

Ontario's Natural Heritage System (NHS) planning approach can be used to assess, protect, and optimize the provision of ecosystem services to respond to climate change

Land cover classes

Geographic Information Systems assessment of Halton Region using Southern Ontario Land Resource Information System (SOLRIS) data (Fig 1).

Mapping was carried out using SOLRIS 1.2 (2008) and SOLRIS 2.0 (2015) data. Land cover types were reconciled between these two data collection points. Fig 1 shows SOLRIS 2.0 data.

By using GIS data from two points in time, changes to land cover classes could be observed over a 7-year period and pinpointed on the map. Gains or losses in different land cover types were mapped and analyzed.

Classification	Area (Ha)
Undifferentiated	26,043
Tilled	18,952
Built-Up/Impervious	15,745
Deciduous Forest	10,403
Treed Swamp	7,013
Transportation	7,017
Marsh	571
Mixed Forest	3,104
Built-Up/Pervious	2,680
Coniferous Forest	1,322
Hedge Rows	1,084
Forest	746
Open Water	734
Thicket Swamp	712
Extraction – Aggregate	639
Plantations (Trees)	577
Fen	2
Open Beach/Bar	2
Total Land	97,347

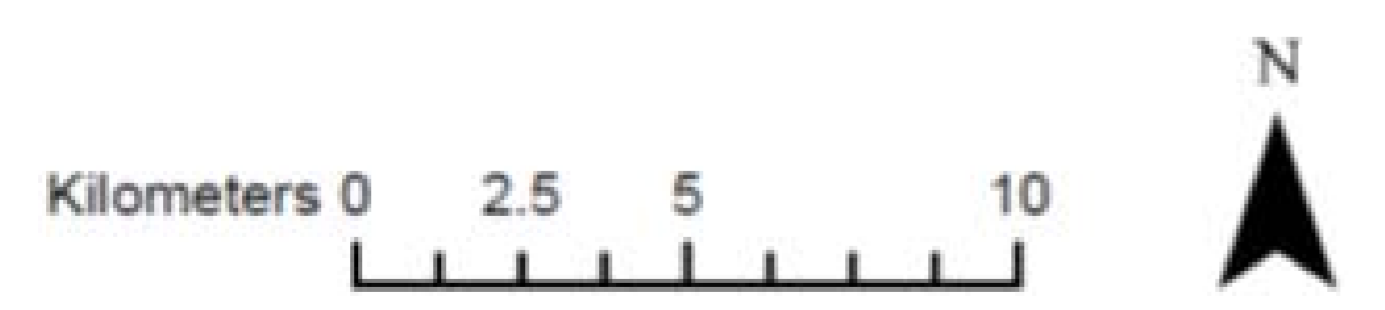


Figure 1 – Land cover classes in Halton Region (SOLRIS 2.0, 2015)

Natural Heritage Systems

- Maintain and protect ecological features such as woodlands, wetlands and watercourses
- Maintain and protect specific ecological functions such as water storage and water quality
- Enable and ensure that ecological interactions occur over various scales of time and space

Ecosystem service values

Ecosystem service values by land cover type were determined using literature values referenced to southern Ontario and published post-2005 (Fig 2). Cumulative ecosystem services were summarized on a per-ha basis.

Ecosystem services were categorized into provisioning, regulating, cultural, and supporting services as shown in the data below.

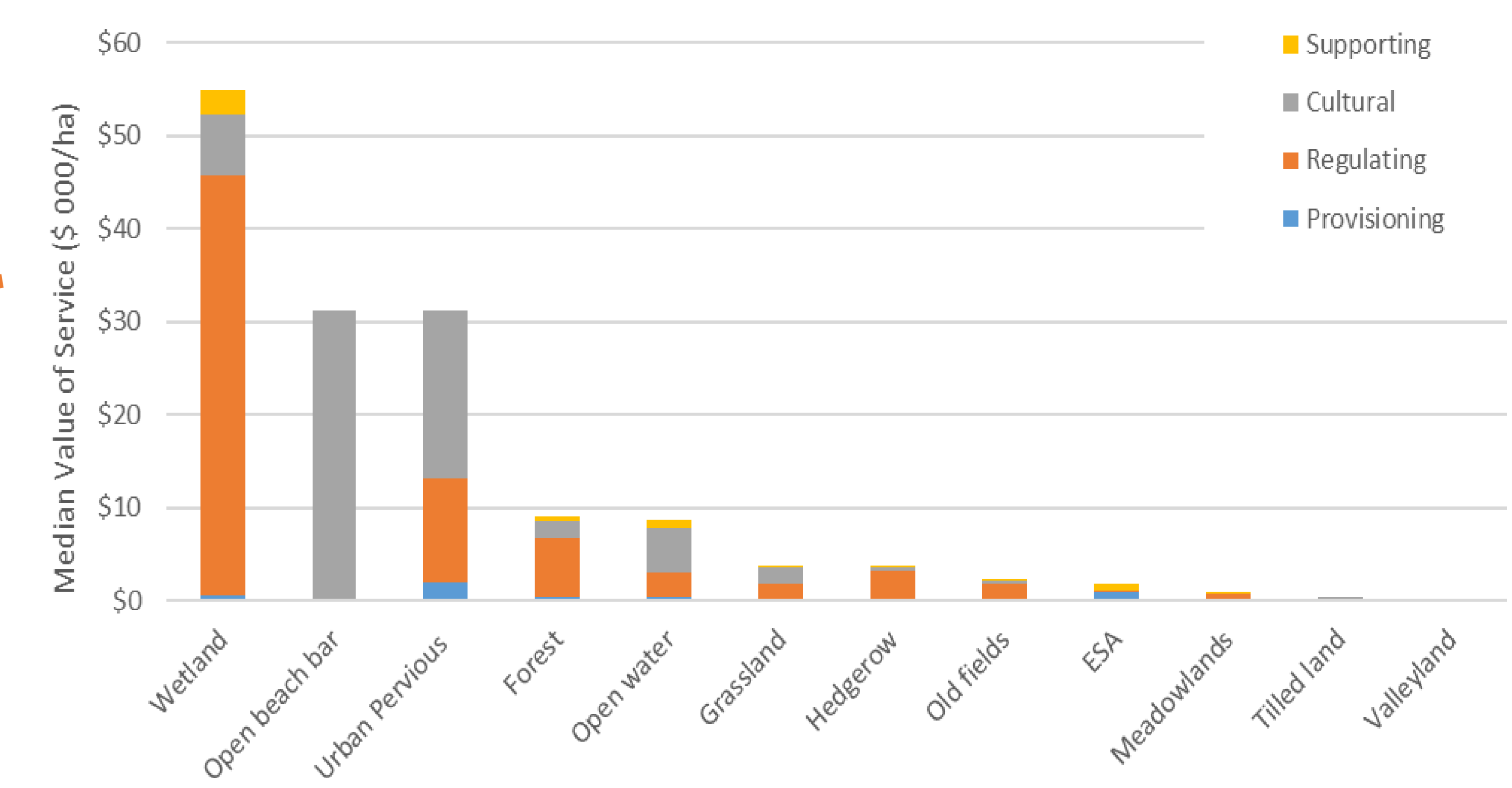


Figure 2 – Ecosystem service values per ha, southern Ontario

Results

- NHS captured 85% of the economic value of ecosystem services in Halton - \$645 M per year.
- Changes to land cover between SOLRIS 1.2 and 2.0 led to a \$1 M per year loss of regulating services, but this loss was offset by a \$1M per year gain in cultural services.
- In summary – NHS is highly effective at capturing ecosystem services in Halton region