

Natural Resources



City of Portland Bureau of
Planning and Sustainability
 Sam Adams, Mayor | Susan Anderson, Director

Portland’s wealth of waterways, woodlands, prairies, forests and fertile soils are natural resources that have supported people (not to mention fish and other animals) for thousands of years. We know, however, that time and change constantly present new challenges. Portland has established many regulatory tools to keep our natural resources healthy and safe.

Even today in Portland, when we have diverted so many streams to underground pipes and covered so much earth with pavement and buildings, we still depend on healthy natural resources to provide important basic functions. Cleaning our air and water, managing stormwater, preventing erosion, and maintaining flood storage capacity are all enhanced by having a thriving riparian environment - that is, vegetated land along our rivers and streams.

Aside from large city-managed natural areas such as Forest Park, most of the remaining natural resources in Portland consist of rivers, streams, wetlands and associated vegetated corridors, and areas containing or providing vital functions to at-risk plant and animal species. Most other areas are largely developed.

A first step in protecting riparian natural resources has been to know what resources we have, and how healthy they are now. The City’s natural resource inventory (NRI) documents the location, extent and condition of Portland’s riparian corridors and wildlife habitat.

The City’s recent update to the NRI serves as the Portland Plan Natural Resources Background Report giving us the latest on the resources we have today in Portland. The report is particularly useful as a companion to the background reports on two especially related topics, Watershed Health and Urban Forestry.

The new natural resource inventory includes:

- **GIS data** for rivers, streams and drainageways, flood areas, wetlands, vegetation, topography, and special habitat areas;
- **science-based models** to assess the functions and values of the natural resources features; and
- **maps.**

The project methodology builds on the approach the Metro regional government used to develop a prior regional inventory of riparian corridors and wildlife habitat as part of state requirements. The relative quality of the natural resources is evaluated for specific ecological functions relating to watershed hydrology, water quality, and fish and wildlife habitat.

The Natural Resource Inventory identifies natural resource features and scores them based on the watershed functions they perform. The individual natural resource features are ranked relative to each other for overall relative riparian corridor and wildlife habitat quality. Combined relative rankings are also prepared, where riparian and wildlife habitat resources areas overlap. Special Habitat Areas receive a high relative combined rank.

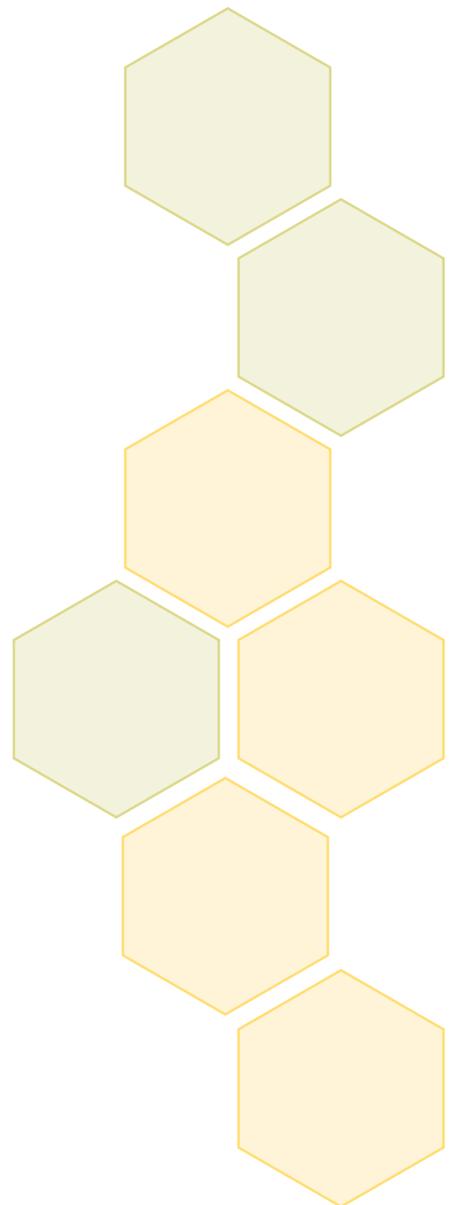
What is a riparian corridor?

“Riparian” refers to land adjacent to a river or stream, and the unique community of plants and wildlife living in that water-oriented environment. Thus riparian corridors are comprised of rivers and streams, riparian vegetation, and off-channel areas including wetlands, side channels, and floodplains. Riparian corridors also include transition areas between stream banks and upland areas. A riparian corridor usually contains a complex mix of trees or woody vegetation, shrubs and herbaceous plants.

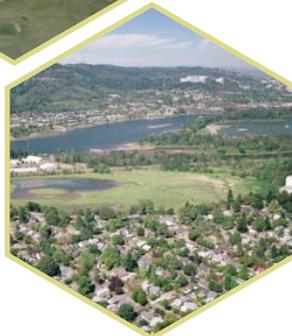
What does a riparian corridor do?

Healthy, intact riparian corridors provide many critical watershed functions that help our environment stay in balance. These functions include those summarized below.

- **Open water bodies, wetlands, and surrounding trees and woody vegetation** are associated with localized air cooling and increased humidity. (i.e., watershed function: microclimate and shade.)
- **Trees, vegetation, roots and leaf litter** intercept precipitation; hold soils, banks and steep slopes in place; slow surface water runoff; take up nutrients; and filter sediments and pollutants found in surface water. (i.e., watershed function: bank function and control of sediments, nutrients and pollutants.)
- **Waterways and floodplains** provide for conveyance and storage of streamflows and floodwaters; trees and vegetation intercept precipitation and promote infiltration which tempers streamflow fluctuations or “flashiness” that often occurs in urban watersheds. (i.e., watershed function: stream flow moderation and flood storage.)
- **Streams, riparian wetlands, floodplains and large trees and woody vegetation** contribute to the natural changes in location and configuration of stream channels over time. (i.e., watershed function: large wood and channel dynamics.)
- **Water bodies, wetlands and nearby vegetation** provide food for aquatic species (e.g., plants, leaves, twigs, insects) and are part of an ongoing chemical, physical and biological nutrient cycling system. (i.e., watershed function: organic inputs, food web and nutrient cycling.)
- **Vegetated corridors along waterways, and between waterways and uplands**, allow wildlife to migrate and disperse among different habitat areas, and provide access to water. (i.e., watershed function: wildlife movement/corridors.)



What does the Natural Resource Inventory tell us?



Significant Natural Resources Make Up One-Third of the City. The Natural Resource Inventory paints an interesting picture of Portland. Woven into the urban fabric of the city is a wealth of natural resources that provide critical watershed functions. In all, the Natural Resource Inventory identifies almost 25,500 acres of riparian corridor and upland resources. The inventory identifies an additional 5,540 acres representing the portions of the Willamette and Columbia rivers within the city. Citywide, about two-thirds of the inventoried natural resources receive a high combined relative rank, and about one-third of the resources receive a medium or low rank.

Portland's contains approximately 242 river and stream miles, about 2,450 wetland acres, and roughly 19,515 acres of forest and woodland areas one acre or larger, according to inventory results. Vegetated riparian corridors provide streamflow conveyance and flood storage, bank stabilization and erosion control, filtering and capture of pollutants, microclimate, shade, large wood and organic inputs to Portland's waterways and wetlands. Even non-vegetated riparian corridors provide hydrologic functions that are important to watershed health, such as providing storage for floodwaters.

As a City on the confluence of two major rivers, the Columbia and Willamette, Portland's watersheds are home to a myriad of native plant and wildlife species, including species that state and federal agencies have designated as sensitive or threatened. Portland connects to habitat systems extending east-west along the Columbia River from the Sandy River to downstream portions of the Columbia River estuary, and north-south from Ridgefield Wildlife Refuge in Washington to southern parts of the Willamette Basin. In the city, Portland's riparian corridors provide critical wildlife habitat, access to water, and movement corridors. Upland habitat areas provide food, cover, breeding and nesting areas for a multitude of avian, terrestrial and amphibian species.

Many habitat areas in Portland are vital to plant and animal species that have been designated by state and federal agencies to be at risk, a number of which are state-listed as "sensitive" species and some of which have been listed under the federal Endangered Species Act. Portland's wetlands, mudflats, buttes, and riparian corridors provide important stopover habitat for migratory birds that travel annually along the Pacific Flyway between Canada and portions of Central and South America.

More key findings are....

Natural Resources are unevenly distributed and affected by urbanization. Though in some respects Portland is “resource rich,” those resources aren’t necessarily distributed equitably.

Most of the inventoried natural resources are concentrated in several large areas listed below.

- Forest Park
- Tryon Creek State Park
- Smith and Bybee Wetlands
- Headwater areas of Tryon, Fanno, and Balch Creek watersheds
- Along the sloughs and wetlands of the Columbia Corridor
- Along streams in the Johnson Creek watershed
- Upland east side buttes

Functioning wetlands, riparian corridors, and remnant upland native oak habitat areas are interspersed through the Willamette River corridor.

Few grassland habitats remain in the city. However, Powell Butte, the St. Johns Landfill, and several large grassy areas in the Columbia Corridor provide functions that mimic native grasslands and are currently used by native grassland-associated species. Ross Island and West Hayden Island also provide unique island habitats in the Willamette and Columbia rivers, respectively.





Many parts of Portland are mainly devoid of the larger forested or vegetated resource areas, wetlands, and stream corridors featured in the Natural Resource Inventory. Large industrial and commercial areas along the Willamette Corridor, and in the Columbia Corridor, downtown Portland, and throughout much of the central-east portions of the city area densely developed. Parks and street trees provide important watershed functions the downtown and many developed neighborhoods, however, anchor habitats and surface streams have been largely eliminated.

Most of the resources identified in the inventory are degraded, at least somewhat, by the effects of urbanization, including removal of vegetation and reduced and fragmented of habitat patches and corridors, industrial contamination, stream channel down-cutting due to increased stormwater runoff rates, and infestation of invasive plants and animal species. Only about half of the riparian area within 100 feet of Portland’s rivers and streams are contain forest type tree canopy. Still, the resources that remain continue to provide critical watershed functions and benefits.

The variability in the distribution of inventoried natural resources is shown on the next page by watershed. Note; Watershed sizes should be kept in mind when comparing these resource distributions.)

Are Portland’s natural resources at risk?

The updated Natural Resource Inventory information can be used to assess the extent to which important natural resources are protected from future encroachment. For example, about 10 percent or more than 20 miles of open waterways and more than 100 acres of wetland in Portland are located outside Portland’s environmental or other resource overlay zones (Pleasant Valley and certain greenway overlays). Overall, about one-third of the total inventoried natural resources outside of the major river channels have no regulatory protections. Most of the high-ranked resources and about half of the medium-ranked resources are within existing resource overlay zones. Less than 20 percent of the low-ranked resource areas are within existing resource overlay zones.

Inventory data can be combined with development data to assess trends and identify where potential conflicts and management priorities exist.

How will the inventory be used?

Area-specific planning and program updates.

The new inventory will update and supplement existing natural resource inventories and inform updates of natural resource protection programs that the City established between 1987 and 2002. The program updates will occur through area-specific projects such as the River Plan for the Willamette Corridor, the Airport Futures project and plans for East and West Hayden Island. During the course of such projects the citywide inventory is further refined for the specific area. The inventory is then used to inform policy and program decision-making efforts, including which areas should be developed and which areas should be protected through updates of the City’s existing natural resource overlay zone maps and regulations.

The inventory can also highlight where watershed conditions could potentially be improved through redevelopment and restoration.

Regulatory Compliance

These program updates will help the City meet its watershed health goals and regulatory obligations including the Clean Water Act and Endangered Species Act. The new inventory information will also inform City strategies to comply with Metro Title 13 Nature in Neighborhoods requirements to protect, conserve, and restore designated regional Habitat Conservation Areas. The City is proposing a phased strategy to achieve compliance with Title 13, relying on a mix of area-specific and citywide regulatory updates, and a host of non-regulatory tools including willing-seller land acquisition, restoration projects, sustainable development approaches, and community education.

Citywide policy and planning

The new citywide inventory information has been used to inform efforts such as the Portland Watershed Management Plan (2006) and Portland's Local Acquisition Strategy (2007), and to help identify high priority areas for watershed restoration. The Natural Resource Inventory is being factored into the City's Buildable Lands Inventory which is part of Portland's state-required periodic review workplan and Comprehensive Plan update. The inventory will also inform Portland Plan public discussions about future growth goals, scenarios, and investments.

Specifically, the inventory can support planning efforts to:

- Determine where development should be prioritized or limited to avoid resource impacts
- Design development that enhances watershed functions and avoids creating hazards to wildlife
- Improve access to nature by planning transportation routes linking communities with parks and natural areas
- Prioritize investments in land, resource enhancement projects, invasive species control, and green infrastructure
- Address implications of climate change including wildfire, flooding, and landslides
- Enhancing habitat connectivity in the city and region

The natural resource inventory update project

was undertaken as a step in continuing implementation of the River Renaissance Vision (adopted in 2001) and the River Renaissance Strategy (adopted in 2004).

The report provides project context, presents the scientific basis for the project, and describes the project approach and methodology. It is titled Natural Resource Inventory Update – Riparian Corridors and Wildlife Habitat, Project Summary Report, discussion draft dated May 2009, and posted at <http://www.portlandonline.com/planning/index.cfm?c=40539>.