

Third place

CATEGORY

3

Nature in Neighborhoods: Integrating Habitats Winners Series

Neighborhood infill development and oak woodland

Roots, Nests & Canopies



Backyard swales

Alley as urban woodland

Landscape habitat mix

Stewardship as a community cornerstone

Canopy house

Nest house

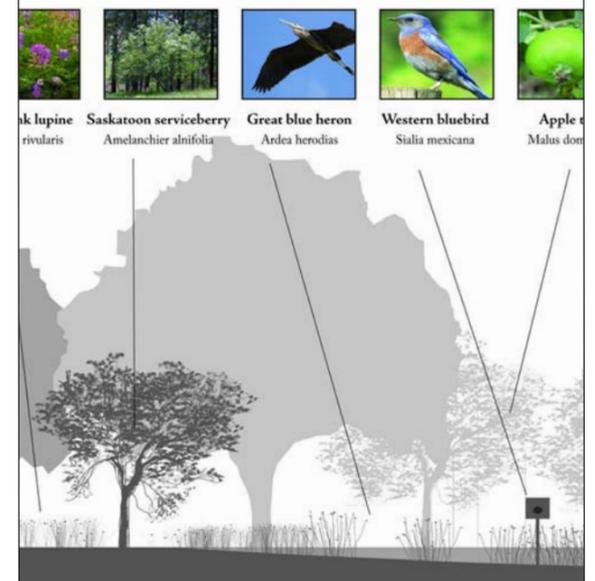
Root house





Snapshot of a winner

Would you like to live in a canopy house, nest house or root house? These types of homes create vibrant, healthy communities by connecting people to the natural world around them. Trees, plants and wildlife are recognized as co-inhabitants that improve a community's quality of life. This design demonstrates how increased density in an urban neighborhood can coincide with the restoration of native oak woodland and create dwellings that harmonize with the dynamic, local ecology.



③ Landscape habitat mix

The community's planting strategy mimics the growth of native oak woodland and savannah habitats. Restoring and improving these different ecosystems provides rich ecological niches to attract a wide variety of flora and fauna. Both wild and domesticated edible plants offer food sources for humans and wildlife. As it grows and evolves, this landscape provides continuous stewardship opportunities for its human occupants, ensuring these unique ecosystems are healthy and benefit all species.



⑤ Canopy house

The names of the different house designs correspond to their relationships to the landscape. The Canopy house features additional height and large windows to view mature oak canopies.

Roots, nests and canopies:

Healthy homes for wildlife and people have stable roots, safe nesting areas, and are sheltered by green roofs and canopies.

Inhabitant profiles



Silvery blue butterfly, house finch (Dave Menke), Nootka rose



② Alley as urban woodland

Because the alley is constructed with permeable pavers which allow water to infiltrate back into the ground, the neighborhood is contributing to protecting and improving water quality. Trees and other native plantings are organized seasonally to promote colonization by native wildlife. The urban woodland grows, blooms and changes color with the seasons, encouraging residents to explore its beauty and diversity.

"The diverse range of plant and animal species underscores the notion of a rich, biodiverse landscape as the context for the homes. The basic activities of 'prep, plant, grow and maintain' over a 40-year time frame help to underscore the importance of long-term thinking in the planning process."

—David Yocca, jurist



① Backyard swales

Rainwater runoff collects into small backyard swales and is captured on site by the swales' native plants, roots, soil and permeable gravel. This prevents rainwater from becoming polluted stormwater runoff that flows into streams and rivers. Result: healthier urban waterways. Each swale serves two households and defines the property lines. During heavy rainfall when soils are saturated with water, rain can flow underneath the permeable road to the seasonal pond in the community's open space.



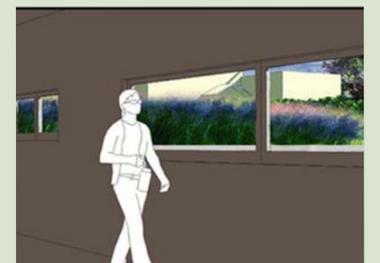
④ Stewardship as a community cornerstone

Residents' intimate experience with a functioning, vibrant ecosystem comes with responsibilities. Plant communities around the neighborhood need co-nurturing, such as pruning trees, enriching soils with compost, introducing native species and removing invasives. Stewardship and enjoyment of this landscape will be a cornerstone of the community, through which its inhabitants bond, celebrate and improve their collective quality of life.



⑥ Nest house

The Nest house has a tiered structure. One half of the house is a single story with an ecoroof. The other half is two stories, with outdoor access to the ecoroof and views.



⑦ Root house

The Root house is partially situated below ground level to relate to the scale of flowers, tall grasses and terrestrial wildlife. This also creates opportunities for geothermal heating and cooling. Windows bring in plenty of light.

Dwellings for all in an oak woodland

In *Roots, Nests & Canopies*, a creative blending of built and natural environments is planned and nurtured.

Traditional urban features are integrated with the unique experience of living in a restored native oak woodland.

Forest habitat complements existing built and natural structures. As the landscape and residential communities mature, these relationships strengthen, creating sustainable, ecologically-minded growth across seasons and generations.

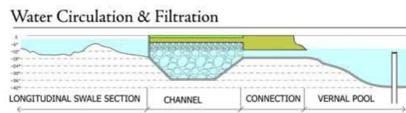
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“In terms of understanding the relationship between habitat and buildings and spaces involved, this was the example that essentially nailed it.” – James Winkler, jurist

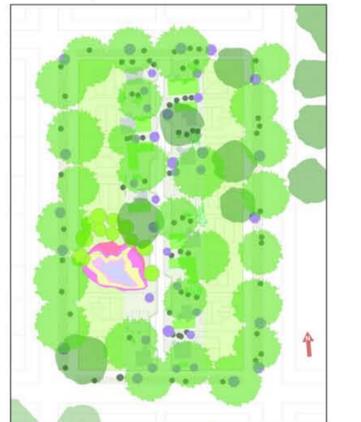
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Rainwater runoff from the rooftops and yards of individual houses collects into small backyard swales that are evenly distributed throughout the neighborhood. The swales, which serve two households and define property lines, are lined with permeable gravel and water-tolerant aquatic plant species to allow for easy ground infiltration of the rainwater. Some swales can be constructed with an impermeable liner to ensure the presence of surface water for most of the year. Subtle changes in the swales' topographies allow for containment of rainwater during storm events. In times of extreme rain and severe ground saturation, water can migrate from the overwhelmed backyard swales into the subsurface drainage channel underneath the permeable parallel parking spots and the permeable alley road. From there, water is carried to the vernal pond located in the neighborhood community space, where additional infiltration and evaporation can occur. If rainfall were ever to exceed the capacity of the swales, drainage channel, and vernal pond, water would be discharged to existing storm water infrastructure via a stand pipe in the vernal pond.

Site Planting



- Existing Oregon white oak
- New Oregon white oak
- Vernal pond: mixed wet meadow and wetland species
- Shrubs: Indian plum and Saskatoon serviceberry
- Shrubs: Oregon grape and Nootka rose
- Orchard Trees: Cherry, Apple, Pear, and Hazelnut
- Green Roof: Small fescue
- Swale: Softstem bulrush and Common spikerush
- Savanna grass: Slender wheatgrass and California outgrass
- Prairie grass and Forbs: Tiger lily, Small camas, and Riverbank lupine

The site planting strategy mimics native habitats of Oak Savannah, Oak Forest, and Wet Meadow. Mixing these different habitats provides rich ecological gradients to attract a wide variety of flora and fauna ranging from migratory birds and insects to the ubiquitous Western Gray Squirrel. This blooming of species grabs the interest of the residents and lets them see an amazing array of life just outside their kitchen window or in the treetops surrounding their green roof. Many, both wild and domesticated edible plants have also been included to provide direct benefit and interest to the human occupants who might have to compete with bluebirds for a serviceberry. Shrubs and the wetland species found in the swales combine to serve as a privacy screen between houses. The dominant features of the landscape, the Oregon white oak and the savanna grass create a rich and beautiful landscape to explore. The Oaks also provide shade from the heat of the summer and form a small wind block with the shrubs at the Northern edge to slow down the winter winds. This landscape provides the potential to become a mature ecosystem and makes every effort to involve its human occupants so that they might steward it forward and make it blossom for the benefit of all species.

Roots, Nests, & Canopies

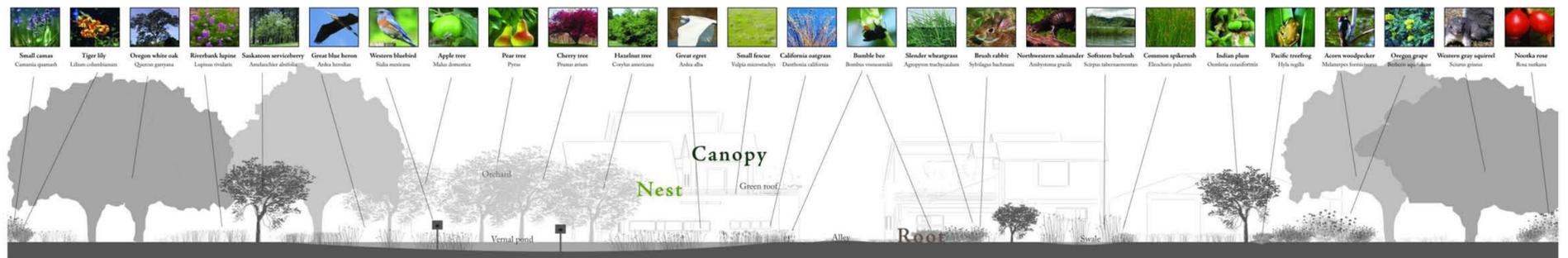


A Mature Landscape
 All oak trees are full grown and their canopies are beginning to connect, they all have wide girth and are at heights between 30 and 60 ft. It is time to start replacing dying fruit trees.

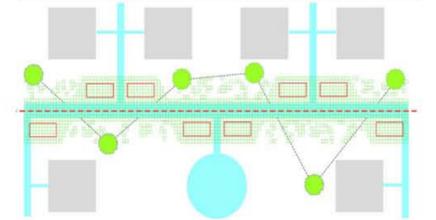
Site Connectivity



The design of this block invites circulation of both people and animals. The block is part park and part residence, it allows for visitors to enjoy the lush alleyway supported by permeable pavers. The surface is perfectly durable but the rustic appearance of the alleyway is a deterrent to motorists and will keep it relatively quiet and walkable. As the oak canopy thickens over time the block will provide the connectivity necessary to make it a merging point in the wildlife corridor between the parks surrounding it. The vernal pond will make this block a nexus for migratory species and attract local nature lovers as a result. These landscaping improvements make the block more enjoyable for the residents but they also attract visitors of all species looking for a beautiful place to pass through or somewhere to stop and snack for a few hours.

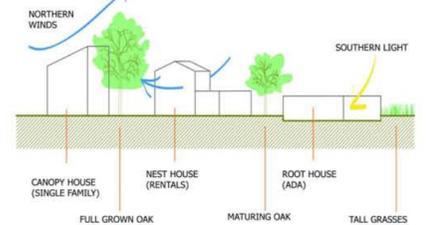


Site Geometry & Flow



Thinking of Portland's rainy climate as an opportunity instead of as a problem, the landscape is sculpted to accept, store, distribute, and cultivate storm water runoff. The flow of the storm water runoff reflects the central position of the public alley: shared swales between houses carry water to the alley; a subsurface drainage channel below the alley carries water to the vernal pond; and the vernal pond retains water that will infiltrate into the ground or evaporate over time. The alley, constructed with permeable pavers and permeable alternating parking spots, is organized into a dynamic spatial experience. The alley edge is reduced further as houses are positioned away from the alley road at varying distances. Trees and other native vegetation are placed stochastically but organized by ecology to promote colonization by naturally co-occurring fauna. The resulting urban-woodland experience shifts over seasons and generations, providing residents a perspective on ecological transition and change. In so doing, the landscape encourages residents to explore the range of diversity available throughout mesic and xeric elements of oak woodlands.

Elements & Massings



The site strategy is laid out, with collaborative architecture and landscape, to allow for passive heating and cooling. Cold northern winds of winter are blocked, while relieving cool summer breezes are permitted to flow across the site west-to-east. The orientation of the new foundations is aligned to true north, a slight shift from the neighborhood street grid, which allows for inspiring northern light and warm southern exposure. The massing of the houses respond to both present and future landscapes. Trees are initially planted at all stages of maturity to achieve a diverse set of conditions that are inherent to all ecosystems. The names of the houses correspond to their relationships to the landscape: the Canopy House has an exaggerated height to relate to mature oak canopies, the Nest House has green roof space at the level of the mid-story, and the Root House is partially buried to relate to the scale of tall grasses, and to create opportunities for geothermal heating and cooling.



Adapted Lifestyles



The landscape of this block provides residents an intimate experience with a functioning ecosystem. This experience however comes with responsibilities. The plants and animals around each home need some management to promote a positive relationship with the human occupants of the site. For people to get the most out of the landscape they must prune trees, fertilize with compost, introduce new desired species and keep invasive ones in check. The maintenance and the enjoyment of this landscape will be the cornerstone of this community through which it bonds, celebrates, and measures success.



Species Habitats

Vertical and lateral organization of an ecosystem both regulate species diversity. With greater vertical organization comes greater habitat availability and thus, greater in situ species diversity. Similarly, the greater the turnover of habitat types along a lateral transect, the greater the turnover of resident species, again, resulting in higher species diversity. A vertical and lateral gradient exists across the neighborhood to promote both native floral and faunal species diversity. Vertical transitions range from an Oregon white oak emergent canopy and an intermediate canopy of shrubs to grasses and forbs. The lateral transect crosses shaded and unshaded conditions relative to overhead canopy, as well as xeric and mesic conditions where swale depressions and the vernal pond meet adjacent grassland. The community composition and species diversity within each component of the landscape will be dynamic, as the community matures and responds to perturbations.

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Nature in Neighborhoods: Integrating Habitats Winners Series

Blend. Balance. Integrate.

Collaborate to redefine the built environment and restore nature.

More than 100 teams from around the world submitted entries to the Integrating Habitats design competition, proving that every space in which we live, work, shop and play can create places for both people and nature. These designs redefine current standards of environmental sustainability. The award winners illustrate new types of nature-friendly designs that balance development, human needs and the health of natural systems we all depend upon.



www.oregonmetro.gov/integratinghabitats

“We need to design our houses and buildings to embrace nature so that people will want to live there. We need to design cities that are built according to our need for nature – reversing the trend of pushing the natural environment yet farther away from our doorstep.” —James Winkler, jurist

Metro regional government

serves 1.4 million people who live in the 25 cities and three counties of the Portland metropolitan area. Metro's Nature in Neighborhoods initiative brings the regional government and local jurisdictions together to help ensure that the region's wildlife and people thrive in a healthy urban ecosystem.

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