

Ecologic Function

Coarse Scale Habitat – Wetland Cover Target –Ecologic Function

The purpose of setting a target related to this value is to ensure that the preferred scenario includes the minimum amount of wetland cover to support a range of wildlife species.

According to “*How Much Habitat is Enough*”, Environment Canada, a high proportion of Ontario’s fish and wildlife species inhabit wetlands during part of their life cycle including many that are deemed at risk.

Wetlands are important on the landscape as they retain water and help to mitigate peak flows and run off, protecting downstream areas from erosion and flooding. In addition, wetlands help to augment low-flow conditions by releasing water over an extended period of time and raising the water table to increase base flow to streams. Wetlands have the ability to perform a significant role in improving water quality by filtering sediments and contaminants and limiting the impacts of thermal pollution to the receiving water body.

There are four types of wetlands in southern Ontario. Bogs, fens, marshes and swamps. Bogs and fens are highly specialized environments. Both are characterized by their peat substrate and are therefore, very rare in the watershed existing in only a couple of locations.

Swamps are the most abundant wetland type in the watershed making up more than 10.14% of the land area. These forested wetlands support a high diversity of species and provide critical habitat for many species.

Marshes are commonly what people think of when they hear the word wetland. They are found scattered throughout the watershed and are characterized by open water. They are important nursery habitats and breeding and feeding areas.

Datasets

1. NPCA NAI ELC Community Series Mapping
2. Soil Landscapes of Canada

The Niagara Watershed currently has 12.4% of its land base in wetland cover which constitutes 40.79% of all existing natural cover (totaling 30% across the land base). The most dominant type at 10.14% of the landscape are swamp communities which is 82% of all wetlands types and 33.4% of all cover types. The rest at 2% are marsh communities and account for 16% of all wetlands or 6.5% of all cover types. Bogs make up the difference; there are no fen communities in Niagara.

Wetland cover is determined by combining all of the mature wetland community types from the ELC mapping. This means that Swamps, Marshes, and Bog dominant communities are considered part of the broader and more general concept of ‘wetland cover’ as it pertains to habitat. It should be noted that there are many sub dominant wetland communities complexed into the watershed’s ELC mapping units.

Discussion

The discussion around this target focused on the accuracy of the dataset and in particular the identification of naturally occurring wetlands from wet areas built for agricultural purposes such as irrigation ponds. Where possible these manmade drainage features were removed from the dataset.

There was also much discussion about what constitutes an unevaluated wetland and how they are protected in the legislation.

Data Gap

None noted.

Decision

Date: May 5, 2011

**10% of the overall NPCA Watershed as the study area in wetland cover.
6% of each soil landscapes in wetland cover.**

Representation in the Learning Scenarios

There is a very high percentage of wetlands on the landscape within the study area. This is largely due to the heavy clay soils in the area above the Niagara Escarpment and their ability to hold water. Through the Natural Areas Inventory, it has been documented that wetlands account for 40.79% of all natural cover in the watershed.

Wetland Cover was one area where there was very little in the way of flexibility given to the model to choose what would be considered for contribution to the scenarios. The Provincially Significant Wetlands were included 100% based on the socio-political constraints set for most of the scenarios with the exception of the Best of the Best Half Scenario.

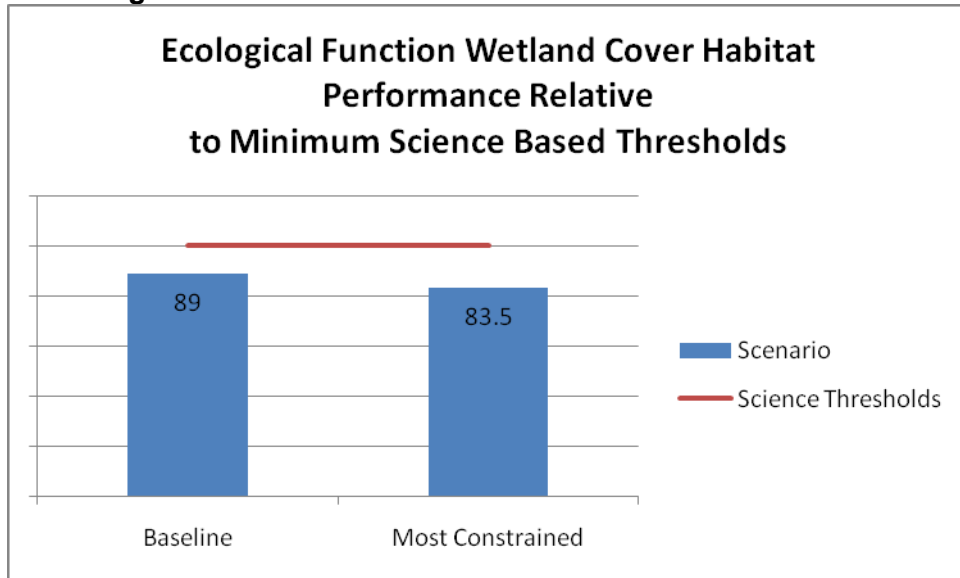
Where the model was allowed to choose, there was still little flexibility given the exclusions placed on agriculture, aggregates and urban areas. The model was forced to choose essentially everything that was outside of these exclusion areas and therefore, the wetlands were all considered for their contribution. They often contributed to other targets particularly in the distributed soil landscapes where natural cover was well below the targets.

Representation in the Final Scenarios

Under the Baseline Scenario, wetland cover was a driving factor behind the spatial configuration of the results. This was based once again on the fact that existing wetland cover in most distribution units is approaching the scientific target and the fact that wetlands designated as Provincially Significant were set to be automatically included through constraints to begin with.

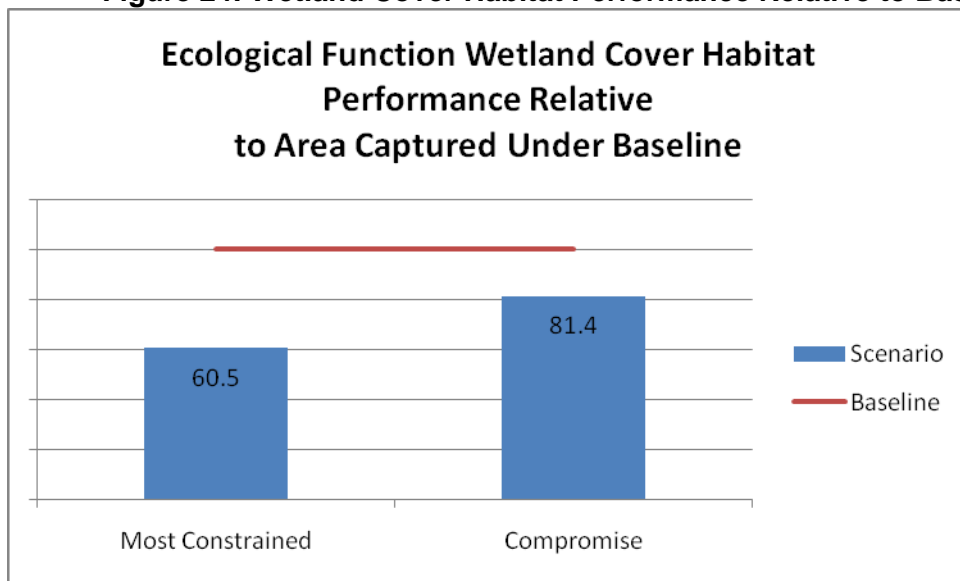
Under the Baseline Comparator Scenario, Wetland Cover at both the NPCA watershed and soil landscape distribution scales used the entire area available in the wetland inventory. This provided for cumulative achievement rate of 89%.

Figure 23: Wetland Cover Habitat Performance Relative to Science Thresholds



Under the Most Constrained Scenario, wetland cover was limited to those areas that were not found on agricultural capable soils or in urban areas except where they were locked in due to their status as Provincially Significant. Under this scenario, the inclusions were the driving force behind the contributions and achievement rate of 83.5% toward the targets which is the equivalent of 60.5% of the value held in the Baseline.

Figure 24: Wetland Cover Habitat Performance Relative to Baseline Comparator



Within the Compromise Scenario, wetland cover was a determining factor in the spatial

configuration even though under this scenario, the model was seeking only 80% of what exists on the landscape. Again this was primarily due to amount automatically contributed towards the targets as a result of the Provincially Significant Wetlands being given an included social political constraint status.

Wetland Cover as it relates to the Ecological Function targets in the Compromise Scenario achieved 81.4% of the value in the Baseline Comparator.

Recommendations

Future projects such as this should look at setting objectives for the composition of specific wetland types. Due to the recent specific focus on inventorying wetlands there is a better understanding that Niagara is in fact closer to the recommended landscape targets from the conservation biology literature. It is clear however that the Niagara Watershed may be over represented in slough swamp types and that open water and marsh types may be critically under represented.

Due to Niagara's unique geographic and soil conditions, wetland composition overall in the natural cover may have been much higher on landscape than what current science recommends as a guideline. An examination of presettlement conditions should be performed to glean what the traditional Upland and Lowland balance for Niagara might have been.

Work to remove manmade drainage from the dataset where appropriate.

Consider breaking up soil landscape 569001 into zones east and west of the Welland Canal.