

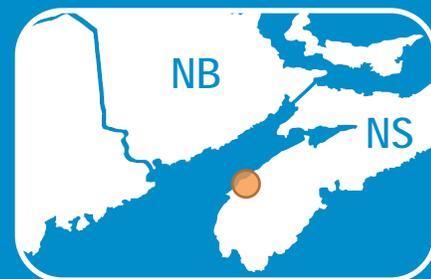
# Bay of Fundy Estuary Profile

## Annapolis Basin

The Annapolis Basin is a sub-basin of the Bay of Fundy along the northwestern shore of Nova Scotia and at the western end of the Annapolis Valley. The Annapolis River is the major water source flowing into the estuary. At the mouth of the estuary, a narrow channel known as the Digby Gut connects the estuary to the Bay of Fundy.

Annapolis Royal and Digby are the main communities along the shore of the estuary, and Kingston-Greenwood is within the catchment area. Near Digby, there is a ferry port that connects to Saint John, New Brunswick. The estuary also hosts a tidal power generating station, which is near Annapolis Royal. The economy within the catchment area is largely driven by agriculture. However, there are also several shellfish and finfish aquaculture tenures, and some commercial fisheries near the mouth of the estuary that largely target invertebrates such as crab, lobster, and clams that inhabit tidal mudflats. The extensive tidal mudflats within the estuary are important habitat for shorebirds. Within the catchment area there is freshwater habitat for wood turtles, and two protected areas that overlap with the landward boundary of the estuary. Although the upper valley is primarily agricultural land, much of the rest of the catchment area is covered by forest.

The following pages provide information about the physical, ecological and human use characteristics of the estuary and catchment area.



Estuary surface area	104.07 km <sup>2</sup>
Width at estuary mouth	1.85 km
Shoreline length	200.63 km
Catchment area	2322.05 km <sup>2</sup>
Shorebird colonies	2
Protected area	94.81 km <sup>2</sup>
Paved roads	1028 km
Aquaculture leases	10
Small craft harbours	0

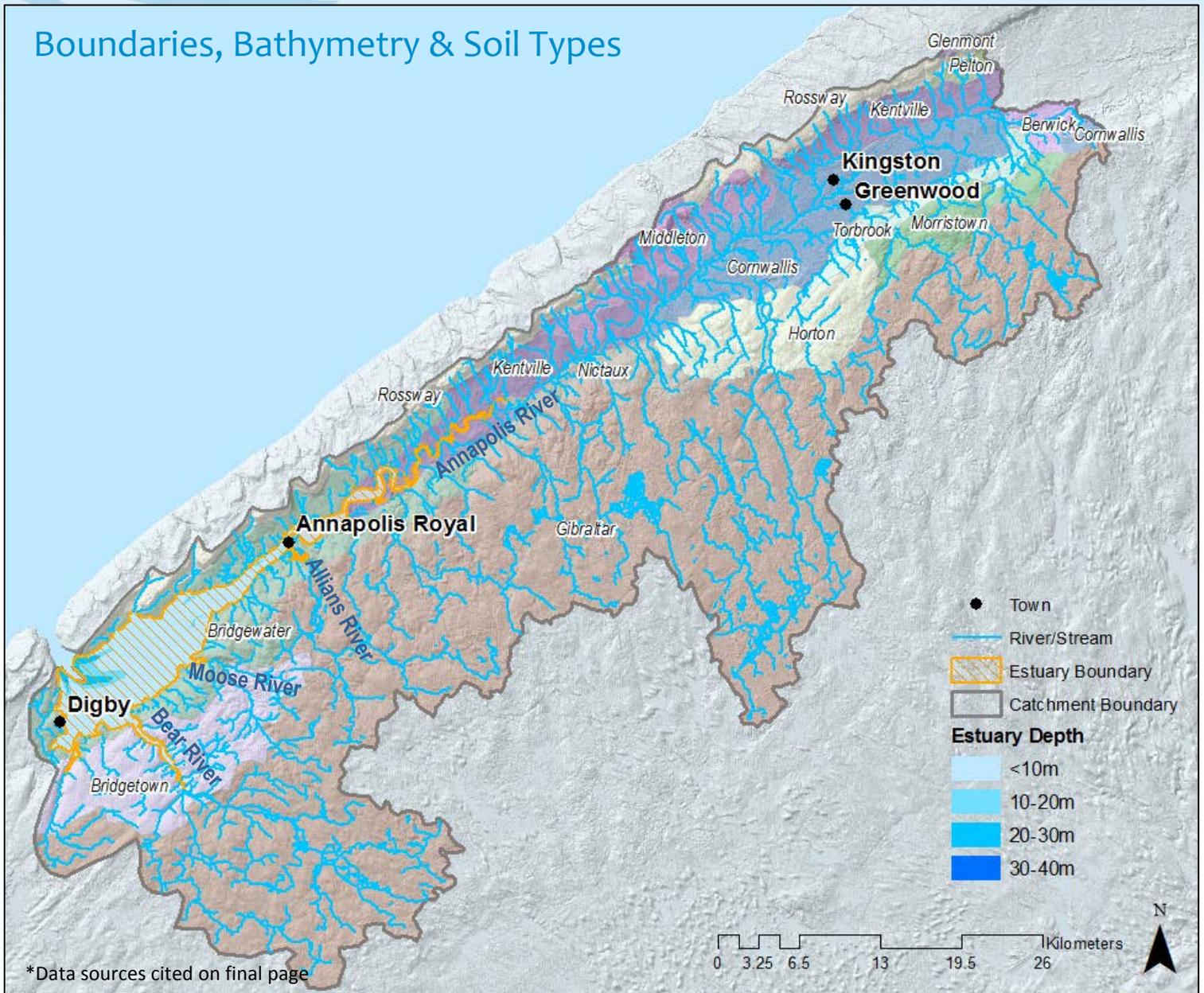


Annapolis Valley Lookoff

<http://www.novascotia.com/see-do/outdoor-activities/blomidon-look-off-provincial-park/1926>

# Physical Characteristics

## Boundaries, Bathymetry & Soil Types



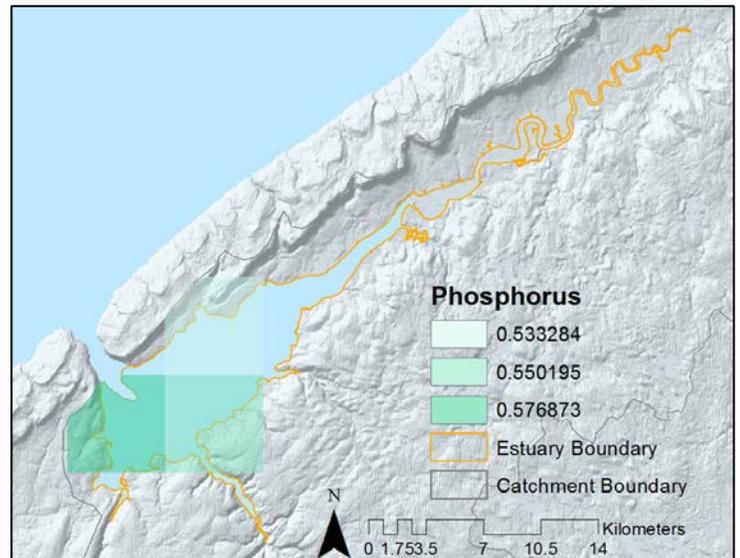
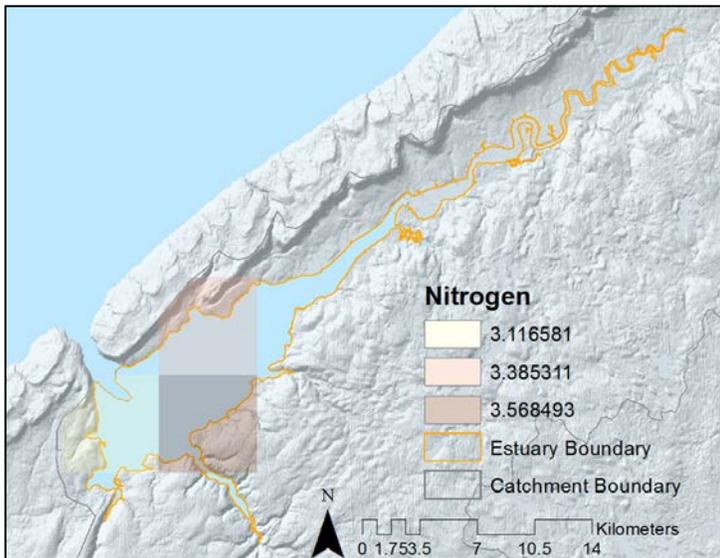
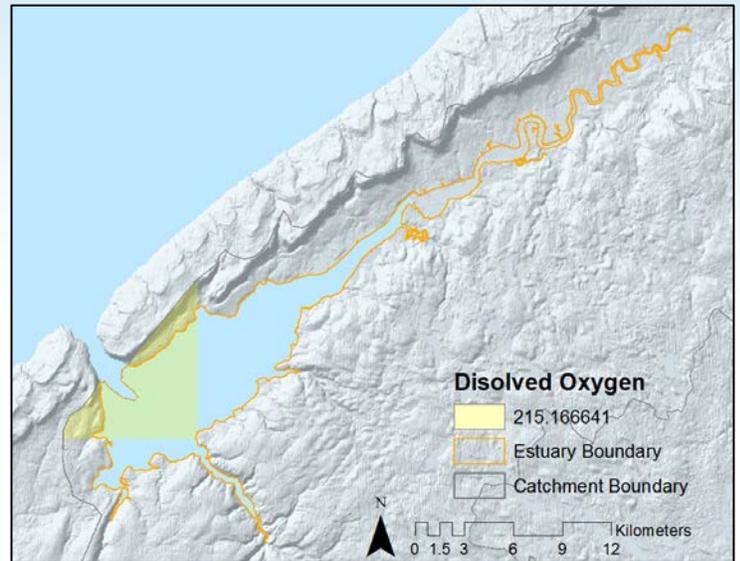
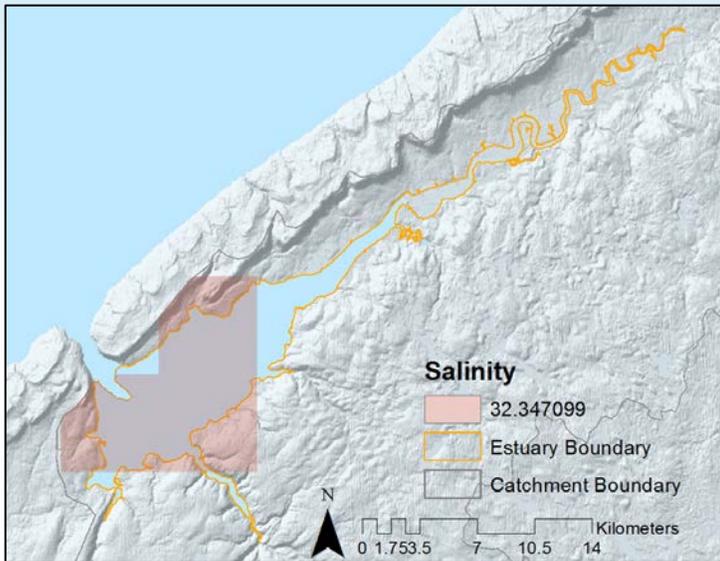
\*Data sources cited on final page

*Regions on the map shaded in different colours and labelled with italic text indicate different soil types.*

The estuary surface area is over 100km<sup>2</sup> but the estuary has a small mouth less than 2km in width, which is known as the Digby Gut. Most of the estuary is less than 10m in depth and features a sandy bottom, with the shorelines near Digby and Annapolis Royal featuring a high density of tidal mudflats<sup>1</sup>. The Annapolis River is the major water source flowing into the estuary, and the other major rivers are the Bear, Allians, and Moose Rivers.

<sup>1</sup> <https://www.ec.gc.ca/Nature/default.asp?lang=En&n=18C33ADA-1>

## Physical Chemistry & Substrate Type

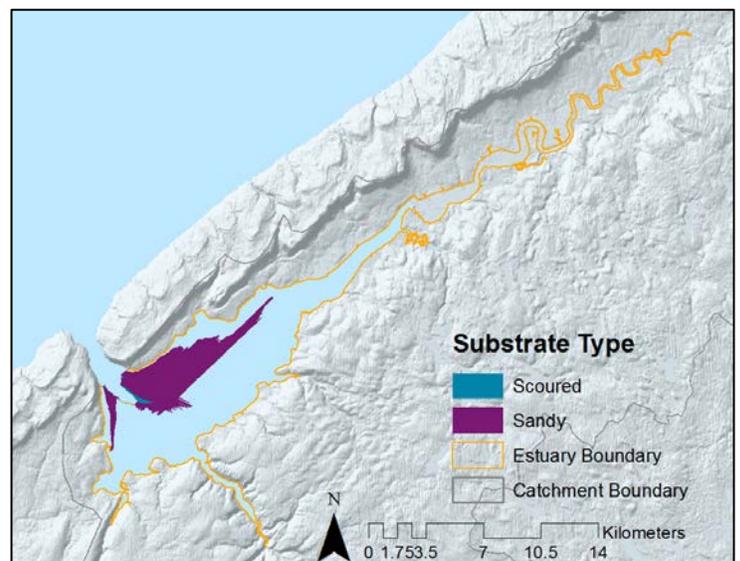


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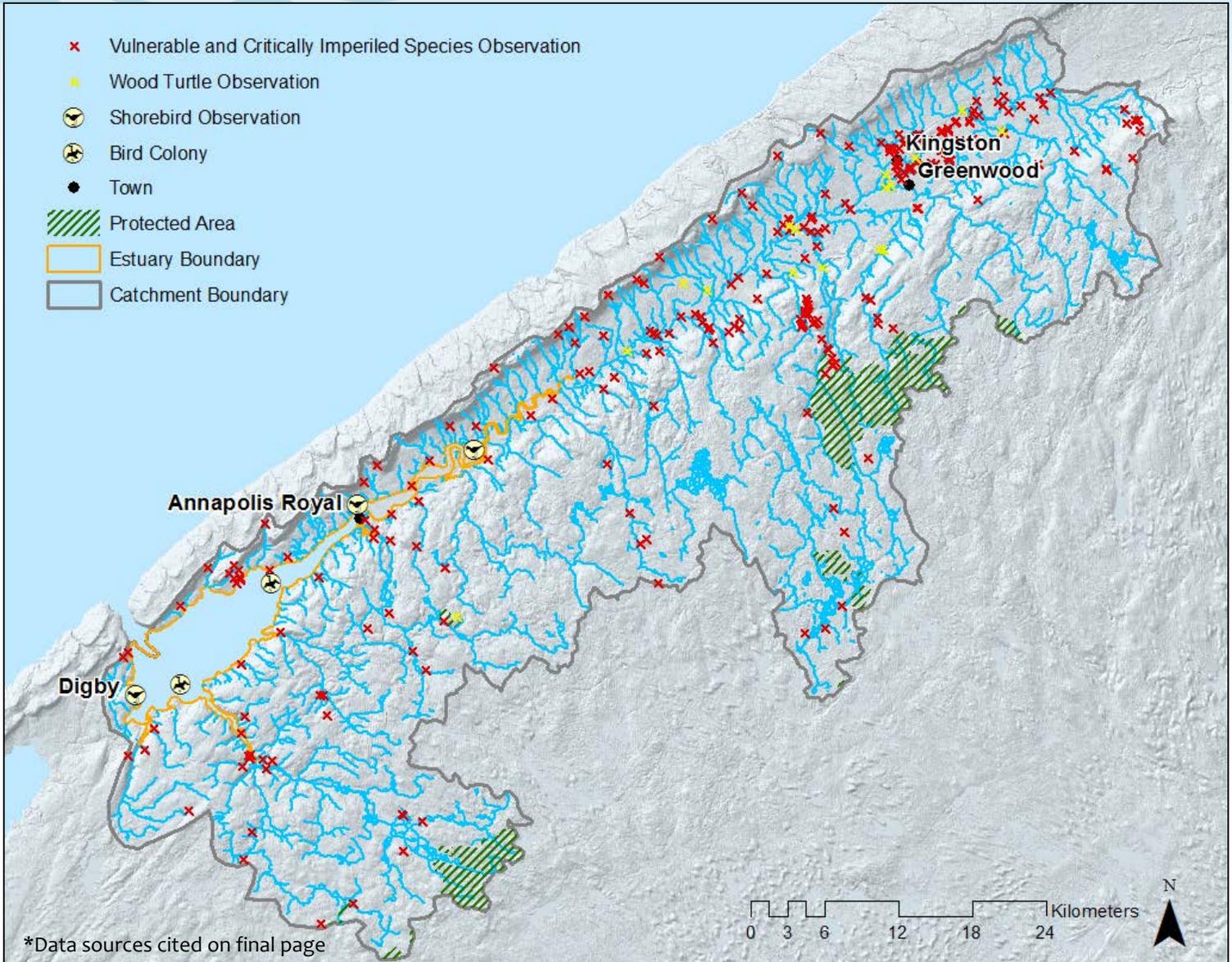
Satellite derived data (i.e., salinity, dissolved oxygen, nitrogen, phosphorus) for the estuary are relatively coarse, and the sea surface temperature data from this dataset does not overlap with the estuary area.

Much of the estuary features a sandy substrate, and is surrounded near its shorelines by extensive tidal mudflats<sup>1</sup>.

<sup>1</sup><https://www.ec.gc.ca/Nature/default.asp?lang=En&n=18C33ADA-1>

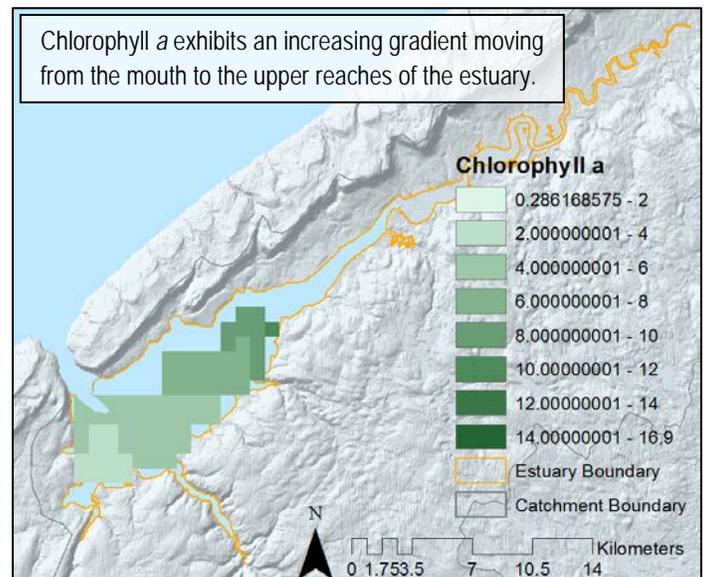


# Ecological Characteristics



The catchment area overlaps with several protected areas, including (from south to north) part of the Tobetic Wilderness Area, the Mickey Hill Provincial Park and Lambs Lake Wilderness Area, the McGill Lake Wilderness Area, and the Cloud Lake Wilderness Area.

There are many observations of wood turtles within the Annapolis River valley. Based on Fisheries and Oceans data published in 2015, there are no salmon rivers in the catchment area. Mudflats within the estuary are home to several shorebird colonies<sup>2</sup>, as well as fished populations of crab, lobster, and scallop<sup>3</sup>.

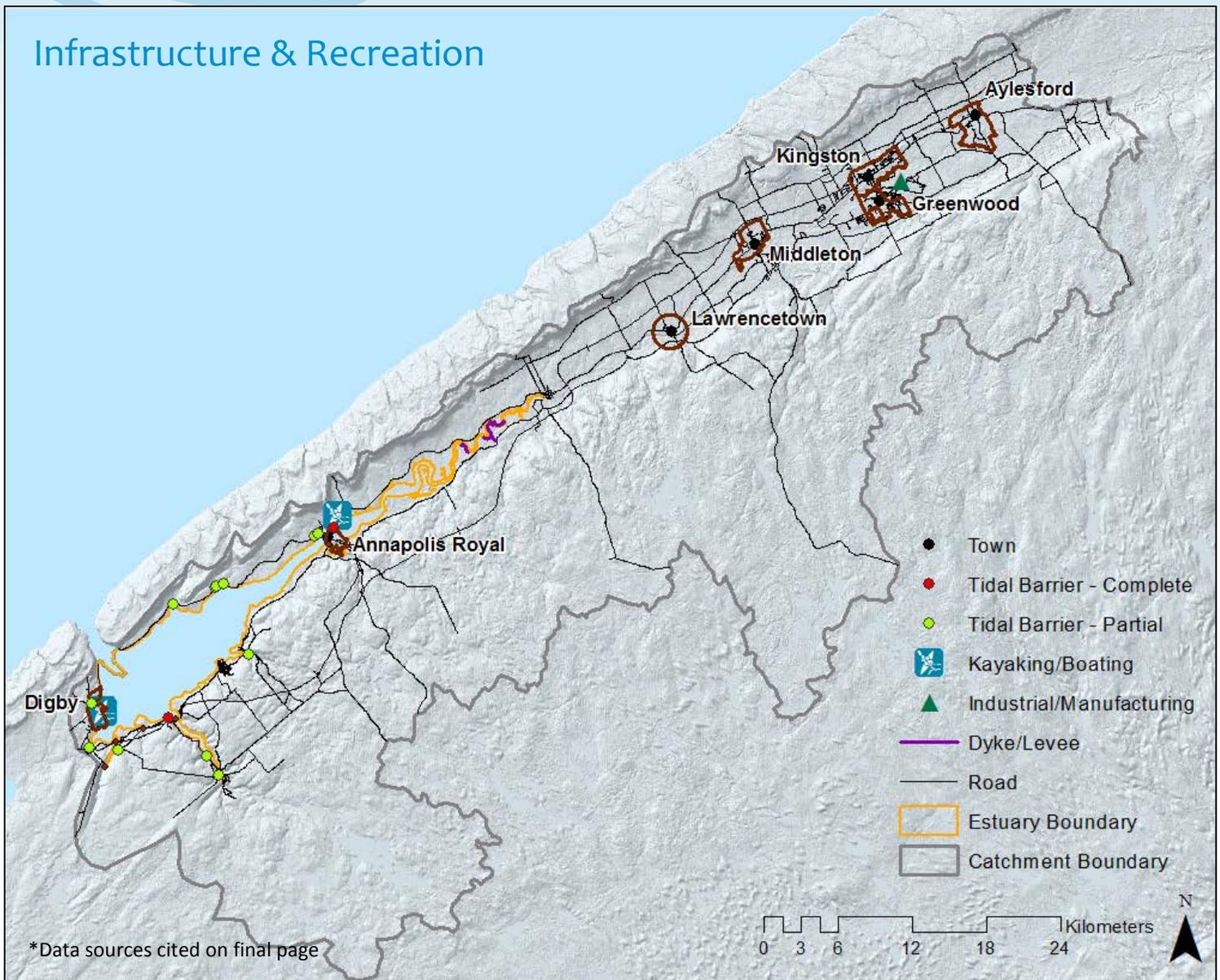


<sup>2</sup> <https://www.ec.gc.ca/Nature/default.asp?lang=En&n=18C33ADA-1>

<sup>3</sup> <http://www.inter.dfo-mpo.gc.ca/Maritimes/Oceans/OCMD/Atlas/Fisheries>

# Human Use Characteristics

## Infrastructure & Recreation

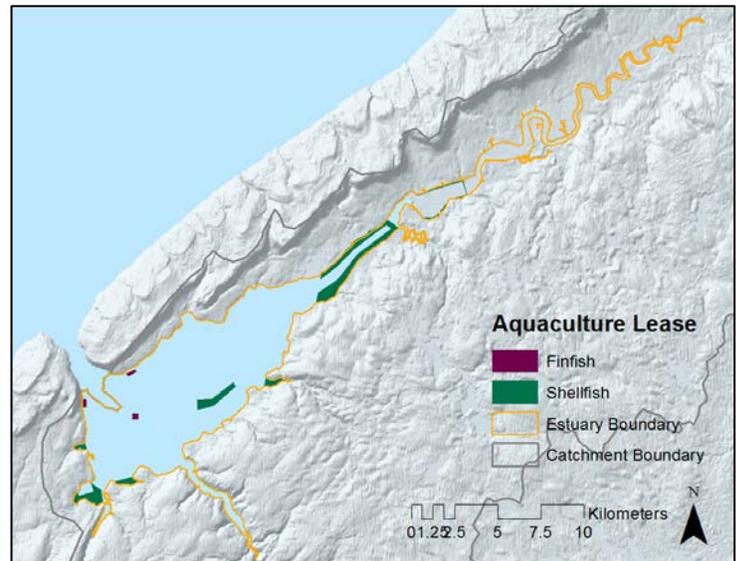
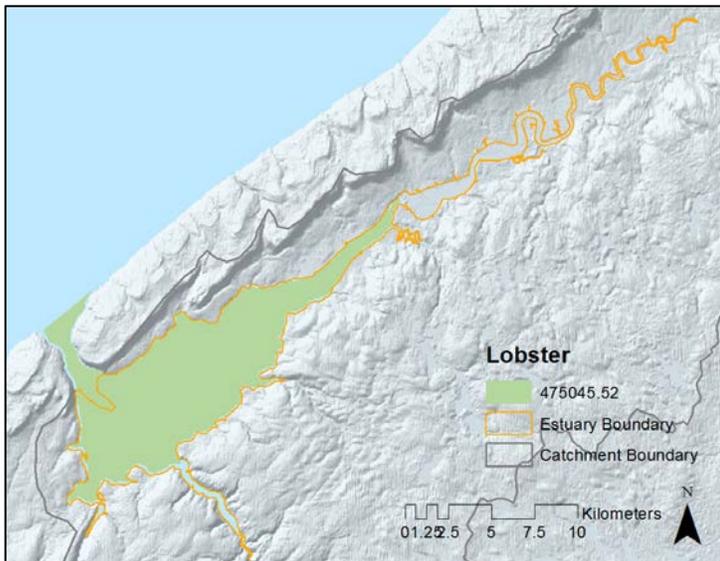
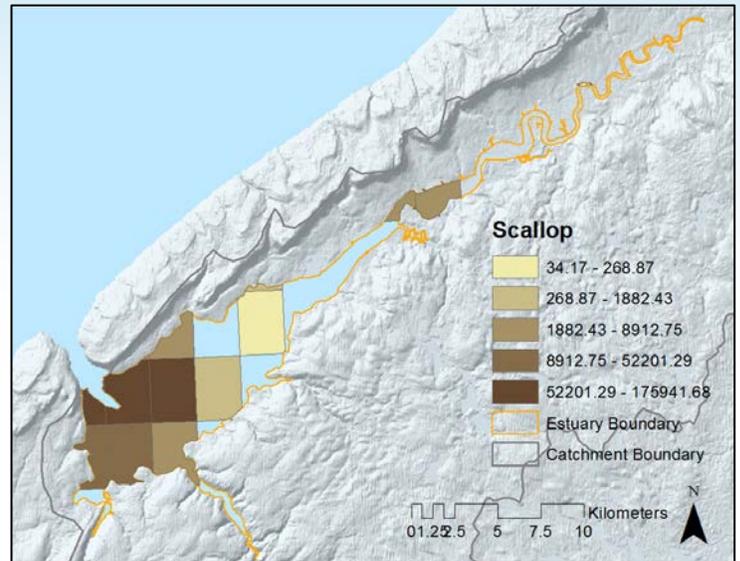
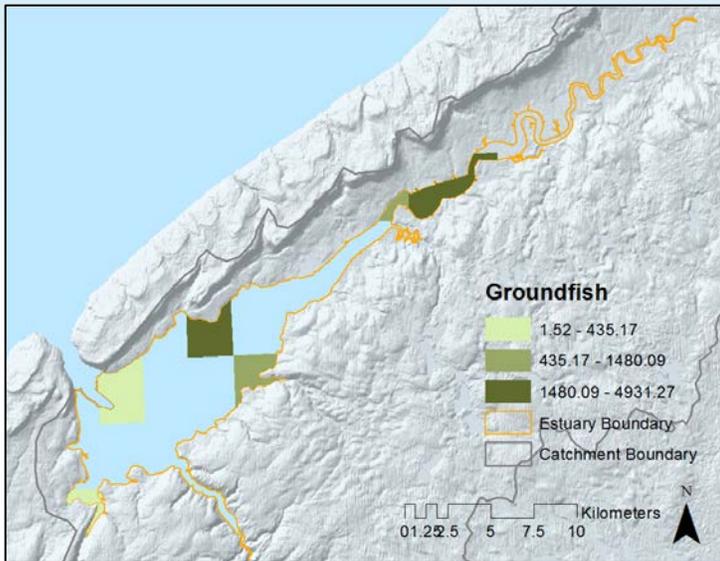


The two main municipalities along the edge of the estuary are Digby and Annapolis Royal. There are several other major settlements within the estuary catchment area, with Kingston-Greenwood being the largest. Just outside of the estuary boundary near Digby, there is a ferry port that links to Saint John, New Brunswick.

The Annapolis Royal Tidal Generating Station, a 20MW tidal power station, is located just upstream of Annapolis Royal (displayed as a red dot on the map).

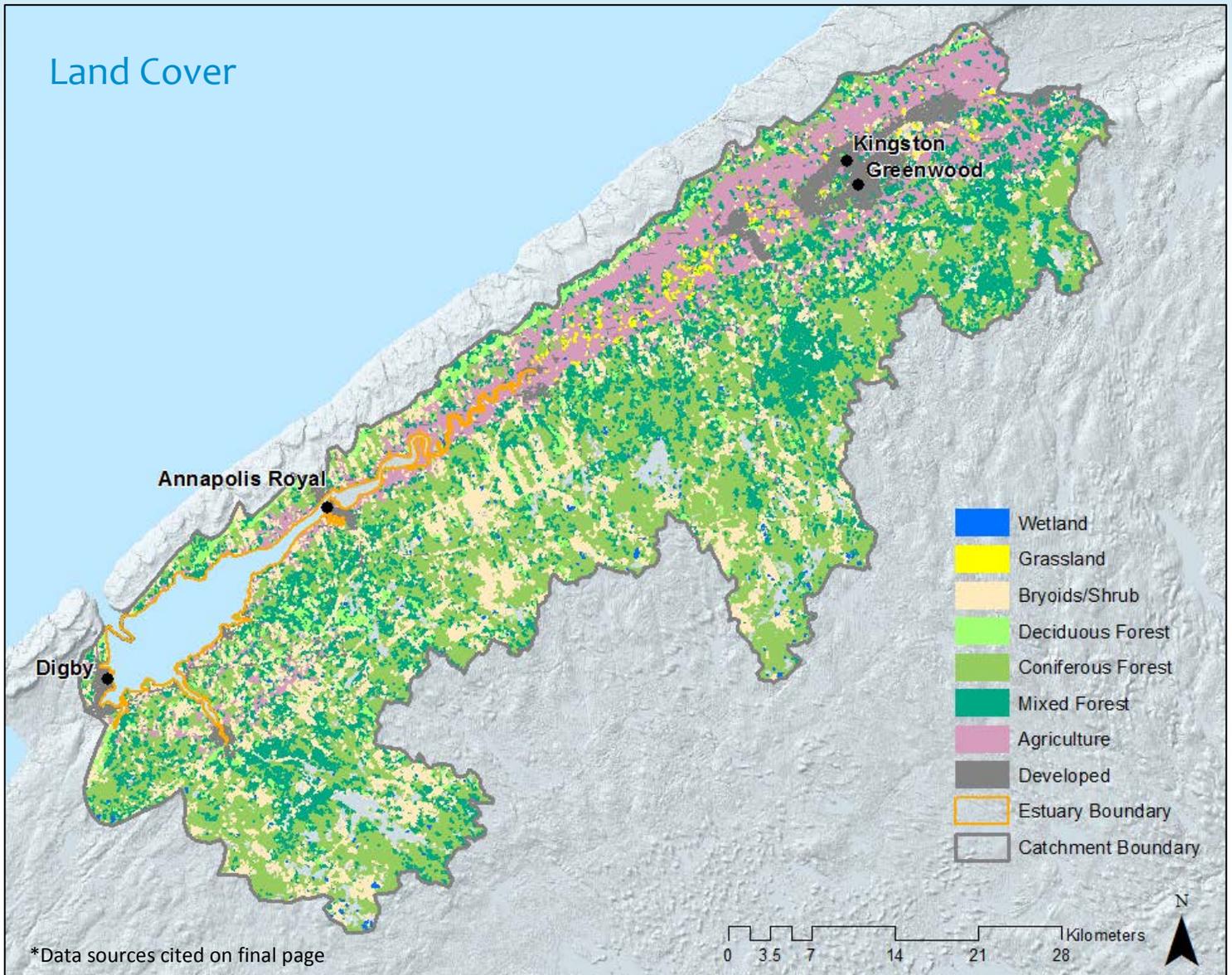
Settlement	Population (2016 Census)
Digby	2,060
Annapolis Royal	491
Lawrencetown	516
Middleton	1,832
Kingston-Greenwood	6,879
Aylesford	833

## Fisheries & Aquaculture



\*Data sources cited on final page

There are several small commercial fisheries within the estuary, which are mainly for invertebrates and groundfish. The maps on this page display aggregated catch by weight information for several of the main fisheries within the Fisheries and Oceans Canada commercial fisheries dataset. Clam fishing also occurs, however data related to that are not currently collected in a way that can be spatial delineated. Within the commercial fisheries dataset, there is also fishing effort information, and data for specific groundfish species as well as and other species. In addition, the estuary encompasses several finfish and shellfish aquaculture leases.



Most of the land in the catchment area is covered by forest, interspersed with numerous small wetlands as well as marshlands that are along the banks of the Annapolis River. Much of the upper Annapolis Valley is covered by agricultural land, with the exception of the large developed area around Kingston-Greenwood. This agricultural industry has included livestock, fruit trees and more recently, wineries. Wineries and scenic farmland also support a tourism industry. Agricultural lands may influence estuary water quality, as nutrients and other compounds enter the river through agricultural runoff. The chlorophyll a gradient, displayed in Ecological Characteristics, may be a reflection of this nutrient enrichment.

# Data Sources

Data Type	Dataset(s)
<b>Physical Characteristics</b> <ul style="list-style-type: none"> <li>Streams/Rivers</li> <li>Soil Type</li> <li>Salinity, Dissolved oxygen, Nitrogen, Phosphorus, Depth</li> <li>Substrate Type</li> </ul>	<ul style="list-style-type: none"> <li>Province of Nova Scotia – Major Rivers (published: 2015)</li> <li>Nova Scotia Department of Natural Resources (NSDNR), Mineral Resources Branch (MRB) – (published: 2006; collected: 2000)</li> <li>Fisheries and Oceans Canada – Census of Marine Life Biodiversity Analysis Layer (published: 2010)</li> <li>Geological Survey of Canada and Canadian Hydrographic Service – Bay of Fundy Seascape Units (n.d.)</li> </ul>
<b>Ecological Characteristics</b> <ul style="list-style-type: none"> <li>Shorebird observations</li> <li>Bird colony locations</li> <li>Wood turtle observations, Vulnerable to critically imperilled species</li> <li>Protected area</li> <li>Protected area</li> <li>Chlorophyll a</li> </ul>	<ul style="list-style-type: none"> <li>Environment Canada, Canadian Wildlife Service – Atlantic Canada Shorebird Survey Data (published: 2016)</li> <li>Environment Canada, Canadian Wildlife Service – Bird Colony Locations (n.d.)</li> <li>Atlantic Canada Conservation Data Centre – Wood Turtle and S1-S3 Observations (published: 2016; collected 2001-2016)</li> <li>Natural Resources Canada, Canada Centre for Remote Sensing – Protected Areas Layer (collected: 2007)</li> <li>Fisheries and Oceans Canada – Protected Areas (n.d.)</li> <li>Fisheries and Oceans Canada – Census of Marine Life Biodiversity Analysis Layer (published: 2010)</li> </ul>
<b>Human Characteristics</b> <ul style="list-style-type: none"> <li>Municipal boundaries</li> <li>Roads</li> <li>Finfish and Shellfish Aquaculture Sites</li> <li>Tidal barriers – partial and complete</li> <li>Kayaking/Boating</li> <li>Industrial/Manufacturing</li> <li>Dyke/Levee</li> <li>Wetland, Grassland, Bryoids/Shrub, Deciduous forest, Coniferous forest, Mixed forest, Agricultural land, Developed land</li> </ul>	<ul style="list-style-type: none"> <li>Province of Nova Scotia – Community Boundaries (published: 2016)</li> <li>Province of Nova Scotia – Roads (published: 2015)</li> <li>Province of Nova Scotia – Aquaculture Sites (published: 2013)</li> <li>Saint Mary's University, Department of Geography and Environment Canada, Environmental Conservation Branch – Tidal Barriers (collected: 2004-2016)</li> <li>Fisheries and Oceans Canada – Coastal Activities (n.d.)</li> <li>Environment and Climate Change Canada – Industrial and Manufacturing Facilities (published: 2016)</li> <li>Natural Resources Canada – Man-Made Features (published: 2016)</li> <li>Province of Nova Scotia – Land Cover Data (published: 2015)</li> </ul>

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