NATURAL RESOURCES INVENTORY

Land Cover Change 2007-22

The purpose of a Natural Resources Inventory (NRI) is to identify areas of local and regional importance including land cover, water, and vegetation resources. Visualizing natural resources are can provide a strong foundation for informed land-use planning and decision-making. NRIs can also serve as the basis for identifying conservation priorities and strategies such as zoning updates or open space protection and help city planners and land managers:

- See how the landscape has changed since the last NRI, which was from data captured in 2007
- Prioritize the protection or enhancement of natural areas and the resources they protect
- Learn how our land use choices affect our natural resources

The 2022 NRI study area covers about 230 square miles, including the City's 68 square miles and nearby regions. This is a remotely sensed project that used aerial photography to create an ArcGIS® Geographic Information Systems (GIS) database of the natural resources in Columbia. To provide a detailed and accurate map of current land cover, 2022 aerial leaf-on imagery at a 60 cm resolution from the US Department of Agriculture National Agriculture Imagery Program (NAIP) was used to classify land cover.

The 2022 NRI map data are available on the City website at https://www.como.gov/nri.

LAND COVER CLASS	ACRES IN CITY	% COVER OF CITY	% CHANGE SINCE 2007
Tree Canopy	14,481	33%	- 7%
Shrub	1,275	3%	N/A
Impervious	10,999	25%	+ 28%
Grass	13,206	30%	-12%
Cropland	1,663	4%	+ 14%
Bare Ground	1,001	2.3%	- 50%
Open Water	732	1.7%	1 %

FOREST COVER & SHRUB

The 2022 NRI documents 14,481 acres of forest within the city, for about 33% tree canopy cover. Most of that canopy cover (10,693 ac) is on private land. The 2007 NRI did not include a Shrub category, but in the 2007 classifications of areas that became Shrub in 2022, we note that most of the shrub category (66%) was classed as Grassland in 2007, and about a quarter of it was classified as Tree Canopy. The rest of the 2022 shrub class fell into the other 2007 classifications.

FOREST CATEGORIES	ACRES IN CITY
Broadleaf	14,432
Coniferous	1,326
Mature Forest	8,632
Mid succession	2,798
Early succession	1,550
Shrub	1,275

GRASSLANDS & CROPLAND

Grasslands and Cropland were the land cover categories that changed the most from 2007 to 2022, with croplands expanding by 4,715 acres and grasslands shrinking by 8,561 acres in the larger NRI study area. This result reflects both land use change and the difficulty in classification and distinguishing between these two land uses.

WATERWAYS & WETLANDS

In terms of land use classifications, there has been little change to the extent of open water since 2007, gaining eight acres in the city and losing 221 acres in the wider study area. In contrast, the condition of Columbia's waterways is very dynamic, changing due to more intense rainfall events, urbanization, and stormwater management policy.

IMPERVIOUS SURFACE & BARE GROUND

Columbia added 2,374 acres of impervious surfaces within the city limits since the 2007 NRI. In the lands annexed since 2007, impervious surfaces jumped from 176 to 536 acres, for a 148% change. It is worth noting that bare ground declined by 1000 acres across the city since 2007, suggesting that much of the added impervious surface was already cleared for development 15 years ago.

ECOLOGICAL MANAGEMENT PRINCIPLES

Managing natural resources and the ecosystem services they provide depends on science-driven principles. Natural resource planning supported by robust data such as this land cover analysis can help communities prioritize and understand how to Protect Biodiversity & Special Features, Enhance Habitat Connectivity, Mitigate Threats to Ecological Health, Manage and Restore Water Resources, and Support Resilience.

Forum Nature Area. Photo: D. Fox