



Roots of Wisdom

Native Knowledge. Shared Science.



Reflections and Ideas about Collaboration with Integrity

by the Roots of Wisdom Project Team

Forward

The *Roots of Wisdom* project is rooted in Indigenous knowledge and ways of life lived for countless generations. Much of this Traditional Ecological Knowledge (TEK) has been passed down for generations. TEK is of vital importance and speaks strongly to the significance of balance to create a healthy environment. The project also provides a contemporary scientific perspective, along with the traditional knowledge perspective, illuminating the complementary aspects of both ways of knowing and a greater sense of understanding that would not be possible with one perspective alone. The result is a synthesis of TEK and Western scientific knowledge in such a way that each one complements the other.

The project was made possible through a working partnership between the Oregon Museum of Science and Industry (OMSI), a large science center; the Indigenous Education Institute (IEI), a Native, non-profit Indigenous organization created for “the protection, preservation, and contemporary application of ancient Indigenous traditional knowledge”; and groups from four Native communities—Native Hawaiian members of the Pacific American Foundation and Waikalua Loko Fishpond Preservation Society, the Tulip Tribes in northwestern Washington state, the Confederated Tribes of Umatilla Indian Reservation (CTUIR) in eastern Oregon, and the Eastern Band of Cherokee Indians in western North Carolina. The partnerships were unique in that they were created at the very beginning of the project to engage Native voices as co-creators. This type of collaboration provided a unique structure and process that featured collaboration with mutual consensus.

This work was indeed a learning process for the participants and resulted in two exhibitions, a website, and related materials that reflected the voices of the Native communities and respected the ways in which the

communities wanted their stories told. At the same time, the process was shaped by the rigorous requirements and intense timeline of the National Science Foundation (NSF), thereby reflecting the priorities of the scientific community.

There are many commonalities between the two worldviews, but there are also many diverse perspectives, even among and within tribes. In this project, the communities were able to determine the content and design, and the collaborative process allowed for unique and authentic voices to be heard, rather than using a generalized, simplistic approach.

To our eyes, the importance of understanding ecology from a Native perspective may be the most significant aspect of the project. The interconnections of all things and the interdependencies of all relationships need to be understood within this comprehensive context of restoration built on traditional knowledge and practices.



Roots of Wisdom at OMSI

Restoration, from this perspective, implies a deep understanding of the environmental balance created by nature, which in so many cases has been lost. This balance can be re-created and restored through an application of TEK. Conservation in terms of the environment can enable a community to achieve wellness and freedom from toxicity. In Native communities, balance is of primary importance. Understanding the concept of balance is a facet of living in accordance with the natural cycle. This concept permeates every aspect of life, from the skies of the universe to every part of the lands and water. Due to the interdependence of people and nature, restoration can enable a community to achieve wellness.

This collaborative project has provided a place for authentic Native voices in an exhibition project led by a major science center. Bringing together multiple lenses and perspectives of Native and Western science results in a synthesis of restoration and conservation, thus engaging Native communities and the scientific community for the benefit of the general public.

The *Roots of Wisdom* project is unique, and, to the best of our knowledge, innovative. We are grateful to OMSI, the NSF, and the Indigenous organizations and tribal partners for funding and bringing this project to fruition, in a spirit of collaboration, as well as respecting the integrity of both Indigenous cultural and scientific protocols.

There are hundreds of Native communities in the United States, and this project focuses on only four of them. Almost every tribe across the country is involved in one way or another in these kinds of restoration projects. Wherever the *Roots of Wisdom* exhibitions are displayed or discussed, local tribes may well have restoration projects underway. These projects can also be showcased as an addition to *Roots of Wisdom* and for public outreach in order to provide relevance and to be useful to local communities.

Almost every Native community has established sustainable ecological relationships with the local environment, which have been in existence since time immemorial. Many places have been historically altered, but there is great potential to restore the lands and waters to a healthy environment. In this age, as in countless generations before, human health and community wellbeing are intrinsically connected to the land. A healthy environment can ensure a healthy population via the establishment of a balanced ecological network. A reciprocal relationship of land and water resources should be of vital interest to every person and every community. After all, we share this planet together.

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David H. Begay (*Diné [Navajo]*), Ph.D., Vice President,
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Table of Contents

| | |
|-----------|--|
| 5 | Introduction |
| 7 | Native Voice & Traditional Ecological Knowledge in <i>Roots of Wisdom</i> |
| 9 | Restoration Stories from <i>Roots of Wisdom</i> |
| 17 | Reflections on Getting Started |
| 24 | Reflections on Collaboration |
| 27 | Reflections from OMSI Exhibit Team |
| 34 | Reflections from OMSI Programs Team |
| 38 | Reflections on Collaborative Evaluation |
| 41 | Advice for Museums |
| 49 | Resources & References |
| 50 | Credits/Acknowledgements |

Introduction

Who is this for?

This document is for museum professionals and educators—especially in informal science education—who are seeking ways to collaborate with Native partners and communities and often undertake innovative work with limited knowledge and resources of how to do so. We hope you find our experience helpful and are encouraged to collaborate more with Native communities and bring Native voices to your museum.

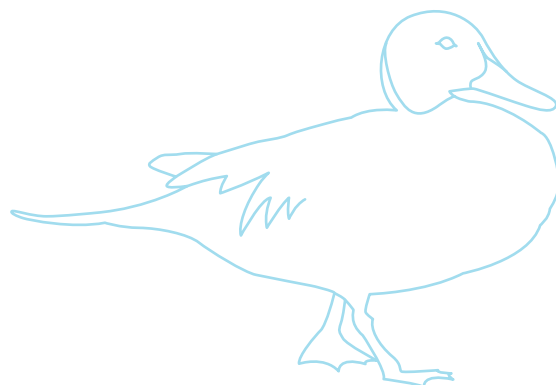
The text is based on the work of a project funded by the National Science Foundation (NSF), *Generations of Knowledge: Traditional Ecological Knowledge and Environmental Science* (DRL-1010559), a six-year collaborative project between OMSI and Native partners from diverse tribes, cultures, and ecoregions to produce traveling exhibits and programs for science and tribal museums. Our goal in this document is to reflect on and share what we learned on this journey, including detours and course corrections. More formal summative evaluation reports of the project deliverables and collaboration are also available (see the Resources and References section of this document).

About the project

The *Generations of Knowledge* project produced a 2,000-square-foot traveling exhibition called *Roots of Wisdom*, a graphic panel version of the larger exhibition for smaller venues (especially tribal museums), a website, and educational activities for Native youth. All of these deliverables were produced in collaboration with Native partners and explore the value, relevance, and complementary nature of Traditional Ecological Knowledge (TEK) and environmental science for understanding the natural world and addressing environmental challenges.

The project was designed as collaborative and inclusive in many different ways:

- **Project leadership** was shared by two principal investigators at OMSI and two principal investigators at the IEI.
- **Project evaluation** was led by Native and non-Native evaluators and was designed to integrate Western and Native evaluation perspectives and emerge from reciprocal collaboration with project partners.
- **Project advisors** were Native and non-Native scholars, scientists, and experts in TEK; tribal and science museum educators; and local Native youth.
- The **project content** focused on Indigenous knowledge as a way of knowing the natural world and explored environmental restoration projects in four Native communities. The exhibits and other project deliverables were developed in close collaboration with partners from each community.
- The **intended audience** is Native and non-Native visitors to science and tribal museums. Native youth, ages 11–14, are the primary target audience. Project evaluation included all of these audiences.



Unlike many museum exhibitions about Native American life and culture, the project was not built around a collection of objects or artworks and did not present and interpret traditional lifeways. *Roots of Wisdom* was designed as an interactive science museum exhibition about current ecological and cultural restoration where hands-on exhibit components allow visitors to learn about the living TEK and scientific knowledge used by each of the communities. Modern Native voices communicate throughout the exhibition through many quotes, five videos in which community members share their restoration stories, and roughly 150 photos and illustrations throughout the graphic panels and computer screens.

Victoria Coats, Research, Development, and Advancement Manager,
Oregon Museum of Science and Industry, project Principal Investigator



Roots of Wisdom at Tamästslikt
Cultural Institute

Native Voice & Traditional Ecological Knowledge

in *Roots of Wisdom*

Why include Indigenous knowledge and Native voice in a science museum?

Studies and practices that bridge Indigenous knowledge and Western science are producing a deeper understanding of the natural world. For example, the Ecological Society of America (ESA) has a TEK Section of its membership that promotes “the understanding, dissemination, and respectful use of [TEK] in ecological research, application, and education,” and NSF supports many research projects that have connections with traditional knowledge. TEK offers deep and unique insights for addressing very complex modern challenges of living sustainably and adapting to global change.

What is Traditional Ecological Knowledge?

“Traditional Ecological Knowledge is the term used to describe the knowledge and beliefs that Indigenous peoples hold of their environments that is handed down through the generations... Drawing upon on the previous several decades of TEK-related research, the following attributes can be said to typically describe the central definition of TEK: cumulative and long-term, dynamic, historical, local, holistic, embedded, and moral and spiritual” (Menziés and Butler, 2006). Other people may refer to this type of knowledge as “Indigenous knowledge” or “Native science.” The project team chose to use the term “traditional knowledge” in the exhibition to avoid academic jargon and to keep concepts accessible to a wide range of audiences.

TEK is important because it offers society the opportunity to strengthen its capacity to manage environmental disturbances and local environments sustainably. Because TEK is a long-term body of accumulated local knowledge, it can provide a more intimate and holistic view of the natural world. A growing number of people, including many non-Native scientists, are beginning to see how traditional knowledge and Western science can be considered two “ways of knowing” that can be complementary rather than contradictory, especially when considering ecological systems. *Roots of Wisdom* focuses on this idea of “Shared Science” using TEK and Western science to enhance our knowledge and stewardship of the natural world.

For over 10,000 years, American Indians from diverse tribes have lived in the United States. Natural resource management is not a modern invention; Indians have practiced the roots of this applied discipline for millennia. Our North American landscapes, a reflection of historical processes, both natural and cultural, bear the indelible imprint of a medley of lifeways.

—*Traditional Ecological Knowledge: An Important Facet of Natural Resource Conservation*. U.S. Department of Agriculture Natural Resource Conservation Service. n.d. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1045244.pdf)

It's difficult for people, not only in science, who are always trying to define who we are as a people, so people [need to] know who we are and our relationship to the world, to the land, to Mother Earth, and how important that relationship is. Because if we don't maintain that relationship, then we almost cease to exist as a people. And that's so hard to have people understand that... The Plains Dakota people will talk about the buffalo the way we talk about the cedar tree. Every tribe has something that is like the main root of their people.

—Inez Bill (*Lummi/Snohomish*), Rediscovery Coordinator, Hibulb Cultural Center and Natural History Preserve, project partner

“The Three Sisters [gardens of corn, beans, and squash] offer us a new metaphor for an emerging relationship between Indigenous knowledge and Western science, both of which are rooted in the earth. I think of the corn as Traditional Ecological Knowledge, the physical and spiritual framework that can guide the curious bean of science, which twines like a double helix. The squash creates the ethical habitat for coexistence and mutual flourishing. I envision a time when the intellectual monoculture of science will be replaced with a polyculture of complementary knowledges. And so all may be fed.”

—Robin Wall Kimmerer (*Potawatomi*), Distinguished Teaching Professor and Director, Center for Native Peoples and the Environment, State University of New York College of Environmental Science and Forestry, in *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants*.

For the project, we (OMSI, IEI, and the groups from the four Indigenous communities involved in the project) worked with our advisors to devise the Big Idea—the most important message that we would communicate to public audiences: **TEK and Western science are valuable and relevant to society and offer complementary ways of understanding the natural world.**

We also developed a series of additional main messages:

1. **TEK and Western science have many commonalities, but they are also unique in many ways because they are culturally embedded.**

One example of a strong commonality is that both ways of knowing involve careful observation of the natural world. Examples of differences include how knowledge is taught and learned, as well as the ownership and protection of knowledge, which—in the case of TEK—is held by the community, while Western cultures use patents to reserve legal rights to intellectual property.

2. **TEK is long-term and place-based.**

From living in specific places for innumerable years, Indigenous cultures have formed vast and intimate knowledge of their homelands, which is passed down through the generations. We worked to show images of each culture's specific environment in *Roots of Wisdom*.

3. **Indigenous peoples have been here for thousands of years and are still here today, engaging in both traditional and modern practices.**

The *Roots of Wisdom* exhibitions aim to dispel stereotypes and misconceptions that Native cultures in North America only exist in the past, rather than being part of modern society. Techniques we used include photos of people in action and videos of each of the communities.

4. **Native knowledge holders use TEK in a dynamic way, adapting their practices based on continuing observations of the environment.**

Our global environments are changing. Elders and other knowledge holders in Indigenous communities have stories of dramatic change within their lifetimes. These stories are key to guiding restoration efforts such as those featured in the project.

5. **TEK is cyclical and considers the connections between all things.** One of the most important concepts in the exhibition content is that of interconnectedness, especially that of people with the natural world, its seasons, and other natural cycles. Each of the restoration stories in *Roots of Wisdom* highlights the deep connection of each community with its lands and waters.

Restoration Stories from Roots of Wisdom

In developing the content for *Roots of Wisdom*, we were challenged to describe TEK to public audiences who may be ignorant of Indigenous ways of knowing or misled by stereotypes. In order to convey largely unfamiliar concepts, we found no better way to communicate than to let the restoration stories speak for themselves. Each of the four restoration stories featured in *Roots of Wisdom* is a powerful example of the place-based, hands-on, and lived-experience nature of TEK.



Umatilla River, Eastern Oregon

Confederated Tribes of the Umatilla Indian Reservation (CTUIR)

Cayuse/Weyíiletpuu (*Why-e-la-poo*) “The place of the rye grass”

Umatilla/Imatalamláma (*Ih-ma-tel-am-thlama*) “The people of Imatalam (the place of many rocks)”

Walla Walla/Walúlapam (*Wah-loo-la-pum*) “The people of Wallula (the place of many waters)”

Saving streams and wildlife

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) have fished, hunted, gathered, and taken care of their homelands in the Pacific Northwest for thousands of years. The Umatilla River, which feeds into the Columbia River in eastern Oregon, is the focus of many of the CTUIR’s restoration projects. The tribes live as part of the Columbia River ecosystem and rely upon streams for water, transportation, cultural practices, and food; however, they have seen a rapid decline in native fish and wildlife in the last 100 years. Land and farm development has damaged habitats and diverted water from rivers and streams.

Restoration efforts have been driven by the tribes’ First Foods, sacred foods of utmost cultural value, including water, salmon, and lamprey (often referred to as “eels”). The order of the foods during the tribes’ annual First Foods feast guides the tribes in protecting and restoring natural resources. Water is the very first of the First Foods served at the feast and the most important—one reason why restoring rivers and streams is so vital. CTUIR efforts have resulted in improved water quality and the return of salmon and other wildlife to the Umatilla River.

Whenever we do restoration, we focus on our Department of Natural Resources mission statement, which is to protect and enhance the tribes' First Foods—which are water, salmon, deer, coos, and huckleberry—and the two ways that we have been doing this are by utilizing science and traditional cultural and ecological knowledge. By telling this restoration story, we focused in on the lamprey and the Umatilla stream project. In our culture, we refer back to tamánwit, which talks about the Creator's law and the natural law of how the foods and the people came to an agreement. The foods gave themselves to the people to be able to nourish them and the people in return would take care of them and honor them every year, and when it was the peoples' turn, they would go back into the ground and nourish those foods through that way, too. We take the cultural teaching of the Creator's law and use that to make it our mission to protect, restore, and enhance those foods on the agreement that we were always supposed to care for them when they needed something and they didn't have a voice.

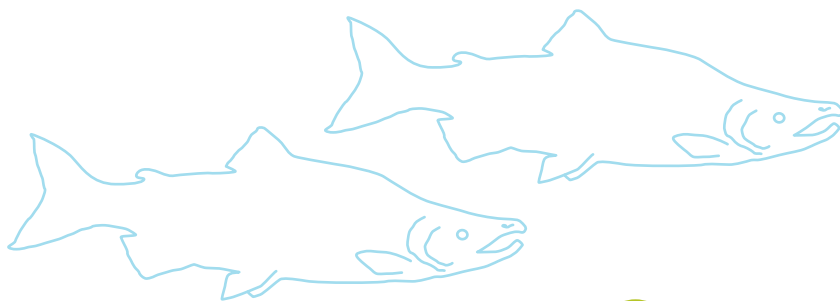
—Wenix Red Elk (CTUIR), Public Outreach and Education Specialist, Department of Natural Resources, Confederated Tribes of the Umatilla Indian Reservation, project partner

Tribal people understand that there is a system, and there is a cycle that the fish and the animals follow. [From] living on the land for thousands of years... [tribal people understand] what the system needs in order for the animals to survive. I think it's important to recognize that tribes have been doing natural resource management for thousands of years and this is just another part of that history.

—Randall Melton (Seminole/CTUIR), Collection Curator, Tamástslikt Cultural Institute, project partner



Showing off a salmon catch



Native Hawaiians

Kānaka Maoli (*Kah-nah-kah Mau-li*) “Indigenous People”

Restoring fish ponds

Traditional fish ponds were developed by Hawaiians hundreds of years ago to feed communities and stay in harmony with the land. The fish ponds were parts of land divisions called *ahupua‘a* (“ah-hoo-poo-ah-ah”), which spanned from mountaintop to the ocean. An *ahupua‘a* centered on the path of a stream from its headwaters to the sea. As the stream traveled down the mountain, it watered food crops, carrying nutrients downstream from one field to the next, often meeting the ocean at a walled fish pond.

Today, most of the hundreds of fish ponds around the Hawaiian Islands have disappeared or become broken down and overrun by invasive species. Hawaiians are using the knowledge of their ancestors with Western scientific methods such as water sampling and data mapping to restore parts of the *ahupua‘a*. Communities are restoring fish ponds and taro fields with the aim of teaching new generations the scientific and cultural knowledge, skills, and values to care for the land.

Ancient Hawaiian fish ponds go back 800 years in the history of the Hawaiian people and probably were one of the most significant innovations that ancient Hawaiians made in terms of the transition from being hunter-gatherers in the open ocean to actually be able to farm fish in these ancient Hawaiian fish ponds, utilizing and manipulating the environment to be able to accomplish this. We have been able to document about 488 of these ponds that were built in the eight major Hawaiian Islands in the period of 800 years, and now there are probably less than 60 that are available or recognizable. Not one of them is in operation. [It is] critical to tell the story of the ancient Hawaiian fish pond and to be able to bridge TEK and cultural wisdom with contemporary science and technology. Twenty-one years ago, I started a nonprofit organization to restore one of these ponds, and we have had a wonderful relationship with the University of Hawai‘i, the Hawai‘i Institute of Marine Biology, and Windward Community College. We are working with scientists and cultural practitioners to reclaim this knowledge and reclaim this part of our culture to



Waikalua Loko Fishpond on the Island of O‘ahu, Hawai‘i

Christopher S. Teresi

incorporate it in how we teach our students in all the core areas—science, math, social studies, language, arts. As part of the education system, the link to the traditional knowledge and wisdom is helping us to inform scientists about solutions towards environmental sustainability and global climate change, as it relates to our specific community. What are the solutions going forward? This link is absolutely critical.

—Herb Lee, Jr. (*Hawaiian*), Executive Director, Pacific American Foundation and Vice President of Board of Directors, Waikalua Loko Fishpond Preservation Society, project partner

For me, it is how we demonstrate the 21st century skill sets that prepare our students for careers in STEM. For us, the restoration goes beyond just STEM science; it includes a culture-based Indigenous ecological knowledge and Traditional Ecological Knowledge foundation, which also has to be restored among our children, families, and members of our communities who are not Native.

—VerlieAnn Malina-Wright (*Hawaiian*), Kula Kaiapuni ‘O Anuenue Hawaiian Language Immersion School, Pacific American Foundation, and member of the Board of Directors of the Waikalua Loko Fishpond Preservation Society, project partner



Restoring the rock wall at Waikalua Loko Fishpond



River cane, a bamboo native to North America

Eastern Band of Cherokee Indians

ᑭᑎᑎ ᑎ ᑎᑭᑎᑎᑎᑎ (*Tsah-lah-gee-yee Deh-tsah-dah-nee-lv-gee*)

Re-establishing a native plant

One of the most important plants to the Eastern Band of Cherokee Indians is a native bamboo called river cane. Historically, the Cherokee used river cane in every part of their lives—as material for building homes, making tools, weaving mats and baskets, and a food source. River cane grew along waterways in vast thickets called *canebrakes* throughout the southeastern United States. Less than 2% of river cane remains today due to factors such as development, farming, cattle grazing, and dams. As river cane disappeared, millennia of Cherokee experience in managing the plant came under threat. However, some individuals—like basket weavers—maintain traditional knowledge about how to harvest and use cane. The Cherokee are now working with land managers and local conservation groups to use science and traditional knowledge together to restore and manage river cane. Major projects are underway to revitalize this natural resource and cultural practices. Today, community and high school programs offer basket making in the classroom to keep the knowledge alive.

There were only a handful of women [weaving with] river cane when the Cherokee Preservation Foundation asked people to write for grants. And I kept thinking, a lot of our baskets don't have good dyes on 'em, and we don't have many river cane weavers. So we wrote for grant money for classes, and our first classes were river cane... When we started having classes, Susan Jenkins at the foundation said, "What's your fear?" and I said, "Gathering material like river cane. Where are we going to get that?" and she said, "Well, that's a good thing to start with." So they had a symposium with people from the Forest Service, Land Trust for the Little Tennessee, neighboring people, and a lot of the Cherokee people. And they started mapping areas where river cane used to grow, and David Cozzo does a lot of the tracking of river cane... But it goes back to the Cherokee people. They know what size river cane to gather, and they could go to a patch and look at it and see what age the river cane is. It's not like you go and gather just a big bundle. You search through that patch and get the straightest and the ones that are mature for a basket. So, it's a

connection. A lot of people who are well-educated, they know people, and they know how to get out and map and preserve, but the Cherokee people, they know the actual material that's needed and when to gather it and how to gather it. It's a good collaboration.

—Vicki Cruz (*Cherokee*), Manager, Qualla Arts and Crafts Mutual, project supporter

Our major concern is that the natural resources that are needed by the Cherokee artists are available in the future. That's the whole reason they started my program, and it fit in nicely with the *Roots of Wisdom* project. [It] was pretty convenient that my job actually follows that line of thinking and to have this project come along and expand the scope of RTCAR to the West Coast and further—it all just seemed like a really good fit. It was a chance to get the word out about river cane on a much grander scale than any stage I've been working with.

—David Cozzo, Project Director, Revitalization of Traditional Cherokee Artisan Resources, project partner



Basket maker Sarah Thompson weaving a river cane basket

I want people to know that the Eastern Band of Cherokee Indians in Cherokee, North Carolina, have a strong community in the [Indigenous] language and [cultural] arts, and it's crucial for everyone to be successful... So, to me that's what it comes back to—a strong community and the [cultural and environmental] restoration story.

—Vicki Cruz (*Cherokee*), Manager, Qualla Arts and Crafts Mutual, project supporter



Organic vegetable garden at Hibulb Cultural Center and Natural History Preserve

Tulalip Tribes

Snohomish/sduhubš (*S-doh-hobsh*) “A lot of men”

Snoqualmie/sdukʷalbixʷ (*S-doh-kwa-biw*) “Moon people”

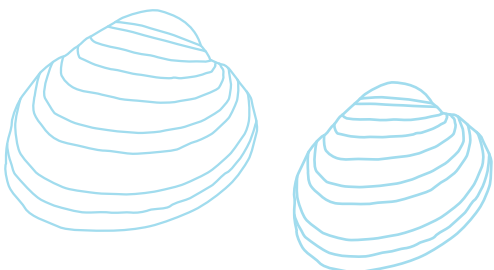
Skykomish/sqixʷəbš (*S-kay-wh-ubsh*) “Inland people”

Other allied tribes

Rediscovering native foods

The Tulalip Tribes (*Tuh-lae-lup*) have always had a strong spiritual connection to their homelands in northwest Washington state. Members of the tribes were moved to the Tulalip Indian Reservation, created by the 1855 Treaty of Point Elliott. Since the time of the treaty, dwindling territories and access to natural resources have hampered the tribes’ connection to the land. Under the treaty, the tribes reserved their rights to hunt, gather, and fish on their traditional lands. However, loss and pollution of native food sources, as well as modern diets high in fat, salt, and starch, led to a dramatic decline in tribal members’ health.

The Tulalip Tribes are now reconnecting to their traditions and rediscovering foods important to their ancestors. As part of the effort, activities on the reservation teach organic gardening, nutrition, and how to bring native foods into tribal members’ diets. Stories, songs, and hands-on teaching convey traditional knowledge about care and use of native plants for food and medicine. By safeguarding these teachings, the people are renewing connections to their land and improving the health of tribal members.



What we had tried to do with the organic vegetables was to empower our people to bring gardening home and to improve their health in incorporating these vegetables with our native foods. So improving health and empowering were the two major things... Some of these vegetables, people may not be familiar with, but if you learn how to grow them, learn how to eat them, then you can incorporate them with the meals, and some of the [native] herbs that we use here were also helpful to our health.

—Inez Bill (*Lummi/Snohomish*), Rediscovery Coordinator, Hibulb Cultural Center and Natural History Preserve, project partner



Caring for vegetable seedlings

Reflections On Getting Started

Start Where You Are

Who are the local Indigenous people who live near you? The original and deep connections of a people to a place are very important and continue to be recognized and honored by Native people. Members of the local Indigenous community may live nearby, far away, or be dispersed far and wide. You may also have Native communities nearby who are far from their traditional lands, especially in urban areas, due to the termination era, efforts to remove Indigenous people from their homelands, and diaspora due to poor living conditions and lack of opportunities on reservations. Consider ways to connect with and honor the original people regardless of where they are now.



Members of the Native Youth Advisory Board from Portland Public Schools Title VII Indian Education Program

Example from *Roots of Wisdom*

Because we were aiming for a national audience for the traveling exhibitions, we designed the project initially without local partners. At the first advisory group meeting, our advisors strongly encouraged us to connect with the local Native community. We were fortunate to partner with the Title VII Indian Education Program at Portland Public Schools to create the Native Youth Advisory Board for local middle school students.

Listening. From listening comes wisdom. That's an old Chinese proverb. I think that's the first thing. And then being able to get your Native communities to have the face-to-face meetings early and be able to have people to tell their own stories in their own way and then create and innovate and reveal from there.

The power of having a Smithsonian or OMSI do something with these Native groups is also something that should be considered more because it's a very empowering thing for us to be able to make people better understand the importance of these bridges between traditional wisdom and modern science. Having a partner that comes to our community like an OMSI or Smithsonian is huge for us to help elevate the story that we're trying to tell in our own community and show the wisdom of how we can go forward, hand in hand, and make opportunities for our community for a better place... I would like to see something like that happen in the future.

—Herb Lee, Jr. (*Hawaiian*), Executive Director, Pacific American Foundation and Vice President of Board of Directors, Waikalua Loko Fishpond Preservation Society, project partner

Learn Some History

What experiences in the past have shaped the Native communities where you live? Chances are good that this history will include disease, war, treaties, removal, reservations, boarding schools, relocation, and loss. It will also include resistance, adaptation, resilience, restoration, and growth. Seek out sources that include Native perspectives and voices. Tribal museums, libraries, and websites are good places to start. Many tribal events are open to the public and can be valuable cultural experiences for non-Natives to learn about traditions and practices, as well as issues and challenges.

Example from *Roots of Wisdom*

At the start of the project, the OMSI team had limited understanding of local Native history or of the histories of the four partner communities. Over the course of the project, the OMSI team visited communities, listened to their stories, and gained a deeper understanding. Learning about the local indigenous history prior to starting a project is important for respectful collaboration.

The museum's [Tamástslikt Cultural Institute] hope was to have a quality exhibit come out of this and that it would tell our story from our perspective, but in a way that the general public can understand it.

—Randall Melton (*Seminole/CTUIR*), Collection Curator, Tamástslikt Cultural Institute, project partner

When science and our people come together and we have one thing that we're focusing in on, not having an understanding of our people is somewhat difficult. I was optimistic when we had the phone calls when we were working, but some of the time, when we got the [exhibit content] back, it didn't reflect [what we talked about]. So that's why I say that when you look at an Indian reservation or Indian tribe, you kind of have to know a little bit about their background and understand a little bit of how our people are.

—Inez Bill (*Lummi/Snohomish*), Rediscovery Coordinator, Hibulb Cultural Center and Natural History Preserve, project partner

Look For “Bridge People”

There are many Indigenous organizations, cultural centers, institutions, and people that have experience in both Western and Native worlds. For example, the American Indian Science and Engineering Society (AISES) is a professional organization of Native scientists, engineers, and students that seeks to increase representation of Indigenous people in STEM careers. Partnering with an experienced group or individual can provide a bridge to engagement with other Native partners and an easier starting place to learn by making mistakes.

The NMAI Office of Education felt the *Roots of Wisdom* project was an important contribution to American Indian content. Our office had recently completed a web-based educational product on American Indian responses to environmental challenges for a middle school through high school audience. OMSI has a great reputation and knowledgeable staff, so for our office, it was an opportunity to be a part of the process and contribute the expertise and knowledge we have gained since opening the NMAI in 2004. We had worked with IEI in the past and were eager to partner with the organization given the work they have done with Native knowledge and Native knowledge holders.

—Pamela Woodis (*Jicarilla Apache*), Resource Materials Manager, Smithsonian Institution's National Museum of the American Indian, project partner



Example from *Roots of Wisdom*

The project's key bridge people were Nancy Maryboy and David Begay from IEI. They were co-leaders of the project from start to finish. They introduced and connected the OMSI team with many other essential Native partners, including tribal museums, evaluators, knowledge holders, and restoration project staff. OMSI's team ran ideas and drafts by IEI first before reviewing with other partners. IEI advised the OMSI team on tribal protocols, relationship building, and reciprocal collaboration. Whenever the OMSI team visited partner communities, someone from IEI joined, too.



Nancy Maryboy and David Begay of Indigenous Education Institute

Commit To And Invest In Relationships

Connections between communities and organizations are built on individual relationships between people. The connection usually starts with and may rely on a single relationship between two people, one from each side. The relationships are what make collaboration possible. Commit to building more and deeper relationships to strengthen your capacity for ongoing collaboration. Remember that it takes time and repeated contact to build trust. Invite your partners to visit you and plan time to reciprocate by visiting them. Don't expect to be able to approach an underserved community to, for example, include in a grant proposal that is due the following week. Focus on your relationships, not just on projects to build capacity.

Make sure that you have time to set down and discuss what you want, what that story is, and how you can best work to create a product that will work for both of you, and do not be scared [and] hold back your voice because sometime, when you see something and you let it go, later on you might be upset about it. When those deadlines come up... mark them down and start working on them early because it always takes three or four more times than you think. Make sure that you have [the] involvement of [your] commissions, of your board of trustees, and the backing of your tribal community if you're a smaller tribe. You have to make sure that the project is going to benefit you and the organization or science museum you're working with, and when you're done with it, it showcases both of you in the best way so that when you're moving forward, you're not wasting time or money or energy or something, getting shut down later on when your board decides "No, we don't want that to go through."

—Wenix Red Elk (CTUIR), Public Outreach and Education Specialist, Department of Natural Resources, Confederated Tribes of the Umatilla Indian Reservation, project partner



Example from *Roots of Wisdom*

We had formal and informal in-person meetings as much as possible, which facilitated relationship building. The full partner and advisory group met at OMSI at three crucial moments in the project: the outset of exhibit development, during exhibit prototype testing, and after the opening of the interactive version of *Roots of Wisdom*. All three meetings were important times to reflect on the collaborative process and foster relationships among partners and advisors. In addition, OMSI team members playing various roles (designers, evaluators, fabricators, exhibit developers, and program developers) attended partner visits and meetings to invest in relationships held across the organization, rather than just through one or two primary contacts.

I wish I would have had more time to have been able to be more dedicated to things.

—Wenix Red Elk (*CTUIR*), Public Outreach and Education Specialist, Department of Natural Resources, Confederated Tribes of the Umatilla Indian Reservation, project partner

It took time for us to develop the relationship, because—especially for the tribal people—it’s just a matter of developing relationships before you really feel comfortable about opening up. It just made the project stronger because we did have those opportunities that were built into the project to do face to face—to have meetings where we were all in the same room together rather than just trying to do it strictly via email or over the phone or something like that. I think it was important to overcome some of those challenges of just building the relationships, but... everybody came to the table with an open mind and willing to be flexible but at the same time sticking to their principles, so... it just took some time to develop relationships to help facilitate the communication for the project.

—Randall Melton (*Seminole/CTUIR*), Collection Curator, Tamástslikt Cultural Institute, project partner



Partners and project team discuss collaborating with each other

Serving in an advisor role was not a challenge—it was an opportunity. But having worked on several projects with American Indian content, there can be many challenges. It takes time to build relationships and for American Indian communities to trust “projects” and the people involved because of past negative history with working with outside groups. It’s important for such projects to have the right people involved to move the project through the different stages... and to not let setbacks derail the work and to learn from mistakes. Understanding some of the history and the current issues the American Indian partner communities face is also key.

—Pamela Woodis (*Jicarilla Apache*), Resource Materials Manager, Smithsonian Institution’s National Museum of the American Indian, project partner

Build relationships; get to know the group you are working with. How will the work benefit the communities? Work through the proper channels. Partner with organizations who may have done similar work.

—Pamela Woodis (*Jicarilla Apache*), Resource Materials Manager, Smithsonian Institution’s National Museum of the American Indian, project partner



Start At The Beginning

Start collaboration at the very beginning of the project. Don’t design or develop something and then look for Native contributors or editors; it is extremely important that projects about Indigenous people are informed by the Indigenous community from the beginning in order to ensure that the information presented is accurate and respectful of the community. It is also less likely that the Indigenous community from which you seek input will be willing to get involved in a project in which they do not feel invested. Start by looking for topics of common interest and asking what the community wants to share in a program or exhibit and who they want to share with.



The OMSI project team and IEl visit Cherokee, North Carolina

Indigenous communities are approached frequently by outside organizations to get involved in projects in order to benefit non-Native communities. In order for a project to be mutually beneficial, there needs to be an exchange of resources. Before approaching a Native community for advice, information, involvement, or support, make sure that you have something of value to offer them in return. Ask yourself: What do you have to offer your [Indigenous] partners, and how will the project benefit those partners? Lots of projects come our way, and folks ask us to partner with them. We try to look at each project and think: Is this tribal-wide and not just the museum? If we invest in this, what is going to be the outcome, and what are we going to get out of it?

With this project, we liked the idea of a traveling exhibit going around the country telling our story of restoration and doing it in a way that acknowledges and honors the traditional aspect, as well as the scientific part. Lots of time[s], people just see the traditional side when they think about Indians. They don’t think about us using technology and scientific methods to manage our resources. To bring out that side of the story, too, is important.

—Randall Melton (*Seminole/CTUIR*), Collection Curator, Tamástslikt Cultural Institute, project partner

Example from *Roots of Wisdom*

We knew we wanted to create exhibits and programs about TEK and environmental science. Beyond that, we asked Native partners to choose what and how they shared about their communities and traditional knowledge. For example, out of many possible examples of ecological and cultural restoration, it was CTUIR's choice to focus on tribal efforts to restore declining lamprey populations. They decided how the story would be told and selected the exhibit ideas that were developed. They reviewed and approved all the images, text, graphics, scripts and software design and content. We were delighted to have the success of our collaborative development affirmed during the exhibit opening at the Tulalip Tribes' Hibulb Cultural Center. During the event, our hosts referred to *Roots of Wisdom* not as "an OMSI exhibit," but as "their exhibit."

At first, when OMSI approached us, our museum staff was skeptical with the idea of the partnership. The main reason for the uncertainty of the partnership was that, historically, museums have a history of misrepresenting Native Americans. This representation of Native Americans within the museum world is starting to change. Our decision to partner with OMSI was due to OMSI communicating and explaining the benefits of a partnership for both organizations. This partnership would allow us to tell our story in our own words. OMSI said it would allow them to create an authentic exhibit by including the voice of each respective community in lieu of OMSI writing the info about each community. What is so important to our people are the teachings [that] are passed on generation to generation. These teachings were shared in the exhibit, and they are the words of our ancestors.

—Tessa Campbell (*Tulalip*), Curator of Collections, Hibulb Cultural Center and Natural History Preserve

Be clear about what you are offering and what you are receiving

When you set out to collaborate with new partners, be clear about who you represent and what you can offer. Are you speaking for your whole institution, your project, your team, or yourself? If you have a limited timeframe and budget, communicate this. The same considerations exist for your partners. A single person cannot usually represent or make commitments for a whole community or organization. Most individuals are speaking for themselves and about their experiences and knowledge, not for the whole community.

I knew that the partnership would be a learning experience for myself, our cultural center, and our community. I was relatively new to the museum field and had a lot to learn about exhibit development. The experience of attending all of the partner meetings at OMSI was very beneficial, as it offered a networking opportunity, an outlet for sharing, and an opportunity for learning about exhibit design, development, and evaluation.

—Tessa Campbell (*Tulalip*), Curator of Collections, Hibulb Cultural Center and Natural History Preserve



Reviewing an exhibit prototype

Example from *Roots of Wisdom*

IEI helped the OMSI team connect with appropriate representatives from each community. Our Native partners held leadership roles in community education or restoration and were knowledgeable about seeking guidance from elders and tribal leadership when needed. Because our project focused on stories from communities, not just individuals, it was important that we had several partners with strong connections to leaders from each community.

Because the Department of Natural Resources is doing the restoration habitat work, it was very important for us to have a voice within the project. They appointed me to be on the team because I'm the public education outreach specialist and I have a degree in museum studies... I was very excited to work on the project. As a young child, I [often] went to OMSI with my father and my family. When [the project] was done, I thought, "Wow, I would have never thought I would have been part of this process!" I could be proud to say I got to work with this team.

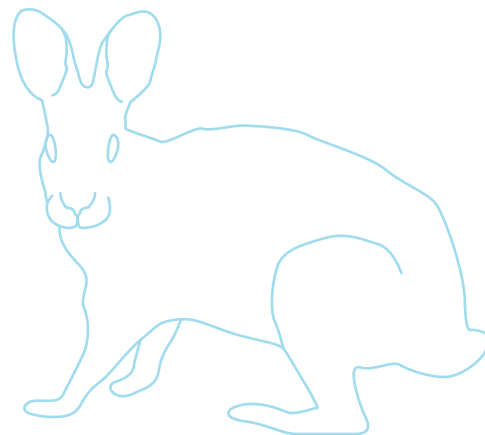
—Wenix Red Elk (CTUIR), Public Outreach and Education Specialist, Department of Natural Resources, Confederated Tribes of the Umatilla Indian Reservation, project partner

Find ways to meet the needs of your audiences

Reciprocal benefit is a defining aspect of collaboration. When working on projects with Native partners, find out their goals and priorities and be prepared to design the project so that it benefits your partners' communities. Our target audiences for the *Roots of Wisdom* exhibitions and activity guides were Native and non-Native youth ages 11–14 and their families. In order to reach underserved tribal communities, we created the banner version of the exhibition, which is appropriate for venues that are small and have limited resources. Due to OMSI's inexperience producing and touring banner exhibitions, we partnered with the Smithsonian Institution Traveling Exhibition Service (SITES).

OMSI has a tremendous depth of experience in bringing people together to work on very complex projects. For us to be able to share our expertise in bringing content to small tribal museums and other small venues interested in Native American subjects... It just felt like a really good marriage of the strengths of our respective organizations.

—Katherine Krile, Assistant Director of Exhibits, Smithsonian Institution Traveling Exhibition Service, project partner



Reflections On Collaboration

Collaborations on Top Of Collaboration

Science center and museum projects are often collaborative, especially exhibit projects where many different skills (such as research, writing, evaluation, design, fabrication, and project management at OMSI) are needed. Adding external collaborators makes the process more complicated. Collaborating with diverse cultures and worldviews adds more complexity. In the case of *Roots of Wisdom*, there were four parallel collaborations between OMSI and the groups from the four Native communities. Sometimes, the OMSI team did not agree internally on how to collaborate with external partners. This challenged the collaborative process within the OMSI team, as well as with external partners.

As part of the summative evaluation of the collaboration, the evaluation team invited each of the participants to draw a map of the relationships within the project and locate themselves in the map. Many of us drew the multitude of relationships as highly interconnected and sometimes nested networks.

I would definitely recommend embracing this type of partnership. It is a great learning experience for both Native communities and science museums. It provides a learning opportunity for all. It is beneficial to Native communities because it allows their voice to be heard. It is beneficial to science institutions because it authenticates the information being shared about Native communities. This type of partnership may open doors to collaborate on other projects, such as projects on environmental issues, research-based projects, or programming.

—Tessa Campbell (*Tulip*), Curator of Collections, Hibulb Cultural Center and Natural History Preserve



Share Creative and Editorial Control of Project Deliverables

Generally, OMSI exercises final editorial control over project deliverables. Project advisors review and comment on prototypes, concepts, and drafts. However, this project was different because the goal was to share Native ways of knowing the natural world, not a Western interpretation of Native ways of knowing. Partners edited and approved the exhibit concepts, graphics, photos, illustrations, labels, scripts, and other project deliverables. These were not OMSI's stories to tell nor was it OMSI's knowledge to share, so in each case, the featured community had final approval of their story.

One thing OMSI did was get out of the way. OMSI was a part of the process, but wasn't obscuring the show. Many people with science backgrounds, or so many people who want to do a program—they've got ideas, they want to jump on their creative bandwagon and drag everybody along with them. OMSI let [the community voice] inform the process instead of having a preconceived notion of what the product was going to be, took the time, met with the communities, listened to the voices from the communities, and I think that's first and foremost what anybody else would have to do.

—David Cozzo, Project Director, Revitalization of Traditional Cherokee Artisan Resources, project partner

As a smaller tribal museum, it's important to understand that if you're going to work with an organization like OMSI or another museum of that [large] size to understand that there's several departments. Each one of them has their own kind of timelines and deadlines, and there are times where they might not be all on the same page, or just because you tell one person one thing doesn't mean that the next department is going to get that info... versus a small museum like us where you know, you're pretty much talking with one guy or two guys that are in charge of their aspect of the whole project.

I think it's important that idea of just understanding that it takes time, you're not going to make a few phone calls and send work someone's way and expect for it to get done without a little bit of pushback and... that's just protocol... just because it's a great project, you can't expect immediate buy-in. It's going to take time to develop the idea and you have to be flexible with what the final outcome is going to be because if you're really wanting tribes' input, you can't come in with the idea already set in stone of what the outcome is going to be. You have to be willing to be flexible.

—Randall Melton (*Seminole/CTUIR*), Collection Curator, Tamástslikt Cultural Institute, project partner

For museums that are not tribal museums, or museums that don't have any existing partnerships or relationships, it is really valuable for them to understand that you don't tell a story without engaging the people who are living the story.

—Katherine Krile, Assistant Director of Exhibits, Smithsonian Institution Traveling Exhibition Service, project partner

My goal was that there would be a good product at the end and it would be something which sparked some interest. I see myself as an advocate, and this was just a really good platform to be an advocate for a plant, if you can be that, and bring the Cherokee cultural perspective into that. I really liked the idea of an institution like OMSI wanting to include Native perspective, wanting to include

Native voices, really trying to get out of the way and let the thing almost develop itself. [...W]ith OMSI's expertise in how to put together an exhibition, and the voices of the people that should be included to inform that[...]it fit everything that I believed in, everything that I thought would be included in a good project, and it turned out to be so.

—David Cozzo, Project Director, Revitalization of Traditional Cherokee Artisan Resources, project partner

Address Staff Turnover on the Project Team

Continuity was a major issue for the project, which was centered on relationships and co-development between Native and non-Native partners. Out of about six main members of the OMSI team (not counting leadership and managers), only two had been part of the project from its beginning. Introducing people to this big, multi-faceted project was very challenging, especially when we were in the early stages. We were learning how to collaborate with intergrity while having to introduce people to the collaboration, as well as the complex and nuanced concepts around TEK and Native partners' restoration projects. This wasn't at just one organization—there were instances of orienting new team members at multiple partnering organizations. Having good relationships among the project leadership and partners—including our “bridge people”—helped to smooth transitions. And as the project continued and we gained more experience and confidence working together, the anxiety of bringing on new team members became less fraught.

Collaboration With Multiple Partners

If we had worked with one local or a few regional partners, the project would have been simpler. However, because we proposed a traveling exhibition for a national audience, we included distant and diverse partners to create a more nationally relevant exhibition. For this to work, we needed to make sure we had adequate project resources to tell four different stories. Throughout the project, we wanted to maintain balance and treat partners

equitably—use the same process with each community, give each story equal weight in the exhibition, and give each partner the same benefits and considerations. This was complicated, especially when project ambitions needed trimming (as they always do at some point). About halfway through, as we were trying to conduct formative evaluation of the project collaboration, we discovered that we did not have a single large collaboration with our partners. We had a series of many overlapping and shifting collaborations.

I think the challenges were first to establish a relationship to determine our common needs and then take a look at the skill sets, what we brought to the table, and how we leverage that collective impact so that we would have not only the ability to tell our story, but a collective [story with] four different perspectives.

—VerlieAnn Malina-Wright (*Hawaiian*), Kula Kaiapuni ‘O Anuenue Hawaiian Language Immersion School, Pacific American Foundation, and Board of Directors, Waikalua Loko Fishpond Preservation Society, project partner

There were obstacles when working with others who were in different regions. There were ways to facilitate communication methods while being in different areas—via phone calls, conference calls, or email.

—Tessa Campbell (*Tulip*), Curator of Collections, Hibulb Cultural Center and Natural History Preserve, project partner

Because of the success of *Roots of Wisdom* and the relationships it fostered, the collaborations and partnerships continue to thrive and evolve. Thanks to the OMSI and Native Universe teams, I feel confident to expand my program’s K–12 science activities and have committed to a couple of youth citizen science projects over the next three years: *Celebrate Urban Birds* and *Lost Ladybug Project*. In addition, I am very excited that my program and I will participate in the upcoming *Lenses on the Sky* exhibit.

During the summer of 2015, my program sponsored 50 elementary and middle school students to take

Overall, it was good to be with the other organizations coming together and addressing similar concerns.

—Inez Bill (*Lummi/Snohomish*), Rediscovery Coordinator, Hibulb Cultural Center and Natural History Preserve, project partner

Sustain Relationships Beyond Individual Projects

Of all the work on *Roots of Wisdom*, the most important work was that of fostering and maintaining relationships among the partners. The exhibition content says that the two ways of knowing are complementary, and Indigenous communities use both in an ongoing and dynamic way, with the benefit of long-term environmental and cultural health. We have sought and are continuing to look for ways to work together. In many ways, our opportunities to do so are shaped by available funding, but the richness of the engagement that we have had with each other provides fertile ground for new projects to sprout.



week-long classes at OMSI, and this was achieved with the guidance and ongoing support of the OMSI team. I believe that the journey of *Roots of Wisdom* has truly expanded my repertoire of supports and services for Native youth. *Roots of Wisdom* demonstrates the positive outcomes and authentic learning that is generated for youth and families when communities, school districts, and programs, such as Title VII Indian Education, develop and nurture partnerships with museums.

—Karen Kitchen (*Osage*), Director of Title VII Indian Education Program for Portland Public Schools, project partner

Reflections from OMSI Exhibit Team

Challenges and Lessons

Big learning curve and slow start

The first year's work was in seeking and building relationships, conducting the front-end evaluation, and establishing shared goals and messages, as well as developing a collaboration plan. The whole first year felt like it was slow and difficult to “really get going.” The OMSI team didn't get fully assembled until the second year of the project.

I was new to the field when the project started, so I felt like my learning curve was very high. It took a long time for me to feel confident in the relationships, because I didn't know any of the partners and wasn't familiar with their communities. A few of the other team members had existing relationships with some of the partners and more background in cross-cultural collaboration.

—Cecilia Nguyen, Exhibit Developer, Oregon Museum of Science and Industry, project Co-Principal Investigator

Challenges in describing and teaching visitors about TEK

Non-Native public audiences are generally more familiar with Western science than TEK. In order to steer away from setting up a dichotomy that might lead visitors to evaluate the relative value of each worldview, we avoided comparing and contrasting. We chose to allow the restoration stories to illustrate many ways that Native communities are using TEK and Western science in concert.

Early on in the project, we created a list of messages about TEK that would be supported throughout *Roots of Wisdom* (see section on Native Voice and TEK in *Roots of Wisdom*). These messages contained some pretty advanced concepts, which may not be appropriate or accessible for younger audiences. For museums

attempting to make TEK accessible to younger audiences, we suggest working with Indigenous partners to prioritize developing age-appropriate messages.

Incorporating Native voice and authenticity

TEK is place-based. This meant we had to have a rigorous standard of checking every image for accuracy of location, plant and animal species, materials that objects were made of, land features, and more. Collecting, photographing, and drawing the 150 images included in the interactive exhibition took a significant number of resources. Not only was it necessary to show ecosystems and environments accurately, we needed to show people—active shots, faces, diversity, elders—to show that Indigenous people are modern environmental stewards in vibrant communities, not stereotypes buried in the past. One of the most important elements in the project was to have Native voices throughout the exhibition. The exhibit labels are written in third-person narrative (e.g., “the Tulalip people”), a choice made early on in the project to maintain consistency throughout the different areas of the exhibition, which include content that isn't specific to one of the four featured communities. However, we incorporated Native voices in the story area, five videos, and quotes throughout the exhibition.



The OMSI team in a welcoming ceremony in Kona, Hawai'i, presenting a lei upon entering a *wahi pana* (important place)

Story Area Case Study

Striving for a culturally appropriate experience

During the development of the four featured communities' exhibit areas, several of the Indigenous partners encouraged the inclusion of traditional stories in the exhibition. The role of stories and oral traditions is fundamental to Indigenous cultures and in passing down TEK, which was agreed should be reflected in the exhibition. The cultural significance of the Story Area is affirmed by a partner from the Tulalip Tribes in the summative evaluation report: "We have one of our stories and one of our songs in one of the exhibit portions. Those are very important for our cultures; the teachings are passed down from generation to generation through the stories." (Stein and Valdez, 2015)

We looked for ways to add stories to planned exhibits—for example, the stories could have appeared as additional audio and text in computer-based activities or as additional graphic panels. The final direction was a dedicated Story Area that included traditional stories from all four Native communities. The OMSI team originally designed the Story Area as a place for visitors to sit down, read Native stories from the four communities, and have conversations about traditional knowledge. In the first design, visitors could sit around a low table and read stories printed on colorful boards. They also could read and respond to a comment board and weave patterns on laptop weaving boards.

In reviewing the newly installed exhibition at OMSI in July 2014, the Indigenous partners and advisors strongly advocated that the traditional stories needed greater presence and that they be available as audio stories told by Native elders. After remediation (design and content revisions to better achieve the project's goals), the Story Area has become a conceptual and visual centerpiece for the exhibition. Visitors experience the audio stories by pressing buttons to hear voices from each of the four Native cultures featured in the exhibition. The buttons are built into the table surface, beside a simulated fire pit. To create a sense of place, curved benches surround the fire, and the entire Story Area is encircled by tall, curved graphic panels printed with images of the night sky. The Story Area offers visitors the richest opportunity in the exhibition to:

- Engage in the transmission of TEK through oral tradition
- Experience how TEK is embedded in Native cultures
- See connections between the featured Indigenous communities—this is the one area of *Roots of Wisdom* that brings together all four
- Experience storytelling in an immersive setting rather than a "reading area"
- Rest and reflect



The Story Area before remediation



Exterior view of the Story Area

The summative evaluation of the remediated Story Area showed that the audio stories were—as hoped—an effective approach to communicating the role of TEK in Native communities. When asked to rank the most interesting features of the exhibit, visitors ranked the audio stories as the most interesting by far (88% of respondents). The redesign also boosted engagement in the Story Area in general and achieved the intended goal of creating a space for reflection (Kuyumjian, 2016). This increase was a big improvement over visitor engagement with the Story Area before remediation, which was generally low, with few visitors engaging with the stories when they only appeared on printed cards (Stein and Valdez, 2015).



Interior view of the remediated Story Area

A pitfall that we needed to avoid was that of making the stories and cultures appear to be in the past. Careful consideration went into designing the fire pit and graphics and into writing exhibit labels to reflect the present day. For example, the fire pit might have had a “natural” or “traditional” look and feel, but it was designed with smooth laminate and a modern-looking metal screen cover. Another example is that, instead of interpreting the Story Area with explanatory text, quotes from living members of each of the featured Native communities convey all of the messaging, such as the quote that appears on this page by project partner Herb Lee, Jr.

Finally, traditional stories have often been misappropriated, taken out of context, rewritten, and retold by non-Native educators. Because *Roots of Wisdom* is intended as a resource and model for the ISE field, it is important that the exhibition reflects culturally appropriate best practices by having authentic voices share stories from their own cultures. Out of co-development by the collective Roots of Wisdom Project Team, the remediated Story Area provides a culturally appropriate example of Native voice and traditional story in exhibits.

In this time of great change, there is much to be learned from our ancestors. Let our past guide us to the future to reach more children, to build strong healthy communities, and to perpetuate for future generations aloha ‘āina—love of our people and Mother Earth.

—Herb Lee, Jr. (*Hawaiian*), Executive Director, Pacific American Foundation and Vice President of Board of Directors, Waikalua Loko Fishpond Preservation Society, project partner

Finding images specific to each community

This project focused on multiple, very specific places and peoples; this was challenging when it came to finding imagery that was accurate and also fit within the aesthetic of the entire exhibition. Having the four tribes as a resource to check and find imagery was helpful, but also added to the challenges—correspondence was often time-intensive, and we needed to balance all ideas and opinions across the exhibition. For example, landscape photos in *Roots of Wisdom* appear at three different scales: panoramic (mountain range), near-distance (river and single mountain), and close-up (streambank). We needed to verify that every shot was taken in a location within the right territories for all four cultures.

One of our partners from CTUIR, Wenix Red Elk, was in Portland and dropped by OMSI. We took her to see the exhibit in the production shop, and she noticed one of the large photo murals did not look right to her. It was a photo of a river in Eastern Oregon, but it was very generic to our eyes—a river, running through low hills of high desert. As Wenix looked more carefully, she became more certain that it was not CTUIR land. The designers checked the source—it was a photo of the Deschutes River and was from Warm Springs land, not CTUIR. We were able to switch out the photo before the opening and avoid showing the wrong photo to visitors, especially visitors from CTUIR or Warm Springs.

—Victoria Coats, Research, Development, and Advancement Manager, Oregon Museum of Science and Industry, project Principal Investigator

Learning experience

Working with Native partners wasn't so much of a challenge as it was an informative learning experience for the OMSI exhibit team. The team had to prioritize providing a positive view to all Native and non-Native visitors.

I was originally hired by OMSI to teach science classes back in 1985. I was well-equipped for this job. I had years of experience teaching and a good background in science. I taught classes for about a year, then I moved on to developing exhibits, writing grants, running

advisory groups, collaborating with other museums, designing and leading collaborative projects, and, lately, collaborating with diverse Indigenous partners, communities, and organizations. Most of these new tasks I learned by doing, making mistakes, and figuring things out along the way.

A science museum is a good place to dabble in different things—during a visit or for a whole career. A drawback of this twisty career path is you are never quite expert or well-prepared for anything you might wind up doing. Collaborating with Indigenous partners was exactly that kind of career twist for me and for most of the *Generations of Knowledge* project team at OMSI. We had limited prior experience with cross-cultural collaboration or Indigenous knowledge. We learned by doing and making mistakes.

—Victoria Coats, Research, Development, and Advancement Manager, Oregon Museum of Science and Industry, project Principal Investigator

Set clear expectations and define roles

We learned much about how to set up and manage collaborations. With respect to getting content approval from Native community partners, there were a variety of roles that were being served by primary contacts, and, in some cases, approval rested with the primary contacts, while in other cases, partners needed to get input from an internal group. Sometimes, it was also unclear whether a person was giving feedback from their own personal point of view or on the behalf of a group or organization.



Second out of three rounds of prototyping the Pacific lamprey

Working through this project made it clear that future collaborations need to have well-understood expectations and defined roles for all people involved.

—Jaclyn Barber, Senior Exhibit Graphic Designer, Oregon Museum of Science and Industry

When y’all came to visit and Vicki [Victoria Coats, the project’s principal investigator] couldn’t come, and it seemed like somebody needed to step up and kind of take charge—I didn’t know if I was supposed to, and it just really wasn’t clear what we were trying to get out of that visit... so it was kind of vague. And once it got kicking, everything was great. But it took a while to get that kick. The focus needed to have been clarified right off the bat, and expectations.

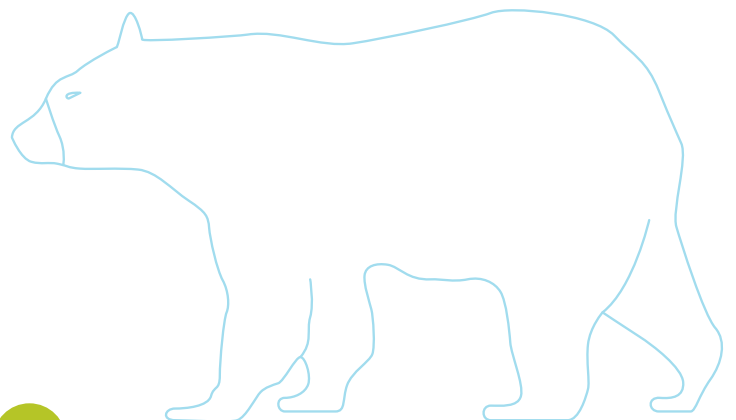
—David Cozzo, Project Director, Revitalization of Traditional Cherokee Artisan Resources, project partner

Expect (and invite) personal and professional growth

Over the course of the project, members of the OMSI team experienced personal breakthroughs. One person reported anxiety about the collaboration process due to inexperience working with Indigenous partners and a concern over clashing communication styles early in the relationship. For example, she worried over when to schedule check-ins, length and detail of messages, and how long to wait before sending reminders. As time went by, the questions and considerations remained the same, but she became more comfortable with the expectations of the partners, and the anxiety melted away. She became “comfortable with being uncomfortable.”

Members of the OMSI team also learned a lot about material choices (natural wood-based material vs. plastics and metals that are fabricated and not earth-friendly), natural imagery, and color choices. While some concessions had to be made in order to ensure quality, the warm earth tones of the metal color choices worked well in the end product.

Despite some apprehension, the team overwhelmingly looked forward to working with a group of people they had never worked with before and learning from differing perspectives. As the partners shared their stories and responded to our work, those expectations were fulfilled through an enjoyable, collaborative learning process. This collaboration was different from those with other groups in that it was more dependent on relationships, reflecting the Indigenous cultural working style. Members of the team learned to be more patient with and understanding of that working style and developed professionally from the growth they experienced through the process.



Advice For Other Collaborative Projects

Think through your communication strategies

Roots of Wisdom was a complex project with thorough evaluation throughout its six years. One strategy that the OMSI team used was naming a team member to be the primary contact for each of the four partners co-developing the content. The partners did the same. We did our best to set expectations in advance, but when multiple parts of the project were active, it wasn't always possible or effective to maintain only one point of contact; for example, OMSI needed input simultaneously on the activity kit, website, banner exhibition, and evaluation at one point during the project. Having a primary contact not only helps manage the flow of communication—that person is also essential in maintaining relationships and advocating for the partners.

Using multiple modes of communication was necessary because of the long distances involved, as well as the multiple collaborative efforts. We used email, person-to-person phone calls, conference calls, in-person meetings, and even text messaging. It is important to plan in-person meetings at crucial points in the project, especially in the beginning.

The project initially used Basecamp as a means of communication and as a repository for touchstone documents. Basecamp is an online tool that is meant to aid collaborative work with features for communication, document sharing, and project management. It turned out not to be an effective tool for *Roots of Wisdom*, despite our attempts. While OMSI has used Basecamp successfully on other projects, not enough of the people involved were comfortable using this tool. As a result, we relied on email and phone calls to plan, coordinate, and manage the project.

Be flexible about timelines and process

One of the single most important rules of collaboration is that it takes time. With Indigenous partners, everything takes longer than it would with non-Native partners, because Indigenous people are accountable to their communities and may have to prioritize cultural protocols. For example, certain ceremonies—such as those associated with deaths of tribal members, weddings, births, and other major life events—are a priority, and it must be respected if the situation warrants that a partner has to be away for a week or two. The focus in tribal communities is on the needs of all members of the community, and being flexible about timing is necessary. Every member of the community is considered a part of the larger family, and taking care of each other and being there for each other takes precedence over projects with non-tribal partners. For example, in many Indigenous communities, ceremonies related to the death of a tribal member require the presence of the entire tribe and can last for several days.



At the Association of Tribal Archives, Libraries, and Museums conference, September 2015

Map project case study

Even relatively simple projects may require extra time and attention

About six months before *Roots of Wisdom* opened, we decided to add a large-scale map to the exhibition. The map would show additional restoration stories from a wider diversity of locations, and it would reinforce the relevance and universality of using TEK and Western science to address environmental challenges. The OMSI team began working on the map, assuming that production would easily fit our timeframe because we were only looking for a photo and a couple of sentences about each additional story.

What we didn't take into account was that we were approaching groups from all over North America that we had not previously worked with, which meant that we were at square one with a number of new relationships. All of the steps of co-creation and review needed to be taken with each of the five groups we worked with, and we had to ensure that the content reflected Indigenous voices and was presented as the collaborators wanted. In the end, it took over a year to produce the map, not the three months or so that was estimated, and it wasn't completed in time for the opening of the exhibition. No matter how big the final product was, it was crucial to take time to form relationships, observe protocols, and recognize that cross-cultural collaboration is a process that cannot be rushed.

Taking Care of Homelands and Culture

Native communities worldwide are working to preserve their local ecosystems, which are deeply tied to their cultures.

Find the communities featured in *Roots of Wisdom* and a few of the many other stories below.

How are communities near you responding to environmental challenges?

Can you add a story to the map?

Find out more at <http://www.omsa.si.edu/environment/>

*Lummi *Nation

Educating Youth on Conservation

Tribal members at the Lummi Youth Academy are creating programs for youth and community members to re-connect with their Schlangon (way of life). By integrating and respecting Western science and the Schelangen, someday our youth will educate others on the ecological health issues of the past and present and be the Keepers of the Tradition and Protectors of the Circle of Life.



***Tsalap *Tribe**
Rediscovering Native Foods



Confederated *Tribe of the *Tsalilla *Indian *Reservation
Saving Streams and Wildlife



***Leech *Lake *Ojibwe**
Protecting Wild Rice Habitat
The Leech Lake Band of the Ojibwe are taking steps to preserve wild rice, their most important traditional food, for future generations. Much of the wild rice habitat has been lost over the last century due to human activity.



*Sault of Sanikiluaq

Ensuring Traditional Food Sources

Inuit hunters monitor changes in environmental conditions such as in water currents, sea ice, and weather in the Sanikiluaq area. These observations help hunters and Elders to share important information with Community members about travelling safely when they hunt and fish.



***Awesasse *Mohawk**
Conserving Native Trees
Members of the Awesasse Mohawk community are working to ensure the future survival of black ash trees. Black ash, an important traditional material in Mohawk basketmaking, is facing environmental threats, including an invasive beetle called the emerald ash borer.



***Eastern *Band of Cherokee *Indians**
Re-establishing a Native Plant



*Campo *Kumeyay *Nation

Restoring a Water-Friendly Environment

The Campo Kumeyay Nation is located where water is a precious resource. Long ago, the Kameyay managed their environment to ensure enough water. Today, they are restoring a water supply damaged by cattle grazing and other factors.



***Native *Hawaiians**
Restoring Fish Ponds

Map graphic from *Roots of Wisdom*
(2,000-sq.-ft. version)

Reflections from OMSI Programs Team

Challenges & Lessons

The scope of program development work grew in response to project needs

The project's program development saw a dramatic transformation from what we proposed to NSF. The original scope of work for the programs team was to create an activity kit for Native youth and a website to complement the two exhibitions. As the project progressed, program needs became apparent to the OMSI team.

Learning and Community Engagement Specialist Tim Hecox led work on the original deliverables, as well as development and implementation of the Youth Advisory Board (YAB). In partnership with the Portland Public Schools (PPS) Title VII Indian Education Program, Tim developed YAB activities to inform the creation of *Roots of Wisdom* exhibits and programs. This aspect of the project was added because soon after the project was funded,

OMSI team members heard from partners and advisors that we should create opportunities to engage the local Native community, specifically Native youth, over the course of the project.

The *Roots of Wisdom* project team also created a staff guide as another deliverable of the project. As we got close to opening the exhibition, we realized that OMSI education staff, as well as staff at other museums who rent the exhibition, may need an introduction to the concepts and processes embodied in the project. This included introducing staff who have less experience with Native communities and traditional ways of knowing to basic issues related to cultural awareness, historical context, and contemporary issues. Senior Learning and Community Engagement Specialist Kyrie Thompson Kellett led the development of the staff guide and training opportunities for OMSI staff. The "Advice for Museums" section of this document is adapted from the staff guide.



Members of the YAB generating exhibit ideas

Elders have a special status in Indigenous communities

In Native American and Hawaiian communities, the respect and recognition of experience and elder voices is of significant value. It was expressed by several advisors that it was extremely important for one member of the team to remain involved, even though she had changed positions at the museum and her role was small.

I was heavily involved in the conception and development of the *Generations of Knowledge* proposal to NSF, including being supervisor of the key staff and PI at the time of the submission. However, shortly after it was funded, there was some restructuring at OMSI, and I was no longer in the same role and significantly less central to the project. I made the choice at that time to stay involved and quickly learned that I had a role, if only of continuity; an expression of leadership commitment; and elder status.

—Marilyn Johnson, former Director of Program Research and Development, Oregon Museum of Science and Industry

External Native advisors' value to enhancing local Native relationships

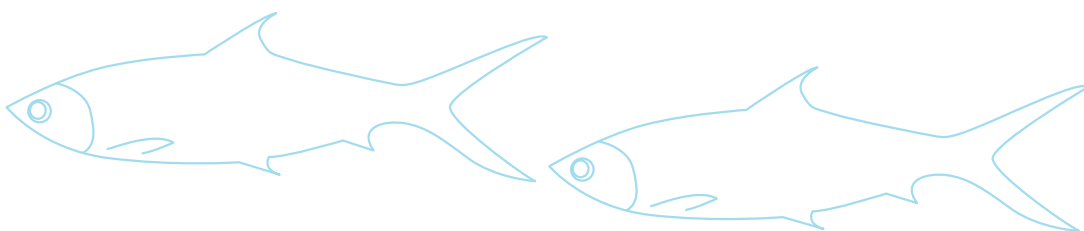
Roots of Wisdom advanced OMSI's work with community advisors in a significant way by providing a platform to discuss minor and large aspects with multiple advisors. The advisory role was one in which there was an openness to say when a different approach would be more effective. In the past, OMSI often worked with a single group or tribe at a time, and if cultural mistakes were made, there was no one to determine the most appropriate next step. It can seem impolite to tell your partner they are not being sensitive, but that was the role and expectation of the project's advisors.

Our interactions cannot be fully separated from the historical and contemporary context of our collaboration

As non-Native people, especially from the dominant group, OMSI team members were much less aware than Native advisors and partners of the mostly negative, often traumatic, histories and issues that Native peoples in the United States experience. Even more importantly, OMSI team members did not experience the impact of these prejudices and injustices. The OMSI team learned that Indigenous people may not trust or have any interest in partnering with OMSI, especially at the beginning—they did not know the OMSI team or its intentions or capacity to be a good partner or ally. The OMSI team approached partners with a willingness to be open, listen, and learn, as well as a commitment to stay engaged, even if it was uncomfortable.

The importance of letting people speak for themselves

When the OMSI team received feedback on the staff guide, the element of the document that got the most positive feedback was how many direct quotations there were from advisors and partners. Even though the document could have just included the essence of what advisors and partners shared in a generic OMSI voice, it was more meaningful to both the readers and the partners/advisors that the messages were shared directly from the many individuals that participated in the project.



Youth Advisory Board Case Study

The programs team was able to leverage existing relationships with PPS Title VII staff and create a unique and mutually beneficial program offering local Native students ages 11–14 an opportunity to learn about and inform exhibit and program development at OMSI. The YAB existed for three consecutive school years and had 11–13 participants each year, with some returning and some new students in years two and three of the program. OMSI staff worked closely with PPS staff to communicate with families, schedule meetings and field trips, recruit guest speakers, and receive advice on creating culturally meaningful and personally relevant experiences.

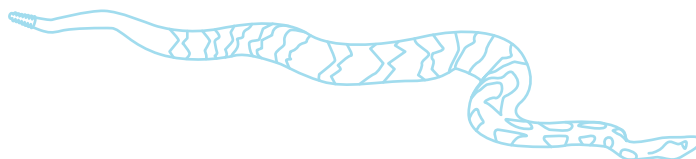
The YAB offered critical feedback on exhibit designs, prototypes, and activity testing, and the project team learned a great deal on collaborating with urban Native youth. When first recruiting YAB participants, OMSI's initial expectations were that we would learn from the Native youth about their culture, and the Native youth would learn about OMSI culture—exhibits, programs, and processes, as well as museums in general. However, it became apparent that both OMSI and the Native youth were eager to learn more about Native traditions and their relevance to the project content areas. Consequently, OMSI and the YAB engaged in a mutual process of learning and exploration of ideas, with input from members of the local Native community. This provided OMSI with the seeds to sustain new relationships in our local area.

During this time, OMSI was also able to collaborate with PPS Title VII Schools to invite Native families to a number of Family Science Nights, during which the *Roots of Wisdom* project team tested exhibit prototypes and activities, conducted evaluation studies, and celebrated the opening of the 2,000-square-foot exhibition. Working with PPS, the YAB, and local Native families taught the OMSI team that taking a multigenerational approach was important to building community trust—from taking time to incorporate elder's voices into YAB programs to incorporating youth as leaders into family programs. OMSI's relationship with the PPS Title VII

Indian Education program offered a wealth of resources and unexpected benefits to the *Roots of Wisdom* project and to OMSI's overarching vision to collaborate with partners in igniting an education transformation at the intersection of science, technology, and design.

I am grateful for the wealth of experiences that *Roots of Wisdom* has provided to Native communities. Our students who pursued a role on the Youth Advisory Board, and our families, community partners, and district colleagues who attended the reception for *Roots of Wisdom* and other *Native Universe* and Native Family Science Night activities at OMSI all benefitted from this engaging project. I am keenly aware of the achievement disparity for American Indian and Alaskan Native students, locally and nationally, in math, science, and high school graduation. This project clearly honors and validates Indigenous expertise, while surrounding Native youth with positive messages from contemporary Native leaders and authentic role models who demonstrate that one does not have to abandon one's culture in the study of science. This approach is rare within our classrooms, and I actively seek experiential learning opportunities such as *Roots of Wisdom* to help reduce the opportunity gap that persists for Native students in the STEM and STEAM arenas.

—Karen Kitchen (*Osage*), Director of Title VII Indian Education Program for Portland Public Schools, project partner



Advice For Other Collaborative Projects

The fundamental role of relationships

The importance of relationships is not unique to Native/non-Native collaborations, but it may be even more important because it is imperative to overcome the initial wariness and miscommunications that happen at the beginning of this type of relationship. Once a relationship has been formed, it is essential to continue to cultivate and respect it so you don't reinforce the same negative patterns that gave Native partners reason to be wary of and mistrust non-Native people in the first place.

The need for reciprocity

Building functional, long-lasting relationships also has to be based on reciprocal understanding and benefit. Both sides have to feel like they get something valuable out of the relationship so that they do not feel like they are being taken advantage of. Both sides have to be willing to give of their time and resources to show their worth and willingness to support their partner. This is especially important for an organization like OMSI that sometimes asks for favors, but is not always as clear on what they are willing to give in return.



Opening circle for volunteer work day at Waikalua Loko Fishpond

Understanding cultural protocols and learning to listen

Traveling to four very different communities, meeting with elders, and experiencing how IEL interacted with fellow Native colleagues and friends taught members of the OMSI team proper cultural protocol and significantly increased team members' ability and confidence to collaborate with Native partners. Small lessons such as knowing when to share a gift, proper language to use, offering an honorarium to those sharing cultural knowledge, and being aware of historical events went a long way toward understanding what it means to collaborate with integrity. The OMSI team's biggest takeaway from participating in this project was simply learning when to listen. Team members quickly found that, when meeting with partners from the Native community, especially elders, they (the team members) needed to slow down their communication styles. OMSI team members learned to give people time to speak and thoroughly listen and process what they had to say before contributing to the conversation.

Engaging Native youth

Something that was consistently brought up was the value that Native communities hold in educating, inspiring, and engaging their youth. After asking advisors for feedback on how to approach a Native person or community to participate on a new aspect of the project, the OMSI team was most often advised to incorporate an opportunity to engage youth. We now echo this advice to other non-Native institutions who are interested in working with their local Native communities. If a museum has had a difficult time with initiating collaboration with local Native communities, we encourage them to make sure their proposed projects offer opportunities to engage and empower youth.

Reflections on Collaborative Evaluation

Adapted from the *Roots of Wisdom* summative evaluation reports for professional and public audience impacts (see Resources and References section)

What is Collaborative Evaluation?

Collaborative or Participatory Evaluation includes key stakeholders in the process of defining intended outcomes, developing an evaluation plan and questions, interpreting data, and reporting.



Shelly Valdez and Jill Stein, *Roots of Wisdom* evaluators

The summative evaluation team for *Roots of Wisdom* (Lifelong Learning Group and Native Pathways) followed a collaborative, participatory process for developing and implementing the summative evaluations. Following an Indigenous process for obtaining input and support (or getting the blessings of one’s leadership and community), the evaluation team used a three-part approach: 1) seek in-depth input from project leadership (akin to a tribal council) and strengthen the plan based on their advice; 2) with a strong foundation supported by the leadership, seek input and endorsement from the community partners, exhibit team, and advisors (akin to the broader community or “the people”); and 3) solidify the plan and send it back out to leadership

and the community to allow for any additional thoughts, questions, or input before finalizing the plan (akin to validation or approval to move forward from “the people,”—the community). This process was used for developing evaluation plans, evaluation activities and protocols, interpretation of data, and final reports.

Why use Collaborative Evaluation?

Collaborative Evaluation can create opportunities for including diverse voices and worldviews, which strengthens the evaluative process and validity of findings. Collaborative evaluation is particularly important when involving multiple communities with different backgrounds, perspectives, and contexts. What is appropriate in one setting may not be appropriate in another, so the evaluation team must find ways to respectfully include the voices of all of the communities involved in each evaluation process.

To support this process on the *Roots of Wisdom* project, an Evaluation Input Committee (EIC) was established to provide feedback on evaluation plans, instruments, analysis frameworks (such as coding rubrics for qualitative data), and reports. In some cases, the EIC met as a whole group and, in some cases, evaluators spoke with partners individually to get feedback and support, particularly when tied to data-gathering within their community.

Using culturally responsive practices

Culturally responsive practices consider the cultural contexts of the evaluation throughout the project, including language, methods, evaluation tools, informed consent processes, analysis, and writing of reports. This includes how we approach the communities and understand their community core values. Culturally responsive practices should be used in all evaluation settings, but are especially important when diverse communities, cultures, and worldviews are involved.

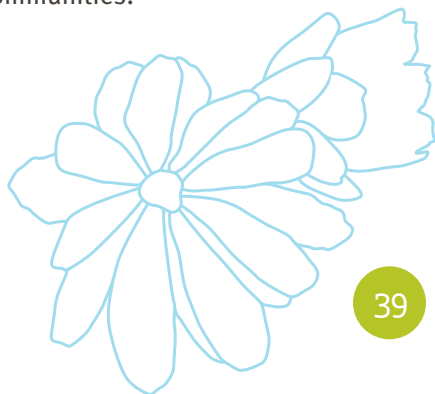
On the *Roots of Wisdom* project, the summative evaluation team followed a joint evaluation process that brings together Indigenous and conventional evaluation practices and seeks to balance voices and worldviews, thereby mirroring and modeling the type of collaboration the project itself is designed to support. The summative evaluation team included Native Pathways, an organization based in Laguna, NM, that focuses on Indigenous evaluation processes, and the Lifelong Learning Group, a research, evaluation, and consulting group (based at the Center of Science and Industry in Columbus, OH) that primarily uses conventional, Western-based approaches. Together, they built a collaborative process throughout the evaluation pathway based on relationship, trust, and mutual respect for one another's intention and knowledge.

Other examples of culturally responsive evaluation practices from *Roots of Wisdom* included data collection methods that focus on story and narrative and less on quantifying measures; avoiding methods like observation and tracking, in order to support a comfortable and inviting atmosphere for evaluation; and being transparent about the purpose of the study while also adjusting the informed consent process to minimize paperwork and the Western paradigm of over-documentation. This approach can lessen the historical ramifications of research and evaluation within Native communities.

Best practices and lessons learned from the *Roots of Wisdom* evaluation process

This section shares some of our learning from the *Roots of Wisdom* evaluation process. We cannot provide a “template” for evaluation in a multicultural environment; instead, we share our own process, recommendations, and lessons learned as an example (see bulleted list below). Each collaboration environment is unique and, therefore, an evaluation approach or process cannot be prescribed.

- We were intentional in developing an evaluation team that represented multiple perspectives and worldviews to reflect the collaborative model of the project.
- The leadership was conscious of involving the evaluation team (including the summative evaluators) from the beginning of the project. As the summative evaluators, we attended all three of the partner/advisor meetings in the development stages of the project and supported some of the early piloting of exhibit components with surrounding Native communities. This allowed us to build a relationship, trust, and familiarity with the project goals over time, rather than “dropping in” to the project in the final year.
- Because the evaluation modeled and mirrored the collaborative process of *Roots of Wisdom*, the uniqueness and genuine need for this type of project became clear—it is crossing boundaries in terms of collaborating with science-focused museums and cultural centers. These types of collaborations are needed to strengthen the voices of Native communities within STEM fields and informal STEM learning environments.



- Similarly, the more energy that was invested in supporting the same partners and partnerships, deeper impacts emerged over time. The fact that many of the *Roots of Wisdom* partners, including the evaluation team, were involved in two related projects—*Cosmic Serpent* and *Native Universe*¹—was a significant factor in evolving and growing the partnership.
- Through the collaborative evaluation process, we have come to realize that when pockets of funding are invested in individual projects, people can be led to focusing on a particular project, rather than carrying or deepening this perspective throughout other work. This can lead to a linear way of thinking and can disrupt relationships with Native communities because the paradigm of relationship is vastly different from a Western paradigm. It is essential that we continue to build and nurture relationships, regardless of funding support systems.
- In order to model a true collaboration process, all areas, including evaluation, need to include all voices. While we all recognize and appreciate this ideal of collaboration, it can be challenging to implement in practice, and there are sometimes missed opportunities. While budget and time constraints are real limitations, it may be even harder to recognize and change the way we each participate in and practice true collaboration. Evaluation for *Roots of Wisdom* built in time for self-reflection around worldviews and cultural assumptions, which is fundamental to a successful collaborative partnership.
- Through this evaluation process and other collaborative partnerships, we see individuals embedded in institutional structures and practices that can make it challenging to change internal practices, especially within a short project timeline. Paradigm shifts are slow, and we can find ourselves easily slipping into old patterns and practices that limit a true collaborative process. It is important to recognize that all partners, including the evaluation team, are learning as they move through a collaborative process; approaching the work, even difficult moments, with this perspective is extremely valuable.
- Because of the geographically dispersed locations of the project partners, it was challenging for the evaluation team to build relationships with all the partners in order to create a deeper participatory evaluation process. Bringing partners, advisors, and evaluators together for multiple in-person meetings is an essential component in this collaborative work.
- While including multiple evaluators (front-end, formative, and summative) in *Roots of Wisdom* was rich in bringing diverse perspectives and expertise to the evaluation, at times, it caused confusion for project partners and a fragmented evaluation process. Streamlining the phases of evaluation and allowing ample time to build relationships between the evaluators and project partners is recommended. Considering a developmental evaluation process that is ongoing, iterative, and adaptive is also recommended in projects of this complexity.

Jill Stein, M.A., Principal Researcher, Lifelong Learning Group
Shelly Valdez, Ph.D. (*Laguna Pueblo*), President, Native Pathways

¹ *Cosmic Serpent* and *Native Universe* are two NSF-funded projects in which many of the same partners were involved (OMSI, IEI, NMAI, CTUIR, and Tulalip tribes). *Cosmic Serpent* was a professional development effort that brought together educators from the Informal Science Education (ISE) and tribal communities; *Native Universe* focused on institutional change around the inclusion of Indigenous voices in science museums. OMSI served as a case-study site for *Native Universe*. All of these efforts have been overlapping and synergistic.

Advice for Museums

As museum staff hosting *Roots of Wisdom*, it is important to understand some of the critical history, misconceptions, and current realities of U.S. Native communities and peoples. Few non-Native people in North America know much about Native communities and cultures, leading them to stereotype Native peoples in disrespectful and misguided ways. Similarly, many non-Native people believe that “Indians are all gone,” “ancient relics,” or “something from the past” and talk about Native people, communities, and cultures in the past tense. However, as museums and visitors will see in this exhibition (and hopefully elsewhere), Native people have overcome many challenges and are very much alive. In fact, it is an exciting time in Indian Country. Native peoples today are working on thriving and cultural revitalization. Many communities are also focused on restoring their local environments because environmental health and cultural preservation depend on one another.

In this section, we have reproduced information from the OMSI *Roots of Wisdom* staff guide, written for the staff working and volunteering on the exhibition and the people training them, which may be helpful for museum collaboration with Indigenous partners. The topics included here were identified and written in collaboration with Deana Dartt, Ph.D. (*Chumash*), the Curator of Native American Art at Portland Art Museum, along with project advisors and project partners.

This segment of the document is meant to be a general introduction for museum staff on how to better respect and present cultural knowledge and issues pertaining to Native peoples in the United States. By no means does the following section encompass all of the ongoing and multifaceted matters related to the varied and diverse cultures of the Indigenous peoples of North America and

Hawai‘i. Instead, the content is intended to address some of the most important questions and issues that museum staff might come across or be asked about. We strongly encourage museum staff to learn more by accessing the resources listed in the Resources and References section and by looking for educational resources created by Native communities in their areas.

Respecting Native cultures

Valuing and respecting diverse cultures is critical for museums of all types and particularly important when hosting *Roots of Wisdom*. Staff should be considerate of cultural differences and similarities that exist without equating value (right or wrong, good or bad) to these differences. Respecting people and cultures means recognizing that all individuals are unique and that the way they interact with their community and the larger world is affected by their language, beliefs, values, and personal experiences. Respecting cultures in this way also allows us to communicate and collaborate more effectively with diverse communities, such as in the *Roots of Wisdom* project.

When hosting the *Roots of Wisdom* exhibitions or conducting any project with Native communities, it is critical to develop a basic understanding of the key issues impacting Native communities today and historically. This understanding is particularly important because of the long history of human rights abuses Native communities have been subjected to and the lack of information most people have about contemporary Native peoples. In the following pages, we highlight historical notes and discussions of some of these key issues that project partners and advisors wanted staff at host museums to be aware of.

North America was not “wild” or “undiscovered” before Europeans arrived

In many Native American languages, there is no word for wild. Instead, nature is often understood as an interconnected, organic system of which the Indigenous people are a part. However, because European explorers and settlers did not understand these interconnections or natural systems, they called the environments that they encountered in the Americas “wilderness.” Therefore, for many Native people, using the word “wild” or “savage” diminishes the value of nature’s order and the long-term relationships Indigenous communities have had with their homelands.

Similarly, it is crucial to understand that the ancestors of contemporary Native American people were the original discoverers and inhabitants of North America and that they lived on this continent for thousands of years before Europeans arrived. Contact with Europeans first occurred with the arrival of Western explorers and settlers in the fifteenth century who brought with them devastating diseases, cultural conflict, and displacement on a mass scale. These disturbances changed the life-ways and futures of millions of people, and Native communities today are still recovering from the near obliteration of their populations and cultures.

Although Europeans perceived North America as empty space when they arrived, it was populated by tens of millions of people (Batencourt 27) from an enormous diversity of Native American communities. The continent was a mosaic of sophisticated cultures with varying political systems, spiritual beliefs, languages, and forms of art. These cultures included rich knowledge of their local ecosystems and how to sustain their communities in that environment. Many tribes also had working systems of agriculture and aquaculture that dated back hundreds or thousands of years.

Native people often feel the term “wild” is a pejorative term. From a Native perspective, it is thinking more about a natural order. There is no such thing as a wild river—it has an order, nature’s order. The beauty has an order.

—David Begay, Ph.D. (*Diné* [Navajo]), Vice President and Co-Founder of IEI, project Co-Principal Investigator

When talking about a name for the exhibit, “wild” was a word that rubbed people the wrong way. Native people know about managing resources from living in the same place for so long. Before Europeans showed up, they assumed things were “wild.” They didn’t know how to take care of it.

—Randall Melton (*Seminole/CTUIR*), Collection Curator, Tamástslikt Cultural Institute, project partner



Smoky Mountains, western North Carolina

European settlers who first arrived in the “New World” wanted to believe it was just that: new not only to them but to all humankind. With their diseases preceding them, diminishing complex Native civilizations, Europeans readily assumed that the Americas were, and always have been, a barely populated wilderness. This view, which justified hundreds of years of European land theft and mistreatment of Indians, has been slow to die.

—Stephanie Batencourt, NMAI (quotation from the NMAI book *Do All Indians Live in Tipis?*)

Refer to Native communities with the appropriate names

It is best to refer to the specific and/or official tribal or national name whenever possible. Many Native people feel honored and recognized when their tribe, nation, or community is referenced accurately. Many tribes are commonly known by names that they do not use for themselves and are sometimes offensive. Therefore, it is best to either ask a tribal member or go to an official resource (e.g., the tribe's government website) to make sure that you are using the appropriate name.

If you do need to use a generic term, *American Indian* and *Native American* are both used in the United States. The terms *Native* and *Indigenous* are also acceptable. In Canada, the appropriate terms are *First People*, *First Nations*, and *aboriginal*. When talking about the Indigenous people of Hawai'i, use *Native Hawaiians*. For Indigenous Alaskans, use *Alaska Natives*.

Native America is incredibly diverse

Native American cultures are commonly lumped together, and many people assume that all American Indians are the same. This idea is not true. Native Americans do not belong to a single homogenous group; instead, they come from thousands of different communities with a multitude of diverse cultures, separate histories, and unique languages. No general characteristics apply to all Native American people, tribes, or communities. Although some tribes may share similarities in their stories, language, or cultural practices, all North American tribes are unique in and of themselves.

Native people in the United States belong to hundreds of different nations, tribes, bands, villages, Rancherias, and pueblos. As of March 2016, there are 567 federally recognized American Indian tribes and Alaska Native villages in the United States (<http://www.bia.gov/WhoWeAre/index.htm>). Many other tribes and Native communities are not federally recognized, but are recognized by states or are seeking federal recognition. For more information on this topic, visit NMAI's website for the *Nation to Nation* exhibition (<http://nmai.si.edu/explore/exhibitions/item/?id=934>).

Identifying “Who is Native?” is a very complex issue

Identity establishment is a complex issue in many Native American communities. Overall, there is no single Native American experience, and each community or tribe establishes its membership in different ways. It is especially important to know that *it is inappropriate to ask someone “how Indian” they are or make assumptions about their Native ancestry based on their appearance, since it can be offensive or embarrassing for that person.*

Blood quantum is one system that is used in the United States to identify Native Americans, but it is not the only mechanism that individuals or communities use to define their cultural identities. The Oneida Trust and Enrollment Committee explains, “In the United States, ‘blood quantum’ is the degree to which an individual can prove a certain amount of Indian blood. This amount is used to determine the individual’s tribal belonging and legal rights. Blood quantum is a measure of the amount of Indian blood, expressed as a fraction such as one-half or one-fourth.”

For many people and some tribes, though, clan relationships and lineage are more important than blood quantum. For example, the Cowlitz Indian Tribe in Southwest Washington has eliminated the need for blood quantum to establish cultural identity and, instead, requires that newborns be lineal descendants in order to be enrolled in the tribe.

In general, the work of determining membership and establishing cultural identity is a complicated, ongoing issue. To learn more, please see the resources listed in the Resources and References section.

Each tribe establishes its membership in a different way. Tribes have the right—because they are governments—to decide who is and who is not a tribal member. As a result, a lot of Native people today may not “look Indian” or fit a stereotypical image of an Indian.

—Liz Hill, National Museum of the American Indian
(quotation from the NMAI book *Do All Indians Live in Tipis?*)

Federally recognized tribes are “sovereign nations” with certain rights

Tribes that are federally recognized by the U.S. government are called “sovereign nations” and are supposed to be protected by federal law differently than other entities. This sovereign nation status is meant to require the U.S. government to engage with the tribe in a “nation-to-nation” relationship. Sovereignty also allows for the nation’s independent authority and the right to govern itself.

The sovereignty of federally recognized nations extends to the traditional cultural practices of these communities, including the rights to use land and resources associated with cultural traditions. The following quote from the U.S. Bureau of Indian Affairs addresses the special rights that American Indians are entitled to:

Do American Indians and Alaska Natives have special rights different from other citizens? Any “special” rights held by federally recognized tribes and their members are generally based on treaties or other agreements between the tribes and the United States. The heavy price American Indians and Alaska Natives paid to retain certain rights of self-government was to relinquish much of their land and resources to the United States. U.S. law protects the inherent rights they did not relinquish. Among those may be hunting and fishing rights and access to sacred sites.

Therefore, some Native communities have the right to hunt, fish, gather, or perform other activities in places where non-Native people are not allowed to do so because of these treaty agreements.

It is also important to note that sovereignty and treaty rights are a very complicated and contentious issue. Many treaties have not been upheld by the U.S. government, and access to land and resources outlined in treaties is often denied by government or private entities. To learn more about these issues, please refer to the references in the Resources and References section.

Native languages are critical for maintaining Native cultures and knowledge

A great deal of the knowledge of a people—cultural, spiritual, medicinal, and cosmological—is carried in the language. With the loss of language comes the loss of an immense cultural knowledge, history, and beliefs.

—Liz Hill and Arwen Nuttall, National Museum of the American Indian (quotation from the NMAI book *Do All Indians Live in Tipis?*)

Language maintains the strength of a person’s cultural identity. Indigenous languages also contain a rich, place-based knowledge. Traditionally in Native American societies, language and knowledge have been passed down orally. In recent history, many Native Americans were persecuted for using their language. Many Indigenous languages are in danger of disappearing.

When an Indigenous language is lost, much of the cultural knowledge contained within it is also lost. Therefore, the loss of a language is also a loss of history and a culture. Now, many communities are actively working to preserve and restore their languages and, therefore, preserve the traditional knowledge that is contained within them. Throughout the *Roots of Wisdom* exhibitions, Native languages and words are prominently featured because of language’s importance in sharing and passing long culture and knowledge.



CTUIR tribal member fishing for salmon

Indigenous languages are very important—if you kill the language, you kill the culture. Raising kids to be multilingual is really important to the survival of all nations! Five hundred years of Hawaiian chants end up being detailed geological record. Native science describes inquiry through poetic story.

—VerlieAnn Malina-Wright (*Hawaiian*), Kula Kaiapuni ‘O Anuenue Hawaiian Language Immersion School, Pacific American Foundation, and Board of Directors, Waikalua Loko Fishpond Preservation Society, project partner

It has been reported that at the end of the 15th century, over 300 American Indian and Alaska Native languages were spoken.

—U.S. Bureau of Indian Affairs, <http://www.bia.gov/FAQs/>



Speaking With and About Native People in the Museum

An important part of our roles as museum educators is to respectfully share the content of our exhibitions with diverse audiences. The following section contains suggestions for how to be culturally sensitive in these interactions, recognizing that many non-Native museum staff, especially in science centers, will not have had a lot of experience working with Native curators, partners, and visitors. This information is provided because it is also important for staff to accurately and respectfully present the material to all audiences to reinforce the messages of the exhibition and dispel misinformation.

Assume that there are Native people in your audience

With this idea in mind, always be polite and respectful when talking about someone else’s culture and recognize that you might make mistakes.

If you do not know the answer to a question, do not answer it

It is okay to say, “I don’t know, but I will try to find out.” There are several resources listed in the Resources and References section to help answer common questions. The book written by the Smithsonian Institution’s NMAI titled *Do All Indians Live in Tipis?* is especially helpful for many common questions. You are also welcome to contact OMSI or IEI, and we can reach out to project advisors and partners to answer questions.

It doesn’t make sense to say...“I read all about you guys before I got here,” before coming to a tribal museum. You can’t really know in that way. Instead, I answer, “this is what I’ve been told or taught,” to explain how I know the things that I am sharing.

—Randall Melton (*Seminole/CTUIR*), Collection Curator, Tamástslikt Cultural Institute, project partner

Avoid using the past tense to talk about Native peoples, cultures, knowledge, and life-ways

Non-Native people often assume that if Native people alive today do not live traditionally, then they do not exist. This idea is not true. There are many Native communities that are actively working to protect and restore their cultural traditions in a modern context.

To acknowledge the continuing existence of Native peoples and cultures, it is more respectful and accurate to use the terms “art” or “object” instead of “artifact” when referencing an object from a Native culture. Similarly, use “pre-contact” instead of “prehistory” when talking about Native cultures before Europeans arrived. Change has always been happening in North America, before and after contact with European and other cultures, and Native communities have a variety of ways of tracking and recording these changes over time.

When you say, “This is how they used to do it,” you are teaching students that we are dead.

—Wenix Red Elk (*CTUIR*), Public Outreach and Education Specialist, Department of Natural Resources, CTUIR, project partner

Be respectful of Native worldviews and knowledge

Origin stories and traditional knowledge are not “myths” or “legends.” Instead, they are a critical part of many people’s worldviews. Traditional stories and knowledge are also rooted in a deep understanding of the local environment and history of the places where Indigenous people have lived for generations.

Well-meaning people assume traditional knowledge is like a legend or myth. Actually, it is a form of real empirical knowledge that can be used. It is real knowledge based on doing something over and over again.

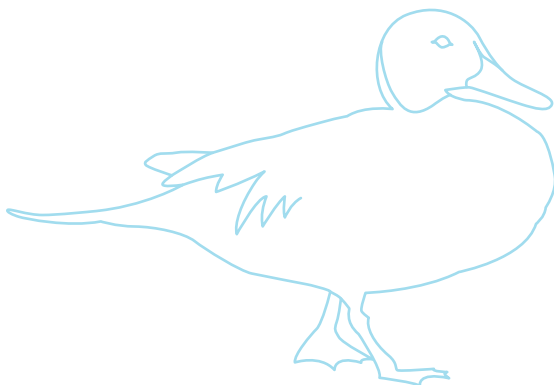
—Charles Menzies (*Tlingit/Gitxaata*), Professor, Department of Anthropology, University of British Columbia, project advisor

Avoid “exoticizing” or “romanticizing” Native people and cultures

Exoticizing means to portray Native people and cultures as exotic or unusual. Romanticizing means to glamorize or idealize Native cultures or people. It is particularly common for non-Native people to exoticize or romanticize Native cultures or people in regards to their spiritual or environmental practices. Therefore, it is important to recognize that there are many Native people with strong connections with the environment or spirituality, but not everyone and not all in the same way.



Young members of the Tulalip Tribes gardening at Hibulb Cultural Center and Natural History Preserve



Avoid Reinforcing Negative Stereotypes

Here are some common examples:

- **Not all Native people live on reservations.** Just like most U.S. populations, the largest Native communities are found in urban areas. According to the 2010 U.S. Census, 78% of people who identified as Native American lived outside of American Indian or Alaska Native areas. Many Native people live in urban centers because of relocation policies.
- **Not all Native people are “traditional” or “spiritual,”** but that does not mean that they are not still Native people. Like any diverse category of people, each person and community has their own spiritual and religious understanding and identity.
- **Do not assume that Native people look a certain way** (e.g., skin color, high cheekbones, dark straight hair, and other physical characteristics). Individuals have their own unique and diverse ancestry, set of physical attributes, and personal preferences that influence how they look, but this physical appearance does not confirm or negate their identity as a Native person.
- **Not all Native people live in teepees, nor did their ancestors.** There are thousands of different Native communities throughout what is now the United States with a wide variety of housing used to best fit their cultures, environments, and climates. Such housing can include teepees, pueblos, longhouses, single-family houses, condos, or high-rise apartments.
- **Not all Native communities have casinos that pay for schooling and other community needs.** Many Native communities do not have casinos or other tribal enterprises that provide payments to individuals or fund community needs. Other Native individuals are not enrolled members of a federally recognized tribe or nation, therefore making it impossible for them benefit from tribal enterprises. Indigenous people in this situation are also denied

services reserved for tribal members under federal law. Therefore, it is not appropriate to assume that all Native American and Alaska Native people have special financial or support services available to them.

Important Considerations for Museums

Respecting intellectual property

Museums and similar institutions must respect the intellectual property rights of Native knowledge holders, or tribal members who have been identified informally to possess and share tribal knowledge, which means respectfully working with identified knowledge holders to determine what information should be shared, how it should be shared, and how it should be credited. Just like any expert in their field, the knowledge holders should also be compensated appropriately for their time and expertise. Unlike with many other types of scientific or historical knowledge, it is rarely appropriate to simply reprint or share Native knowledge without the explicit permission of the knowledge holder. For example, it would be inappropriate to retell a cultural story or share photos of a cultural ceremony without first consulting with the knowledge holders who maintain and understand those traditions. It is also important to know that one individual does not speak for or represent his or her tribal nation or community. If you are looking for this type of credit or authority on an area, then you must approach the tribal council, who will lead you to the appropriate individuals.

To learn more about how to respectfully work with Native knowledge holders and include cultural information in educational environments, please refer to the Resources and References section, including the documents created by the Alaska Native Knowledge Network.

Human remains in the building²

Being near human remains and/or seeing remains on display can be uncomfortable or offensive to some Native people for a variety of reasons. For some people, human remains are seen as spiritually harmful. For others, it reminds them of how remains of Native people have been removed from their traditional and appropriate burial grounds to be put in museums and other non-Native institutions, which can be extremely offensive and painful. Other individuals and communities may prefer not to view or be close to human remains, such as skeletons and fetuses. Therefore, if your museum has human remains in its collections or exhibitions, it is important to warn visitors about this situation and allow them to make an informed decision about visiting the museum or certain exhibit areas.

Advisors for *Roots of Wisdom* brought this issue to OMSI's attention before the exhibition opened, allowing the team to reach out to local advisors and partners working in Native-serving organizations and tribes for guidance about where to locate the exhibition and how to alert visitors to the presence of human remains in the building.

The recommendation to include signs/copy in critical areas came from advisors and partners, as well as OMSI's experience while hosting the exhibition.

The reason for telling people that there are human remains in the building is to protect the visitor. Many Native people feel that there is a negative attachment to the bones, and visitors could be harmed by the negative energy.

—Nancy Maryboy (*Cherokee/Diné [Navajo]*), Executive Director, President, and Co-founder of IEI, project Co-Principal Investigator

When I talked to our Native advisors about why it would be offensive to see human remains in a museum, especially those of their ancestors, I started thinking about how I would feel if someone removed my grandfather from where we buried him in our nearby veteran's cemetery. I would be horribly sad and offended. It would be even worse if they put his remains on display without permission.

—Kyrie Thompson Kellett, Senior Learning and Community Engagement Specialist, Oregon Museum of Science and Industry

Include signage/copy in the following places:

- At all point-of-sale stations, membership windows, and membership check-in stations
- Near any exhibitions with human remains
- On any materials/advertisements promoting the *Roots of Wisdom* exhibition
- On web pages promoting the *Roots of Wisdom* exhibition

Suggested copy for signage:

Out of respect for cultural and personal beliefs, [insert organization] would like to make you aware that there are **human specimens in the museum**. If you have any questions, please contact a staff member.

² It is now illegal in the United States for museums to keep remains of Native people or funerary objects. The Native American Graves Protection and Repatriation Act (NAGPRA) requires that these items be returned to the Native communities that they were removed from.

Resources & References

Roots of Wisdom website

<http://omsi.edu/exhibitions/row/>

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Portland Public Schools Title VII Indian Education Program



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