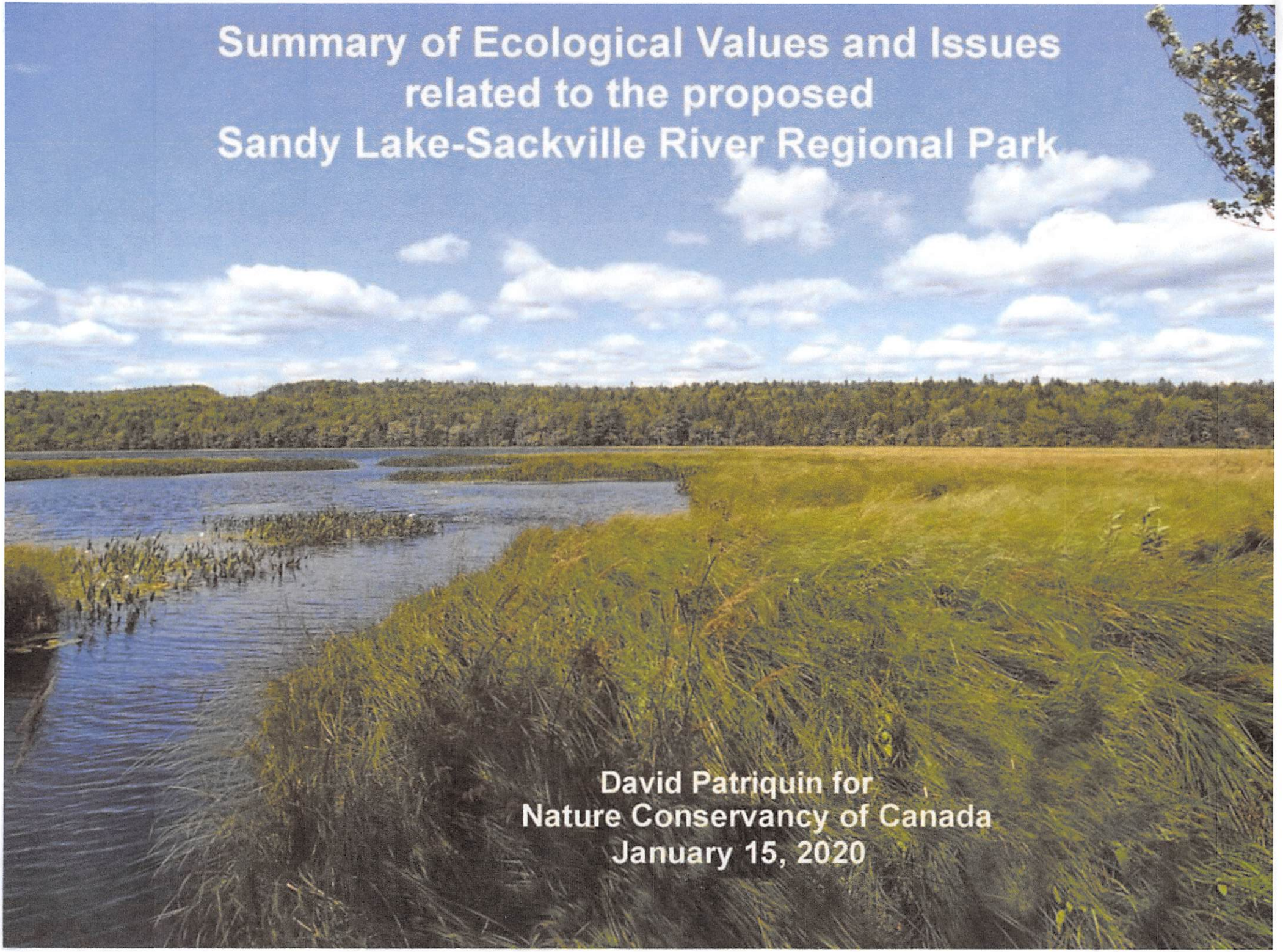
Summary of Ecological Values and Issues related to the proposed Sandy Lake-Sackville River Regional Park



David Patriquin for
Nature Conservancy of Canada
January 15, 2020

Notes to Accompany Ecological Attributes Presentation January 15, 2020. Dr. David Patriquin

Slide 2: Where – just above the neck of the Chebucto Peninsula, a significant conservation area in its own right

Slide 3: What – as described on the slide

Slide 4: What, Habitats – Forest and surface waters make up prob 90% of more of the 2000+ acres; it includes 3 lakes, Sandy Lake to Sackville River watercourse

Slide 5: It is very mixed Acadian forest. All the major tree species are well represented; and there are many pockets of Old Growth variously with hemlock, white pine, and rich hardwoods (sugar maple, yellow birch, ash) dominant. Age of Old Growth: 140 to ~211 years, relates to historical storms.

Slide 6: It includes SRA in both the terrestrial and aquatic components

Slide 7: Recreation: significant use now of lands east of Sandy Lake, many old logging roads provide natural trails. Great potential given location between Bedford and Sackville area... get people off of the wilderness trails and onto these logging roads

Slide 8: Sandy Lake is relatively deep, stratifies, supports Walter's salmon, likewise the watercourse; SRA has put digger logs in; it is Critical habitat

Major Threat– Development on west side, that area is critical for terrestrial connectivity and habitat and the watercourse for aquatic and riparian connectivity; and as aquatic habitat

Observations on S.Lake show increasing salt, marginal O2 in deeper waters; In the 50s it was Oligotrophic, now mid-mesotrophic...modelling study suggested it could be maintained as mid-mesotrophic with development; I am skeptical, but anyway we should be aiming for Oligotrophic, especially with climate warming.

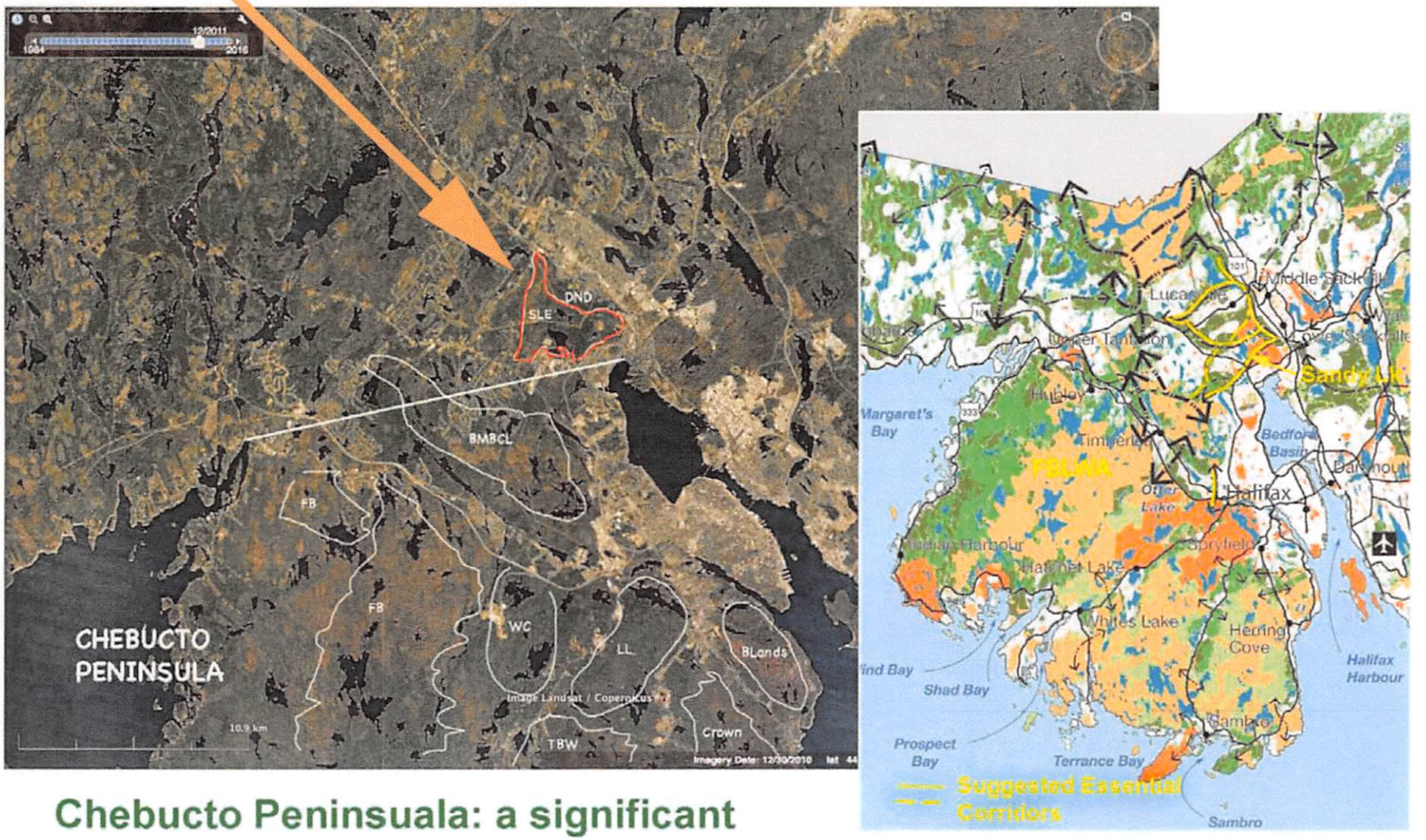
Also, Sandy lake watershed is critical for flood control Bedford area; was not modelled in recent flood plain study on assumption said author, there would be no dev at S.Lake for 100 years; not been properly highlighted

Slide 9: Connectivity. Lies at neck of Chebucto Peninsula which is a significant conservation area, by my estimate Close to 30% protected, additional 12% Crown Land...but cut off at the neck; connectivity to central and eastern mainland; stepping stones now, but all the more important

Slide 10: a current Pinch Point

Slide 11: Putting it all together, west and north for conservation, east for integrated recreation and conservation.

Where:



Chebucto Peninsuala: a significant conservation area

Modified from HGNP

Sandy Lake & Environs: critical connectivity Chebucto Peninsula to central/eastern mainland

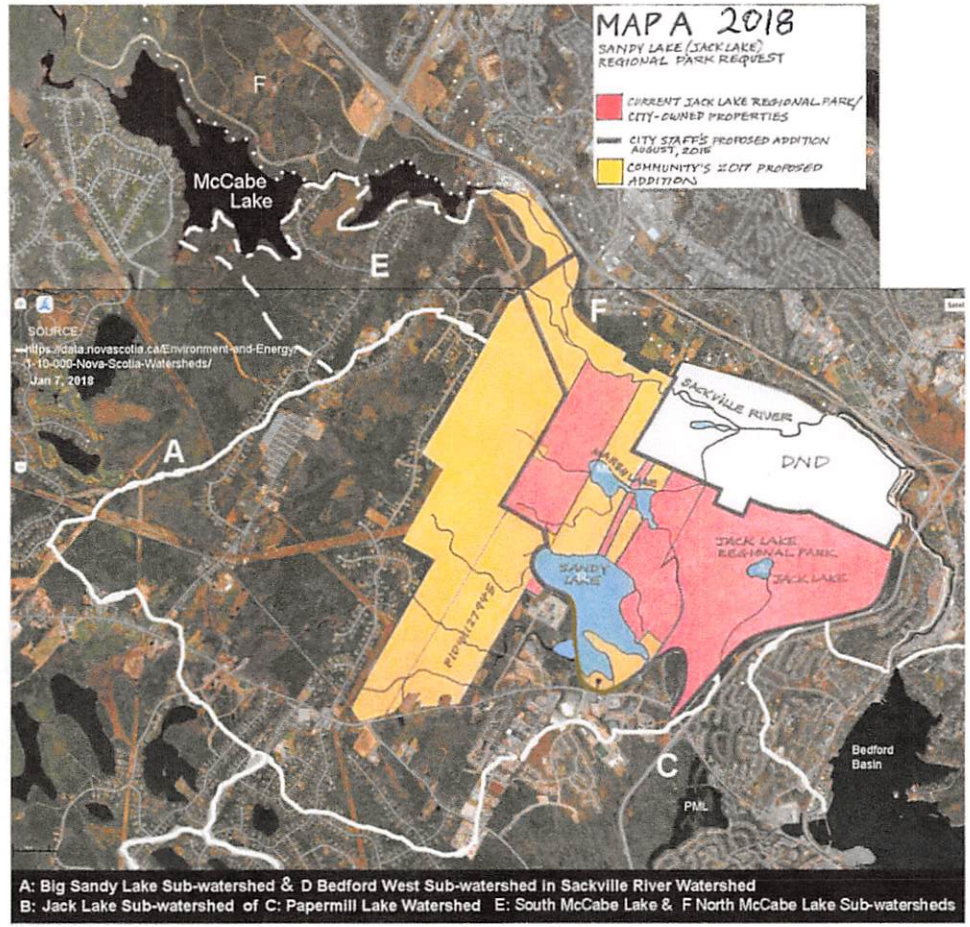
View NNE: Marsh Lake to Sackville River

Looking east to Jack Lake and, in the distance, Bedford Basin

View west onto clearcut, Peverill's Brook at top right

What: 2000 acres of mixed Acadian forest & surface waters (lakes, streams, wetlands)

- Pieces of 4 subwatersheds, Sandy Lake the largest
- ~1000 acres now HRM, ~1000 now private
- bounded to south by Hammonds Plains Rd., north by Sackville River, east by Hwy 102, west by Gatehouse & Viscount Runs



Existing and Proposed Parkland/Protected Area

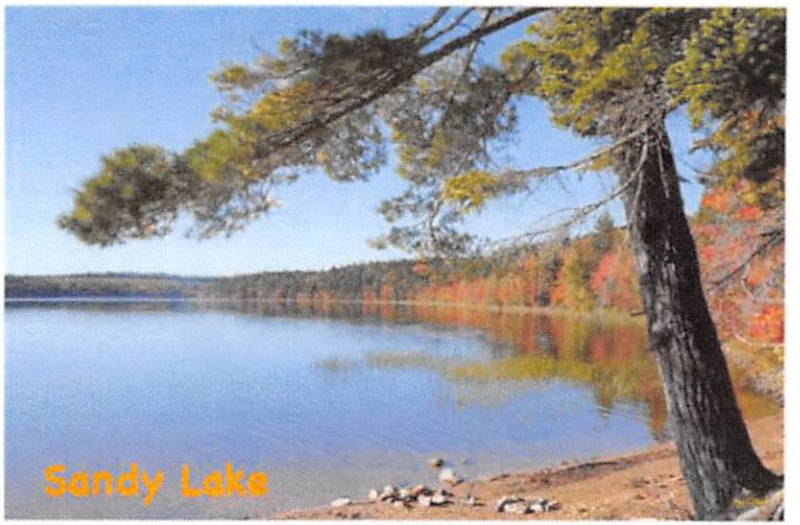

Morraine Brook forest


Upper Peverill's Brook


Marsh Lake

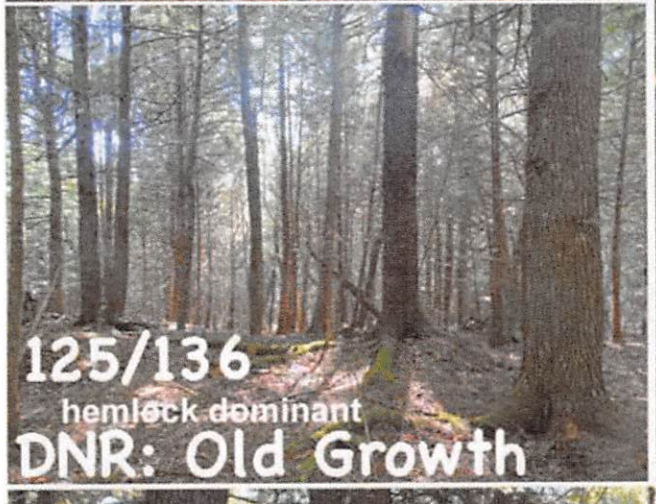

Gaspereau

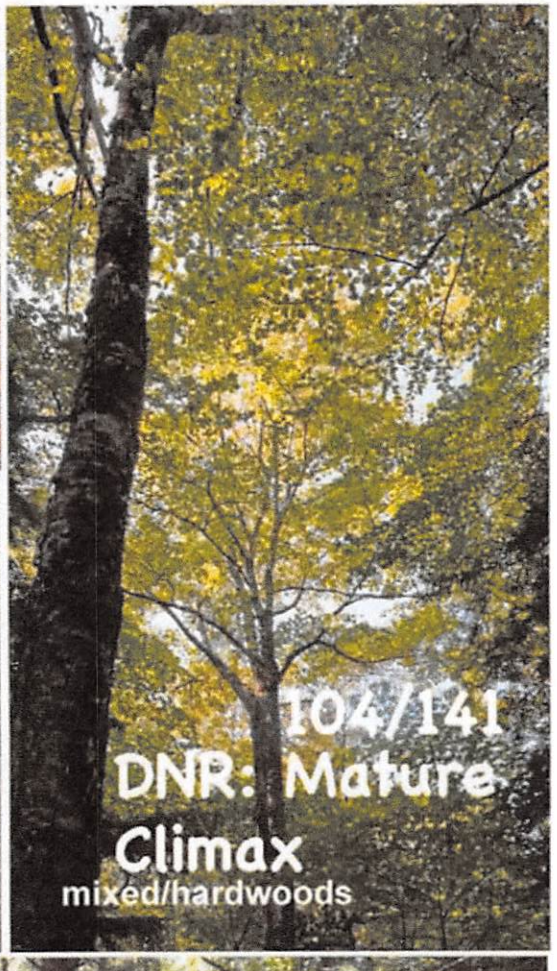

Snapping turtle habitat


Sandy Lake


Jack Lake

Forest, Wetlands
Streams, Lakes





Old Growth:

- fewer but bigger trees

- younger trees also present...gaps, multilayered

-lots of deadwood: snags & CWD; cavities

- trees with lichens, moss

- "spongy duff", beetles...

**forest floor not level but with "pits & mounds"

- Andrew Whitman of the Manomet Center for Conservation Sciences (Mass,) & Shawn Fraver of the University of Maine's School of Forest Resources cited by Joe Rankin in: "Old Growth" Forests Defined by Key Ecological Characteristics, Dec 20,2016 on http://www.forestsformainesfuture.org

13 Species-at-Risk

Little Brown Bat
Mainland Moose

Snapping Turtle
Wood Turtle

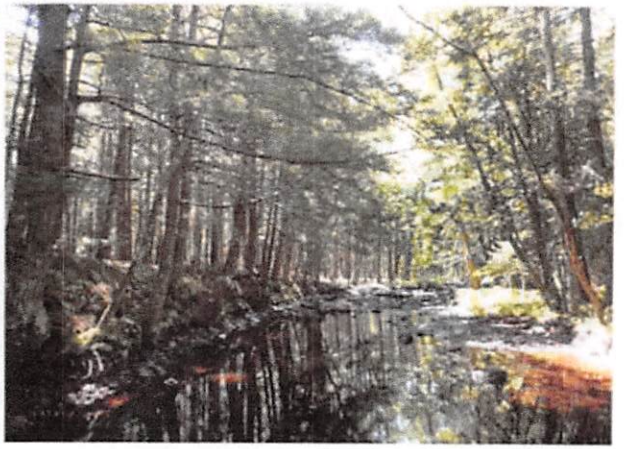
Barn Swallow
Canada Warbler
Common Nighthawk
Chimney Swift
Eastern Wood Pewee
Olive-sided Flycatcher
Rusty Blackbird

American Eel
Atlantic Salmon

21 of 23 vertebrates species associated with old Acadian forests

Ovenbird - forest interior species

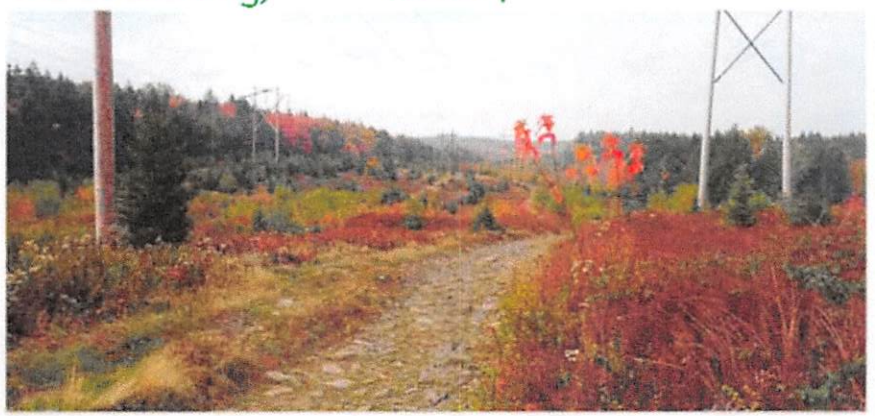
RECREATION



Swimming Fishing
Paddling ice sports

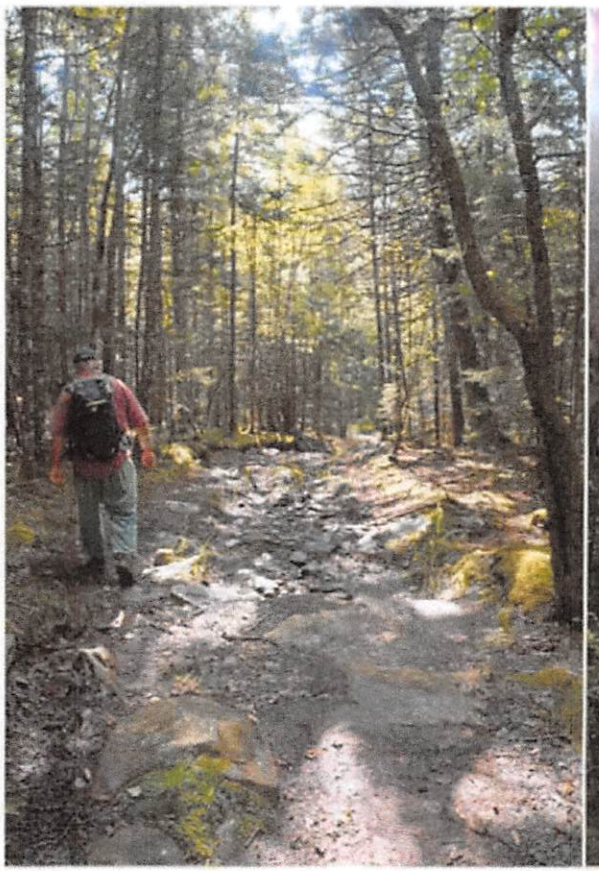
Wilderness hiking
Forest Bathing
Birdwatching,

Natural History
Wilderness Running
Hiking



Walking
Snow-shoe, Ski

Dog walking
Mt Biking



Sandy Lake Water quality: marginal oxygenation of deep waters currenty, salty water accumulating

FROM AECOM (2014)

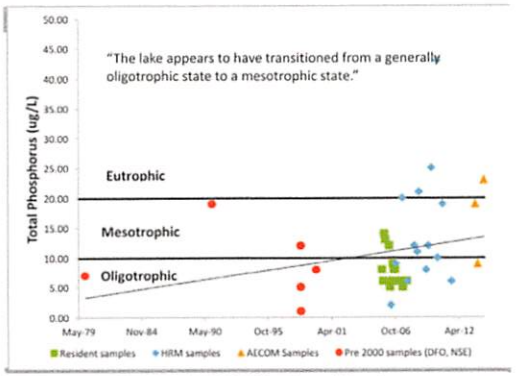


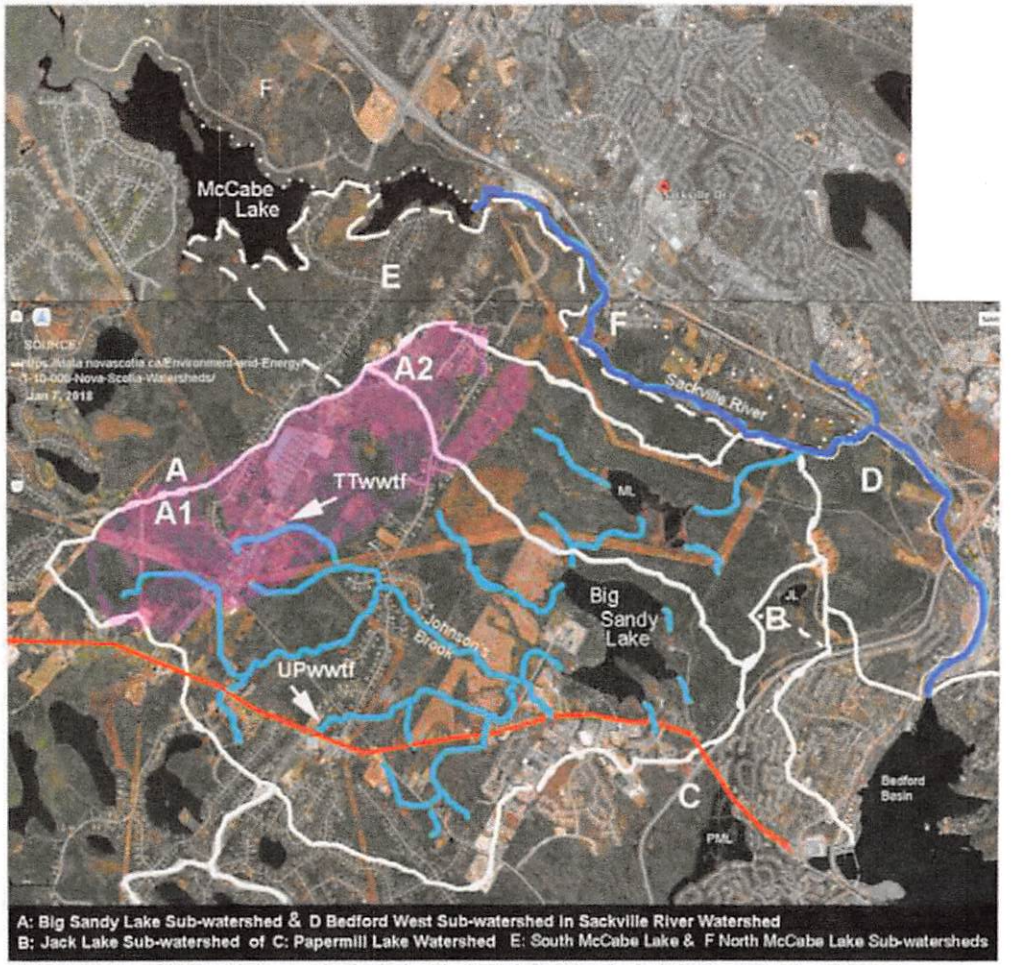
Figure 9: Sandy Lake Total Phosphorus - All Samples

ISSUES

Table 11. Water Quality Objectives and Early Warning Values for Total Phosphorus

Lake	Trophic State Objective	Numerical Objective	Early Warning	Evaluation
Sandy Lake	Mesotrophic	< 18 µg/L	15µg/L	Based on 3 year running average
Marsh Lake	Mesotrophic	< 15.5 µg/L	13 µg/	Based on 3 year running average.

Why should the goal be mid-mesotrophic?



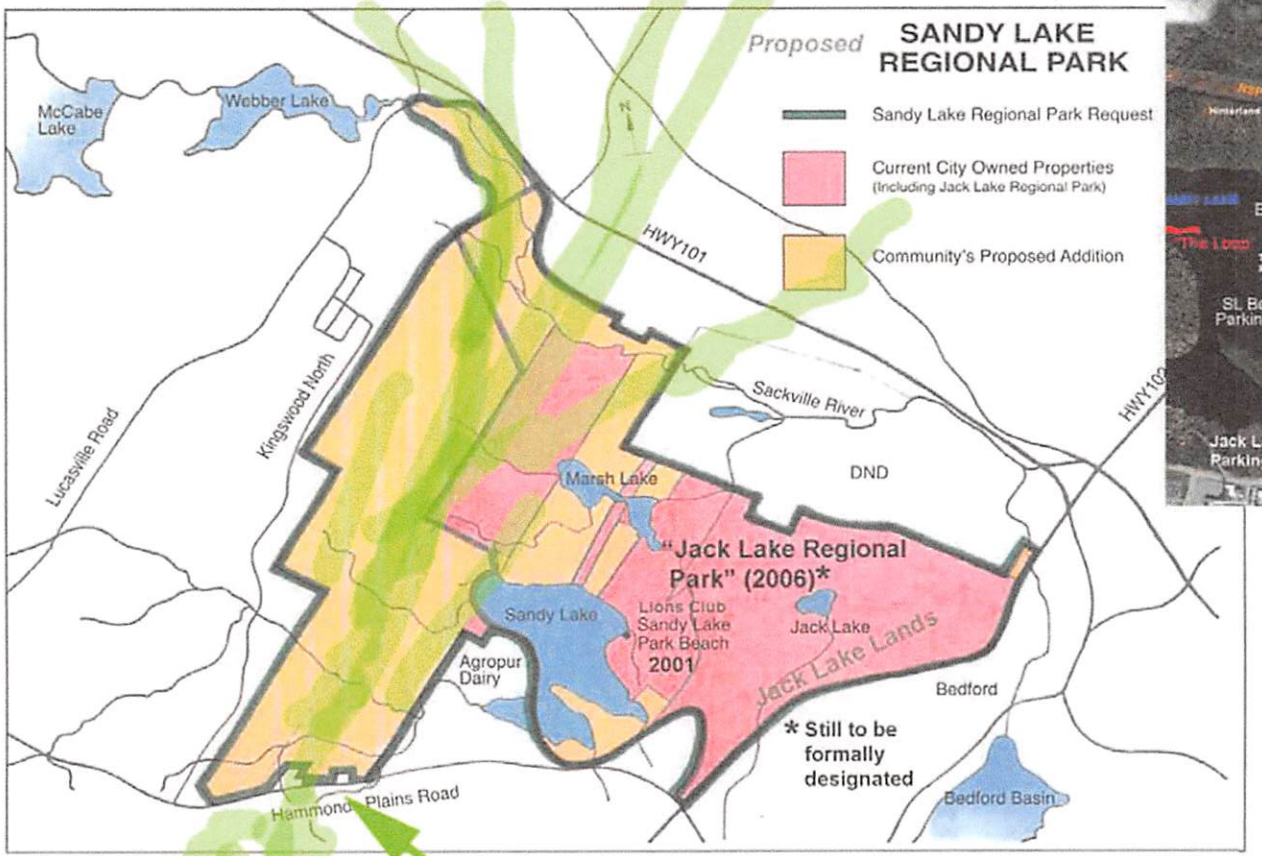
A1 Sandy Lake and A2 Marsh Lake are subwatersheds of the Sandy Lake Sub-watershed of the Sackville River Watershed
Purple highlighted area: Bedrock with acid-generating potential. UPwwtf: Uplands Park waste water treatment facility.
TTwwtf: Timber Trails waste water treatment facility. Blue highlighted streams are the major streams in the Sandy Lake Sub-watershed as identified in the Sandy Lake Watershed Study Final Report (AECOM 2014)

Major streams of Sandy Lake Sub-Watershed

Surface waters flowing into Sandy Lake are concentrated on the western side of the lake where development is proposed.

So we need to protect land to the west of Sandy Lake

Map 3 ISSUES: CONNECTIVITY



Jack Lake Lands:
- Many trails, multiple uses all seasons; mostly informally managed

Sandy Lake Beach Park:
- Formally managed; swimming, paddling, fishing

CHEBUCTO PENINSULA

The proposed SLRP embodies more of the original concept of a Regional Park at Sandy Lake, which was for parkland around the lake, not to one side of it, and that of the 1979 MAPC plan which would "include more area on all sides, from the Sackville River to the Hammonds Plains Road and from the Bedford RifleRange west toward the Lucasville Road (including buffers and flood plains)."

Major reasons to expand the Park

#1 - Historical

#2 - Protection of the Sandy Lake to Sackville River watercourse for migratory fish, reptiles, amphibians, waterfowl, otters... water quality/aquatic recreation; reduce downstream flooding

#3 - Provide a forested wildlife corridor connecting lands of the Chebucto Peninsula with central and eastern mainland


Urgent: protect this pinch point
359 m
2003
Google Earth
Imagery Date: 9/5/2015 lat 44.772821° lon -63.713291° elev 93 m eye alt 2.00 km

Map 4: Putting it all together: Conservation Priority on west side

Mixed Recreation and Conservation on east side
(where recreational activities are currently focussed)

A species to watch: freshwater mussel

Posted on January 2, 2020 by admin. www.sandylakebedford.ca

Empty mussels are common on shore and
in shallows amongst aquatic plants

The freshwater mussel *Pyganodon cataracta* occurs in abundance at Sandy Lake.
I have viewed many living specimens while snorkelling in the shallows (down to 2-3 m) and discarded shells are common amongst emergent wetland plants around the fringes of the lake. The latter could be the remains of river otter luncheons.

Living mussel

It was thus with some interest that I caught this title: A freshwater mussel apocalypse is underway—and no one knows why by Carrie Arnold on www.nationalgeographic.com, Dec 16, 2019. From that article:
Throughout the U.S. and Europe, staggering numbers of freshwater mussels are dying. To make the matter worse, no one knows why, prompting investigations into everything from infectious diseases to climate change to water pollution...
...mussels are crucial to their ecosystems, both by cleaning water of impurities and creating shelter for other species via their shells (after their decades-long lifespans are over)...Tony Goldberg, a wildlife disease expert at the University of Wisconsin-Madison, puts mussels' importance more bluntly. Without them, he says, "the freshwater ecosystem will change forever."
So together with the turtles and frogs and salmon and trout and other valued species we still find in Sandy Lake, the mussels are one to keep an eye on.