side and paddlers should avoid getting too close to these. Zebra mussels are present. Aquatic vegetation growth is present in most sheltered areas with a depth of less than 10 ft (3 m). Wildlife is abundant.

### **Poonamalie Lock to Edmunds Lock**

These water in the river between the locks in this section has been raised by the various canal dams to the level it is today. The river channel has a maximum depth of 3 m (10 ft). The water depth outside of the marked channel averages about 1.2 m (4 ft). The land bordering the river is all privately owned except for the federal lands at the lockstations and some municipal lands in the section between Smiths Falls Detached and Old Slys.

The flooding by the dam at Smiths Falls Detached has produced some extensive wetlands in this section, including The Swale (see below for details). The river passes through the heart of the Town of Smiths Falls (urban development). Once past Smiths Falls (at Old Slys) the lands bordering the canal have rural development (some cottages, some farms).

## **POINTS OF INTEREST** (listed south to north)

**Lower Rideau Lake:** Much of the cottage development is along the southern shore (i.e. Miller's Bay). On the northern shore, in Beveridge Bay, you'll find the entrance to the Tay Canal, via the Beveridges Locks (see Section 10). You can also paddle up the Tay River to Port Elmsley and see the site of the first lock of the first (1834) Tay Canal. The lake east of Stonehouse Island is the flooded headwaters of the Rideau River and there are extensive marshlands with lots of wildlife in this area.

You're not the first paddler to enjoy this region. The oldest archaeological discovery on the Rideau Canal, a site that shows paleo-native occupation dating back to 6,050 B.C., was made in this area. The outflow of Rideau Lake was a prime hunting and fishing area, attracting native use for thousands of years and there are a number of occupation sites. It's unclear if there were ever any permanent settlements, and recent (last 500 year) native use of the Rideau has been transient (hunting and fishing camps).

**Ferryland Cottage:** Just to the north of the Rideau Ferry bridge, on the southeast shore, is a beautiful old cottage with distinctive turrets. It was built by Alexander Martin of Ottawa in the 1890s. Additions including a gazebo and a boat house were added over time.

**Rideau Ferry Conservation Area:** This is a day use facility, featuring a sandy beach, picnic tables, outhouses and a boat launch. It is run by the Rideau Valley Conservation Authority.

**Camp Merrywood:** At Stuarts Point as you come around into Beveridge Bay, you'll see Camp Merrywood, an Easter Seals camp (for children with physical disabilities) established in 1948.

**Beveridges Locks/Tay Canal:** (see Section 10).

**Stonehouse Island:** This island (private property) was once used as a staging point for the Tay Navigation Company (1834 - 1840s). Goods would be offloaded from barges plying the Rideau Canal and then loaded onto smaller barges that could ascend the Tay Canal (which had smaller locks than the Rideau Canal) via Port Elmsley to Perth. Prior to the Rideau Canal being built, it represented the end of a point, the Tay River flowed into the Rideau River on the east side of that point.

**Port Elmsley:** The Weatherheads erected a dam and sawmill here in 1829. The first Tay Canal was opened in 1834, with Locks 1, 2 and 3 in the area of present day Port Elmsley. You can still see the remains of Lock 1 as you paddle into Port Elmsley (look for it on your left (south side) as you enter – a small island marks one wall of the original lock).

**Lower part of Lower Rideau Lake:** East of Stonehouse Island you'll see that the navigation channel takes a long loop. It is following the original channel of the Rideau River. If you have a copy of the navigation chart, you can clearly see the old river channel from the depth readings on the chart.

**Mud Cut:** This used to be a shortcut that avoided the long loop. Today it is no longer passable, even by paddlers (info as of 2018). This shortcut was originally dredged between 1909 and 1911. Early navigation maps (1920s) show the main route of the canal as being through this cut. That dredging stopped some time ago (~1970s) and the channel has now filled in to the point that it is non-navigable.

**Bacchus Island:** This is a glacial drumlin (an elongated gravel ridge) formed during the last ice-age. The long direction of the island shows the direction of the ice movement in this area (in this case, south-southwest). The island is named after William Bacchus who briefly owned part of the island in the 1870s. The development on the island that you see today started in the 1940s, with a permanent causeway to the island built in the 1950s.

**Poonamalie Dam:** As you approach Poonamalie, you'll see the dam to the north of the cut that leads to the locks. This dam is sitting at the head of First Rapids, the first set of rapids on the Rideau River, flowing over hard layers of flat lying limestone. The dam that you can see today (worth a visit) is the third dam in this location. The original dam was a timber overflow dam with stone abutments. A timber weir was later incorporated into that dam. It survived until 1904 when a massive sheet of ice tore a 75 foot (23 m) wide hole in the dam. A new concrete dam was then built just a bit downstream from the original timber dam. In 1971, a new concrete dam was built, a bit downstream from the 2nd dam. It incorporated a large hydraulic water control gate.

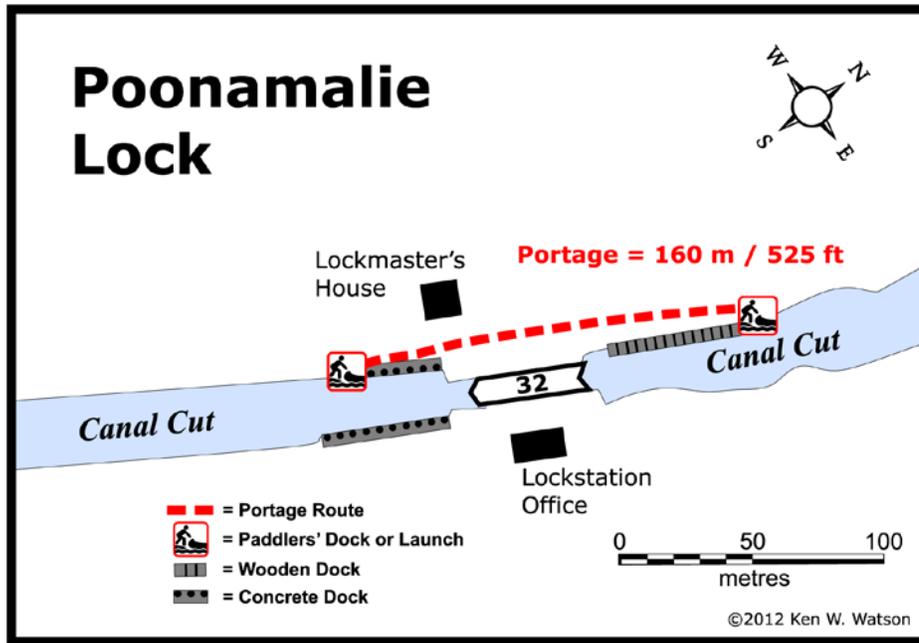
**Poonamalie Cut:** The original plan for navigation was to place a lock to the north of the Rideau River in this location. But hard bedrock forced a re-design and the lock was placed in a long canal cut to the south of the river. As you paddle to the lock, you'll see both rubble stone and stone wall embankments lining the cut. In 2015-16 part of the southern embankment was re-done and new wall put in place. The Minnow Creek Weir (through the embankment, just south of the lock) was also replaced at that time.

**Poonamalie Lock:** This station has a single lock (lift of 2.2 m / 7.1 ft). The lock is sitting in the middle of a canal cut that bypasses a shallow meander of the Rideau River. The dam, as previously noted, is

## Rideau Paddling Guide 11: Rideau Ferry to Edmunds Lock by Ken W. Watson

sitting at the head of First Rapids. The name Poonamalie was given to this lock during construction. The name comes from Poovirundavalli, a town near Chennai (Madras) in India, which served as a garrison town for the British Army. The name was anglicized as Poonamallee and this was the original spelling for the name of the lockstation. Speculation is that the cedar-lined banks of the Rideau River reminded one of the military men of the Indian garrison town.

You'll find a beautiful 2-storey lockmaster's house at this location. A short hiking trail extends from the lockstation, along the north side of the canal cut, to the dam.



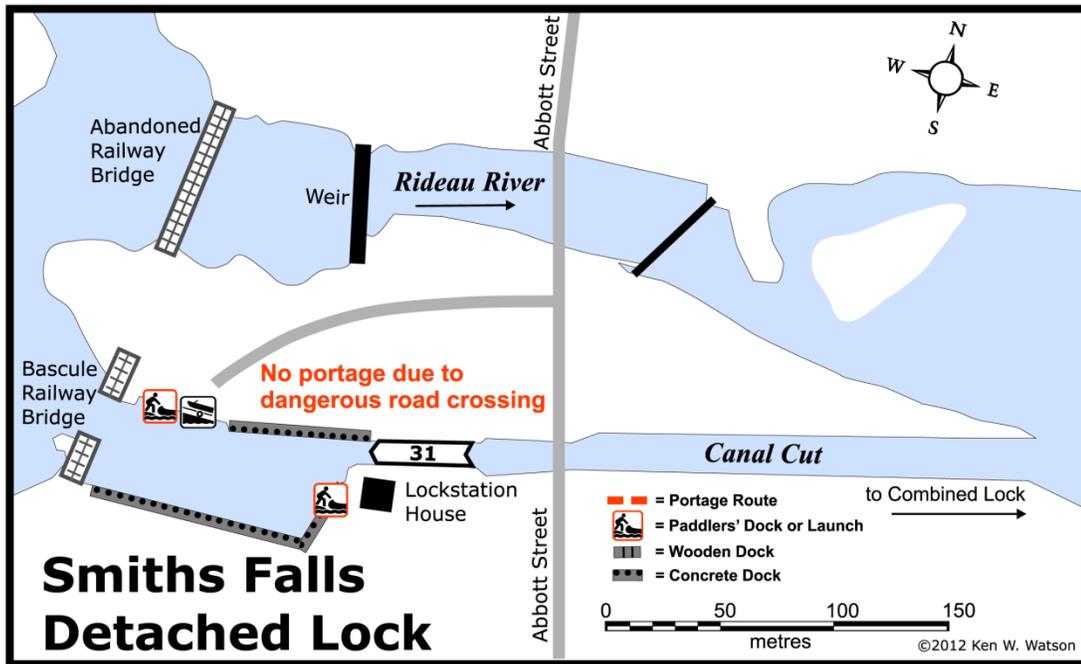
**Rideau River – Original Channel:** If you turn north at the northeast end of the Poonamalie Cut (rather than following the navigation channel east) you'll be paddling into the original course of the Rideau River (now flooded from the dam at Smiths Falls Detached). You can follow the channel up to the foot of the Poonamalie Dam.

**The Swale:** The Swale is 385 ha in size and is classified as a Class I wetland – a cattail marsh. It contains approximately 250 identified plant species. Similar to other marshes on the Rideau, this marsh is a haven for wildlife, particularly waterfowl. You'll also find lots of frogs and turtles.

**Bascule Railway Bridge:** Just west of Smiths Fall Detached Lock is a permanently raised railway bridge. This is a Scherzer rolling-lift railway bridge (a type of bascule bridge) built for the Canadian Northern Railway in 1912/13. The railway line was taken out of service in late 1978. In 1983 the bridge was designated as a National Historic Site of Canada – it is the oldest surviving bridge of this type in Canada.

**Smiths Falls Detached Lock:** This is a single lock (lift of 2.6 m / 8.5 ft) in a canal cut. You'll find the dam and weir, to the north of the lock, in the original channel of the Rideau River. It's called a "detached" lock since originally four contiguous locks were proposed for Smiths Falls. But the topography and fractured nature of the bedrock necessitated a change in plans, and this lock was

detached from the combined locks and built in this location. The lock was known for a time as Jones Lock after several early lockmasters by that name.



**Abbott Street Swing Bridge:** This is a through plate girder swing bridge constructed in 1959. It has a closed clearance of 1.9 m / 6.2 ft. It replaced an earlier swing bridge that was constructed here in 1897.

**Catarauqui Trail:** This all-season trail, part of the Trans-Canada trail system, follows an old railway bed. You find the northern end of the trail located at the south end of Ferrara Drive, 0.8 km south of Highway 15. For more information about the trail see: [www.catarauquitrail.ca](http://www.catarauquitrail.ca)

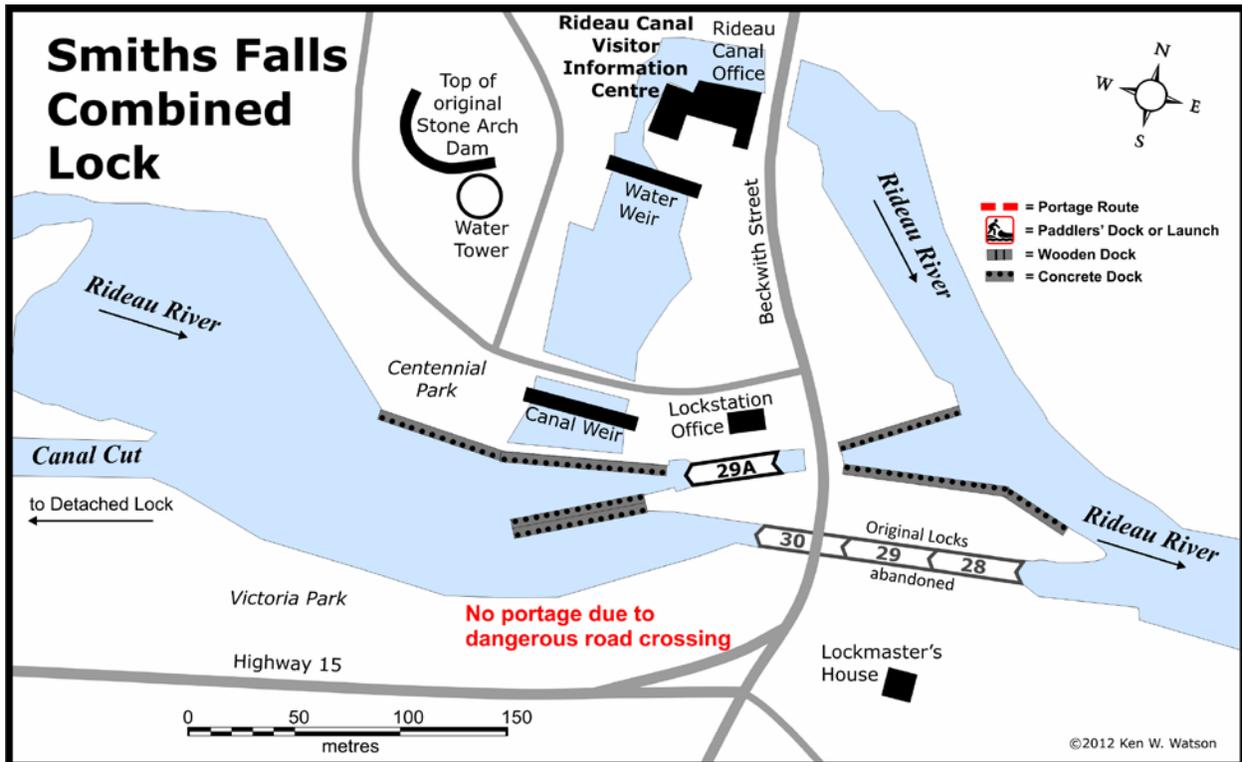
**New Smiths Falls Combined Lock:** This is a single lock (lift of 7.8 m / 25.7 ft) in a canal cut. It's the most recent lock on the Rideau Canal, built in 1973/74 to replace the original combined locks. The change was made because the swing bridge over the original locks restricted traffic flow (see Beckwith Street Bridge). The new combined is an electric lock with the highest single lift on the Rideau Canal. Water enters from the floor of the lock to reduce turbulence.

**Beckwith Street Bridge:** This is a fixed high level (26 ft / 7.9 m) bridge. It was built in 1973/74, at the same time as the new combined lock. The need for this bridge was the reason the original combined locks were abandoned and a new lock built. Since the opening of the canal in 1832, there had been two bridges near this location, a swing bridge over the original combined locks and a fixed bridge over the bypass channel. The first bridge at the locks was a rolling bridge over the centre lock, later replaced by a swing bridge. In 1889, a new swing bridge was installed over the upper lock. It was replaced in 1923 and it was that bridge, by the 1960s, that generated complaints (too old, too narrow, too slow). To run a fixed high level bridge with the required minimum clearance of 22 ft (6.7 m) over the original alignment of the canal and locks meant that a number of buildings would have had to have been torn down to make room. This wasn't acceptable to the Town of Smiths Falls. In the end, amid much controversy, the configuration

that we see today, a fixed high level bridge going over a relocated lock, and the original locks left in place, was implemented.

**Here There Be Whales:** If you were paddling here about 11,500 years ago, you would have been doing it in the company of whales. The bones of a humpback whale (*Megaptera novaeangliae*) were found in a gravel pit just north of Smiths Falls. This whale swam in the Champlain Sea that covered this area at that time (see the Geology of the Rideau Canal section).

**Old Smiths Falls Combined Locks:** These are the original set of 3 locks, left in place when the new single-lock combined lock was built. They are interesting to visit since they are empty of water, revealing many of the engineering details (such as sluice tunnel valves) that are underwater in an operating lock.



**1 Jasper Avenue:** Located adjacent to the old Smiths Falls Combined Locks, this is the original lockmaster's house. It was built as a single storey defensible lockmaster's house in 1838-41. The second storey framed addition was done in 1927. From 1985 to 2015 it was the office for non-profit organization Friends of the Rideau. It is now the Smith's Falls office of Le Boat.

**Original Smiths Falls Dam:** Another historical point of interest is the old dam (built in 1828-1831) that used to block the flow of the Rideau River (diverting it to the weir). Walk to the parking lot under the big water tower (near the Rideau Canal Museum). The stone retaining wall is actually the top four feet of the 23 foot high stone dam. It has been backfilled on both sides. Standing in the middle of parking lot puts you right above the original channel of the Rideau River.

**Rideau Canal Visitor Information Centre:** Formerly the Rideau Canal Museum, it is located just north of Smiths Falls Combined Lock, housed in part of an old grist mill (the Woods Mills complex). The mill complex underwent an extensive restoration in 1989-91, including the creation of a museum in the

## Rideau Paddling Guide 11: Rideau Ferry to Edmunds Lock by Ken W. Watson

old granary section of the building. The museum operated from 1991 until it closed in 2012. Parks Canada is now maintaining it as visitor information centre. It has many interesting displays related to the Rideau Canal. For more information: [https://www.pc.gc.ca/en/lhn-nhs/on/rideau/activ/accueil\\_info](https://www.pc.gc.ca/en/lhn-nhs/on/rideau/activ/accueil_info)

**Rideau Canal Office:** When Parks Canada took over the Rideau Canal in the early 1970s, they made the very good decision to move their direct management of the canal from Ottawa to Smiths Falls, to place them right on the canal in a central location. That was originally in offices in downtown Smiths Falls. Part of the rehabilitation of the Woods Mills Complex included creating offices for canal staff in the eastern half of the restored building. Those offices were occupied in 1991.

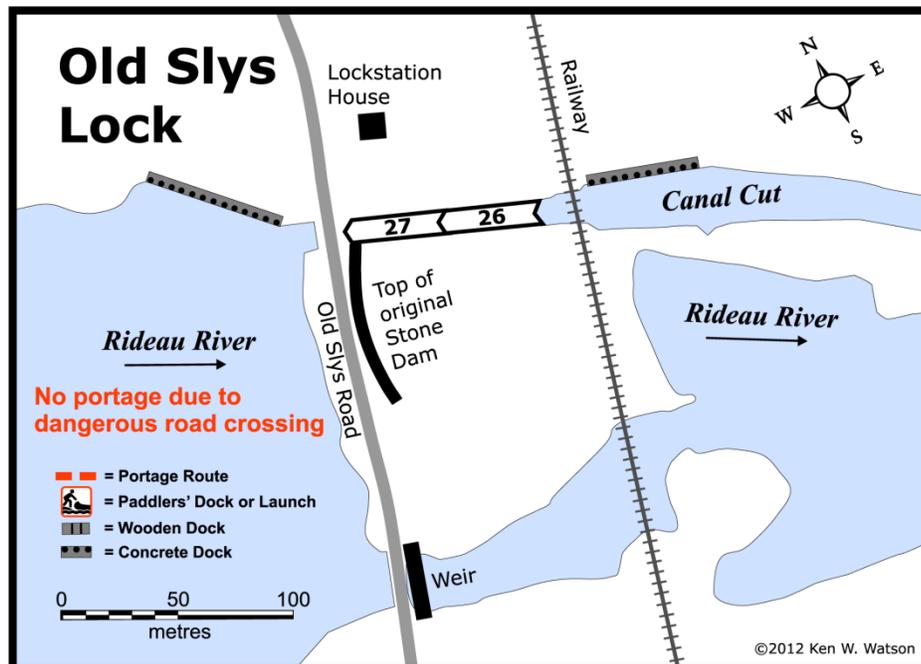
**Smiths Falls:** The largest community between Kingston and Ottawa, Smiths Falls offers a full range of stores and services. You'll also find some interesting museums. The **Rideau Canal Visitor Information Centre** (see above), the **Smiths Falls Railway Museum**, located just up the road (north) from Smiths Falls Detached Lock and **Heritage House Museum**, located just down the road (south) from Old Slys Lockstation.

**Rideau Trail:** This walking trail, which extends from Kingston to Ottawa, passes through Port Elmsley and Smiths Falls. In this area it mostly follows roadways. You find more info about it at: [www.rideautrail.org](http://www.rideautrail.org).

**Old Slys Lockstation:** This is a double lock (two locks in flight - combined lift of 5.0 m / 16.3 ft). The locks are at the head of a canal cut that leads back to the Rideau River. The waste weir is located in the original channel of the Rideau River to the south of the locks. The area below the original stone dam at this location was backfilled in the 1960s so that only the top few feet of the original 21 foot high dam remain visible.

A defensible lockmaster's house was built here in 1838, but it was torn down in 1965 and replaced with the current lockstation office.

The first road across the dam and locks was built in 1857, with a wooden swing bridge across the lock. The present steel truss swing bridge was installed in 1962.



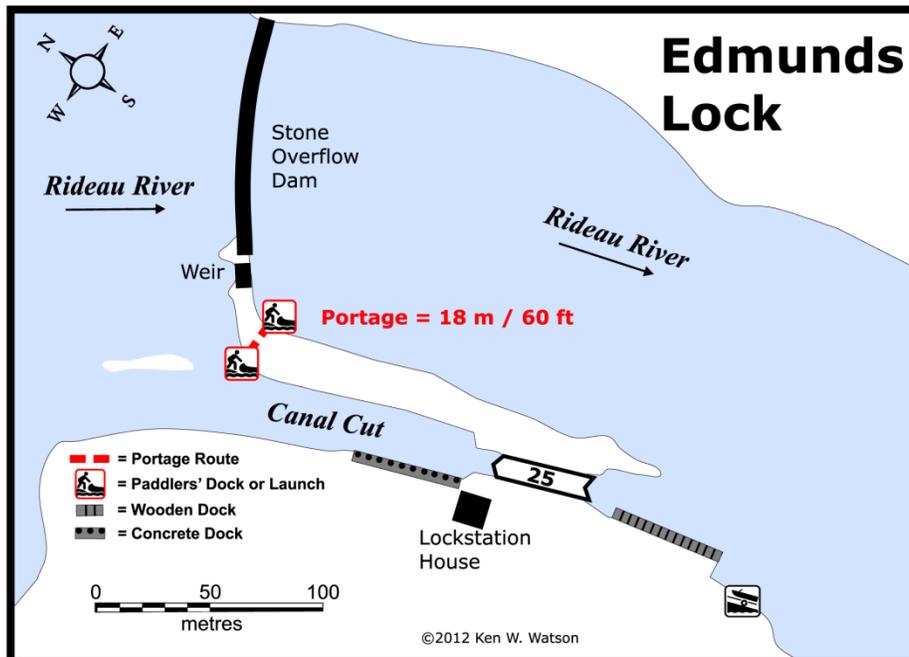
**CPR Railway Bridge:** The original railway bridge was built in 1858 by the Brockville and Ottawa Railroad. Ownership transferred to the CPR sometime around 1900 and the bridge appears to have been upgraded at about that time.

**Rideau River:** This section of the Rideau River between Old Slys and Edmunds is typical river travel, the water depths average 6 to 8 feet (1.8 to 2.4 m). There is moderate density home/cottage development in some sections, with quite a bit of shoreline still in its natural state (farm frontage).

**Edmunds Lock:** This lockstation has a single lock, a weir and an overflow dam. The lock has a lift of 9.2 ft (2.8 m). A two-storey lockmaster's house is located on site (the lockstation office today). It was built in 1905, replacing an earlier stone defensible lockmaster's house that had been built here in the 1840s. Edmunds, accessed by road from County Road 17 (south side of the Rideau River) features extensive grounds (verdant lawns with large shade trees), lots of parking, and a boat launch.

This lockstation features a stone arch overflow dam. Originally, all of the dams designed by Colonel By and the other Royal Engineers were to be overflow dams (including the largest, the huge dam at Jones Falls). But, after seeing the effect of spring flooding, By quickly changed his plans, making many into non-overflow dams and adding waste-water weirs to all of them. In the case of Edmunds we have a combination of both - an overflow dam with a waste-water weir. He explained the weir in an 1830 report noting "the addition of a Waste Weir to preserve the Dam from the effects of Spring Floods." The dam has been doing a great job, it's only required normal maintenance. The weir was rebuilt in 1906-07.

Edmunds or Edmonds? The lock is named after James Edmunds, the first settler in this area. Over the years his name has been spelled Edmunds, Edmonds and even Edmons. Currently Parks Canada used Edmonds and the Canadian Hydrographic Service (charts) uses Edmunds. Either is fine. At one point this lock was known as Mills Lock, removing the issue of how to spell Edmunds.



## Off the Beaten Path

### **Port Elmsley** (8 km / 5 mi return from the navigation channel south of Stonehouse Island)

Leave the navigation channel south of Stonehouse Island and turn north to the island. Paddle past it (either side) and head north to the mouth of the Tay River. Paddle up the Tay River to Port Elmsley. There is lots of undeveloped shoreline and marshlands in this area (wildlife viewing opportunities). As you come into Port Elmsley, you'll see a small island on your left (south side) - this is the location (44° 53.440'N - 76° 07.070'W) of Lock 1 of the first Tay Canal (opened in 1834, closed in the 1860s).

There are rapids at Port Elmsley with shallow areas and small rapids in the Tay River upstream of Port Elmsley. This area is generally non-navigable.

### **Poonamalie/The Swale** (16km / 9.9 mi circumference)

This trip can be done from either the lock at Poonamalie or Smiths Falls Detached. It can be a short day trip or an off the beaten path exploration as a part of a larger trip. The two features here are the original channel of the Rideau River and The Swale.

At the northeast entrance to the canal cut into Poonamalie, head northwest to follow the original channel of the Rideau River. This can be paddled all the way up the base of the big dam at Poonamalie. The shorelines in this section are mostly undeveloped.

While The Swale is specifically the Class 1 wetland to the north of Smiths Falls Detached Lock, the whole section from Smiths Falls Detached to the canal cut entrance to Poonamalie features lots of marshland with its associated wildlife. This area is mostly undeveloped, with lots of natural shoreline.

## Geology of the Rideau Canal

As you paddle the Rideau Canal, the route you follow is defined by its geology. The area is underlain by part of an old mountain range, the Grenville Mountains, eroded down over many millions of years. Much of this eroded mountain range has been covered by younger sedimentary rocks, but portions of the old mountains are exposed, partly a result of their original topography and partially due to the eroding away of younger overlying rocks. This area is known as the Frontenac Axis. In essence, if you paddle from Kingston to Smiths Falls, you'll be paddling over a (very old) mountain range.

The Frontenac Axis can be thought of as a ridge connecting the extensive area of the Canadian Shield to the north and the Adirondack mountains to the south. On the Rideau, the southern irregular boundary of the Frontenac Axis is near Kingston Mills and the northern irregular boundary is on the northern reaches of Big Rideau Lake. The Frontenac Axis is made up of rocks formed 1.35 to 1.06 billion years ago (Precambrian: middle to late Proterozoic age) and then deformed and metamorphosed 900 million years ago. The rock types that you'll be able to see as you travel through the Frontenac Axis include granite, syenite, monzonite, migmatite, gabbro, quartzite, marble, gneiss and pegmatite. Many of the lakes are underlain by marble (crystalline limestone) which provides some buffering against acid rain.

To the north and south of the Frontenac Axis are younger, 520 to 460 million year old (Paleozoic: Cambrian to Lower Ordovician age) rocks including limestone, sandstone, dolomite, shale and conglomerate. Most of these rocks were laid down in a shallow sea that covered this area, which was near the equator at that time (part of Laurentia which eventually became part of North America due to

**Rideau Paddling Guide 11: Rideau Ferry to Edmunds Lock by Ken W. Watson**

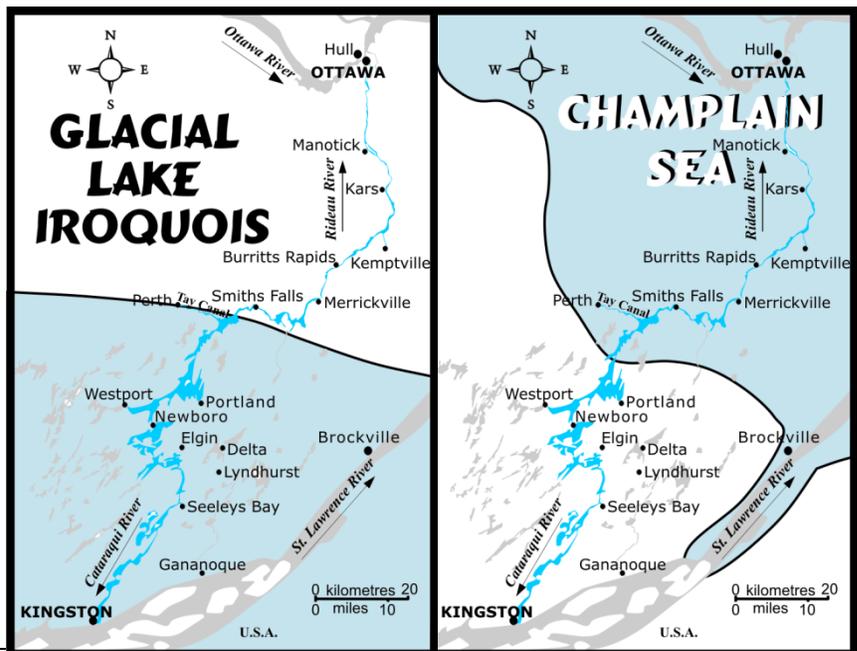
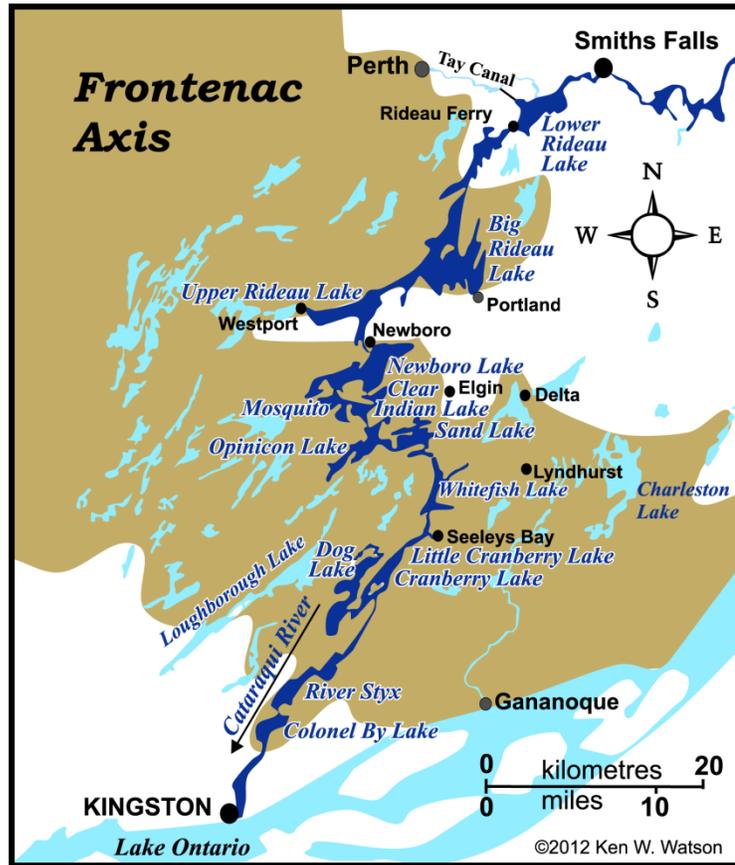
continental drift). The rocks near Kingston are dominated by limestone which provided much of the building material for the early town (hence the nickname, Limestone City). In the centre part of the Rideau, on the margin of the Frontenac Axis, the younger sedimentary rocks tend to be dominated by sandstone. Beyond that, from Smiths Falls to Ottawa the rocks are mostly dolomite, limestone and shale.

More recently, three events have impacted on the landscape - the ice last age, glacial Lake Iroquois and the Champlain Sea. During the last ice age, which peaked about 20,000 years ago, the Rideau area was covered by ice up to 1.5 kilometres (1.0 mi) thick. The ice polished and moved rocks, excavated some of the landscape and left large deposits of sand and gravel. The weight of the ice depressed the landscape by about 175 m (575 ft) below where it is today.

By 14,000 years ago, the climate began to warm up, melting the glaciers and forcing them to retreat. In the area of Lake Ontario, today's exit of the lake down the St. Lawrence River was blocked by ice and a large lake, about 30 m (100 ft) higher than today's Lake Ontario, formed. That lake, known as Lake Iroquois, extended as far north as Perth and Smiths Falls.

Evidence of that lake exist today in form of glaciolacustrine (a big word for glacial lake) deposits. These include near shore sediments such as gravel and gravelly sand, and deeper water deposits such as silt and clay. These deposits are found all over the southern Rideau, including on heights of land, such as near the top of Rock Dunder. This is because the overall landscape was depressed, and features such as Rock Dunder formed part of the bottom of this large lake.

By about 13,350 years ago a channel opened up in the ice dam



**Very generalized representations of glacial Lake Iroquois and the Champlain Sea in the Rideau region.**

## ***Rideau Paddling Guide 11: Rideau Ferry to Edmunds Lock by Ken W. Watson***

(near Rome, NY), rapidly draining much of the lake. At the same time the land was rising as the weight of the ice was removed (this rising is called “isostatic rebound”).

As Lake Iroquois and subsequent glacial lakes were getting smaller, the glaciers were continuing their retreat from the St. Lawrence lowlands. About 13,000 years ago this allowed waters from the Atlantic Ocean to mix with glacial melt-waters and river drainage to create a brackish sea known as the Champlain Sea which extended past (west and south) of Ottawa.

The southern limit of this sea on the Rideau Canal was near Nobles Bay of Big Rideau Lake. If you were paddling the sea back then, you would have been enjoying it in the company of whales. The bones of a humpback whale were found near Smiths Falls and beluga (white) whale bones have also been found in Champlain Sea deposits. This sea retreated as the glaciers moved north and the land continued to undergo isostatic rebound. By about 11,100 years ago, the central Rideau had risen above sea level and the land that we see today was being revealed. Rivers and streams continued to modify the landscape up until the building of the Rideau Canal.

There are a some interesting geological features in the Ottawa area. The northern part of the Rideau River is the youngest part of the waterway (outside of canal altered sections) since, in the immediate post-glacial period, the Ottawa River had a channel to the south of where it is today, across much of urban Ottawa to the Mer Bleue area (where the trace of the old Ottawa River channel can be clearly seen). It eventually shifted north (due to isostatic rebound) to its present location and cut a deep channel. The faster excavation by the Ottawa River, through the underlying limestone rocks, compared to the Rideau River, formed Rideau Falls.

Another geological feature at Ottawa is that much of the area is underlain by a thick clay layer, a type of “quick clay” known locally as Leda clay (named after a type of small clam found in the clay deposits). Quick clay is a clay that is not well bonded and is subject to liquefaction, that is, when vibration is induced, it can turn into a liquid and flow. When undisturbed, it looks and acts like a normal solid form of clay. It was formed by glacial silt settling out on the bottom of the Champlain Sea. There it formed a stable type of marine clay, “glued” with salt. When the sea retreated due to the rising land, this clay was exposed to rainfall that removed much of that salt bonding, creating the unstable clay that is present in much of the region today. Earthquakes can cause this clay to liquefy, leading to landslides. Ottawa is a seismically active region (earthquake prone) and, in the future, an earthquake is going to play havoc with the city (if I lived in Ottawa, I’d check to see if my house is sitting on bedrock or on clay).

### **Mining in the Rideau Region**

The rocks of the Frontenac Axis are host to some small mineral deposits, several of which were mined in the mid-late 1800s and in the early 1900s. In the Rideau Canal region, minerals such as apatite (for phosphate), mica, feldspar, graphite and iron were mined. A few of these old mining areas have been noted in the guides.

Some of the earliest mining in the region was for rocks to be used for the dams and locks of the Rideau Canal. Rocks of the Frontenac Axis were not suitable for this purpose (too hard and often fractured) and so quarries to mine rocks for the canal were established in the younger sedimentary rocks, mining sandstone or limestone. You can see the local sedimentary geology reflected in the type of rocks used for the building of the locks and dams along the Rideau; limestone in the southern area, sandstone (Potsdam sandstone) in the central Rideau and dolomitic limestone and limestone in the northern part.

The first mine on/near the Rideau Canal (excluding the small scale iron mining near Lower Beverley Lake in the early 1800s) was the iron mine on Iron Island near Newboro opened by the Chaffey brothers, John, Benjamin and Elswood, in about 1850. Phosphate mining (for fertilizer, most was shipped to England) started in the Rideau area in about 1867 and continued to the early 1890s. By the late 1880s, mica mining was also underway. Apatite (phosphate) and mica form in the same geological environment, so several mines which started off mining phosphate were later mined for mica. Mica mining ended in the 1920s as the value of the mineral fell to uneconomic levels.

Today, mining in the region is mostly surface quarrying for sand, gravel, and stone.

## **Wildlife of the Rideau Canal**

The Rideau spans a wide variety of ecosystems, due in part to the underlying geology and man's activity in the last 200 years. The Frontenac Axis, a section of the Canadian Shield (Precambrian rocks - very old) underlies the Rideau from Kingston Mills to Lower Rideau Lake. These hard rocks form rugged topography (hills, ravines), including the basins for the lakes on the system. Most of the lakes are underlain by crystalline limestone which acts as a buffer against acid rain (hence the lakes are very productive for fish and other aquatic life). Outside of the Frontenac Axis, younger (Palaeozoic) flat lying sedimentary rocks form the underlying bedrock (it is from these rocks that the stones for the dams and locks were quarried).

The area has been actively logged since before the canal was built, the entire area cut over several times. Most of the region (including many of the islands in the lakes) was farmed or used for cattle pasture at one time. By the early 20th century, small farms on poor Frontenac Axis lands were being abandoned in favour of better (more productive) pastures.

So today, along the Rideau you'll find forested areas (some now 100 years mature), active farmland, scrubland and abandoned farmland, low density cottage/summer home developed (rural) land and urban land. The forests are generally mixed, deciduous trees (oak, maple, ash, basswood, birch, elm) and conifer trees (most commonly white pine, white spruce and cedar). On flat lying topography you'll find cedar swamps, hardwood (black ash & silver maple) swamps, and bogs. Along the margins of the Rideau Canal you'll find cattail marshes. All these areas support a varied and healthy wildlife population.

The following is a list of the most common wildlife that you might spot on your Rideau journey. Note that photos of many of these birds and animals can be found on my Rideau website at:

[www.rideau-info.com/canal/ecology/fauna.html](http://www.rideau-info.com/canal/ecology/fauna.html)

### **Water Birds**

**Common Loon** - on all the lakes, this bird is distinctive for its haunting call. It's a diving bird, swimming underwater to catch fish

**Great Blue Heron** - along the entire Rideau, a large bird usually seen wading near shore.

**Green Heron** - most commonly in the shallow water sections (Colonel By Lake, River Styx, Rideau River) this is a small heron. Usually seen perched in a tree.

**Canada Goose**- yes, we have these (more each year)

## ***Rideau Paddling Guide 11: Rideau Ferry to Edmunds Lock by Ken W. Watson***

**Ducks** - most commonly the Mallard duck (quacks when flushed), American Merganser duck (a pointed red bill) and Wood duck (squeaks when flushed).

**Pied-billed Grebe** - In some areas you'll also spot the reclusive Pied-billed Grebe (a small diving bird).

**Ospreys** - now common along the Rideau - often spotted in their large nest made of sticks perched high in a pine tree or a power line stanchion. It dives to catch fish (quite spectacular to see)

**Ring-billed Gull** - a gull with mark on bill

**Terns** - the Common Tern, a large white tern with dark bill and the Black Tern, small tern with black body (adult)

**Trumpeter Swans** - An extirpated native species in this region, they were re-introduced in the 1990s. Favourite haunts include Opinicon Lake and Big Rideau Lake (near Narrows and Portland).

### **Other Birds**

There are many other types of birds that you might spot in the near-water environment; red-tailed hawks, red-winged blackbirds, turkey vultures, turkeys, ruffed grouse and many more (bring along your bird book).

### **Reptiles and Amphibians**

**Turtles:** we've got lots of turtles - most common are the Common Map Turtle (a peaked shell and yellow-orange lines on the skin and shell); Midland Painted Turtle (a flat smooth shell with bright red splotches along the edge) and the Common Snapping Turtle (can get very large, a prehistoric looking turtle). You'll often find Map and Painted turtles sunning themselves on logs and rocks. The Snapping turtle almost always stays in the water, you'll find it floating or slowly swimming near marshy areas. There are also three other less commonly seen turtles, the Stinkpot Turtle (aka Musk Turtle) a small turtle found in areas with aquatic plant growth; Blanding's Turtle with a "war helmet" type shell and bright yellow chin and throat, usually found in wetlands and the Spotted Turtle, a small turtle with bright yellow spots on its shell, usually found in areas with aquatic plants and a silt bottom.

**Frogs:** we have lots of frogs that will provide you with a nightly serenade. The two biggest are the bullfrog and the green frog. Also the leopard frog, spring peeper and many others.

**Snakes:** we do not have any poisonous snakes. The two largest snakes are the Northern Water Snake and the Black Rat Snake - both generally found near water. The common garter snake can also be found throughout the region.

### **Mammals**

In the near shore environment you'll likely spot muskrats and beavers. You may even spot the somewhat reclusive river otter (found in the lakes here as well as rivers). And there are the usual Eastern Ontario mammals to be sometimes found near the water: raccoons, black, grey and red squirrels, chipmunks, foxes, coyotes, white-tailed deer and skunks. Black bears, although quite rare in the region, are present.

## **Fish**

The Rideau is home to healthy populations of many fish species. The lakes and most of the rivers are home to species such as Large Mouth Bass, Small Mouth Bass, Northern Pike and Crappie. Lake Trout are present in some lakes that have depths in excess of 80 ft / 24 m (i.e. Big Rideau Lake). There are Walleye in some areas (i.e. Upper Rideau Lake and the Rideau River) and Muskellunge (Musky/Maskinonge) in some sections of the Rideau River.

## **Aquatic Plants:**

The Rideau hosts quite a variety of aquatic plants.

**Submerged Plants:** Waterweed (like aquarium plants); Pondweed; Smartweed (holds flower above surface of water); Tape-grass (like underwater grass, flower on coiled stem); Coontail (like a thick furry coon's tail); Water-milfoil (one species an invasive plant).

**Aquatic Plants ( floating):** White Water-lily (white fragrant flower); Bullhead Water-lily (round yellow flower); Frogbit (invasive alien, small floating leaf like water lily); Duckweed (food for ducks, tiny plant)

**Aquatic Plants (emergent):** Cattail (big brown seed heads); Pickerelweed (blue flowers on stalk); Flowering Rush (invasive alien); Arrowhead (arrowhead-pointed leaves, white flowers); Purple Loosestrife (invasive alien, now controlled by beetles in some areas).

Oh - and those amorphous green blobs floating under the water in near-shore areas. They are benign (not due to pollution), a type of filamentous green algae. Their abundance is due to zebra mussels which don't eat this type of algae, but do eat their competition (single-celled algae) - and so, by removing the competition, have allowed these blobs to expand in numbers and length of season.

*My thanks to Simon Lunn and the Rideau Roundtable ([www.ridearoundtable.ca](http://www.ridearoundtable.ca)) for assistance with the wildlife and aquatic plants information.*

Those interested in some tips for taking good photos of wildlife should view "The Nature of Wildlife Photography" on my website at: [www.rideau-info.com/canal/ecology/nature-photography.html](http://www.rideau-info.com/canal/ecology/nature-photography.html)

One photography hint, a very simple one, is to choose a paddling route that puts the sun to your back for most of the day. Try to choose a route that has you on a west shore in the morning, a north shore at mid-day and an east shore in the afternoon. For those doing the entire Rideau, this means going from Kingston to Ottawa rather than the other way around. This will put the wildlife that you see on your paddle in the best light.

## **Errors**

If you find any errors or omissions in this guide, please let me know ([rideauken@gmail.com](mailto:rideauken@gmail.com)) and I'll get them fixed.

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