Ecologic Function

Coarse Scale Habitat – Adjacent Upland Cover
Target –Ecologic Function

The purpose of setting a target related to this value is to ensure that the preferred scenario includes associated upland adjacent cover to wetlands which is important to both the biophysical functions of the wetland, and as habitat for species associated with wetlands.

A high proportion of Ontario's wildlife species inhabit upland areas adjacent to wetlands during part of their life cycle, many of which, are deemed at risk.

Wetlands are important on the landscape as they impound 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 (Environment Canada, *How Much Habitat is Enough", 2006).*

While the size, type (bog, fen, marsh or swamp), and hydroperiod (the length of time a wetland is inundated with water) of a wetland are important to consider, the proximity of the wetlands to each other and other suitable habitats is also critical across the landscape.   Upland cover adjacent to wetlands can be very important to the sustainability of the wetland on the landscape as well as the function of that wetland for species that depend on it.

Datasets

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

Currently for the NPCA watershed as a whole there is approximately 41% upland natural cover within 30m of wetlands, 36.3% within 50m, 28.13% within 120m, and 24% within 240m.   The current portion of upland cover within 30m constitutes 4.5% of the land base, while the upland cover between the 30 and 120m thresholds constitutes 5% of the land base.

The full scope of wetland cover (not just wetlands identified as part of the OWES) was determined by querying out all wetland community types from the ELC Community Series Mapping.   Once isolated these mapping units were reduced to a patch level by dissolving the adjacent polygons based on shared boundaries.   Upon completion of the wetland patches, concentric buffer rings at the 30, 50, 120 and 240m distances were calculated from them to create the wetland proximity or critical function zones as they are sometimes referred to as.

In a similar manner the upland communities were queried out from the ELC Community Series Mapping.   The isolated upland areas were then intersected with the wetland derivative zones to identify the upland cover within each threshold and produce statistics with which to facilitate the associated target discussion.

For processing purposes, the upland cover within 30m of the wetlands were separated into those immediately adjacent to the wetland and those simply within the 30m zone in order to provide an indication of the quality of the adjacent habitat.   Immediately adjacent wetlands are

those that share a boundary or are connection with the wetland and enable free movement of species. The rest of the upland cover within 30m means there is some travel across another land cover type for species to move between the wetland and upland habitats.

Discussion
The discussion concerning this target carried over from discussions about proximity of wetland patches where it was decided that the type of cover was not as important as the fact that there was cover adjacent to wetlands.

Clarification was required about what constituted upland vs. lowland communities.

Given the fragmented nature of the habitat in Niagara, it was decided that the percentages could be arbitrary based on the distances from the wetland as laid out in the literature.

Data Gap
None noted.

Decision
Date: May 5, 2011

100% of existing natural cover within 30m of a wetland by soil landscape.
50% of existing natural cover within 30m - 120m of wetlands by soil landscape.

Representation in the Learning Scenarios
Conservation biology literature supports the concept that cover adjacent to wetlands fulfills different needs associated with life functions at varying distances. For ease of reporting, this project considered the cover that fell within 30m and the cover that was between 30m and 120m from an existing wetland.

Within 30m a distinction was made between the cover that was immediately adjacent and cover that was not immediately adjacent but still within the 30m. After some discussion, it was decided by the SDT that, within 30 m, regardless of whether existing natural cover was immediately adjacent, the target was set at 100%.

The target was 50% for the existing natural cover that was within 30m-120m. Under many of the Learning Scenarios, this target was overachieved since much of the upland cover is in very short supply across the watershed relative to minimum threshold for other ecological targets.

Representation in the Final Scenarios
As mentioned earlier, since upland natural cover is significantly underrepresented across the watershed relative to suggested minimum thresholds, the Baseline Scenario was easily able to capture 100% of the upland natural cover within 120m of wetlands.

Under the Baseline Comparator Scenario Adjacent Upland Cover within 30m, the model included between 99.8% and 100% of the target value. Within 30m and 120m, the model achieved 100% of the target value.

Figure 11: Adjacent Upland Cover Performance Relative to Science Thresholds
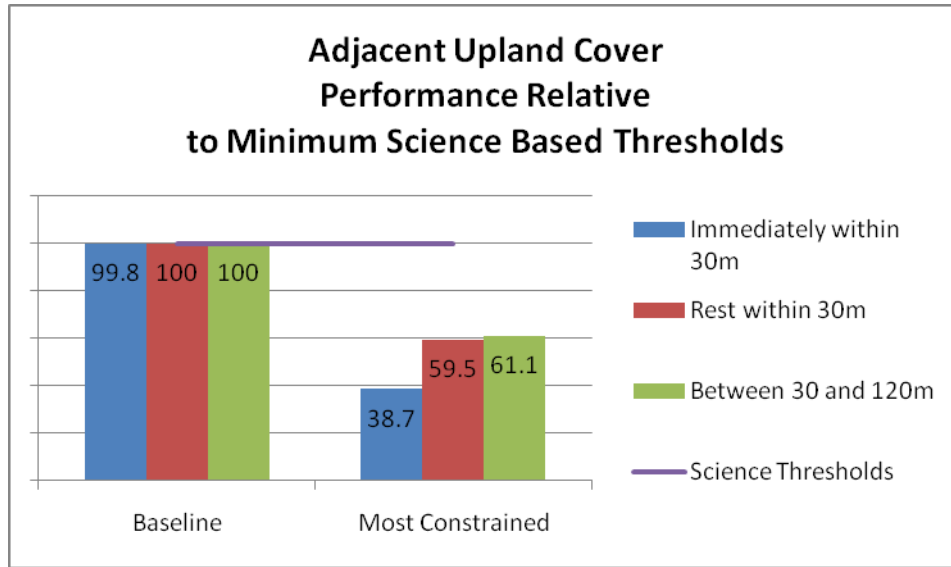
Under the Most Constrained Scenario, adjacent upland cover which could contribute towards targets was limited to those natural areas that were not found on agricultural capable soils, or in urban areas. Under this scenario, these exclusions were the driving factor not the fragmented natural cover. Under this scenario, exclusions for these land uses locked out between 65% and 75% of remaining available existing upland cover within 120m of wetlands.

Adjacent Upland Cover within 30m under the Most Constrained Scenario achieved only between 38.7% and 59.5% of the target value and 38.8% and 30.9% of the value held in the Baseline Scenario. Within 30m and 120m, it achieved 61.1% of the target value, 33.1% of the value in the Baseline.

Figure 12: Adjacent Upland Cover Performance Relative to Baseline Comparator
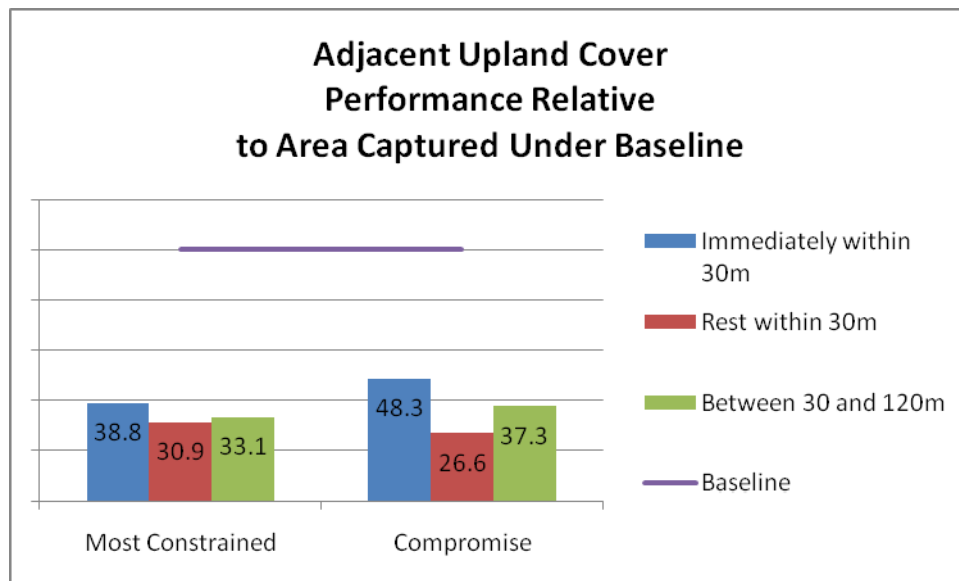
Within the Compromise Scenario, Adjacent Upland Cover was largely achieved through correlation what also contributed to the forest cover targets. The drop in achievement in this scenario compared to the Baseline is largely due to the removal of meadow communities from consideration and generally makes up the difference between the current rates and the targeted 80%.

Adjacent Upland Cover within 30m as it relates to the Ecological Function targets in the Compromise Scenario achieved between 48.3% and 26.6 % of the value in the Baseline. Within 30m and 120m, it achieved 37.3% of the value in the Baseline and used 36.7% of the area held in the inventory.

Recommendations

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