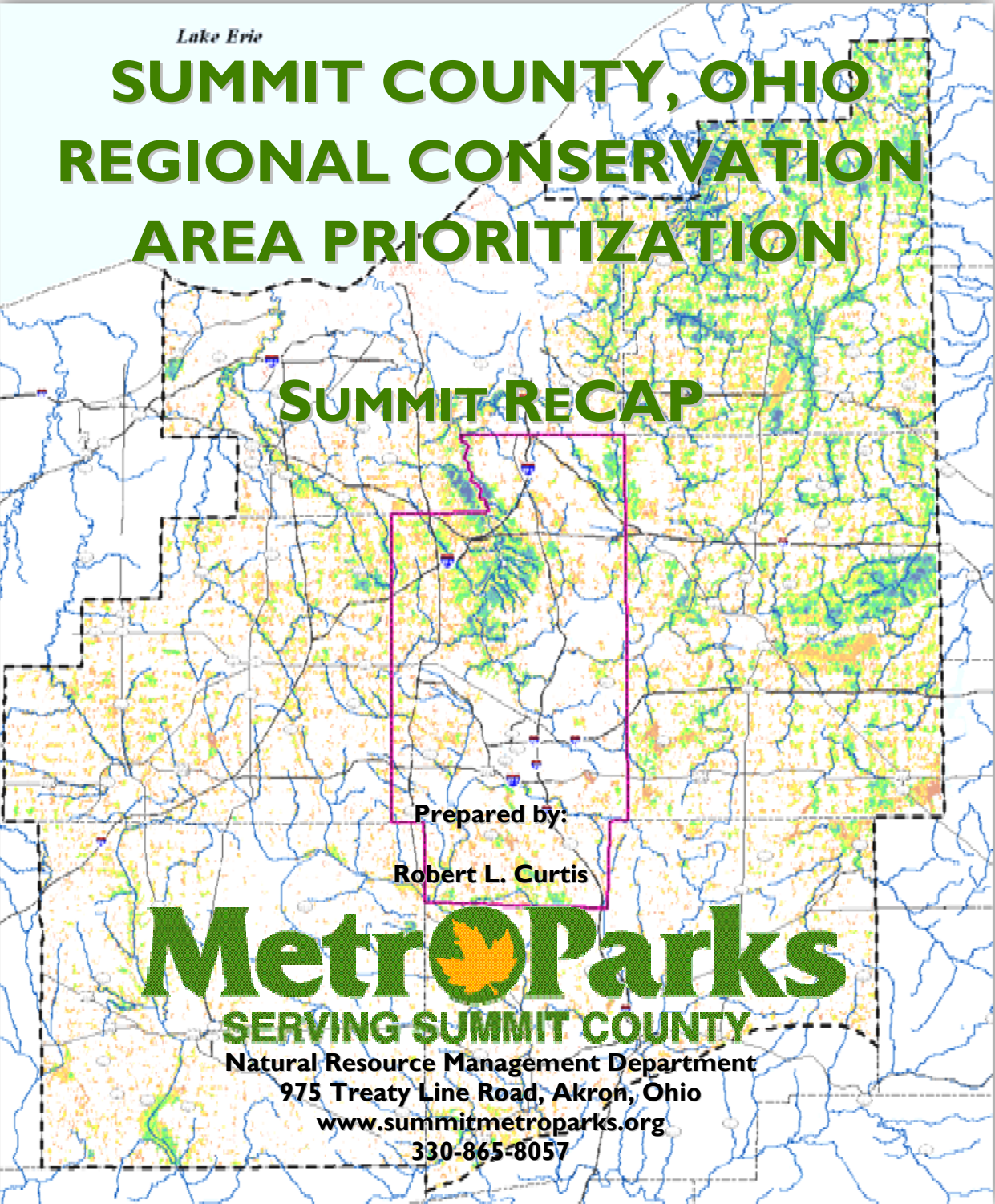


A map of Summit County, Ohio, with a green and yellow color-coded topographic overlay. The map shows the county's boundaries with a dashed line and includes major roads and water bodies. The text "Lake Erie" is visible in the upper left corner of the map area.

SUMMIT COUNTY, OHIO REGIONAL CONSERVATION AREA PRIORITIZATION

SUMMIT RECAP

Prepared by:

Robert L. Curtis

MetroParks

SERVING SUMMIT COUNTY

Natural Resource Management Department

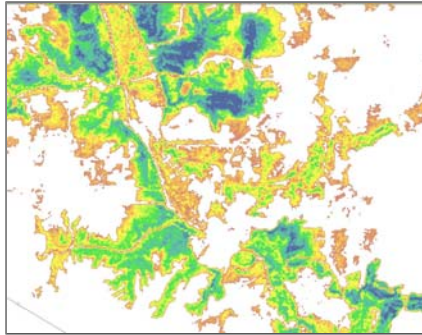
975 Treaty Line Road, Akron, Ohio

www.summitmetroparks.org

330-865-8057

FEBRUARY 2012

Summit County, Ohio Regional Conservation Area Prioritization (Summit ReCAP)



Tags

Summit, Medina, Cuyahoga, Geauga, Portage, Stark, Wayne, Ohio, county, park, district, conservation, region, plan, model, natural, area, resources, land cover, forest, interior, patch, corridor, watershed, aquatic, wetland, stream, pond, lake, buffer, floodplain, riparian, setback, migration, cave, ledge, rare, species, priority, curve, soil, muck, rock, outcrop, barren, bog, fen, slump

Summary

Summit ReCAP is a spatial model designed to rank the ecological value of land within and around Summit County, Ohio. This data can be utilized to prioritize natural area conservation. It is best displayed by excluding the lowest values (0-30), representing predominantly anthropogenic uses, to allow natural areas to have the highest possible resolution.

Description

Summit ReCAP is a spatial model designed to rank the ecological value of land within and around Summit County, Ohio. The 30m-resolution model developed in 2012 uses numerous spatial datasets created within the past decade. It is comprised of eleven individually developed metrics ranking a robust suite of natural resource components. Each metric was independently ground-truthed and calibrated using 700+ random floristic survey plots. Brief descriptions of each are given below and detailed information is provided in the Appendix.

Metric 1-Landcover Valuation (0-10 points, unweighted): Scores region according to *existing* landcover data, based on disturbance, regional significance and global ranking, respectively.

Metric 2a-Forest Quality (0-10 points, weighted x2): Scores region according to *existing* tree height data as a proxy for age; known to be highly correlated with floristic quality (internal data).

Metric 2b-NonForest Quality (0-10 points, unweighted): Scores region according to soil types, based on *potential* to support naturally occurring noforest habitats; often rare types such as barrens, bogs, rich fens, rock outcrops and slumps.

Metric 2c-Cave and Ledge Potential (0-10 points, unweighted): Scores region according to *potential* to harbor cave and ledge sites; habitats harboring our highest priority species, such as northern monkshood and Indiana bat, as well as numerous other rare species.

Metric 3a-Natural Area Size (0-10 points, unweighted): Scores region according to *existing* natural area patches, based on a species-area curve equation derived from literature sources and in-house data.

Metric 3b-Core Natural Areas Size (0-10 points, weighted x0.5): Rescores region according to *existing* CORE natural areas, based on the same species-area curve equation. This metric emphasizes core portions of Metric 3a.

Metric 4a-Forest Interior (0-10 points, unweighted): Scores region according to *existing* forest interior, based on distance from edge. This metric is complimentary to, and emphasized by, Migration Potential (Metric 4b).

Metric 4b-Migration Potential (0-10 points, unweighted): Scores region according to sensitive species migration potential through the *existing* landscape, based on perceived movement difficulty through various habitat types. This metric is complimentary to, and emphasizes, Forest Interior Valuation (Metric 4a).

Metric 5a-Watershed Prioritization (0-10 points, unweighted): Scores region according to *projected* watershed quality, based on supported stream biology derived from Ohio EPA Aquatic Life Use (ALU) designations.

Metric 5b-Aquatic Resources (0-10 points, unweighted): Scores region according to *projected* proximity (based on variable buffers) of aquatic resources, including wetlands, ponds, lakes and streams. Buffer widths vary based on resource size, disturbance, naturalness and quality.

Metric 6-Priority Species Concentration (0-10 points, unweighted): Scores region according to *existing* natural area patches based on summed priority and concentration of *existing* rare species occurrences. This metric accounts for higher potential occurrence on larger patches by utilizing the locally derived species-area curve. Although highly important, it has been left unweighted because, although it attempts to remove surveyor bias (relating to access and location) by distributing species record concentrations within entire contiguous natural areas, it cannot account for all bias without uniform survey effort. Final scores are derived from summing each weighted metric and are included in the data table.

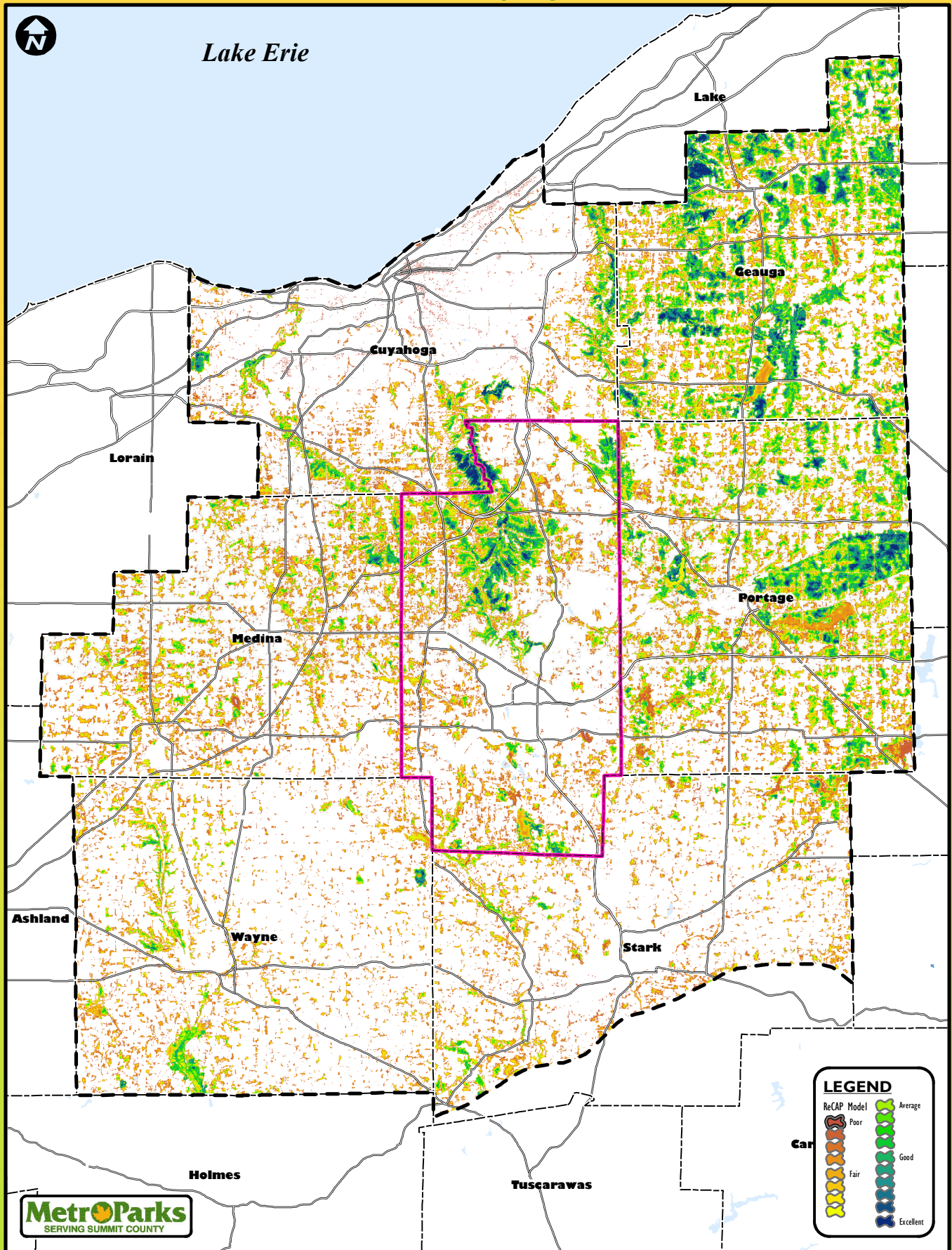
Credits

Metro Parks, Serving Summit County, with support from Western Reserve Land Conservancy, The University of Akron and Cleveland MetroParks.

Use limitations

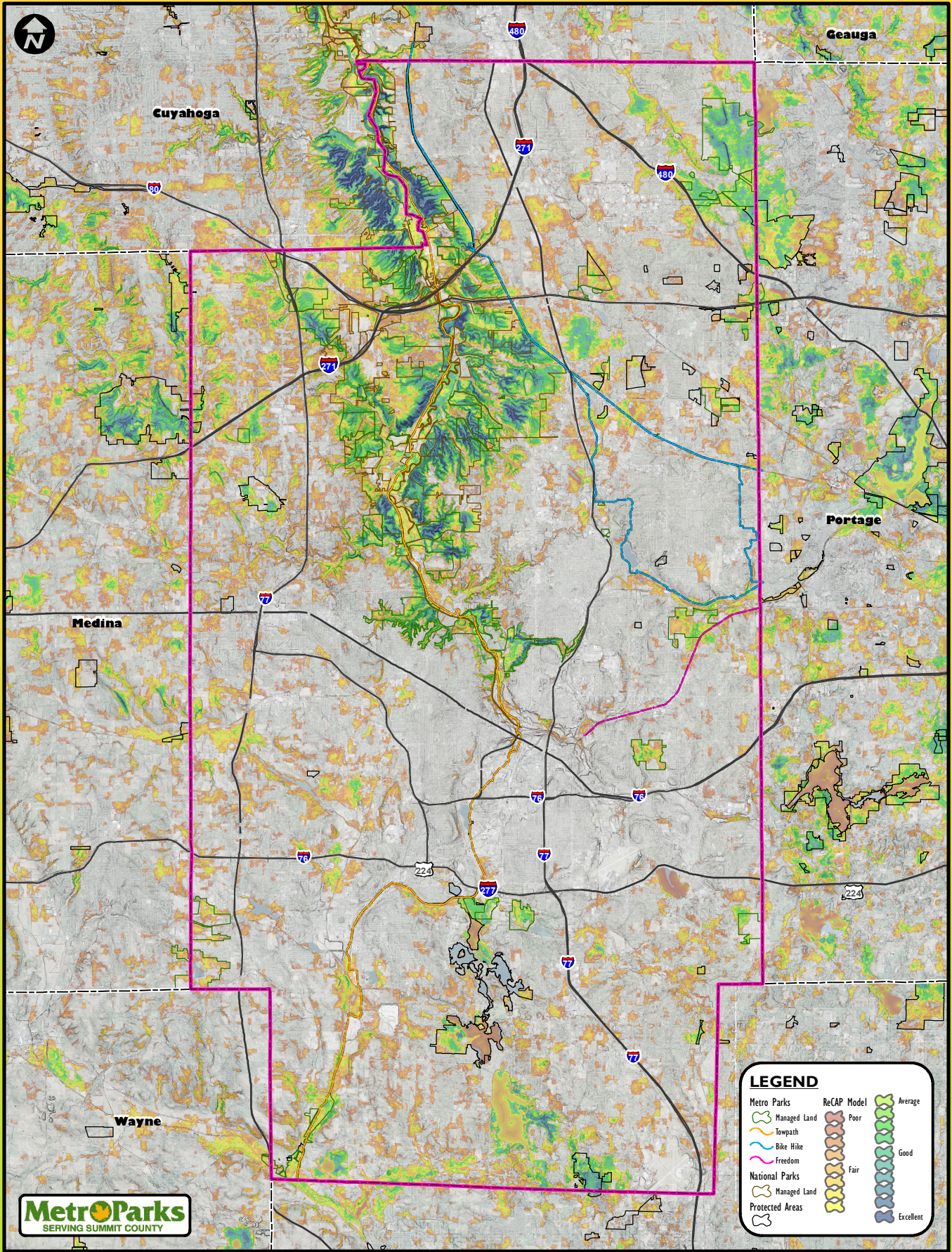
There are no access and use limitations for this item.

Summit ReCAP Seven-county Region



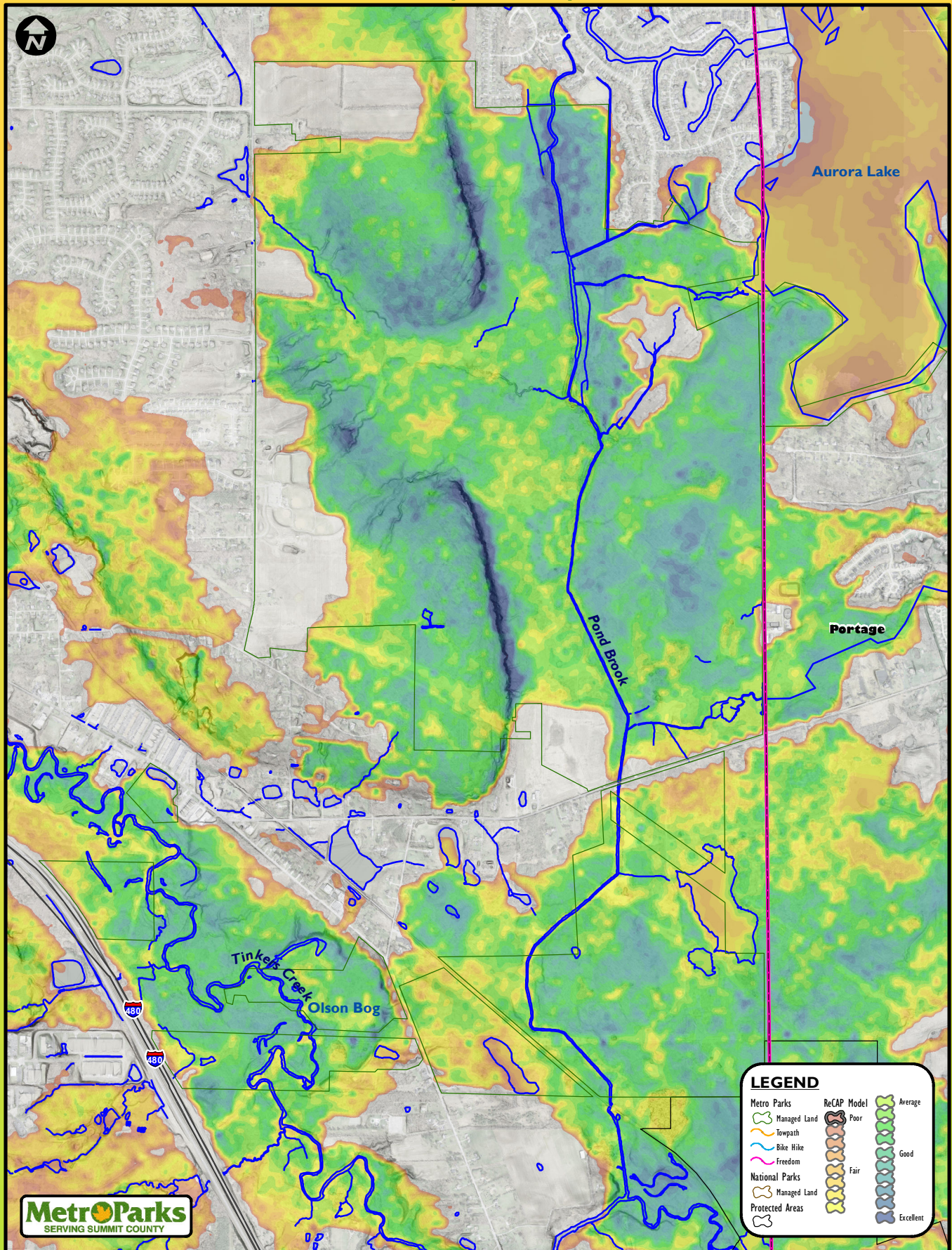
MetroParks
SERVING SUMMIT COUNTY

Summit County



Summit ReCAP

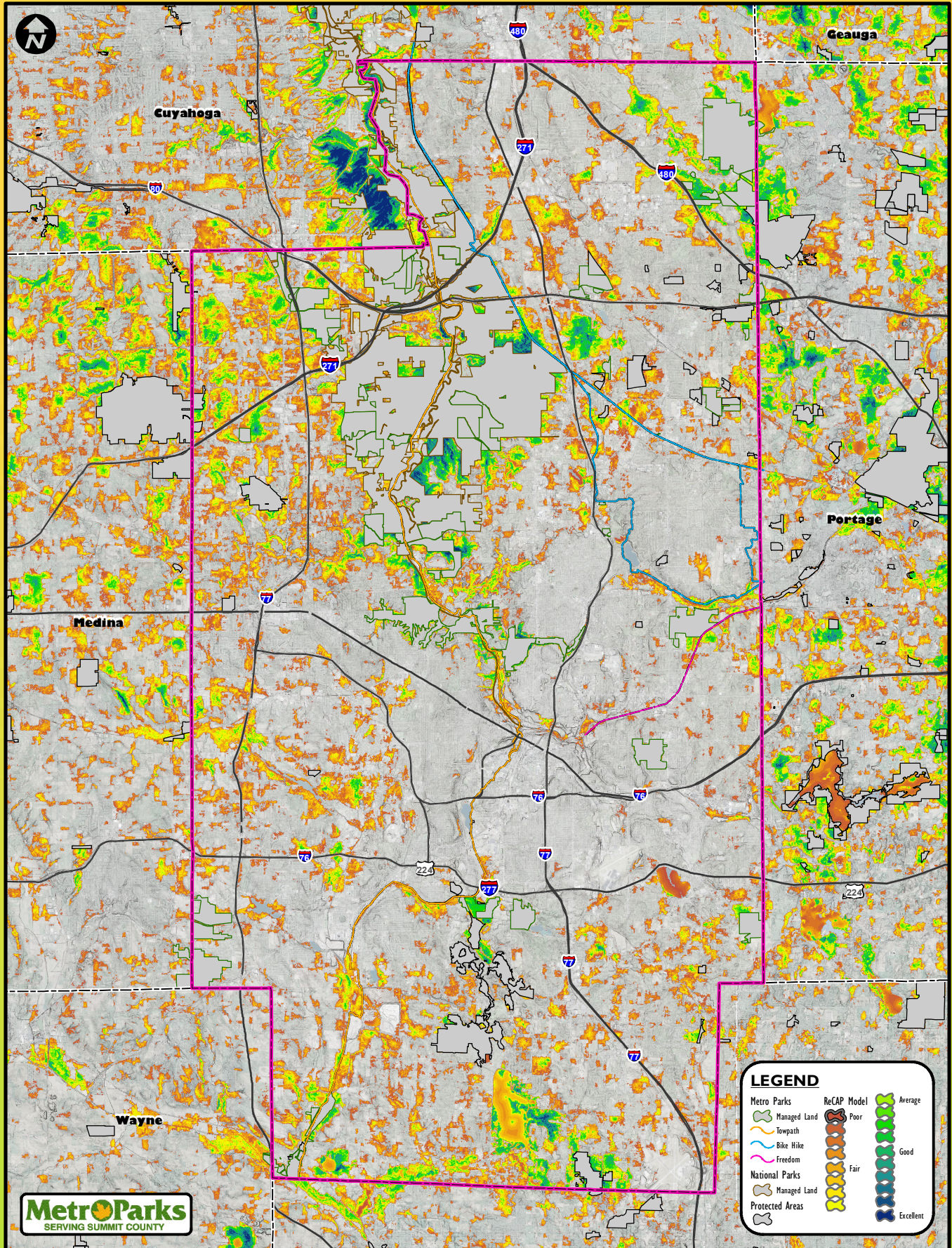
Local Example - Liberty Park



MetroParks
SERVING SUMMIT COUNTY

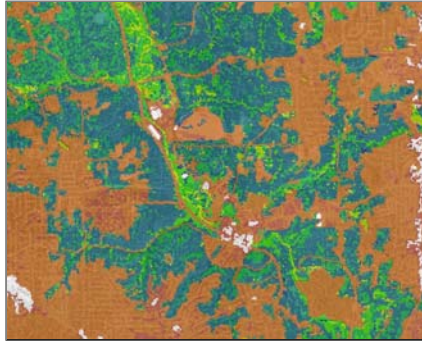
Summit ReCAP - Unprotected Resources

Summit County



APPENDIX

Landcover Valuation (ReCAP Metric 1)



Tags

landcover, land, cover, habitat, community, rank, regional, global, priority, significant, value

Summary

Scores landcover 0-10 according to regional significance.

Description

Scores high-resolution (30m) *existing* landcover (2001 data) 0-10 according to a priority scheme based on disturbance, regional significance and global rarity, respectively, as defined in the following table.

Land Cover	Points	Land Cover	Points
Developed-High	0	Barrens-Dunes	10
Developed-Medium	1	Barrens-Oak (Savannah)	10
Developed-Low	2	Herbaceous-Marsh	7
Developed-Open	2	Herbaceous-Marsh (Lacustrine)	8
Disturbed-Mines	2	Herbaceous-Wet Prairie	10
Disturbed-Other	2	Scrub/Shrub(Herbaceous)-Bog	10
Agriculture-High	1	Scrub/Shrub(Herbaceous)-Wetland	7
Agriculture-Low	2	Forest-Beech/Maple	9
Herbaceous-Ruderal (Plantation)	3	Forest-Flatwoods	5
Herbaceous-Ruderal (Old Field)	3	Forest-Floodplain	6
Herbaceous-Ruderal (Logged)	3	Forest-Hemlock(Pine)/Hardwood	8
Herbaceous-Ruderal (Wetland)	4	Forest-Mixed Mesophytic	7
Scrub/Shrub-Ruderal (Logged)	4	Forest-Mixed Swamp	7
Forest-Ruderal (Plantation)	4	Forest-Northern Hardwood	7
Forest-Ruderal	4	Forest-Oak	7
Open Water	5	Forest-Oak/Maple	7
Barrens-Calcareous (Alvar)	10	Forest-Pine/Oak	7

Credits

Metro Parks, Serving Summit County, using landcover data developed by NatureServe in 2009 (using 2001 LandSat data) for Cleveland MetroParks and Lake Erie Allegheny Partnership for Biodiversity (LEAP).

Use limitations

There are no access and use limitations for this item.

Forest Quality (ReCAP Metric 2a)



Tags

forest, canopy, tree, height, age, quality, LiDAR, value

Summary

Scores landscape 0-10 according to tree height, as a secondary proxy for habitat development.

Description

Landscape is scored 1-10 according to *existing* tree heights of 20-160 ft. Tree height is used as a proxy for forest age, a parameter known to be highly correlated with floristic quality in natural areas. Tree height was extracted from 2006 Ohio LiDAR at 10-ft resolution. Height was averaged within a 30m raster using cubic convolution resampling and score breakpoints were determined using standard deviations. Heights under 20 ft are scored 0. This metric works in tandem with other parts of Metric 2 (b & c) to identify and score all naturally occurring habitat types.

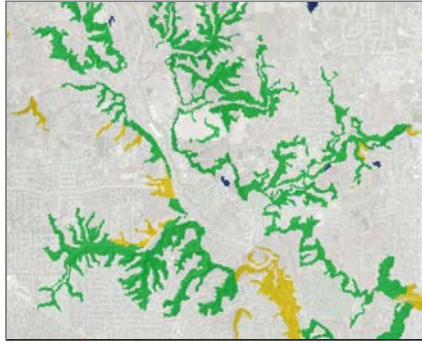
Credits

Cleveland MetroParks and Western Reserve Land Conservancy developed and produced canopy elevation data for the region based on 2006 Ohio LiDAR data. They graciously provided Metro Parks, Serving Summit County with relevant data for this analysis.

Use limitations

There are no access and use limitations for this item.

Nonforest Quality (ReCAP Metric 2b)



Tags

nonforest, rare, natural, areas, habitats, quality, soils, poor, hydric, muck, slump, peat, bog, rocky, stony, outcrop, ledge, cliff, fen, barren, slip

Summary

Scores soil types 0-8 according to potential to support natural noforest habitats, often rare types such as barrens, bogs, rich fens, rock outcrops and slumps.

Description

This region supports deciduous forests under normal circumstances. However, certain soil types are indicative of hydrogeomorphic conditions (ie saturated, dry, eroded, poor-nutrient, etc), which often support rare nonforest communities, such as bogs, fens, rock outcrops, slumps or barrens. These soils were selected and scored 0-10, as defined in the table below, according to their *potential* of supporting rare nonforest systems. This metric works in tandem with other parts of Metric 2 (a & c) to identify and score all naturally occurring habitat types.

Type	Score
shallow bedrock	2
rocky	5
eroded	5
muck/peat	8

Credits

Metro Parks, Serving Summit County, utilizing Natural Resource Conservation Service SSURGO data.

Use limitations

There are no access and use limitations for this item.

Cave and Ledge Potential (ReCAP Metric 2c)



Tags

cave, ledge, overhang, rock, shelter, outcrop, slope, gradient, bedrock, soil, glacial, geology, model, value, potential

Summary

Scores landscape 0-10 according to potential to harbor caves and ledges.

Description

Cave and ledge habitats harbor our highest priority species, northern monkshood and Indiana bat, as well as numerous other rare species. An independently developed multi-metric model, calibrated to known cave habitats, was created specifically for this purpose. The best data from this model was used to score the landscape 0-10 according to *potential* to harbor caves and ledges. This metric works in tandem with other parts of Metric 2 (a & b) to identify and score all naturally occurring habitat types.

Credits

The University of Akron, with support from Metro Parks, Serving Summit County.

Use limitations

There are no access and use limitations for this item.

Natural Area Size (ReCAP Metric 3a)



Tags

natural, area, patch, size, species, area, relationship, curve, equation

Summary

Scores natural areas 1-10 according to size.

Description

Natural area size is very important for larger mammals and overall species viability. This metric scores *existing* natural area patches 1-10 according to a species-area curve equation derived from literature sources and in-house data. The equation defines the general logarithmic relationship between potential species occurrence and patch size, increasing dramatically at first and slowing toward a maximum approaching 30,000 acres. Anthropomorphic land uses receive a score of 0. This and the subsequent metric (3b) work in tandem to prioritize large core habitat patches.

Credits

Metro Parks, Serving Summit County, with landcover data from NatureServe.

Use limitations

There are no access and use limitations for this item.

Core Natural Area Size (ReCAP Metric 3b)



Tags

core, natural, areas, patch, species, area, curve, buffer, interior, wide, corridor, connect

Summary

Scores core natural areas 1-10 according to size.

Description

This metric emphasizes the *existing* core regions of natural areas (defined as natural areas with minimum buffers of 300m) by rescoring them 0-10 according to the species-area curve equation derived from literature sources and in-house data. The equation defines the general logarithmic relationship between potential species occurrence and patch size, increasing dramatically at first and slowing toward a maximum approaching 30,000 acres. Anthropomorphic land uses receive a score of 0. This and the previous metric (3a) work in tandem to prioritize large core habitat patches.

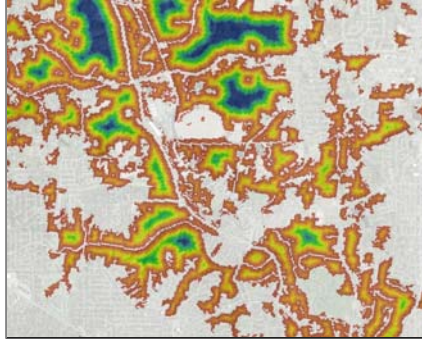
Credits

Metro Parks, Serving Summit County, with landcover data from NatureServe.

Use limitations

There are no access and use limitations for this item.

Forest Interior (ReCAP Metric 4a)



Tags

forest, interior, edge, species, wildlife

Summary

Scores forests 1-10 according to distance from open edges.

Description

Forests are the foundational habitat type of our region and support a number of native species which require large unbroken tracts. This metric scores *existing* forest 0-10 according to 0-300m distances from openings, thereby prioritizing interior habitat. Nonforest areas receive a score of 0. This metric functions in tandem with the subsequent migration potential metric (4b) to score the entire landscape 0-20 according to how hospitable it is for sensitive species.

Credits

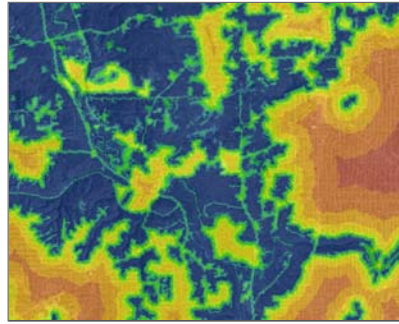
Metro Parks, Serving Summit County, with landcover data from NatureServe.

Use limitations

There are no access and use limitations for this item.

Migration Potential (ReCAP Metric 4b)

File Geodatabase Raster Dataset



Tags

forest, edge, species, wildlife, plant, migration, immigration, emmigration, disperse, travel, movement, potential, link, corridor, route, path landcover

Summary

Scores the landscape 0-10 according to the migration potential of sensitive species.

Description

Scores the *existing* landscape 0-10 according to the potential for migration of sensitive species (such as amphibians, reptiles and small mammals) by ranking perceived movement (meters) difficulty from forests through various habitat types. The following table depicts the projected multiplication cost of travel. The final scoring breakdown used quantile statistics to rank costs of <132 to >3712 scores of 9-0, respectively. Forests scored 10. This metric functions in tandem with the previous forest interior metric (4a) to score the entire landscape 0-20 according to how hospitable it is for sensitive species.

Type	Cost
natural areas	1
managed forest	2
managed shrub	3
old field	4
developed (low density)	5
agriculture (low intensity)	5
open water	6
agriculture (high intensity)	6
disturbed	6
developed (medium density)	8
developed (high density)	10

Credits

Metro Parks, Serving Summit County, with landcover data from NatureServe.

Use limitations

There are no access and use limitations for this item.

Watershed Prioritization (ReCAP Metric 5a)



Tags

watershed, catchment, priority, stream, river, quality, biology, biocriteria, aquatic, life, use, designation, ALU

Summary

Scores watersheds 0-10 according to quality of supported streams.

Description

Projects watershed score of 0-10 according to the quality of supported stream biology, based on Ohio EPA Aquatic Life Use (ALU) designations, as defined in the following table. This metric works in tandem with the subsequent aquatic resource metric (5b) to prioritize the landscape supporting and adjacent to high-quality aquatic resources.

Aquatic Life Use (ALU) Designation	Score
Cold Water Habitat (CWH)	10
Exceptional Warmwater/Coldwater Habitat (EWH/CWH)	9
Exceptional Warmwater Habitat (EWH)	8
Warmwater Habitat (WWH)	5
Modified Warmwater Habitat (MWH)	2
Limited Warmwater Habitat (LWH) & Limited Resource Water (LRW)	0

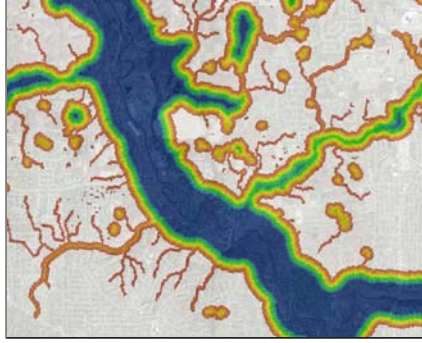
Credits

Metro Parks, Serving Summit County, with NHDPlus watershed data and Ohio EPA stream designation data.

Use limitations

There are no access and use limitations for this item.

Aquatic Resources (ReCAP Metric 5b)



Tags

aquatic, stream, wetland, lakes, buffer, drainage area, quality, value

Summary

Scores buffered aquatic resources, including wetlands, ponds, lakes and streams, 0-10 according to distance from edge. Buffers around aquatic resources vary in width depending on resource size, disturbance, naturalness and quality.

Description

Variable-width stream buffers based on drainage area (30-800m using OSU Extension's locally derived regional setback curve), wetland buffers based on quality (0-300m using LDI Index), and pond and lake buffers based on size and naturalness (3-300m, 1000m for Lake Erie), were independently generated and merged. *Projected* scores of 0-10 were assigned based on a 0-300 m distance from buffer margins.

Functionally, this allows high-quality, broad (>300-m wide) wetlands, natural lakes, and streams having large drainage areas (>215 sq km) to contain high interior scores, and poorly buffered, narrow wetlands and smaller streams to have lower scores. This metric works in tandem with the previous watershed metric (5a) to prioritize the landscape supporting and adjacent to high-quality aquatic resources.

Credits

Metro Parks, Serving Summit County, with NHDPlus Stream Data (USGS 2011) and NWI wetlands data (USFWS 2009). Western Reserve Land Conservancy (WRLC) performed a modified LDI Index on all NWI wetlands as a proxy for quality, and provided the data for our use here.

Use limitations

There are no access and use limitations for this item.

Priority Species Concentration (ReCAP Metric 6)

File Geodatabase Raster Dataset



Tags

rare, priority, species, concentration, habitat, patch, area, curve

Summary

Scores natural area patches 0-10 according to summed rare species priority and concentration.

Description

Rare species are an extremely important, yet notoriously difficult group to handle, without significant bias. Obvious bias takes two primary forms: 1) non uniform survey effort due to access limitations, proximity, etc; and 2) surveyor expertise. Another major hurdle to overcome is that many species are listed for reasons other than conservation priority. This is most notable with species whose rarity in a given political region is due to natural distribution, not imperilment.

This metric attempts to account for all of these factors by scoring entire *existing* natural area patches 0-10 according to summed rare species priority (see table below). It also accounts for expected higher occurrence potential on larger patches by utilizing a natural species-area curve equation derived from literature sources and in-house data. The equation defines the general logarithmic relationship between potential species occurrence and patch size; increasing dramatically at first and slowing toward a maximum approaching 30,000 acres.

Jurisdiction Status			Priority Jurisdiction Status		Priority
State	Assemblages	0.5	Global	G3/G4	4.5
State	Communities	0.5	State	Endangered	5
State	Noteworthy	1	State	Extirpated	5
Global	G4/G5	1	Federal	Threatened	8
State	Special Interest	2	Global	G3	8
State	Potentially Threatened	3	Federal	Endangered	9
State	Species of Concern	3	Global	G2	9
State	Threatened	4	Global	G1	10

Credits

Metro Parks, Serving Summit County, with heritage data from Ohio DNR and landcover data from NatureServe.

Use limitations

There are no access and use limitations for this item.