

Designing Sustainable Landscapes: Potential dominant life form settings variable

A project of the University of Massachusetts Landscape Ecology Lab

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- North Atlantic Landscape Conservation Cooperative (US Fish and Wildlife Service, Northeast Region)
- Northeast Climate Science Center (USGS)
- University of Massachusetts, Amherst



Reference:

McGarigal K, Compton BW, Plunkett EB, DeLuca WV, and Grand J. 2017. Designing sustainable landscapes: potential dominant life form settings variable. Report to the North Atlantic Conservation Cooperative, US Fish and Wildlife Service, Northeast Region.

General description

Potential dominant life form is one of several ecological settings variables that collectively characterize the biophysical setting of each 30 m cell at a given point in time (McGarigal et al 2017). Potential dominant life form (unvegetated, herbaceous, shrubland, woodland, forest) represents the structure of vegetative community at a site and is used, for example, to distinguish early successional forest from permanent grassland or shrubland. Potential dominant life form is assigned by landcover class, derived from expert opinion (**Fig. 1**). This settings variable is dynamic, changing with urban growth.

Use and interpretation of this layer

This ecological settings variable is used for the similarity and connectedness ecological integrity metrics.

This layer carries the following assumptions:

- Land cover classes are well-distinguished, and completely and accurately mapped.
- The weights assigned to ecological systems are meaningful. As the weights were assigned by opinion rather than an empirical model, this assumption is difficult to assess, other than by noting that the resulting layers seem to pass a gut check.

Derivation of this layer

Data source

- DSLland. Our integrated landcover layer (see DSLland document, McGarigal et al 2017, for details).

Algorithm

This layer was assigned weights by landcover class according to **Table 1**.

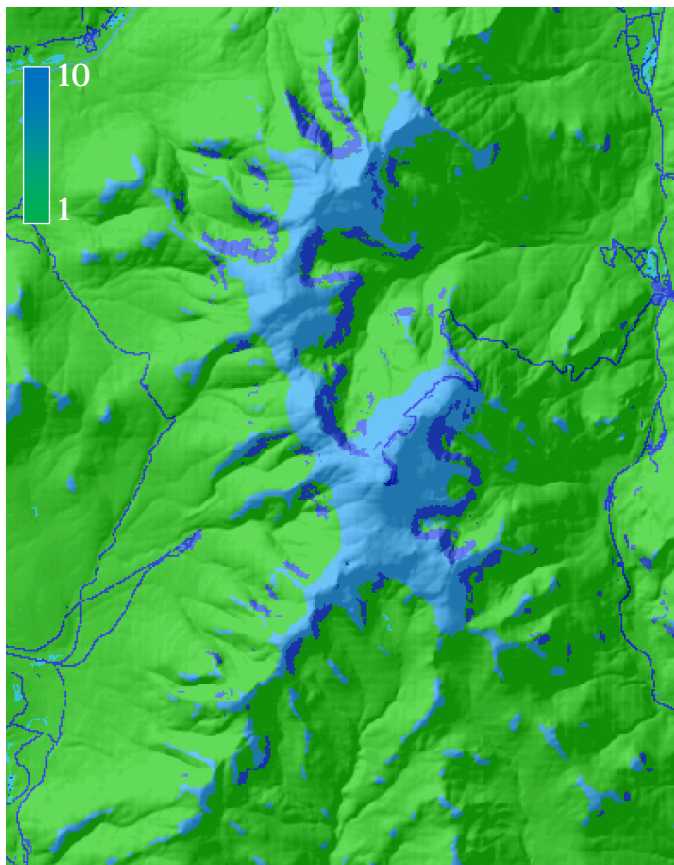


Figure 1. Potential dominant life form in the Presidential Range, New Hampshire.

DSL Data Products: Potential dominant life form

Table 1. Weights assigned to landcover classes for potential dominant life form, ranging from unvegetated = 1, through full canopy forest = 10.

Landcover	Potential dominant life form weight
Estuarine Intertidal Unconsolidated	1
Marine Intertidal Unconsolidated Shore	1
Estuarine Intertidal Aquatic Bed	1
Marine Intertidal Aquatic Bed	1
Estuarine Intertidal Reef	1
Estuarine Intertidal Rocky Shore	1
Marine Intertidal Rocky Shore	1
Freshwater Tidal Riverine	1
Estuarine Subtidal Sheltered	1
Lotic	1
Lentic	1
Great Lakes	1
Ocean	1
Roads	1
Trains	1
Culvert/bridge	1
Dam	1
Developed- high intensity	1
Barren land	1
Coastal Scrub-Herb	2
Cliff & Rock	2
Developed- open space	2
Developed- medium intensity	2
Estuarine Intertidal Emergent	3

Landcover	Potential dominant life form weight
Developed- low intensity	3
Pasture/hay	3
Cultivated crops	3
Alpine	4
Grassland & Shrubland	4
Estuarine Intertidal Scrub Shrub	4
Northeastern Wetland	5
Peatland	5
Estuarine Intertidal Forested	7
Northeastern Upland Forest	10
Boreal Upland Forest	10

GIS metadata

This data product is distributed as a geoTIFF raster (30 m cells). The cell values range from 1 (unvegetated) to 10 (full canopy forest). This data product can be at McGarigal et al (2017).

Literature Cited

McGarigal K, Compton BW, Plunkett EB, DeLuca WV, and Grand J. 2017. Designing sustainable landscapes products, including technical documentation and data products. https://scholarworks.umass.edu/designing_sustainable_landscapes/