

Ecologic Function

Coarse Scale Habitat – Forest Interior Target –Ecologic Function

The purpose of setting a target related to this value is to ensure that the preferred scenario includes forest patches with a significant proportion of forest interior to reduce edge impacts and provide habitat for interior forest species.

The concept of forest interior takes into account not only the forest size but also its shape. It is expressed as a distance from any edge. Some species require specialized habitat niches that are not impacted by the effects of noise, predation, light conditions, reduced moisture, and weather that are associated with the forest edge conditions.

Datasets

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

The Niagara Watershed currently contains 3% interior forest habitat at 100m across its landscape which is 16% of all existing forest cover. It is found across 959 individual forest habitat patches.

The Niagara Watershed currently contains 0.82% interior forest habitat at 200m which is 4.5% of all existing forest cover. It is only found in 180 forest patches.

Forest cover is determined by combining all of the mature wooded area community types from the ELC mapping. This means that most mature tree dominated communities like Woodlands, Savannahs and even Plantations are included with the ELC 'Forest' community and considered part of the broader and more general concept of 'forest cover' as it pertains to habitat.

Forest patches were derived by dissolving the mature wooded ELC communities isolated as forest cover habitat into individual mapping units. A derivative patch is a polygon of forest cover that does not share a border with another patch, there needs to be a separation by non natural cover in between.

Interior forest habitat is identified by generating concentric buffer rings inside the forest patch features at both the 100 and 200m distances. It is usually measured as a percent of the composition of the existing forest cover on the landscape, rather than the percent of a particular landscape.

Discussion

The discussion around this target focused on the concept of interior forests being important for a certain suite of species that cannot exist anywhere else. The group accepted that as with forest patch sizes, when it comes to habitat, bigger is better. It was decided that based on the literature, there would be two forest interior classes, one at 100m from any edge, and another at 200m from any edge.

There was some discussion about which scale to use for the analysis. Some members of the Scenario Development Team (SDT) suggested that the watershed as a whole would be more appropriate. However, in the end, the group agreed to use the soil landscape unit since that

was the scale being used for the forest patch size targets.

Data Gap

None noted.

Decision

Date: May 5, 2011

10% of the existing forests with interior forest greater than 100m from any edge by soil landscape.

5% of the existing forests with interior forest greater than 200m from any edge by soil landscape.

Representation in the Learning Scenarios

Most of the natural cover in the study area is forest cover. It contributes roughly two thirds of all natural cover.

Given the condition of the landscape at 18% forest cover, and the scientific target for that being much higher at 30%, the spatial component of all scenarios was again largely driven by the distribution of existing forest cover.

In many cases, the same forest patch features contributed to multiple targets. In the case of the interior forest habitat, targets were set on 100 meters from any edge and 200 meters from any edge. As a result interior forest areas generally became efficient areas to achieve the overall forest cover targets, and were a significant factor in determining where those contributions came from in the learning scenarios.

Representation in the Final Scenarios

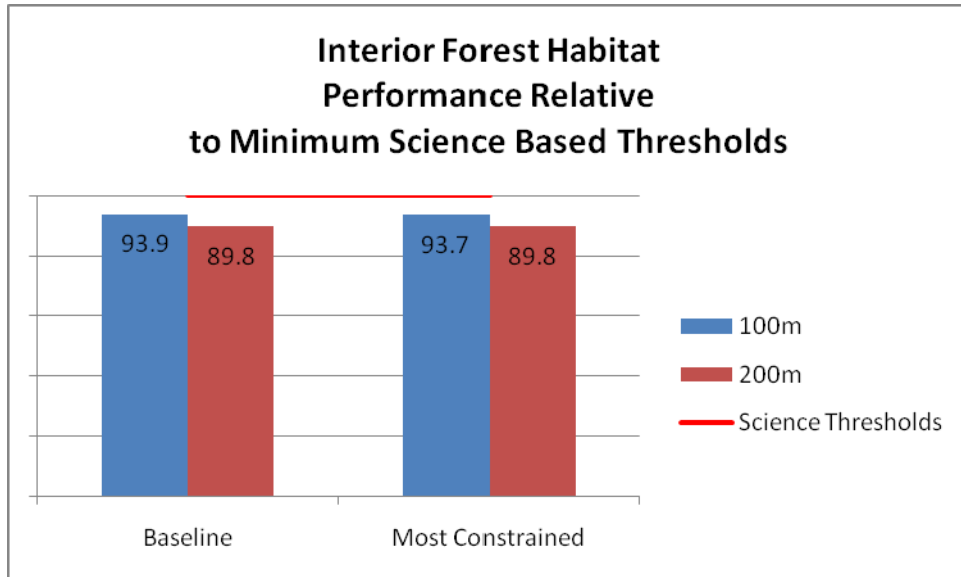
Under the Baseline Scenario, forest cover was a driving factor for the spatial configuration. This was based once again on the shortfall of the existing natural cover relative to the scientific target for this related objective. Interior forest habitat is obviously contained within the forest cover and therefore dependent upon its current distribution and patch shapes.

Under the Baseline Scenario, Interior Forest Habitat 100m achieved 93.9% of the cumulative target value and used 100% of the area available in the inventory to do so, while Interior Forest Habitat 200m achieved 89.8% of the cumulative target value and used 100% of the area available in the inventory. The Interior Forest Habitat targets are based on percent composition of existing forest cover levels. These results would indicate that interior habitat levels are generally being met across many of the Soil Landscape distribution units however, this needs to be qualified because the achievement statistics are generated based on cumulative area held. Therefore, the fact that under each the 100 and 200m condition there is still on average about a 10% shortfall in relation to the cumulative target has more to do with several distribution units. For example, those below the escarpment with proportionately little forest cover will not have many patches big enough to provide interior habitat. Further analysis of the individual target values by distribution unit confirms this as only 5 out of 11 the Soil Landscapes actually met the interior at 100m target. These are also generally the larger ones and proportionately a bigger factor in the cumulative results.

At the 200m level, there were only 6 Soil Landscapes with patches big enough to even consider (the objective was only applied to distribution units already containing some of this habitat type) and only 2 of those met the target. In both cases, those individual distribution units that did fail

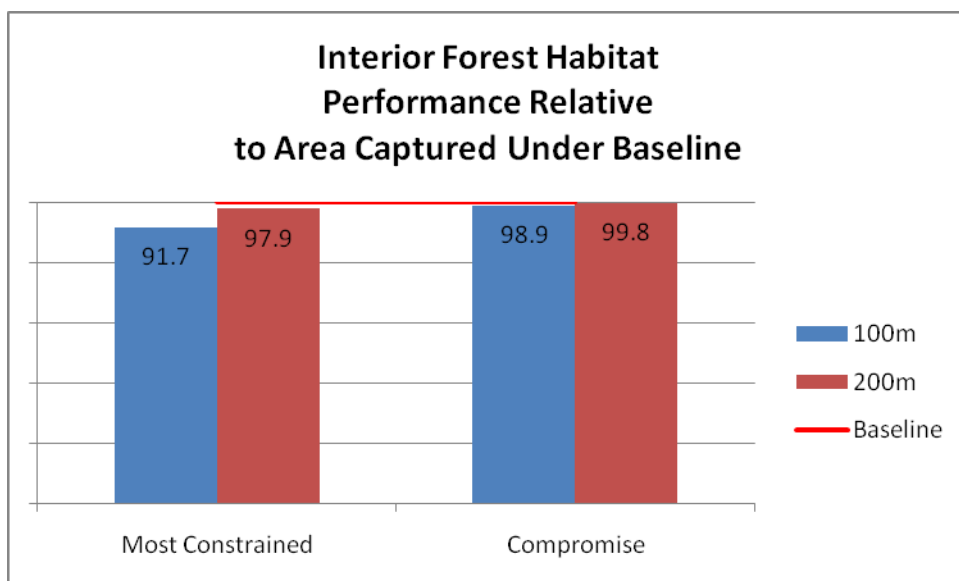
to meet the targets did so by a lot with many failing to even hit the 50% achievement mark. The individual achieved values by distribution unit are included in the Individual Ecological Objective Target Achievement table. See the associated Forest Cover and Interior maps for a visual representation of the fragmentation, and a spatial understanding of the effect that the proportionate distribution of contributing area has in relation to the cumulative target achievement summaries.

Figure 15: Interior Forest Habitat Performance Relative to Science Thresholds



Under the Most Constrained Scenario, Interior Forest Habitat was limited to those areas that were not found on agricultural capable soils or in urban areas, but this did not have significant impact on achievement rates. Interior Forest Habitat 100m under this Scenario achieved 93.7% of the target value and 91.7% of the value held in the Baseline Scenario. Interior Forest Habitat 200m under this Scenario achieved 89.8% of the target value and 97.9% of the value held in the Baseline Scenario.

Figure 16: Interior Forest Habitat Performance Relative to Baseline Comparator



Interior Forest Habitat at 100m within the Compromise Scenario achieved 98.9% of the value in the Baseline. Interior Forest Habitat at 200m within the Compromise Scenario achieved 99.8% of the value in the Baseline. These achievement rates again are largely due to the dependency interior forest has on overall forest cover. Even though the Compromise Scenario only sought 80% of what is currently available in terms of current forest cover, it's efficient to grab core areas first in contribution to that goal, and therefore interior forest habitat over achieved the 80% mark as most of what is available wound up naturally being included in pursuit of overall forest cover.

Recommendations

Consider setting the 10 and 5 percent composition rates based on the forest cover objective, not the existing forest cover percent. Apply the interior forest habitat objective to all soil landscapes, not just those that currently have existing interior forest at the 100 and 200m removed from edge thresholds.

Add feature typing to the local ELC community mapping based on size thresholds and surrounding land use context to identify true forest habitats from more general wooded habitat types. There are many small wooded area polygons of mature trees in the mapping that are classified as forest communities that may provide refuge for species but do not necessarily provide true forest habitat.

Swamp communities (ELC class level) identified through the Ontario Wetland Evaluation System (OWES) protocol at the wetland complex level should be held to more scrutiny as potential forest cover based on their individual wetland unit poly forms to remove the dominant open water and emergent type communities (ELC series level) that are spatially generalized within them.

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