



Turnbull NWR Thematic Matrix



NATIONAL
WILDLIFE
REFUGE SYSTEM

Created by Riley Vance
Interpretive Research Fellow
National Wildlife Refuge System – Visitor Services | Summer 2025

Welcome to the Interpretive Thematic Matrix for Turnbull National Wildlife Refuge!

The purpose of this matrix is to connect resource management efforts to resource education efforts on National Wildlife Refuges. This process was developed by the Albuquerque Regional Office for the U.S. Fish & Wildlife Service (USFWS). The first matrices were piloted at several different national wildlife refuges within New Mexico, Arizona, Oklahoma, and Texas. This matrix, along with two others at Little Pend Oreille and Kootenai National Wildlife Refuges, represent the first to be created in the Pacific Region, which includes Washington, Oregon, Idaho, and the Pacific islands.

The Interpretive Thematic Matrix (ITM) serves as a guide for refuge managers and visitor services staff to guide decision making and available resources for community engagement and refuge programming. With a matrix in place, the refuge can create and share content that directly connects refuge management efforts to the public and in a relevant, understandable, and compelling way. Matrices can be used to create new environmental education or interpretive programming, help orient volunteers, emphasize focuses for contractors on exhibits or signage, to leverage resources or capacity, and more.

The Interpretive Thematic Matrices feature themes from subject matters and management efforts with the U.S. Fish & Wildlife Service. Each matrix contains several components including: interpretive themes, supporting concepts and ideas, tangibles, intangibles, and universals concepts. The sister agency of the USFWS, the National Park Service, states that interpretive themes "encourage exploration...[They] go beyond a mere description...to foster multiple opportunities to experience and consider the [refuge] and its resources. These themes help explain why a [refuge] story is relevant to people." Through these efforts, USFWS hopes to improve the quality of visitor services within each refuge to change public perception and increase support and share that refuges are where both wildlife and people may thrive.

From *Denali National Park and Preserve Education Plan: A Long Range Vision for Education and Interpretation*, 2010.

Denali National Park and Preserve
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Subject Matter and Interpretive Theme Statement	Concepts and Ideas	Tangibles: Topics and Stories+	Intangibles and Universals
1. Extensive Natural Ecosystems Denali's intact, natural ecosystem embodies a wisdom from which humans can learn and promote the workings of a healthy planet for a sustainable future.	Some examples of concepts and ideas to be included in the themes: (Some of these concepts may potentially develop or combine into specific programs and interpretive media themes.) <ul style="list-style-type: none"> An ecosystem consists of living and non-living components and elements seen and unseen. Complete understanding of such a complex system is impossible. Unaltered ecosystems can serve as baselines to understand ecosystems that have been impacted. Unaltered ecosystems provide excellent opportunities for research and learning. The ambitious vision of ANILCA was to surpass previous conservation efforts by setting aside vast areas that could protect large undisturbed and intact ecosystems. Conserving large protected areas requires recognizing that local people are part of the ecosystem and accommodating some level of human consumptive use of resources. Intact ecosystems are rare because human activity has eliminated species, altered habitat, and fundamentally changed natural relationships on much of Earth's surface. The Denali ecosystem is dependent upon the global ecosystem and vulnerable to changes that originate beyond the park's borders. Denali's ecosystem is recognized to be of international significance. (Biosphere Reserve) 	Some examples representing the types of stories that could be told under this theme: <ul style="list-style-type: none"> Species specific stories Species interactions Illustrations of complexity Short-term and long-term change Wildland values Role of science in preserving parks Role of science in helping us understand the world at large Human interaction with landscapes Opportunity for hands-on discovery Natural cycles Exotic species Nexus of biological and physical worlds 	Some examples of deeper meanings of topics: Intangibles: Ecosystem Biodiversity Complexity Preservation Rare Sustainability Knowledge Conservation Heritage Universals: Protection Wonder Humility Mystery Curiosity Survival Wisdom Health

+ These topics are representative, a partial list. They are not intended to be all-inclusive (in fact they could never be) nor are they intended to exclude any topics.

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*Example of an interpretive matrix at Denali
National Park and Preserve
Image courtesy of the National Park Service*

Matrix Terms & Definitions

The following are the interpretation elements used in the Interpretive Thematic Matrix, as well as their definitions.

Interpretive Theme: The interpretive theme states the reasons why a person should care about/for a resource.



Supporting Ideas: The supporting ideas provide key information, facts, or definitions that support the theme.



Matrix Terms & Definitions

Tangible: A tangible is anything a visitor can see, hear, taste, touch, or smell, such as a model or live animal.



Intangible: An intangible is an abstract concept, such as feelings or beliefs.



Matrix Terms & Definitions

Universal: Universals are abstract concepts that everyone can relate to, but everyone sees differently, such as family or beauty.



Target Audience: The suggested, specific audience that could be reached by the interpretive theme.



The People Behind the Matrix

Without the support and assistance of the FWS employees detailed below, the Interpretive Thematic Matrix for Kootenai National Wildlife Refuge would not have been possible.

Riley Vance, Primary Author
Interpretive Research Fellow
Inland Northwest National Wildlife Refuge Complex

Emily DeLanzo, Visitor Services, Cultural Resources,
and Planning Chief
National Wildlife Refuge System Region 2

Joshua Contois, Visitor Services Manager
Inland Northwest National Wildlife Refuge Complex

Trinity Joshua, Directorate Fellowship Program
National Wildlife Refuge System Region 2

**We'd like to thank you all for your hard work and participation.
We could not have done this without you: thank you!**

The Process to Develop the Matrix

The information in this matrix was gathered during a 1-month residency by the interpretive research fellow (IRF) at Turnbull NWR. During this time, an in-person scoping session with FWS staff and members from the Friends of Turnbull took place. Primary subject matter was populated during a brainstorming exercise, represented by a word cloud (seen on right). The IRF also conducted informal scoping of members of the public.

From this sessions, the IRF identified 5 primary subjects to focus on for the matrix. These primary subject matters became the basis for every theme. The IRF then worked independently to create the theme statement for every subject matter as well as identifying and forming supportive ideas for each theme statement. Weekly progress meetings between the IRF and the Visitor Services Manager helped to focus and refine the document.

The themes and full list of supporting ideas, and concepts created are stored on a separate Microsoft Word document, “Turnbull NWR Expanded Matrix – Messages and Themes.” This is intended to be a living document – revised regularly as planning, policy, regulation, or other priorities are updated.



ABOVE: Screenshot of Brainstorming Word Cloud with Turnbull Staff

BELOW: Example pages from Turnbull Messages and Themes

Subject Matter: Wildlife

Primary Theme: The Refuge provides vital habitat for wildlife, from moose to migratory birds, making it a living sanctuary where people can connect with nature firsthand.

Supporting Concepts and Ideas:

Directly from slides:

- o Turburb provides essential breeding, nesting, and stopover habitat for a wide diversity of bird species. Over 200 bird species have been observed on the Refuge.
- o Diverse habitats—wetlands, pine forests, prairies, and riparian zones—support a wide range of animal life.
- o Migratory birds were central to the Refuge's creation and remain a defining feature of its identity today.
- o Moose are iconic animals frequently seen on the Refuge, drawing visitors eager to see them in their natural habitat.
- o Vernal pools support amphibians and unique forms of life, such as fairy shrimp.
- o Seasonal wildlife changes—from spring waterfowl migrations to the fall rut—shape the visitor experience.
- o Visitors are encouraged to recreate responsibly around wildlife, ensuring protection of both animals and humans.

Additional Supporting Information:

- The refuge supports a large variety of wildlife. Over 200 different kinds of birds have been recorded. Mammals include moose, elk, white-tailed and mule deer, coyote, bobcat, river otter, porcupine, muskrat, beaver, bobcat, and cougar. There are also numerous small mammals such as chipmunks, red squirrels, Colombian ground squirrels, deer mice, and weasels. Eleven species of bat have been recorded on the refuge. Notably, the long-eared bat and Californian myotis, and big brown bats breed and rear their young on the refuge. (Turnbull NWR Brochure)
- Although the main habitat emphasis has been waterfowl, the refuge's focus expanded to include restoring and maintaining the native ecosystem processes of this unique area. This means that habitat on the refuge will be managed to support

Subject Matter: Plant Life

Primary Theme: Turnbull's diverse plant communities, from wildflowers to ponderosa pines, are key components of the Refuge's ecosystems and enrich the visitor experience across seasons.

Supporting Ideas & Concepts

Directly from slides

- o Ponderosa pine forests are the dominant habitat type and function as a keystone species that support many forms of life on the Refuge.
- o Aspen groves, now reduced by over 60% due to pine encroachment, are a focus of restoration, valued for their wildlife benefits and brilliant fall colors.
- o Wetlands and vernal pools support specialized plants and a variety of animals like waterfowl, amphibians, and invertebrates. Species like bulrush and cattail can help filter excess nutrients from the environment before it impacts the wetland.
- o Willowflies like butterfleys, canams, and lupine draw in visitors with the beauty of their seasonal changes.
- o Spadings Cactylaris has an endemic and threatened species of interest. It is both occurring and actively planted through recovery efforts.
- o The Refuge collaborates with partners to study the plant and its pollinators to guide recovery strategies.
- o Plants can serve as both food and medicine. Southern Plateau peoples historically gathered and utilized canams, bitterroot, wild onion, and biscuitroot here, a cultural practice that continues today at Turnbull National Wildlife Refuge.
- o The Refuge features a pollinator garden run by Friends of Turnbull. This garden supports declining pollinator populations.
- o Ongoing restoration efforts include tree plantings, controlled burns, and invasive species control.

Notes from Molly Dixon:

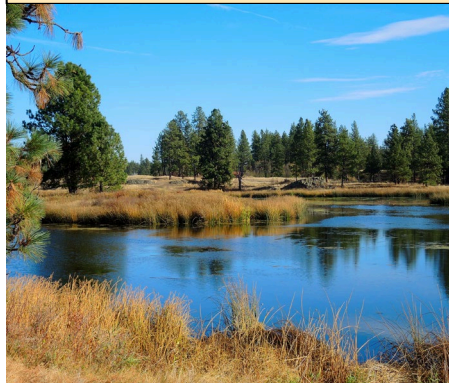

- For Palouse prairie habitat at Turnbull (which includes biscuit and swale, meadow steppe, and palouse hills), we have over 4,000 acres. The palouse hill habitat type, which is classic palouse prairie, is the smallest portion of that, but I don't have an exact acreage. As for remnant palouse prairie, we do have some on the refuge but don't know how much. I would venture less than 10 acres. There is less than 1% of



Theme: The powerful forces of volcanism, glaciation and some of the largest floods in geological history have forged a distinct environment at Turnbull National Wildlife Refuge that is unique to the region.

Supporting Ideas and Concepts:

- Glaciation, volcanism, and monumental floods shaped the Channeled Scablands that Turnbull NWR sits on.
- The Channeled Scablands were carved by the cataclysmic Missoula Floods about 15,000 years ago—a theory once mocked and rejected. This theory is now widely accepted, despite still being unknown to many visitors.
- Turnbull is the only National Wildlife Refuge within the Channeled Scablands.
- The Refuge is part of the Columbia Plateau, a volcanic landscape with a basalt bedrock that channels water into springs and aquifers that help to sustain the Refuge’s wetlands.
- Turnbull’s geology is integral to its wetlands, as the scoured depressions formed by floods now hold seasonal and permanent water that sustains life.
- Resulting geologic formations provide habitat niches, from nesting birds utilizing basalt cliff sides to amphibians spawning in vernal pools, created by depressions in the scoured land.
- Turnbull NWR protects over 4,000 acres of Palouse prairie habitat, a rare ecosystem with less than 1% remaining intact globally.
- Mima mounds are mysterious dome-like landforms found on the refuge that support unique plant and wildlife communities. Formation theories vary, and the true cause of formation is still unknown.
- The Refuge exemplifies how catastrophic geologic events can create lasting beauty and ecological richness.

Tangibles: Channeled Scablands Basalt Palouse Vernal Pools Wetlands	Intangibles: Time Natural power Destruction Geology
Universals: Time Destruction	Target Audience: Students Geologists Hikers Families Birders
	

Theme: The Refuge provides vital habitat for wildlife, from moose to migratory birds, making it a living sanctuary where people can connect with nature firsthand.

Supporting Ideas and Concepts:

- Turnbull provides essential breeding, nesting, and stopover habitat for a wide diversity of bird species. Over 200 bird species have been observed on the Refuge.
- Diverse habitats—wetlands, pine forests, prairies, and riparian zones—support a wide range of animal life.
- Migratory birds were central to the Refuge’s creation and remain a defining feature of its identity today.
- Moose are iconic animals frequently seen on the Refuge, drawing visitors eager to see them in their natural habitat.
- Vernal pools support amphibians and unique forms of life, such as fairy shrimp.
- Seasonal wildlife changes—from spring waterfowl migrations to the fall rut—shape the visitor experience.
- Visitors are encouraged to recreate responsibly around wildlife, ensuring protection of both animals and humans.

Tangibles: Moose Migratory Birds Tracks & signs Ducks	Intangibles: Migration Seasonality Wonder Diversity
Universals: Wonder Diversity	Target Audience: Bird watchers Families Wildlife enthusiasts Photographers



Theme: Turnbull’s diverse plant communities, from wildflowers to ponderosa pines, are key components of the Refuge’s ecosystems and enrich the visitor experience across seasons.

Supporting Ideas and Concepts:

- Ponderosa pine forests are the dominant habitat type and function as a keystone species that support many forms of life on the Refuge.
- Aspen groves, now reduced by over 60% due to pine encroachment, are a focus of restoration, valued for their wildlife benefits and brilliant fall color.
- Wetlands and vernal pools support specialized plants and a variety of animals like waterfowl, amphibians, and invertebrates. Species like bulrush and cattail can help filter excess nutrients from the environment before it impacts the wetland.
- Wildflowers like buttercups, grass widows, camas, and lupine draw in visitors with the beauty of their seasonal changes.
- Spalding’s Catchfly is an endemic and threatened species of interest. It is both naturally occurring and actively planted through recovery efforts. The Refuge collaborates with partners to study the plant and its pollinators and guide recovery strategies.
- Plants can serve as both food and medicine. Indigenous peoples, who have lived in the region since time immemorial, historically gathered and utilized camas, bitterroot, wild onion, and biscuitroot within the refuge, a cultural practice that continues today.
- The Refuge features a pollinator garden run by Friends of Turnbull. This garden supports declining pollinator populations.
- Ongoing restoration efforts include tree plantings, controlled burns, and invasive species control.


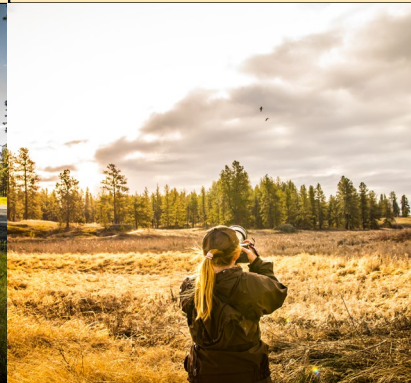
Tangibles: Spalding’s Catchfly Ponderosa pines Wildflowers Invasive species Aspens	Intangibles: Beauty Growth Seasonality Diversity Restoration
Universals: Beauty Diversity Growth	Target Audience: Conservationists Families Volunteers & Friends Botany enthusiasts



Theme: Turnbull fosters meaningful human experiences—through quiet reflection, outdoor learning, and recreation—while deepening connections between people, nature, and place.

Supporting Ideas and Concepts:

- The Refuge serves as a local asset and point of identity, creating community pride.
- Located near Spokane and Cheney, the refuge offers nearby communities convenient access to nature, recreation, and learning.
- The dedicated staff and volunteers at Turnbull embody the USFWS mission of “working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.”
- The Friends of Turnbull contribute significantly at the Refuge, participating in volunteer events, facilitating environmental education and visitor services, running the nature store, and more.
- Turnbull is a wonderful place to learn. The Environmental Education Classroom is a great asset for groups to reserve, free of charge, for nature-related topics.
- As a National Wildlife Refuge, Turnbull provides an experience distinct from urban parks, offering solitude, wildness, and a unique conservation purpose.
- Activities enjoyed on the Refuge include hiking, wildlife observation, photography, environmental education, and hunting.
- The Refuge features over 10 miles of hiking trails, including 3 accessible trails. The 5.6-mile Auto Tour Route is a frequent choice for visitors to enjoy.
- The Refuge serves as a safe and family-friendly destination.



Tangibles: Facilities Staff & volunteers Trails Auto Tour Route	Intangibles: Partnerships Access Community Peace
Universals: Peace Community	Target Audience: Community members Families Youth groups Nature lovers
	

Theme: At Turnbull National Wildlife Refuge, fire is a natural and necessary force. Through careful management, the refuge works with fire rather than against it, to sustain a healthy, resilient landscape.

Supporting Ideas and Concepts

- Fire has shaped this landscape for millennia.
- Refuge forests evolved with natural fires. Many plants and animals depend on post-fire habitats.
- The United States began suppressing fires in the early 1900s. Fire suppression has altered ecological balance, raising the risk for devastating fires.
- The Service has used fire as a management tool since the 1930s.
- Prescribed burns mimic natural fire regimes and minimize the risk of devastating fires while regenerating landscapes.
- Managed forests are more open, and the remaining trees have room to grow with less competition for resources.
- Signs of fire can be seen throughout the refuge through burn scars, charred vegetation, and new growth.
- Educating the public about fire reduces fear and builds understanding. Locals can take steps to lessen risk of destructive wildfires impacting their home or property.

Tangibles: Fire Regrowth zones Fire crews Prescribed burns Burn scars	Intangibles: Fire Management Renewal Balance Transformation Resilience
Universals: Balance Transformation Resilience	Target Audience: Community members Students Conservationists Policymakers



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The following are the documents and resources used and referenced in the creation of the Interpretive Thematic Matrix.

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