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Applying Asset Management Principles to Urban Natural Areas in Portland

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Applying Asset Management Principles to Urban Natural Areas in Portland

Portland, Oregon's Parks & Recreation Bureau has developed a protocol to assess our managed natural areas using an asset management framework. We utilized traditional asset management best practices to create a rapid, actionable protocol that also establishes parity between natural asset assessments and our existing inventory of built asset assessments, such as playgrounds, bridges, and trails. The results of these natural area assessments will help inform resource allocation, planning for future fiscal needs, and prioritization of on-the-ground interventions.

Keywords

urban forested natural areas, practitioner notes, urban forests, urban ecology, assessment

CONTEXT

Portland Parks & Recreation manages over 8,000 acres of land, mostly in a natural state for ecosystem benefits and passive recreation. Portland City Council has directed all bureaus to manage built, natural, and green assets using asset management principles. At its core, asset management is the process of determining the value of assets by evaluating their current condition, calculating costs for improving the condition, and planning business strategies for mitigating risk and forecasting staffing and financial resource needs. A more in-depth explanation of asset management has been published by the Institute of Asset Management on their website, and more about Natural Asset Management has been published as a National Standard of Canada.

This new methodology was developed because we do not have a protocol for assessing urban natural areas through an asset management lens. This assessment works to evaluate the condition of a natural area as a measure of the human health and ecosystem services being provided by the site. Natural areas with more intact and functioning ecosystems offer greater value to the City of Portland and the community. Those areas that have significant degradation provide less in terms of human health and ecosystem services. More significantly degraded sites require greater resources to improve the condition and restore the desired level of service provided.

These urban natural areas continue to face various stressors that impact their condition. In recent years, increases in unsanctioned camping and new invasive plants and pests have had significant impacts. Climate change compounds these impacts. To protect and improve the condition of these natural areas, a current assessment of condition is needed. Additionally, there is a need for ongoing condition assessments to determine the impacts of interventions and demonstrate the results of resource inputs.

GOAL

The focus of this work is to assess the condition and ecological function of Portland Parks & Recreation managed natural areas. After applying the methodology, the outcome will be a 1–5 Natural Area Condition Score for each park or naturally managed portion of a park. The assessments will be completed on a five-year assessment cycle to provide current data and to document changes at sites and across our parks system over time.

These condition scores will be used for the yearly report on the condition and financial needs of assets across the Parks & Recreation Bureau. They are also incorporated in a Parks asset condition report. These scores will also be provided to the newly created citywide asset management group to be used when reporting on the City of Portland's assets.

An Environmental Systems Research Institute (ESRI) dashboard has been created which allows for staff to examine the results in an interactive map with an interface that displays summary data. The dashboard allows staff to use custom filters to display results in various ways for individual metrics, asset classes, sites, and/or data collection plots. Results for each of these features can also be seen by clicking on the map.

APPROACH

While there isn't an existing protocol that can be readily applied to Portland's natural areas, there are some existing protocols which were modified and expanded to meet our needs. Some of the protocols utilized in the development of the Natural Area Assessments including the Modified Terrestrial Ecology Enhancement Strategy (TEES) Assessment developed by City of Portland Staff, an assessment standard from the Institute of Public Works Engineering Australasia, and the National Standard of Canada: *Specifications for natural assert inventories*. Many elements come from the Washington Department of Natural Resources Ecological Integrity Assessment.

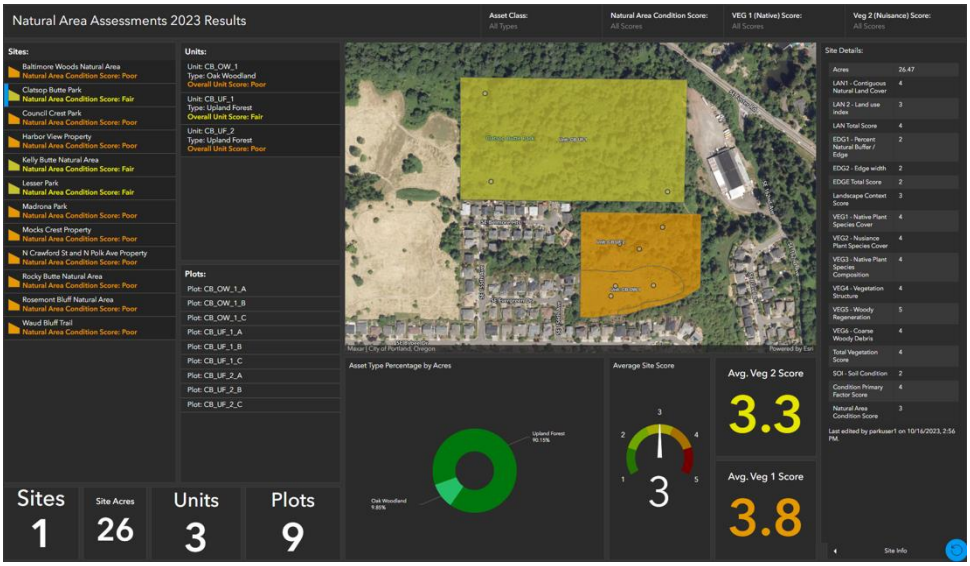
At all stages of this project, we worked in conjunction with various Parks staff to develop and refine this protocol. Asset management staff were vital in aligning these protocols with traditional asset management practices used for built asset assessments. Parks ecologist and other city nature management helped determine and refine the site and assessment unit boundaries. As the staff directly managing these sites, their experience and institutional knowledge were used to accurately determine boundaries. We also capitalized on their familiarity with the sites as they reviewed and suggested edits for the rating guides and metrics.

The assessment takes a two-tiered approach using on-site evaluations and Geographic Information Systems (GIS)–based metrics. GIS-based metrics were coded and automated using regularly updated data sets of land cover type, impervious surface, and tree canopy to evaluate the connectivity of sites and the intensity of adjacent developed areas. We used three classes of development intensity for these evaluations. The first class includes tree canopy and natural areas managed by Parks and other organizations. The second class is intensely developed landscape,

which consists of public and private lawn areas, including sport fields. The third class is all impervious surfaces including buildings, parking lots, roads, and railroad rights of way.

Sites are divided into Assessment Units and assigned an Asset Class based on existing vegetation and/or proximity to waterways and wetland features. These Assessment Units can range in size depending on the characteristics of the site, from a two-acre minimum. Some Assessment Units cover an entire site when the vegetation is of the same Ecological System and there are no hydrological or road features present within the site boundary.

Randomly located vegetation plots are used to evaluate native and nuisance plant cover and additional metrics where applicable based on the Asset Class. The scores for on-site metrics are consolidated at both the Assessment Unit and site levels which provides the ability to review condition at various magnitudes. The final Natural Area Condition Score for each site is determined by combining the GIS-based metrics with on-site metrics.



A screenshot of the Natural Areas Results Dashboard

RESOURCES

This work and new natural asset assessment position are funded through the 2020 Parks Local Option Levy. This five-year levy was approved by voters to bridge an operational funding gap. The Natural Area Assessment work is the next step in understanding the condition of our natural assets and therefore our funding and human resource needs into the future. Asset condition will be used to justify expenditures and ensure that interventions are having the intended impacts.

KEY RESULTS

- A completed and up-to-date inventory and map of Parks' owned and managed natural areas sites with detailed vegetation community data. The result allows for an accurate understanding of management and ownership responsibilities.

- A condition rating for each natural area in the system, and each Assessment Unit within those sits. A score of 1—Very Good would indicate there are no signs of deterioration and that the asset is providing a high level of services. 5—Very Poor would result if there are widespread signs of deterioration and the asset isn't providing any functional service. These scores allow for managers to focus interventions, plan for future resource needs, and demonstrate the impacts of past efforts.

- A map of the ecological systems and vegetation communities within the natural areas. This allows for Parks to better determine the risks and impacts of specific invasive species (e.g., emerald ash borer *Agrilus planipennis*) and global climate change.

- An interactive dashboard of the results to show internal and external stakeholders the condition of our natural areas and how their condition is changing over time.

- City managers will use these future requests for funding such as bond measures and levies. They will be able to demonstrate the gap between the current asset condition and where the condition should be to maximize the cost vs benefits and reduce risk. Managers will also be able to illustrate areas of success, and of greater need, as more assessment cycles are completed.

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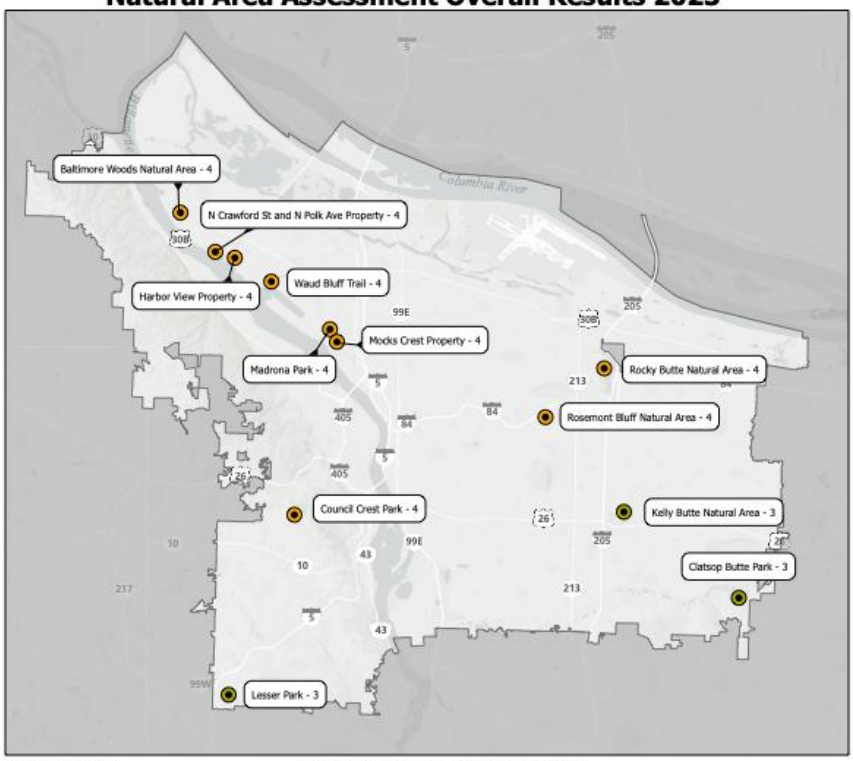
Natural Area Assessment Overall Results 2023



Site Name	Natural Area Condition Score
Baltimore Woods Natural Area	4
Clatsop Butte Park	3
Council Crest Park	4
Harbor View Property	4
Kelly Butte Natural Area	3
Lesser Park	3
Madrona Park	4
Mocks Crest Property	4
N Crawford St and N Polk Ave Property	4
Rocky Butte Natural Area	4
Rosemont Bluff Natural Area	4
Waud Bluff Trail	4

Condition Score

- 1 - Very Good
- 2 - Good
- 3 - Fair
- 4 - Poor
- 5 - Very Poor

Natural Area Condition Score - Scores from Vegetation, Soil, and GIS-based metrics from each of the units are combined to result in a single sitewide score.