



Wetland Delineations near Shediac, New Brunswick

A report to the New Brunswick Department of Environment and Local Government

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November 30, 2017

Introduction

In spring 2017, the New Brunswick government undertook the Water Quality at Parlee Beach project, in order to improve water quality and thereby protect both public health and the viability of Parlee Beach as a tourist destination for the region and for the province. The project steering committee was led by Project Manager Jacques Paynter with representatives of the Departments of Agriculture, Aquaculture and Fisheries, Health, Tourism, Heritage and Culture and Environment and Local Government.

Wetlands make a significant positive contribution to local water quality, and much of what was once wetland within the area surrounding Parlee Beach has been converted to human uses that reduce its function in water quality improvement. It was thus considered important to better understand the extent of nearby, currently existing wetland that might contribute to water quality at Parlee Beach. It has long been well understood that existing wetland boundaries mapped in the GeoNB map viewer are inaccurate, because of both Type I and Type II errors. They include some areas as wetland that are actually upland, and they fail to include substantial areas of actual wetland, especially in sites having tree or shrub cover that makes hydrology less readily understood from aerial photos. Thus, as part of the Parlee Beach project, the Atlantic Canada Conservation Data Centre was contracted to use standard field wetland delineation methods to improve the understanding of the spatial extent of wetlands in the Shediac – Pointe-du-Chene study area. The Atlantic Canada Conservation Data Centre contracted Theo Popma of Overdale Environmental, one of New Brunswick's most experienced wetland delineators, to undertake most of the project's fieldwork.

Methods

The study was conducted in the Shediac – Pointe-du-Chene area, defined as land within approximately 2.5 km east and west of Parlee Beach Provincial Park (Figure 1). Within that area, wetland delineation was only undertaken where permission for access had been granted via contact between the Department of Environment and Local Government (DELG) and the landowner. Landowners had the opportunity to be present while surveys were taking place on their property.

Wetlands were delineated between June and October 2017 by Theo Popma (throughout the study area) and Sean Blaney (only on the Anglican Church property adjacent to Parlee Beach Provincial Park), using the standard two parameter method used by Departments of Transportation and Infrastructure and Environment and Local Government. The two primary parameters for wetland delineation under this method are dominance of hydrophytic vegetation and visible signs of surface hydrology. A third parameter (hydric soil indicators) is used where wetland boundaries are not clearly defined by the first two parameters. These standards are based on the U.S. Army Corps of Engineers Environmental Laboratory (1987), Lichvar (2005), United States Department of Agriculture (2006), and U.S. Army Corps of Engineers (2012).

Efforts were also made, where possible, to delineate the upper boundary of dunes or other coastal features, which are not wetlands but are considered habitat of conservation concern, and to distinguish between coastal wetlands and non-coastal freshwater wetland. Coastal wetlands are Provincially Significant Wetland (PSW) by definition and are thus regulated more strictly under New Brunswick Wetlands Conservation Policy than non-Provincially Significant wetlands (NB DNRE & DELG 2002). Provincially Significant Wetland

was distinguished from non-Provincially Significant Wetland where transitions between the two types occurred. Of the seven potential reasons for identification of Provincially Significant Wetland in NB DNRE & DELG (2002), only the first reason was clearly relevant in areas surveyed:

“Wetlands having provincial, national or international importance for one or more of the following reasons are considered Provincially Significant: **1. Wetlands, such as coastal marshes, which represent a remnant of a formerly more widespread wetland type where, historically, impacts to this habitat type have been severe.**”

Thus for the purposes of this study, Provincially Significant Wetland equates to coastal marsh. Coastal Marsh is defined in NB DNRE (2006) as “...wetlands dominated by rooted herbaceous plants. These wetlands drain directly into coastal waters and have the potential to be at least partially inundated with salt or brackish water.”

In the field the primary determinant of the inland boundary of Provincially Significant Wetland (Coastal Marsh) was dominance by woody, non-herbaceous vegetation. As defined in NB DNRE (2006), Coastal Marsh must be dominated by herbaceous plants, and areas dominated by woody plants cannot be Coastal Marsh. This corresponds with biological reality in that no woody species in the New Brunswick flora are capable of surviving frequent inundation with saltwater. Based on the extent of occasional storm-induced flooding in the built-up areas of Pointe-du-Chene, it is likely that coastal flooding with salt or brackish water occasionally extends inland beyond our identified Provincially Significant Wetland (Coastal Marsh) boundary and into the adjacent shrub or tree dominated wetlands. However, because these wetlands are dominated by woody rather than herbaceous vegetation, they are not Coastal Marsh and therefore not Provincially Significant Wetland based on available information.

Plot data supporting classification of sites as wetland or upland was recorded on standard wetland data sheets in the field and was subsequently transferred to Excel spreadsheets. Spatial data was recorded by hand-held GPS units and downloaded into ArcGIS and Google Maps for final analysis and transfer to DELG and Department of Health.

Results and Conclusions

Theo Popma and Sean Blaney visited and undertook wetland surveys and delineations on 94 properties for which DELG had received permission for access, and we completed 92 wetland data sheets describing communities on these properties. Wetlands were detected on 48 of the 94 properties visited. Wetland data sheets in Excel, and field-delineated wetland boundaries in GIS were provided to DELG and Department of Health.

The study documented more wetland than is currently represented on the GeoNB map, further demonstrating the already well-understood fact that ground-based delineation is more accurate than aerial photograph interpretation. Cases where field visits verified additional wetland beyond the GeoNB map were mostly forested or shrub wetlands, within which boundaries between wetland and non-wetland conditions are generally not easily seen on aerial photography.

Figures



Figure 1. Survey Area around the Town of Shediac. Pale blue-bounded properties were visited to determine presence of wetland.



Figure 2. Sample Wetland Delineation Schematic. The red line is the property boundary. The blue line is the field-delineated wetland boundary (wetland to right, upland to left) with GPS points taken along the line. The single point east of the wetland boundary is the location at which a wetland data sheet was completed. The second series of points depicts the upper boundary of dunes or coastal features which are not wetlands but are considered habitat of conservation concern.

References

Lichvar, R. 2005. Wetland Identification, Delineation and Classification. Humbolt Field Research Institute, Steuben, ME, USA.

NB DNRE (New Brunswick Department of Natural Resources). 2006. New Brunswick Wetland Classification for 2003-2012 Photo Cycle. Department of Natural Resources, Fish and Wildlife Branch, Fredericton NB.

NB DNRE & DELG (New Brunswick Departments of Natural Resources and Energy and Environment and Local Government). 2002. New Brunswick Wetlands Conservation Policy. Natural Resources and Energy and Environment and Local Government. Fredericton NB.

United States Department of Agriculture. 2006. Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils, Version 6.0. (G.W. Hurt and L.M. Vasilas, eds.). Natural Resources Conservation Service, in cooperation with the National Technical Committee on Hydric Soils, Baltimore, MD, USA.

U.S. Army Corps of Engineers Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Wetlands Research Program Technical Report Y-87-1. U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS, USA.

U.S. Army Corps of Engineers. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0). Wetlands Regulatory Assistance Program, U.S. Army Engineer Research and Development Center, Vicksburg, MS, USA.