

# Reporting on the Health of Lake Winnipeg and its Basin



# Lake Winnipeg and its Basin

- Large lake – 23,750 km<sup>2</sup>
- Large basin – 1,000,000 km<sup>2</sup>
- Sub-basin state of watershed reporting through Provinces / NGOs



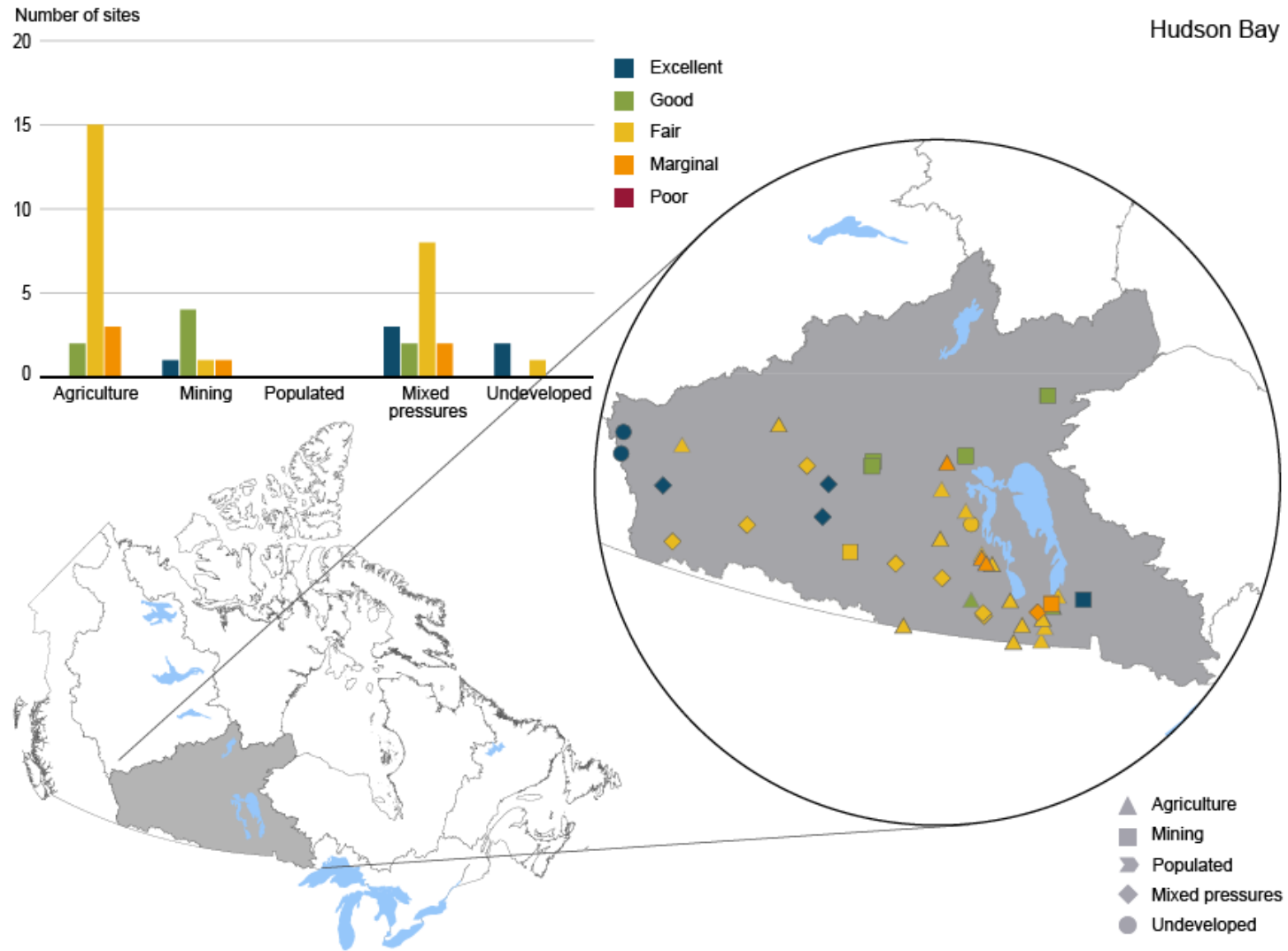
# Reporting on the Basin

- Canadian Environmental Sustainability Indicators:
  - Water Quality in Canadian Rivers, 2015-2017
  - Water Quantity in Canadian Rivers, 2015
- Agri-Environmental Indicators (2011)

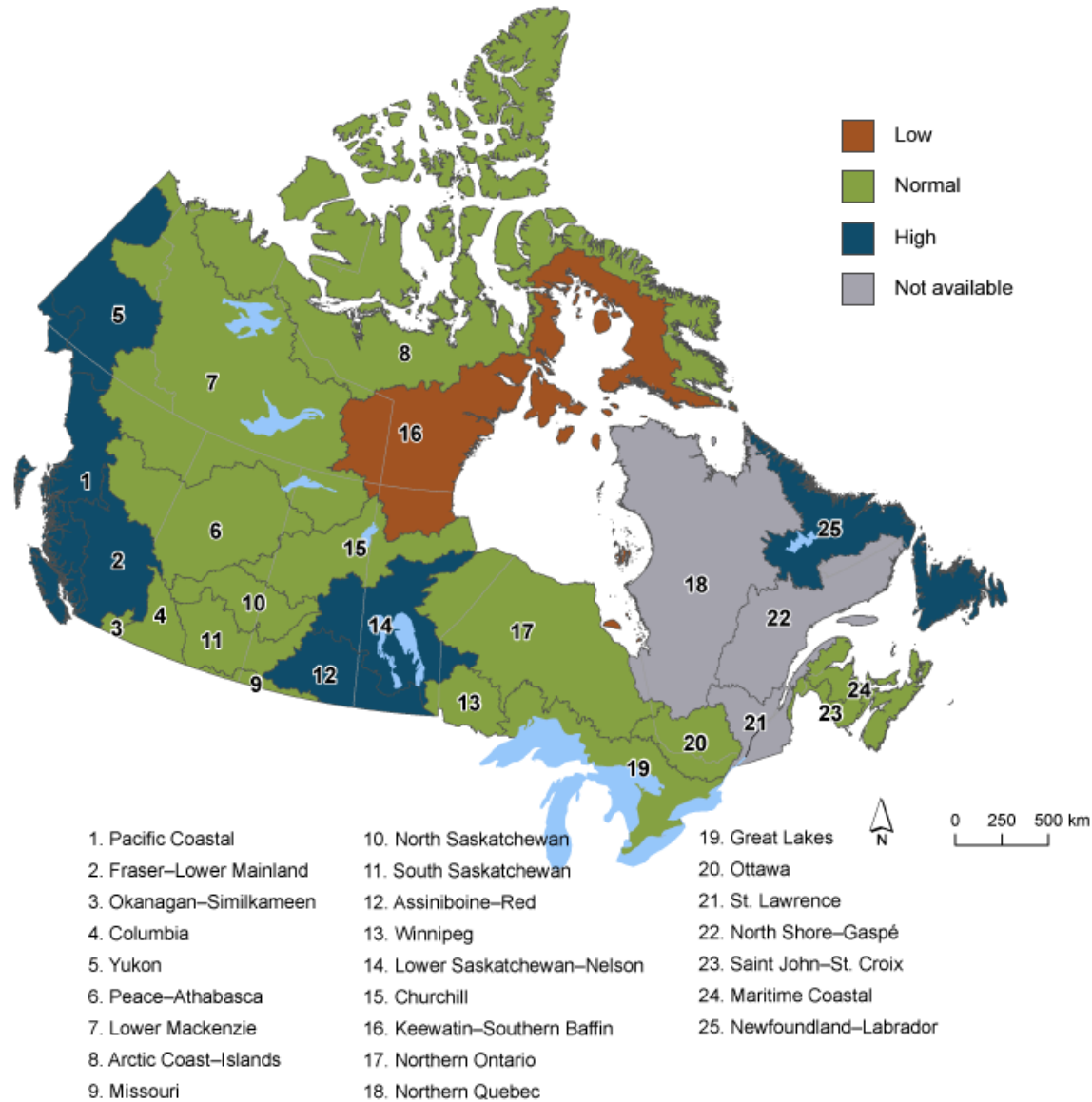
<https://www.canada.ca/en/environment-climate-change/services/environmental-indicators.html>

<http://www.agr.gc.ca/eng/science-and-innovation/agricultural-practices/environmental-sustainability-of-canadian-agriculture-agri-environmental-indicator-report-series-report-4/?id=1467307820931>

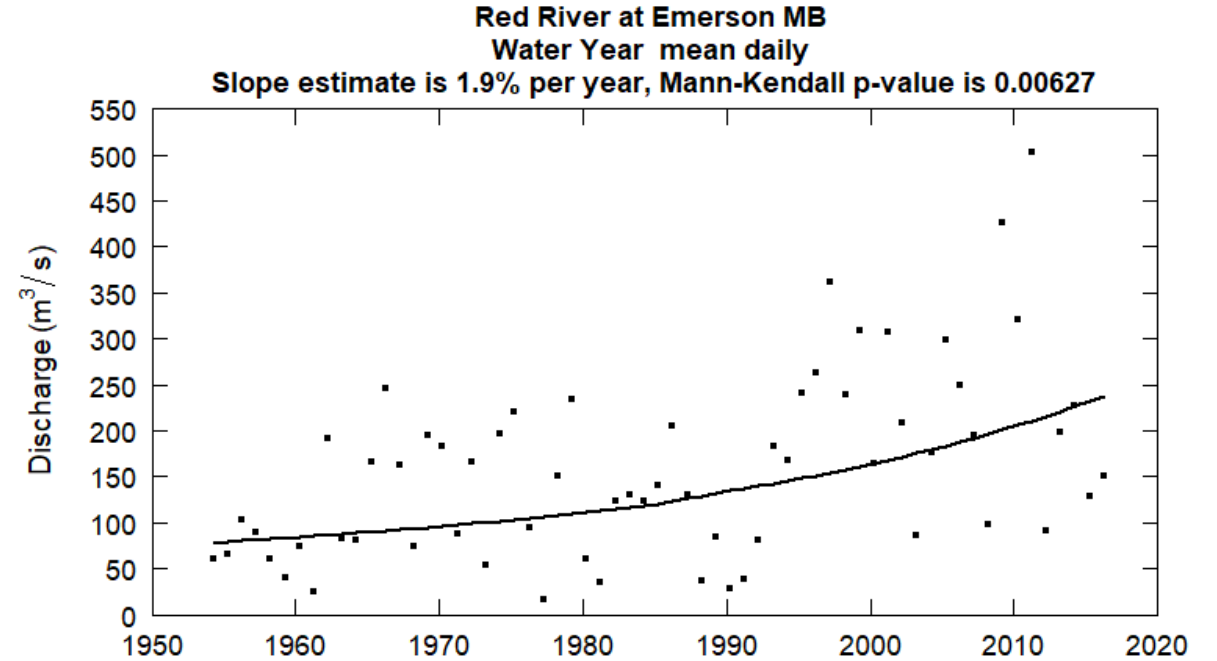
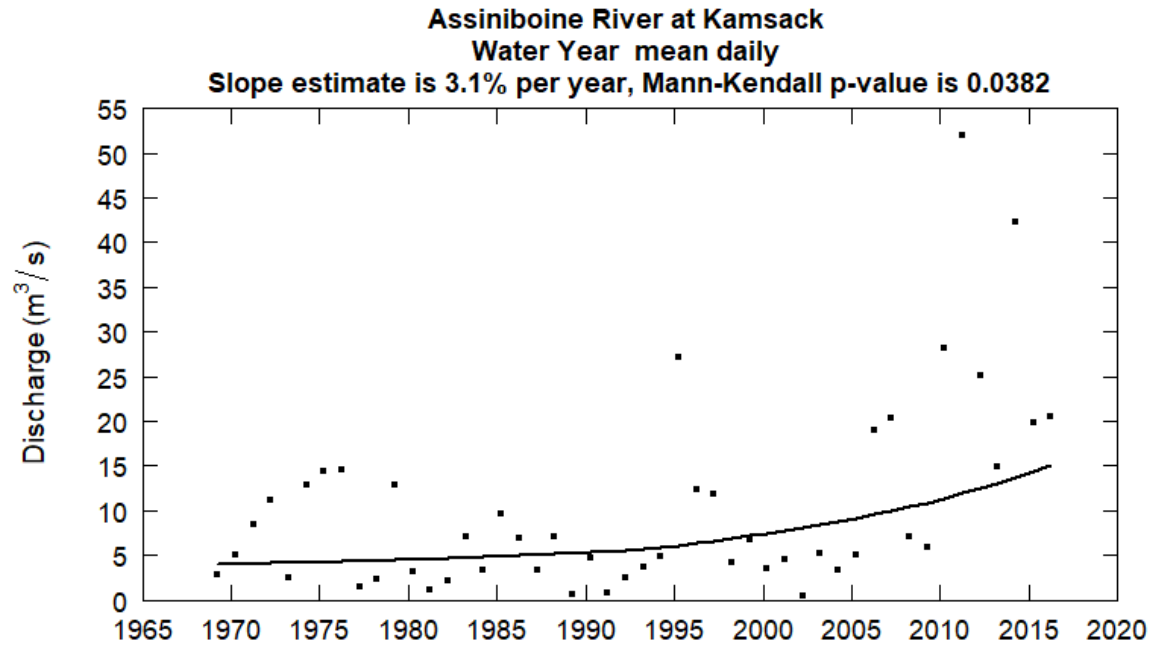
# CESI – River Water Quality, 2015-2017



# CESI – River Water Quantity, 2015

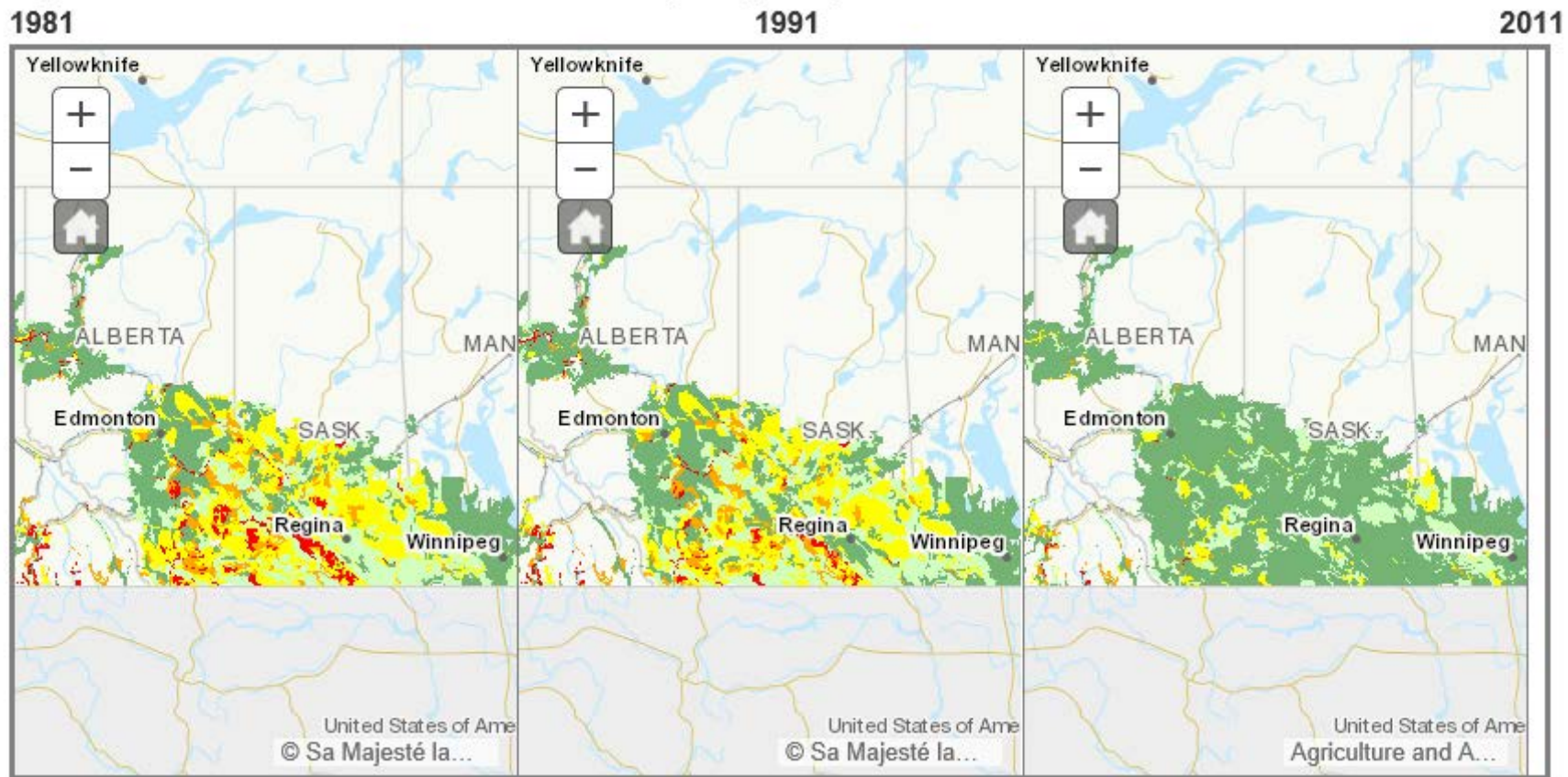


# Many river flows are increasing

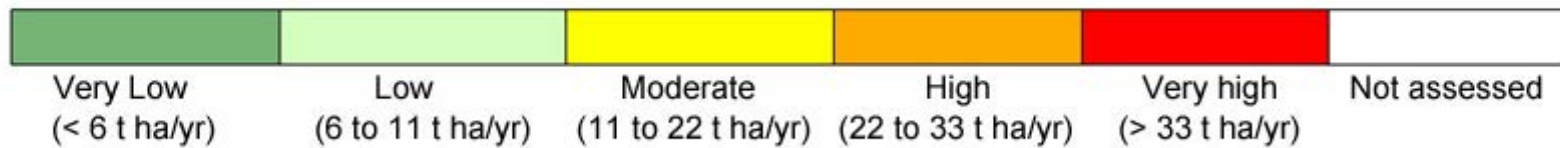




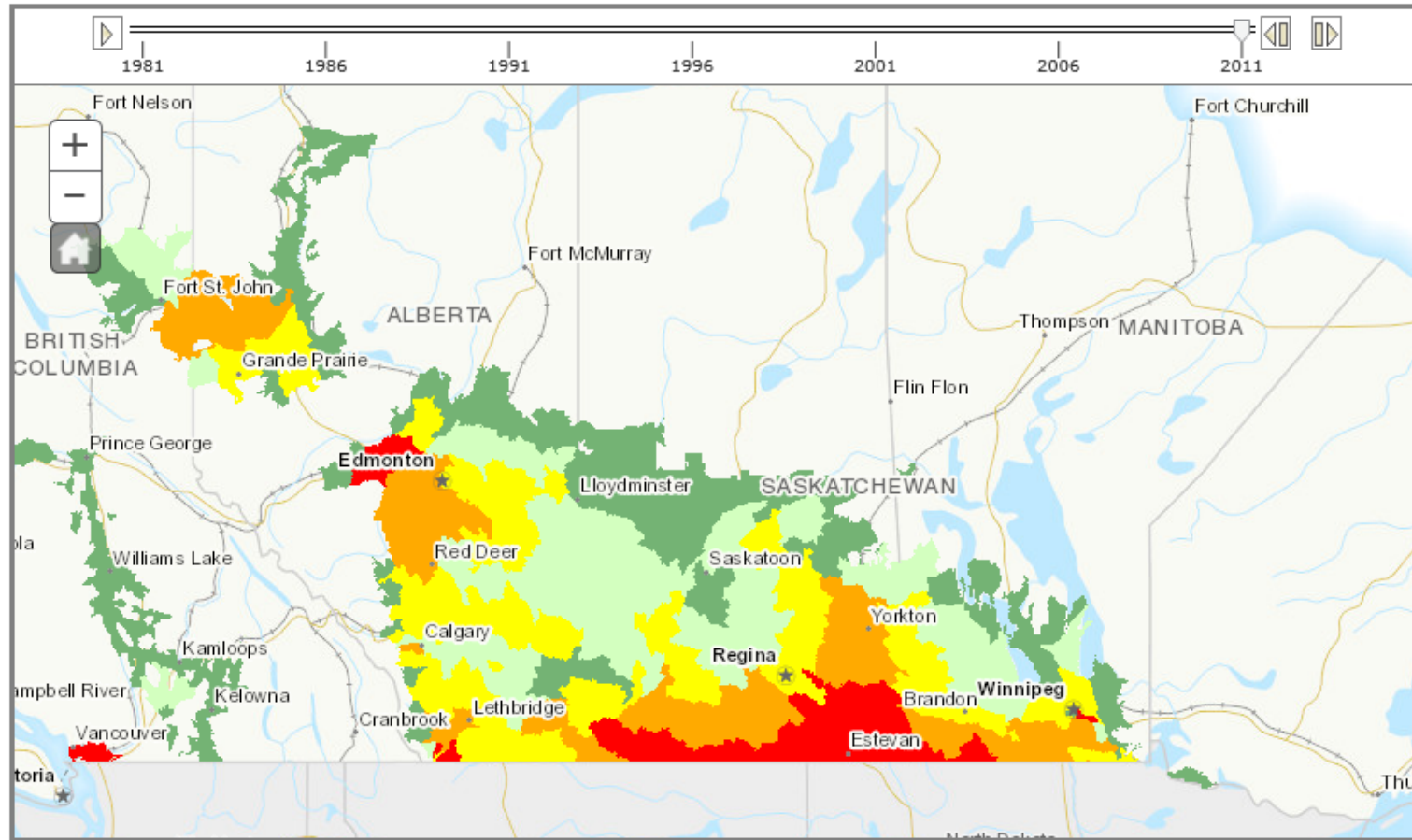
# Assessing Risk – Soil Erosion Risk



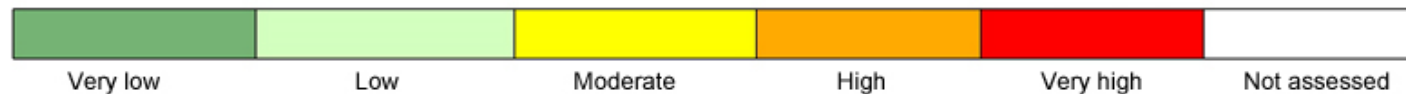
Legend:



# Assessing Risk – Phosphorus Loss to Water



Legend:



Source: Environmental Sustainability of Canadian Agriculture: Agri-Environmental Indicator Report Series – Report#4

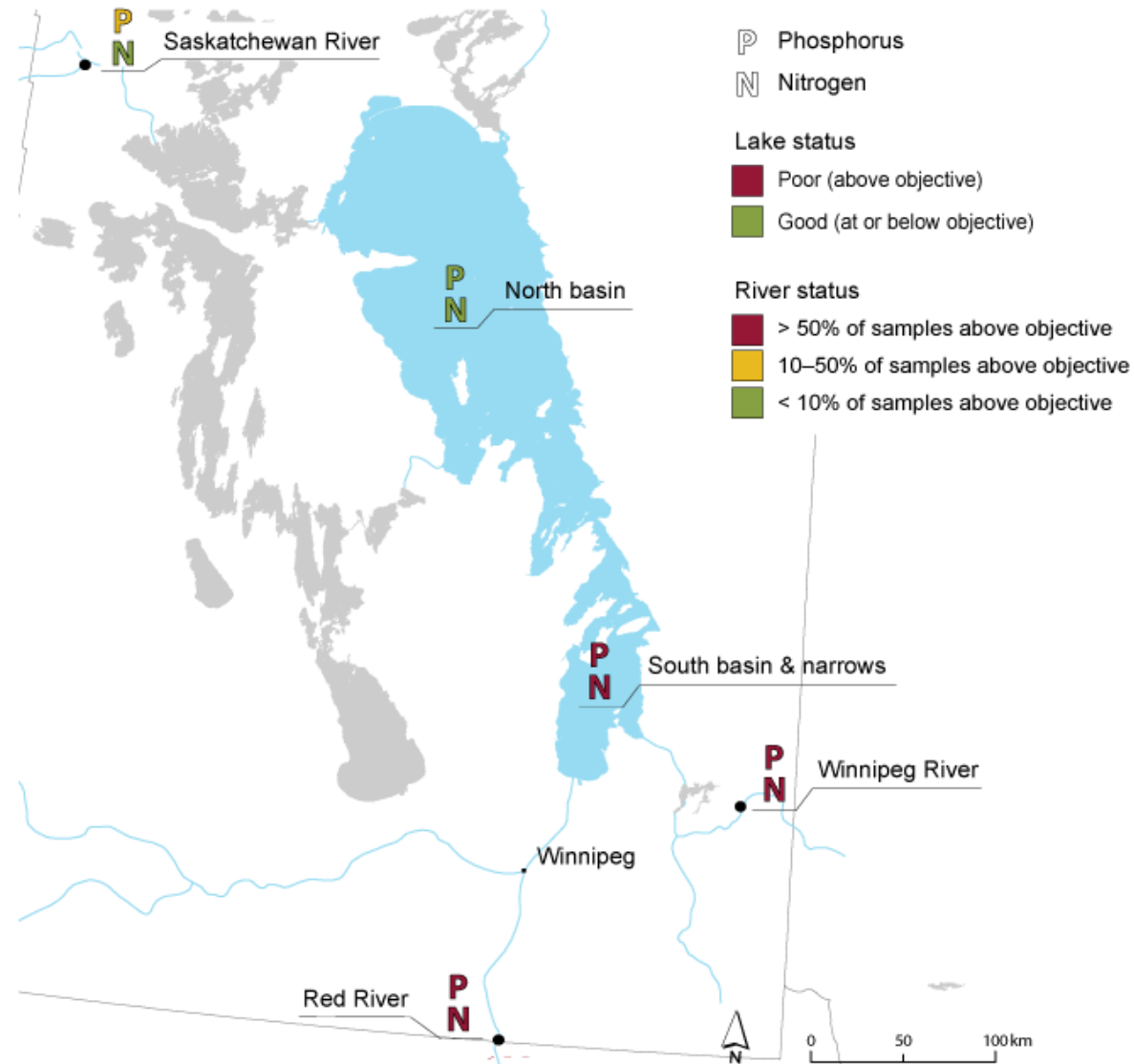
<http://www.agr.gc.ca/eng/science-and-innovation/agricultural-practices/soil-and-land/soil-erosion-indicator/?id=1462893337151>



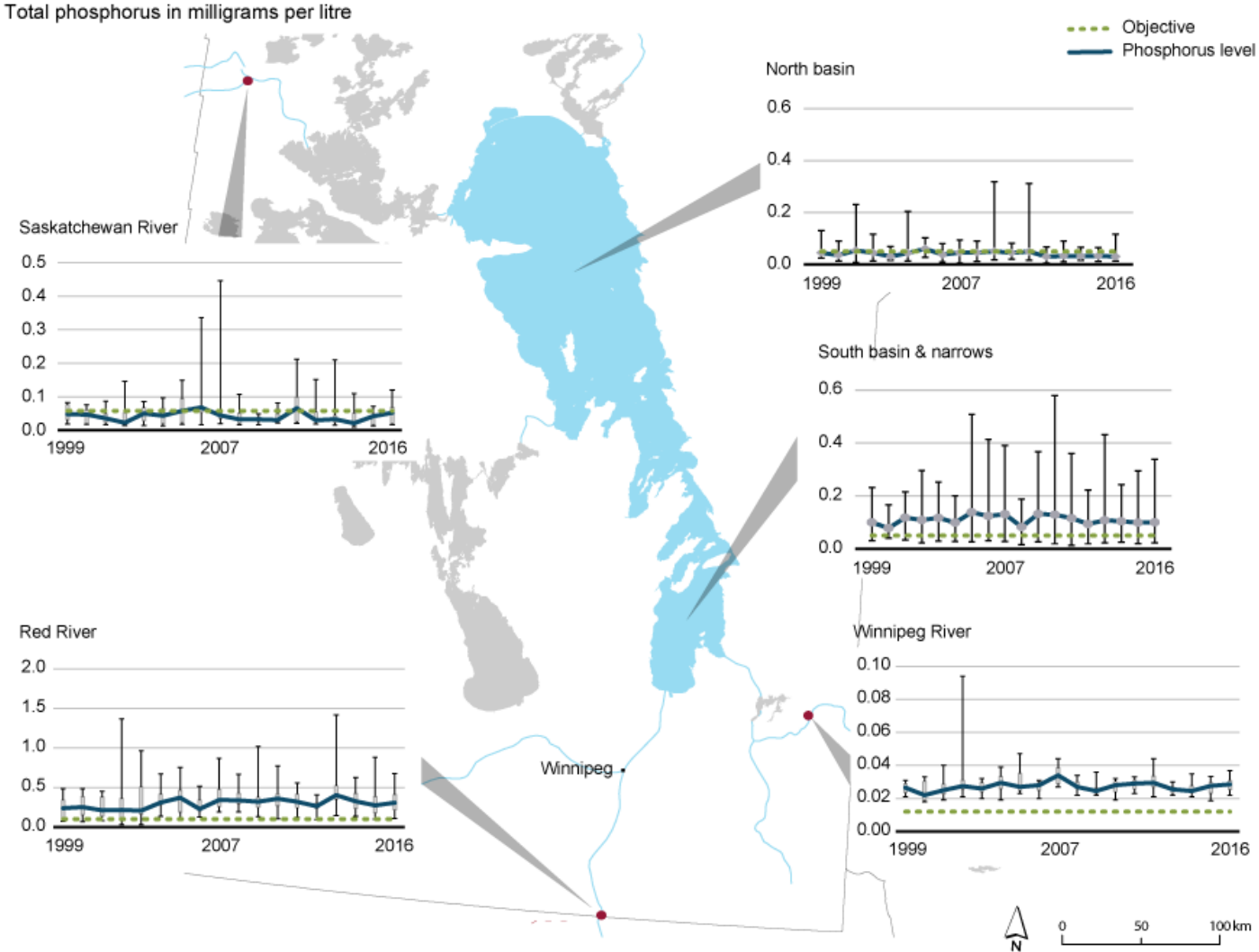
# Reporting on the Lake

- Canadian Environmental Sustainability Indicators:
  - Nutrients in Lake Winnipeg, 2014-2016
- Manitoba Sustainable Development Reporting:
  - Lake Winnipeg: Nutrients and Loads, A Status Report, Manitoba Sustainable Development, February 2019
- State of the Lake Report
- Lake Winnipeg Indicators

# CESI – Nutrients in Lake Winnipeg, 2016



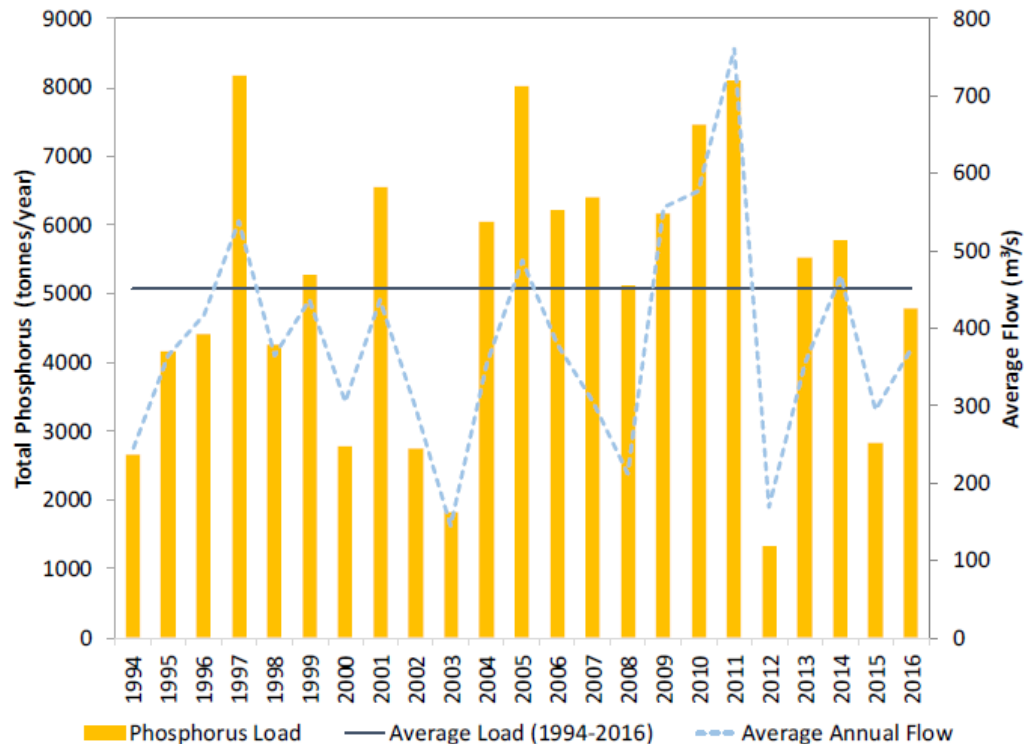
# CESI - Phosphorus Concentrations



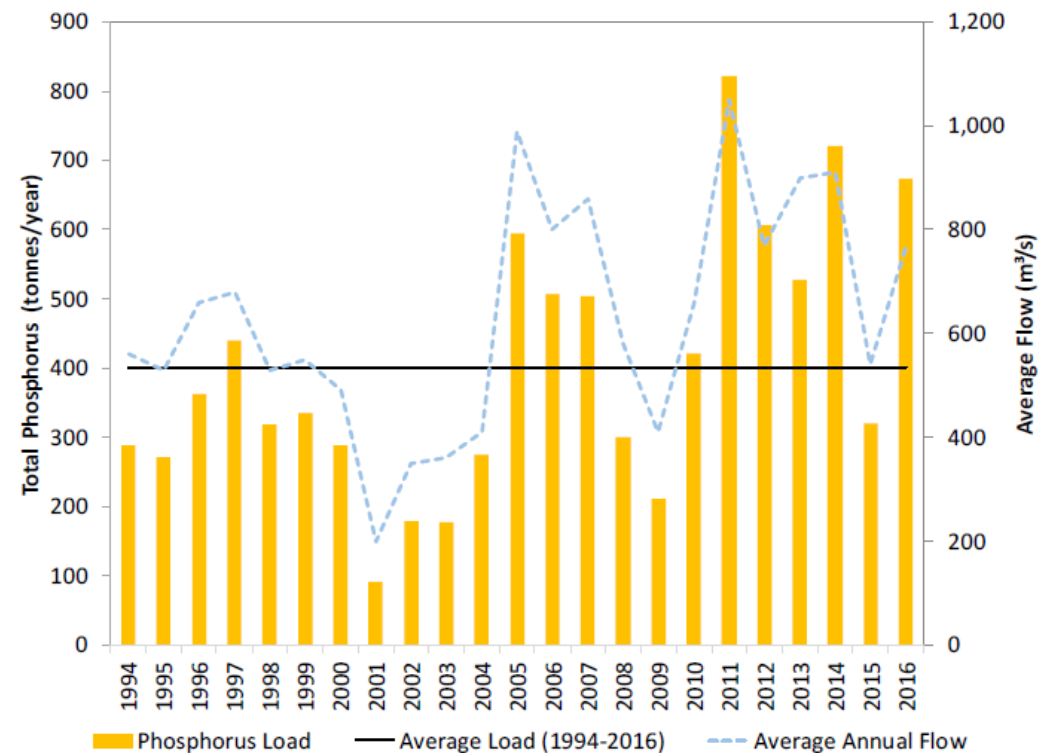


# Phosphorus Loads to Lake Winnipeg

## Red River



## Saskatchewan River



Source: Lake Winnipeg: Nutrients and Loads, A Status Report, Manitoba Sustainable Development, February 2019  
[https://www.gov.mb.ca/sd/pubs/water/lakes-beaches-rivers/lake\\_winnipeg\\_nutrients\\_status\\_report.pdf](https://www.gov.mb.ca/sd/pubs/water/lakes-beaches-rivers/lake_winnipeg_nutrients_status_report.pdf)

# State of the Lake Reporting

- First report published in 2011 covered 1999-2007 period
- Updated report to 2016 currently in progress
- Overview of lake status in terms of
  - General chemistry
  - Nutrients
  - Hydrology
  - Invasive species
  - Aquatic biology (e.g. phytoplankton, zooplankton, fish)
  - Contaminants
  - Recreational water quality

# Lake Winnipeg Indicator Series


## Lake Winnipeg Basin Indicator Series



### INTRODUCTION

Lake Winnipeg is the tenth largest freshwater lake in the world by surface area and the third largest freshwater reservoir. The Lake Winnipeg watershed encompasses four provinces and four states. The lake is important to Manitobans as a major commercial and subsistence fishery, a drinking water source for permanent and seasonal residents, as well as for recreation and tourism.

Rivers can transport phosphorus, nitrogen, and suspended solids from throughout the basin to the lake. Point and non-point sources of pollutants such as municipal and industrial effluents and run-off from the land also go into the rivers. As a result, the lake is undergoing accelerated nutrient enrichment (eutrophication) and algal blooms are increasing in frequency and severity. Other considerations related to human activities within the Lake Winnipeg Basin include:

- water withdrawal
- drainage
- water diversions
- soil erosion
- agricultural practices
- changes in the extent of wetlands



Manitoba  Canada 

## Fish Populations

LAKE WINNIPEG BASIN INDICATOR SERIES

### SUMMARY

Lake Winnipeg supports an important subsistence fishery, and valuable recreational and commercial fisheries. Walleye and sauger are the primary target species. Small fish (prey fish) that walleye and sauger eat are also important to the overall health of the fishery. Manitoba Sustainable Development, Wildlife and Fisheries Branch, monitors walleye, sauger, and prey fish in Lake Winnipeg each year. This indicator reports on the weight (biomass) of walleye and sauger, condition (relative weight) and mortality of walleye, and on the weight (biomass) of prey fish, using this monitoring data.

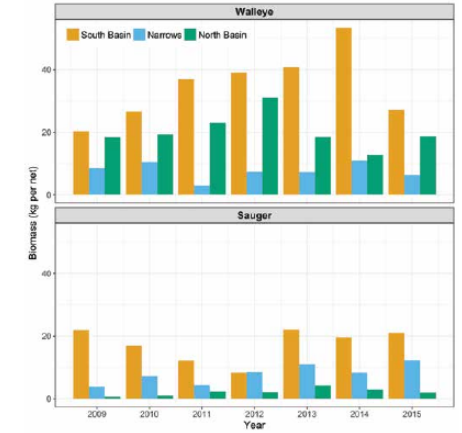




Figure 1. Weight (biomass) of walleye and sauger in Lake Winnipeg from 2009 to 2015, by basin (south basin, north basin, and narrows).

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Thank you

Questions?