# CLEARING

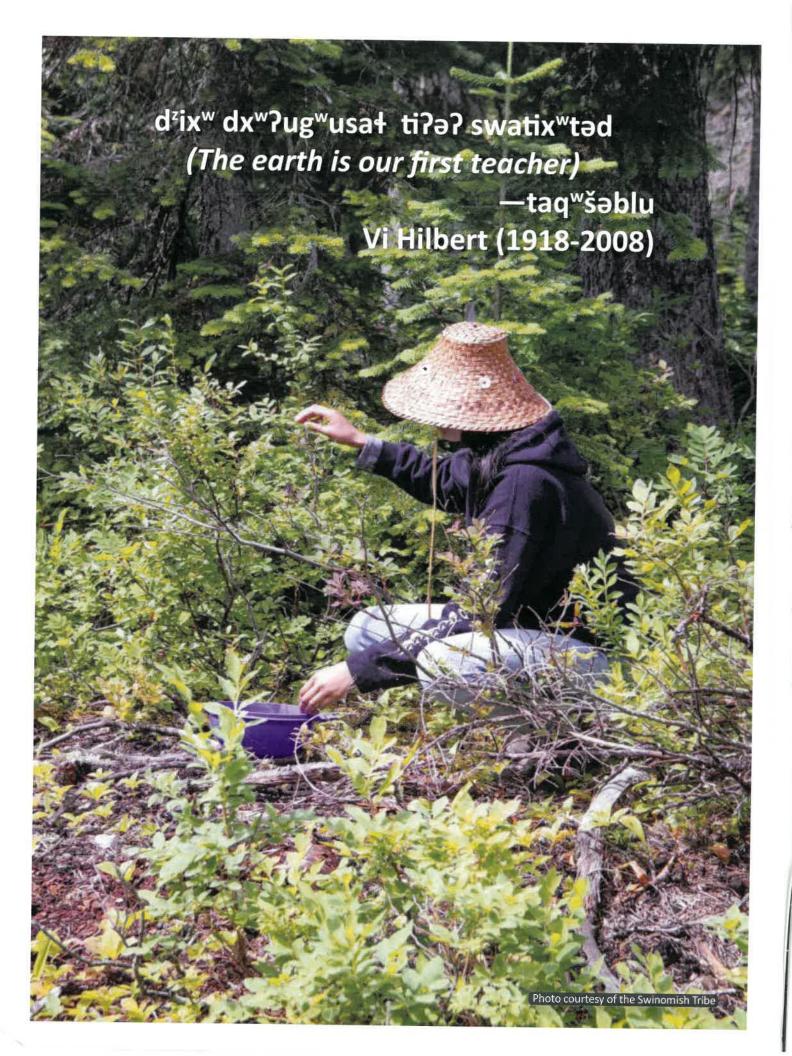
Resources for place-based environmental education in the Pacific Northwest

Special Issue:

Indigenous
Perspectives and
Environmental
Education:

Connecting Youth with Plants, Places, and Cultural Traditions

Summer 2022





# Resources for place-based environmental education in the Pacific Northwest

# Summer 2022 Special Issue: Indigenous Perspectives and Environmental Education

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### On the cover:

Photo by Erika Schultz, Seattle Times. Used with permission.

Effective environmental education produces ecologically literate citizens who understand and value healthy environments. They understand their connection to and impact on natural environments, and through this understanding become motivated to act as environmental stewards and live sustainable, healthy lives.

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The journal of community-based environmental literacy education

# Indigenous Perspectives and Environmental Education:

# Connecting Youth with Plants, Places, and Cultural Traditions

# **INTRODUCTION**

These are exciting times in our region. We are fortunate to live at the confluence of two currents: the growing integration of Indigenous perspectives in both formal and informal education, and a surge of cultural revitalization in Indigenous communities. In the state of Washington, the 2015 passage of Senate Bill 5433 requires public K-12 schools to teach Indigenous history, culture and sovereignty in collaboration with the tribes nearest their schools. Educators have a rich variety of curricular materials to draw upon, beginning with the Since Time Immemorial curriculum. In the state of Oregon, the 2017 passage of Senate Bill 13 Tribal History/Shared History has led to similar developments in curriculum creation and collaboration between schools and tribes. Simultaneously, Indigenous communities around the region are experiencing a dramatic and wide-ranging cultural resurgence, including language revitalization and the revival of traditional pre-colonial practices. This fertile convergence offers a wealth of new opportunities to both Indigenous and non-Indigenous educators and their students. This special edition's essays, including contributions by both Indigenous and non-Indigenous practitioners, introduce you to these currents and opportunities by focusing on Indigenous relationships with the more-than-human world, and particularly our ties to our plant relatives. We hope that these essays will inspire and guide you as you explore ways to enhance your teaching by accurately and respectfully integrating Indigenous experience and knowledge.

—Rob Efird and Laura Lynn Co-editors



Laura Lynn, Ph.D. Office of Native Education, OSPI

lementary, middle school, and high school students across Washington are learning in collaboration with tribes nearest their schools about tribal history, treaty rights, tribal sovereignty, and contemporary issues that impact tribal communities and all citizens of our state. The Since Time Immemorial curriculum has been developed in collaboration with tribal nations by educators for educators. Effective 2015, these inquiry and place-based lessons and resources are required to be integrated and taught in all social studies and history courses from kindergarten through high school. In addition to social studies and history, the curriculum is also aligned to English Language Arts, Environmental and Sustainability Education, and Social Emotional learning standards and can be integrated in all subjects and classes.

Students' inquiry is grounded with five essential questions. The curriculum provides engaging, interactive, and age-appropriate opportunities for students to learn about tribal peoples and nations who have been here for thousands of years and who are still here today!

The place-based approach encourages educators and students to address the essential questions within the unique and distinct context of the tribes in their own communities. Learning that begins with connection to the lands and waters of our places, that centers tribal world views, perspectives, and treaty rights strengthens our commitment to the shared responsibility we all have to nature and each other, now and for generations yet to come.

The Since Time Immemorial curriculum is available online and is free.

# **Five Essential Questions**

- -How does physical geography affect the distribution, culture, and economic life of local tribes?
- -What is the legal status of tribes who negotiated or did not negotiate settlement for compensation for the loss of their sovereign homelands?
- -What were the political, economic, and cultural forces consequential to the treaties that led to the movement of tribes from long established homelands to reservations?
- -What are the ways in which Tribes respond to the threats and outside pressure to extinguish their cultures and independence?
- -What do local Tribes do to meet the challenges of reservation life; and as sovereign nations, what do local Tribes do to meet the economic and cultural needs of their tribal communities?

"Our next generation of voters and decision-makers are dependent upon what they are taught. What they are taught becomes what they believe. What they believe is what they act upon. When students learn the truth, they are better equipped to confront and defeat the disinformation that serves to rewrite history and obscure reality. Since Time Immemorial: Tribal Sovereignty in Washington State is built upon that truth and presents tribal sovereignty and history as foundational knowledge for all students at all levels. This country would not exist without tribes. Today, Washington's economies, governments, communities, and ecosystems still rely on the generosity, strength, and vitality of our tribes. The Since Time Immemorial curriculum ensures a shared and equitable vision of what the future of Washington can be."

-Shana Brown (Yakama, Muckleshoot, Puyallup)
Native American Curriculum Specialist, Seattle Public Schools, Since Time Immemorial Principal Writer, Pacific Northwest Project Manager and Curriculum Writer, Native Knowledge 360

# Since Time Immemorial: Tribal Sovereignty in Washington State: Lesson Examples



Why do the Foods We Eat Matter? Grades 9-12 NMAI Native Knowledge 360 Food & Culture of Pacific Northwest Natives | Teacher Resource

The Walla Walla Treaty Council of 1855
Middle School WA State History
Middle School Unit 1 Washington State
History—Walla Walla | OSPI
www.k12.wa.us

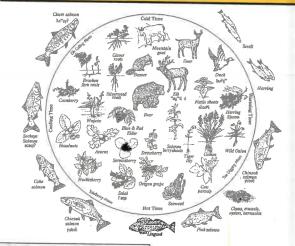


Living in Washington: Celilo Falls
Elementary WA State History
Elementary Unit 2 Washington State History
OSPI (www.k12.wa.us)





Giving Thanks: A Native American Cultural Tradition Primary Grades K-3 Seasonal Rounds- The People of Cascadia, Heidi Bohan (2009)





Actor Marlon Brando and Puyallup tribal leader Bob Satiacum just before Brando's arrest during a fishin, March 2, 1964. Photo courtesy of Seattle Post-Intelligencer

Our Foundation: Boldt Decision (I and II)

High School U.S. History

High School Unit 1 US History | OSPI (www.k12.wa.us)



Washington Office of Superintendent of PUBLIC INSTRUCTION

Since Time Immemorial: Tribal Sovereignty in Washington State OSPI (www.k12.wa.us)

# Supporting Non-Native Educators with Since Time Immemorial:

The Hummingbird Story



by Jenni Conrad

Summary: Based on research partnering with three Coast Salish nations, I offer five considerations to support K-12 non-Native educators who (like me) seek to build reciprocal relationships and strengthen their teaching with Indigenous nations and knowledges through the Since Time Immemorial curriculum. I explain common pitfalls and promising approaches to enact non-Native educators' responsibilities to accurately and respectfully teach Native histories, cultures, and sovereignty.

xperiential learning outdoors first showed me how education could be transformative: huge gifts for my parenting, teaching, and living. But witnessing a program for Indigenous youth shook this easy positivity. When students shared their experiences of a forest tour, I immediately recognized my OEE colleagues and myself in their non-Indigenous guide. A wave of shame held up a mirror, offering an important truth.

During the tour, the students found a hummingbird lying on the trail. They were discussing what to do when their guide strode over, accidentally stepping on the hummingbird. Hearing

the crunch of her bones, he looked down, then tossed her body into the brush. "It'll decompose," he shrugged, before moving everyone quickly to the next activity. Young students sharing this story shed tears, and spoke of losing sleep. They decided to construct a beautiful offering to the hummingbird at our site.

This story continues to teach me - when I'm willing to feel it and find myself in it. Even in open spaces, educators can shut down Native students' ways of knowing and being in seconds, continuing colonial patterns. Such disregard and ignorance of Indigenous systems of relationship are common for non-Indigenous people, and structured into U.S. schooling systems. I had likely done so, too, even without physical harm. Being

part of transformative experiential education demands grappling with what I've been taught about relationships with the natural world (morethan-humans) and local Indigenous peoples. This goes beyond much-needed antiracism and equity work, which often positions Native peoples as racial

Developing and sustaining reciprocal relationships requires seeing ourselves as accountable partners with Indigenous peoples and more-than-humans, wherever we go.

minorities, rather than members of political nations. Developing and sustaining *reciprocal* relationships requires seeing ourselves as accountable partners with Indigenous peoples and more-than-humans, wherever we go. The extractive and distant relationships that I first learned let me off the hook: expectations that ended with my trip, not impacting my teaching or other roles.

In the last five years, with three Coast Salish nations and many Indigenous educators, I've been fortunate to research, teach, and learn with over 150 pre- and in-service K-12 educators implementing *Since Time Immemorial (STI)* in Washington. Our research identified multiple types of learning necessary for non-Native teachers to implement meaningfully, or in alignment with its principles: see resources below. From that experience, I share five foundational lessons for teaching this living curriculum.

# 1. Expand your interpretive power

Accurately understanding and exploring (rather than judging or ignoring) students' thinking in cultural context is a foundation for excellent teaching- especially when students' cultures and ways of knowing differ from their educators'. Tulalip psychologist Stephanie Fryberg and her colleagues describe this ability as *interpretive power*. Many Native teaching traditions also expect this of teachers: to develop caring relationships that acknowledge a power imbalance in order to responsibly engage with students' ideas and experiences. Yet classroom teachers often struggle to attend to the *substance* of students' thinking, instead focusing on

# Supporting Non-Native educators with Since Time Immemorial:

(continued)

their accuracy or procedural sequence.

Likewise, the forest guide did not notice, or ask about students' thinking, or consider what their actions illustrated about cultural ways of knowing different from his own. Unlike the guide, students engaged with the hummingbird as a fellow subject, seeking reciprocity. To walk away from this bird in



distress would be unethical: inconsistent with their relational responsibilities. In contrast,

the guide's actions defined the hummingbird as a compostable object, and students' ideas as irrelevant to his teaching agenda. Paying attention to students' reactions and body language might have offered

important interpretive cues. He might have recognized the need to build deeper relationships in order to better interpret students' ideas, or named the harm done and apologized. But to really understand his students' ideas and aims of reciprocity, the guide also needed insight into his own cultural lens.

For non-Native educators, identifying and admitting limitations to our interpretive power can be a catalyst for deeper learning with Native knowledges and communities - and can support better STI teaching. For example, one science teacher who first struggled with STI teaching learned to change his approach. In one lesson, he illustrated how female salmon use a powerful kick to build a wall of large gravel, so small-sized gravel fall atop their eggs for protection. "It's amazing that evolutionarily, the fish were able to learn to do this," he noted. A Native student added, "Weren't they always able to do that, though?" The teacher affirmed later that he recognized this "always" as a reference to ancestral knowledges, that salmon had been kicking gravel since time immemorial. "Yes," he responded, "but not all of them did it in a way where their eggs survived: the right kind of kick. Those that did it wrong did not pass on their genes. So the ones that did, survived." The student nodded. This teacher's ability to respond in the moment and affirm the students' traditional knowledge relied on his interpretive power: understanding both dominant science and local Native knowledges about salmon.

# 2. Seek out multiple types of learning and initiate reciprocal relationships

Educators developed this awareness and interpretive power through ongoing, non-required, informal learning with Native communities, as participants and listeners. Local Indigenous resources (e.g. local tribal websites, newspapers, stories, and museums) and public community events (e.g. powwows, salmon ceremonies, cultural workshops) were important resources. Through them, educators developed lasting, authentic personal interests with Indigenous knowledges, from language to plant medicine to weaving. In the process, they built relationships

with local Native knowledge holders in multiple spheres of activity, including youth, elders, community members beyond their teaching settings, and district and state colleagues in Native education. This range of perspectives and connections was important, rather than relying on a few individuals. Gregarious or introverted, educators built relationships by continuing to engage. While forming these relationships, teachers sought additional learning and help with *STI* teaching through gifts. Gifts reflected the person and scope of the request, from a high-quality chocolate bar to a handmade basket. This approach steered away from patterns of non-Native taking, laying a path for reciprocity in ongoing words and actions.

By contrast, educators who taught *STI* less consistently or meaningfully struggled to accurately assess their interpretive power, and took minimal initiative for learning beyond formal spheres. While all educators saw a learning stance as important with *STI*, applying such humility to one's knowledge (teaching content) seemed particularly challenging. Fearful of mistakes, these educators tended to teach only what was "safe" or officially approved. While well-intentioned, such habits continued distant or transactional relationships, and patterns of waiting. The forest guide might have held this perception of distance from Native communities, too.

# 3. Develop subject-based connections

Goals matter for learning and teaching. From my botanist grandfather to forest ecology field studies, I had learned to "appreciate" the natural world from a scientific distance, like the forest guide, and to see Native knowledges as mostly romantic or irrelevant relics. Wherever I traveled, this ethic separated me from "resources" in "the wild" - and "endangered" or "historic" Indigenous peoples. I valued their existence and my knowledge about them when it appeared relevant, but did not recognize ongoing responsibilities that honored their terms when returning home.

Rather than pursuing such goals of expertise - knowledge about Native people and more-than-humans consistent with object-based relationships - strong STI implementers focused on seeking reciprocity with Native people and lands. This ongoing subject-based relational learning supported meaningful teaching. For example, one teacher explained how local Native elders' plant teachings guided her approach: "I've noticed that when I talk about [plants] now, I talk about them as if they have a spirit. Not just that, 'Oh, it's a tree. It grows from a seed, and blah, blah, blah.' I'm actually like, 'Mother Cedar and how she cares for us.' Or when we go out and harvest, how we have to give something back because we're taking something out." This attention to giving applied to her human relationships, and supported students' subject-based learning, too.

If the forest guide had made time for students to share their knowledge instead of consistently prioritizing his own, different forms of relationship with the hummingbird and each other could have been made visible. And recognizing the hummingbird's legitimacy as a relative also requires shedding "lessons" ingrained in many of us by schools.

# 4. Recognize deficit views and colonial logics

Most K-12 schools do not honor specific Native peoples, histories, political nationhood, or knowledges, which limit educators' interpretive power. Instead, deficit-based narratives in curriculum and society focus on Native victimhood: false notions of extinction, perceptions of inferiority or ineffectiveness, and single stories of poverty and alcoholism. Native knowledges are portrayed as primitive or romantic relics, irrelevant to contemporary concerns.

Recognizing that deficit-based views of Native peoples, knowledges, and nations inform educators' own learning is a crucial first step, and an ongoing one. "I think that's hard to acknowledge: what your misconceptions were, for everyone," one teacher shared, "But I feel like it's our duty. It's an obligation for me to then shift my whole thinking, my whole thought process, my whole teaching process, and to incorporate all of that [change]."

Deficit views also inform explanations about the world that erase or devalue Native peoples, knowledges, or sovereignty: what Tigua/Mexica scholar Dolores Calderon calls settler colonial logics. These "explanations" persist. For example, that the U.S. is a nation of immigrants, or that treaty rights were granted to Native nations rather than by sovereign Native nations. The forest guide's actions upheld another: that humans are separate from and superior to the natural world - even as they care for and teach about it.

# Focus on asset-based, contemporary framing with Native peoples, knowledges, and nations

Recognizing patterns of Indigenous invisibility and erasure was necessary for educators to develop effective, asset-based STI teaching. Strength- or asset-based frames focus on the past, present, and future resilience and agency of Native peoples and nations: their innovation, strength, and leadership for addressing urgent contemporary issues. For example, one teacher's Native students joined a large climate action youth conference, where he saw their authority amplified: "Out of that entire group it was only the group that I was with [who] had the power of the voice to say things that carried enough weight to actually shift the understanding in the way that we handle climate change. They are living on the landscape where they traditionally have lived since time immemorial, and have felt, and actually have the data within their knowledge of how the climate has changed over the last ten thousand years. And by all rights, they have the most authority to say this is what needs to be fixed right here right now." Recognizing and countering colonial logics helped educators support Native students and communities against threats, from ocean acidification to Native language loss.

To enact transformative teaching with *Since Time Immemorial*, OEE educators have many choices. We can notice how we interpret and value students' ideas from a particular standpoint, and constantly seek to broaden the interpretive resources in our toolkit. We can be vigilant with countering deficit frames applied to Native students, families, and knowledges. We

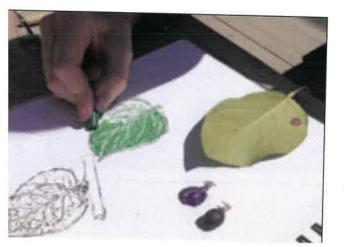
can build relationships in the natural world and with Native communities as reciprocal participants and listeners, rather than dominators. We can approach colonial logics embedded in our own habits with more curiosity and determination. As we identify deficit frames and colonial logics shaping our relationships and understandings, we can share those myths with our students and challenge those frames as we teach. Our lessons can illustrate the urgently-needed leadership of Native peoples, knowledges, and nations with contemporary issues. As individuals and organizations, we can humbly seek partnerships and request feedback from Native colleagues and communities, and be more attentive to ways our own cultural values may shape our responses. And we can accept responsibility for co-designing learning experiences and partnerships that honor Indigenous peoples, lands and nations. Honoring the hummingbird and the Native youth who shared her story expect this of me. What next steps will you take?

# Recommended Resources for Educators

- Educator Self-Reflection Tool with Since Time Immemorial developed from this research: <a href="https://tinyurl.com/reflectSTI">https://tinyurl.com/reflectSTI</a>
- Calderon and colleagues' Research Brief on Land education (different from place-based education) professional development for educators gives important background and concrete suggestions for designing non-Native educator learning. <a href="https://cedar.wwu.edu/woodring-dei/33/">https://cedar.wwu.edu/woodring-dei/33/</a>
- Conrad's (2022) Desettling History: Non-Indigenous Teachers' Practices and Tensions Engaging Indigenous Knowledges illustrates how two non-Native educators worked to support Native knowledges and sovereignty in placebased settings (email jconrad@temple.edu for a free copy).
- Learning in Places Collaborative's (2021) Frameworks for Educators, and Co-designing Places for Outdoor Learning Facilitation Guide offer resources for designing education aligned with Indigenous knowledges across settings. <a href="http://learninginplaces.org">http://learninginplaces.org</a>
- Indigenous STEAM Collaborative's Learning Activities offer print-ready tools for all settings that incorporate science, technology, engineering, art, and math. <a href="https://indigenoussteam.org/learning-activities/">https://indigenoussteam.org/learning-activities/</a>
- Critical Orientations: Indigenous Studies and Outdoor Education: a free online course taught by Indigenous faculty at OSU, relevant to outdoor educators across settings <a href="https://workspace.oregonstate.edu/course/Critical-Orientations-Indigenous-Studies-and-Outdoor-Education">https://workspace.oregonstate.edu/course/Critical-Orientations-Indigenous-Studies-and-Outdoor-Education</a>







# Tend, Gather & Grow:

# A Teaching Toolkit Connecting Students with Plants, Places, and Cultural Traditions

By Kim Gaffi, Mariana Harvey (Yakama) and Elise Krohn

a cornerstone of Indigenous teachings to strengthen mind, body, and spirit. As Skokomish Elder Bruce Miller said, "The Forest was once our Walmart." The Pacific Northwest is teeming with wild edible berries, greens, roots, and seeds that are nutritionally superior to store-bought foods. Wild plants also provide medicine and materials for traditional technologies. Many common and accessible "weeds" are useful and can be found in our own backyards.

Tend, Gather and Grow (Tend) is a K-12 place-based curriculum dedicated to educating people about plants, local landscapes, and the rich cultural traditions that surround them. Tend focuses on native and naturalized plants of the Pacific Northwest region and includes Northwest Native knowledge, stories, and plant traditions. The curriculum toolkit consists of a teacher guide, six modules, videos, Coast Salish stories, plant identification cards, posters, games, recipes, and a garden guide. The 60+ lessons align with Science, Technology, Engineering, Art, Mathematics (STEAM) education principles and Next Generation Science Standards. Here's a glimpse at the main curriculum modules:

- Plant Guide This module covers 20 northwest plants and includes 38 hands-on lessons. Teachers can choose lessons based on what plants are available, in season, and most relevant to students. Each plant overview contains information on identification, seasonality, where the plant grows, human uses, and ecological relationships. A K-12 lesson called Dandelion: The Useful Weed introduces students to the lifecycle of dandelion, how it improves soil quality, and how it benefits insects, grazing herbivores, and people. Two lessons for 6th to 12th graders dive deeper into making food and medicine from dandelions. Plants that are at risk for overharvest have not been included in the curriculum unless there is a specific emphasis on restoration.
- Cultural Ecosystems Field Guide This module is about reframing the settler/dominant narrative about Northwest Coast Native People. Typically, Native Communities in the Northwest have been characterized as hunter-gatherers. This is not an accurate representation, and erases the deep-time relationships and land cultivation practices of Native People. This module includes an overview lesson on cultural ecosystems and a field guide to camas prairies, saltwater beaches, food forests, wetlands, and urban landscapes. Students learn about reciprocity and explore how they might both receive the gifts of the land and give back to the land.
- The Herbal Apothecary This module includes techniques for harvesting, processing, and preparing medicinal plants. Topics include herbal teas, infused vinegars, honeys, poultices, infused oils and salves, herbal baths, and aromatherapy.
- Plant Technologies This module investigates how plant qualities have been used for millennia to create human technologies. Students explore ways to gather, process, and make useful items including cordage, bas-



Tend, Gather & Grow development team

kets, mats, tools, and dyes from plant materials. Lessons are rooted in STEAM concepts.

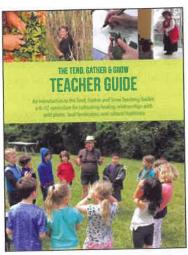
- Tree Communities This module introduces common Northwest trees and how they are valued for food, medicine, and traditional technologies. Themes include tree identification, ecological relationships, and life skills that we can learn from trees including generosity, building community, willingness, adaptability, and resilience.
- Wild Food Traditions This module engages students with native and wild foods from a Coast Salish perspective. Seasonal lessons include spring wild greens, summer berries, healthy snacks in fall, and traditional beverages in winter. Native American stories, cultivation practices, ethical harvest techniques, and recipes are woven throughout lessons.

Our *Tend*, *Gather and Grow* development team (photo above) includes twelve people sharing a common passion for connecting people with plants, the land, and cultural traditions. Several of our team members have worked together in tribal health and natural resources programs and half are Indigenous. Over the years we have heard consistent requests for educational resources designed for youth. The *Tend* curriculum is our effort



to meet that need. Collectively, we have knowledge and skills in teaching, environmental education, Northwest Native culture and storytelling, ethnobotany, herbal medicine, traditional technologies, art, media, social justice, and youth advocacy. Our team met monthly for several years to study plants in the seasons and co-design lessons and activities. Co-developing

the curriculum has been an opportunity for our team to be in community with each other, share our love of plants, deepen our knowledge, and support each other along the way. We also worked with Native Elders, cultural specialists, and other regional experts in developing lessons-especially regarding storytelling and plant technologies. The curriculum includes quotes and instructions from these individuals.



### **Tensions**

There are inherent tensions in non-native people using this curriculum, including concerns of cultural appropriation and misuse of plants and cultural landscapes. The curriculum exists, as we all do, within a painful and persistent history of colonialism, white supremacy, and systematic oppression. Historic and ongoing colonial settler practices negatively impact Native People and their traditional lands. Plant communities have changed drastically and many important cultural foods and ecosystems are diminished and difficult to access. Cultural appropriation and a misuse of knowledge among settler communities has undermined tribal sovereignty in several ways, including researchers claiming copyright authority over Indigenous knowledge and the overharvest of plant communities. For instance, as the health benefits of mountain huckleberry are more broadly learned, huckleberry stands cultivated by Native Peoples for thousands of years have been damaged and overharvested by non-native foragers and commercial harvesters.

To address these tensions, the *Tend* team has collaborated with tribal Elders and cultural knowledge keepers to ensure that information in the curriculum is appropriate to share broadly. Some plants and plant knowledge have been purposefully left out. All stories and plant teachings are included with permission from the storyteller or plant knowledge keeper. We have also created a video called *Honoring Plants, Places, and Cultural Traditions* that features Indigenous educators offering tools and advice to teachers wanting to use the curriculum. The *Tend*, *Gather and Grow Teacher Guide* and trainings support educators in adopting the curriculum responsibly. The toolkit also encourages educators and young people to be advocates and allies for Northwest Native peoples, tribal sovereignty, and cultural ecosystems. Lastly, we are encouraging schools to integrate featured plants from the curriculum in schoolyards and have

# **Tend, Gather & Grow**

(continued)

created an Ecosystem Garden Guide that includes plant lists and basic garden installation directions.

# Ways People are Using the Curriculum

Tend is adaptable to multiple learning environments, cultures, languages, participant ages, and abilities. We encourage educators and students to explore and add specificity around local language, culture, stories, and places as appropriate. We believe that cultural diversity is part of our richness as people. Educators can create



2019 Tend, Gather & Grow Cohort

opportunities for immigrant students to share their knowledge and traditions as well, and plant uses from around the world are included in the curriculum to encourage this.

The Tend curriculum is being implemented in a variety of settings including tribal schools, non-tribal schools, health and wellness programs, behavioral health programs, youth camps, and informal educational settings. Educators are also using Tend in various ways that meet their learning goals, fit their environment, and follow their students' interests. Some schools focus on a plant each month (Wild Rose in September, Cattail in October, Doug Fir in November, etc). Some teachers are integrating Tend lessons into other courses like agriculture, nutrition, biology, ecology, social studies and the Since Time Immemorial Tribal Sovereignty curriculum. Teachers can also choose lessons and modules to accompany existing nearby landscapes like camas prairies or saltwater beaches and/or gardens or to accompany the creation of an ethnobotanical garden. Tend can also be the centerpiece of a full year-long course and we've designed a 180-hour Career Technical Education framework called Tend, Gather and Grow - Ethnobotany & Natural Resources Management to support this.

# **Tend Tribal Educator Cohorts**

The Tend team has facilitated year-long tribal community educator cohorts where 16–20 educators from Washington tribes gather monthly for full-day workshops. Our first two internships focused on serving Western Washington tribes and this year we

are honored to work with tribes from the Plateau region.

The Plateau internship includes seventeen tribal food gatherers, teachers, community educators, birth justice advocates, Indigenous language teachers, Elders, and youth who represent Yakama Nation, Colville Confederated Tribes, Kalispel, Nez Perce, Spokane, and Coeur d'Alene Tribe. This internship is led by GRuB's Wild Foods and Medicines Tribal Relations Lead, Mariana Harvey (Yakama) and Traditional Plants Educator and *Tend* development team member, Elizabeth Campbell (Spokane/Kalispel).

This internship meets regularly over the year to integrate the *Tend* curriculum into various communities, schools, and programs. Participants also build teaching and group facilitation skills, learn about how to identify, harvest, and prepare many local plants, attune to the seasons, deepen a connection to the land, practice storytelling skills, and more.

Often the most enriching outcome for these tribal internships is the community and relationship building among the participants. Our participants are leaders within the tribal food sovereignty movement and it is a lot of work to carry. We hear that our gatherings feel like a 'retreat' where people can learn together, share ideas, and deepen bonds to each other and the earth. Gatherings take place in each participating tribal community, allowing us all to gain a deeper understanding of each other's tribal history, culture, and of course foods and medicines! While we were in Spokane, a common highlight among participants was hearing a traditional story about the tamarack tree. When we were in Yakima, many remarked that it had been a very long time since they had eaten many of the roots that were served that day, and others were eating them for the first time. There is joy that radiates from our participants after our gatherings and the beauty is they bring that joy and spark of knowledge back home to their communities. 🏶

# **How to Access the Curriculum and Trainings**

We offer trainings seasonally to give educators handson support in adopting and adapting the resources to their
teaching environment. We are also available for technical
assistance to districts or organizations that need customized
workshops for their staff. For upcoming trainings at GRuB
in Olympia, see <a href="https://www.goodgrub.org/events">https://www.goodgrub.org/events</a>. The
Tend, Gather and Grow curriculum is now available through an
online portal at nativeplantsandfoodsportal.org. To contact
our team with questions, ideas, and feedback, email <a href="mailto:tend@goodgrub.org">tend@goodgrub.org</a>.

# Welcome to Our Garden:

# Integrating Since Time Immemorial and Ethnobotanical Gardens at the Middle School Level

By Erin Johnson

When I was approached in 2018 by the parent of one of my students about possibly planting an ethnobotanical garden at our school, I thought it would be a fun and interesting teaching tool. A garden would be an engaging addition to the Washington State history content I taught, something we visited every spring. I had no idea at the time what a profound and foundational part of our history curriculum it would become. Each year, its presence is more central to the overarching themes within our 7th grade Washington State history course.

Planting our garden at McClure Middle School in Seattle took months of research and preparation, but building a network of supporters made the task manageable. Throughout the project I reached out to many different groups, and all were incredibly supportive. In particular, our Parent Teacher Student Association (PTSA), Seattle University cultural anthropologist Rob Efird, and Garden Raised Bounty (GRuB) educator and herbalist Elise Krohn were all eager to lend a hand. Partnering with people and groups knowledgeable about ethnobotany is critically important. As a non-Indigenous educator teaching this content, I need to ensure my understanding of the subject is accurate and my curriculum honors the traditions of the Indigenous people of this region. I found the resources and knowledge provided by Garden Raised Bounty (goodgrub.org) particularly invaluable. Their Tend, Gather, Grow curriculum helped my students and I research and choose which plants were best suited to our garden. It also gave me a foundation to build units of study for my classes on traditional plant uses. I continue to use their curriculum today.

My students are consistently most interested in learning about edible and medicinal plants. With this in mind, we chose Nootka rose, Oregon grape, salmonberry, salal, wild ginger, maidenhair fern, evergreen huckleberry, and Indian plum for our garden. With the plants picked and ordered from our local King Conservation District's annual plant sale, my students spent time designing the garden layout based on the size and sunlight needs of each plant. It was important to me that they

were involved in every step of the process. I wanted them to understand that this project was a legacy, something they were starting, which would be continued by the classes that came after them. This realization hit home for them when we finally planted the garden in the spring of 2019. Over the course of two days, every 7th grade student at our school participated in a series of activities in celebration of native plants and Indigenous culture. Elise Krohn led tutorials on using Nootka rose. Roger Fernandes, Lower Elwha tribal member, told Native American stories. The Duwamish tribe welcomed us into their longhouse.

The students also spent part of this time preparing and planting our garden. What they planted were tiny, delicate bare roots. In fact, when our garden was finally done, it looked mostly empty. Even though I had prepped them for this eventuality, I

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To practice identifying native plants, students participate in a scavenger hunt in a nearby park. Photo by Erin Johnsonn.

# Welcome to Our Garden

(continued)

received many questions about why we weren't planting larger plants and some students were even a bit disappointed that all the delicious fruit they'd been learning about wouldn't be available for them to try anytime soon. However, this became that elusive 'light bulb' moment that educators strive for. All year, we had talked about stewardship and legacy; how Indigenous cultures are deeply connected to their land and how they share that generational knowledge. As we looked at our little garden and had that conversation once again, my students could really see what they had accomplished, and they too could feel a connection to the land. This garden would be here, used by students to learn, long after they left. It was a gift, not for them, but from them.

Today our garden is established and those bare roots have grown into mature plants. My students are now welcomed into our garden every year during the first week of school. They meet the plants and hear their names for the very first time. Their initial excitement is at the novelty of class outside for the day and my promise that we'll eventually taste jams and teas made from the plants we grow. Over the course of our year though, as we visit the garden more frequently, place our hands in the dirt, and learn

As we looked at our little garden, my students could really see what they had accomplished, and they too could feel a connection to the land.

about the traditional uses for our plants, students' interest and appreciation deepens. I explain to them that we will be learning and connecting to history by working with native plants in the present. I talk about the first group of students who planted our garden and how we are carrying on their legacy by

continuing to take care of the garden for those to come.

As the weather turns and the rain comes, we make another trip to the garden before winter sets in, to harvest rose hips. We use resources from GRuB to learn about ethical and responsible harvesting. It's important to be certain that we are harvesting the right plant, to have permission to harvest, never take more than we need, and to harvest with gratitude for what the plant has provided. I share the various uses for all parts of the Nootka Rose and dissect a few rose hips for them to see what they look like inside. Processing rose hips is no small feat, but the work is worth it. They can be used for tea, jelly, or powdered and added to just about anything.

We embark on more in-depth research into Indigenous cultures during the winter, when being outdoors isn't as inviting. I begin each lesson, for several weeks, with a story. The oral tradition is fundamental in Indigenous cultures for sharing knowledge and teaching the younger generations about the history and importance of their land and culture. It makes sense then, that my students learn in the same way. Many of the stories I choose have direct connections to plants in our garden or animals that that are readily spotted in our area. One of my favorites is a Sinixt story called "The Origin of Black Huckleberries" from *The* 



Student-made signage posted in the garden. Photo by Erin Johnson.

Earth's Blanket by Nancy J. Turner. Among other things, it teaches us that huckleberries are highly prized as a food source that is both delicious and strengthening.

A good story is universally engaging and initially, this serves as a strategy for capturing student interest. However, before they know it, they are not just drawn in by the entertainment factor of hearing a story. They soon become invested in figuring out the meaning within. When reflecting on her learning this year, my student Kazuho wrote that "Learning about native plants improved the way I understand how much they mean to the Indigenous cultures and how much they depend on them. I learned that Native tribes treat plants as something special. I learned more about their uses through the stories, and those things clearly showed how important the plants were to the Native tribes."

I always ask my students the same two questions. What is the purpose of this story and what does it tell us about the land we are on? This leads to rich conversations about morals and lessons, comparisons between stories they have heard themselves or similar teachings their elders have shared with them. One of my students' favorite projects is tied to this learning. They choose a story to re-tell in stop motion format and share their recreations with peers and family, continuing the story telling tradition and spreading their knowledge.

At the same time, we are also integrating resources from the *Since Time Immemorial* curriculum (STI). We use them to dig deeper into the history of tribes during the colonization and treaty making eras and learn how colonizers systematically threatened and removed tribal sovereignty. This is the moment when students are connecting the foundational and experiential work we do earlier in the year with our garden to the larger study of history. The garden helps my students easily see the connection between the land and Indigenous culture. They can explain how

As one student put it, our garden, when paired with the resources from STI, creates a fuller picture of the history of this land we are on and its continued importance.

tribes must have access to their traditional lands to harvest the plant medicines because the students have spent time in our garden working with and

harvesting from the plants themselves. My students can see that the land is not just a food resource or a place to live, but that it is inextricably tied to Indigenous culture and when it's taken from the tribes, irreparable harm is done. As one student put it, our garden, when paired with the resources from STI, creates a fuller picture of the history of this land we are on and its continued importance. My students will recall this important learning far beyond their time with me because it is tied to their hands-on, place-based experiences in our garden.

Even in the winter, we bundle up and trek to the garden to check on the plants and track how they are changing. We notice which ones keep their green leaves and which ones don't. Early in March, just as spring is approaching, I take them out to show them Indian Plum. It's one of the first plants to produce new leaves. Their bright, lime green color stands out amongst the brown and dark green of a forest background. In our garden, they are impossible to miss. These early sprouting leaves are edible and taste like bitter greens and cucumber. The students love to chew them while they work on plant sketches. I ask them to pick a plant to focus on for the remainder of the year and visit it throughout the spring, to track its growth. They make detailed drawings showing how it changes over the course of the season.

Later in the spring, as our garden is really coming to life, my students complete a project on one specific plant. In the interest of allowing student voice and choice, they get to choose the plant they research and the format of their project. This is the point in the year where we start moving from general plant knowledge to specific expertise. They will also share their project with their peers so that in the end, we've created a vast pool of knowledge that we all have access to. Many projects are posted on our school website or even in our garden as signage so that the community can learn from our garden as well.

Students tend to pick the same plant they've been sketching throughout the spring. Most of the plants that they can choose from are in our garden. I include a few that aren't, but can be found nearby, for the sake of variety. Nettle, dandelion, and western red cedar are good examples. Common project formats include videos, websites, presentations, or art. They can be created

digitally or by hand. I ask that students make these projects with the intent of teaching their peers and community about the following aspects of the plant:

- -Where and how to grow it
- -Size and description
- -Traditional uses

Many students also choose to include the plant stories they heard earlier in the year, recipes for eating or making medicine from the plant, and even their scientific sketches.

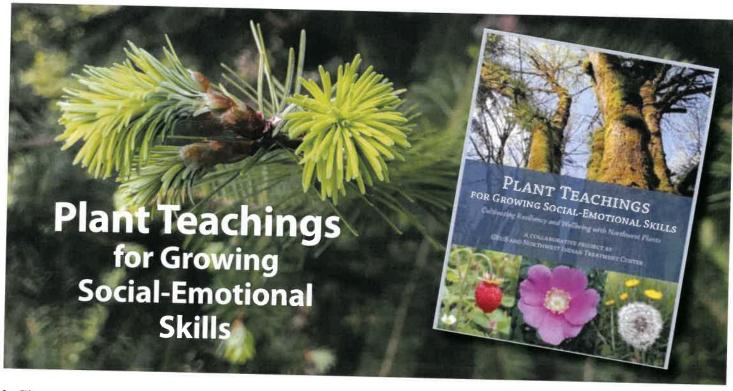
In late spring we also spend a few days doing garden maintenance. I borrow tools from our school district and students bring them from home. We pick weeds, cut back overgrown plants, and lay down compost and mulch. Even though our garden is mostly established, I have found ways for students to continue to plant each year. Mixing a packet of seeds into soil, then having each student place a handful into the garden is one way to include each student. We've used this strategy to scatter camas seeds around our campus. We've also planted seeds in pots, and those plants that won't fit in our garden will be adopted by families so that more native plants are out in our community.

The students aren't here in the summer, when some of our garden is ready for harvest. I don't want them to miss out on tasting the fruits of their labor during the school year, so I harvest salal and Oregon grape berries for them. With more than 150 students, there isn't enough in our garden for everyone, so I reach out to my community and ask to harvest from people's yards or from our surrounding area. When people hear about the purpose of my harvesting and what we are doing at my school they are always excited to help and share their plants with us.

I have found that this summertime activity brings me joy and mindfulness. Researching recipes and processing the plants helps me connect to my curriculum and reset my teaching intent for the coming year. Sharing the food I make for students and seeing their excitement brings me back to why I love teaching. I am reminded of how much they enjoy their time in our garden and that it is the cornerstone to their learning about Indigenous culture. Years from now, I hope they think about their time in our garden and that it will call to mind their deeper learning and appreciation for the history and continuing importance of Indigenous peoples and the land we share. •



Students taste rose hip tea and Oregon grape jelly.



by Elise Krohn and Sarah Anderson

# Many Native Elders remind us that plants are teachers. When we awaken all of our senses and observe nature, plants can lead us to be healthy and resilient.

For example, alder trees demonstrate how to build a healthy forest community through partnering with bacteria and enriching the soil. They create shade, food, and a place for many species to live. How might we work across differences with others and build a healthy, diverse community? Wild rose offers nectar to pollinators and nutritious fruits to birds and other animals while protecting itself from harmful browsing with sharp thorns. Like rose, we can be compassionate and fierce.

The Plant Teachings for Growing Social-Emotional Skills Toolkit is for educators, mental health workers, and community members who are exploring behavioral health skills that are rooted in the land and Coast Salish culture. It includes:

- A book with an overview on social-emotional skills; a chapter covering 22 Northwest regional plants with descriptions, cultural teachings, stories, ecological relationships, and recipes; and a chapter on making plant medicine with methods for harvesting, processing, and preparation.
- A card set featuring photos of each plant and its related social-emotional teaching, accompanied by personal reflection questions.
- An activity guide with additional insights and activities for teaching about plants and social emotional skills. A slideshow features images of each of the plants.

Movement Videos are led by Chenoa Egawa (Lummi) and Rachel Smart (Port Gamble S'Klallam), and include movement and breathing activities to promote physical health, mindfulness and selfawareness, and stress reduction. The videos can be used in a classroom or home setting. Educators are encouraged to adapt the movement activities and lead them in a way that best fits their teaching environment.



# OAK I grow slowly -- making deep roots, hard wood, thick bank, tough leaves, and nutritious nuts. My patient efforts help me get through challenges and create a supportive environment for species around me.

- Can I remember a time when someone was patient with me.
   How did that make me feel?
- When I am feeling impatient and frustrated, can t: STOP for a moment, take a few deep breaths, think about my teng-term goals, and act mindfully from a place of calm?

 Posters feature images of each plant in the toolkit along with short paragraphs summarizing teachings. These serve as a visual reminder of the plant and associated skill.

# **Project Background**

Plant Teachings was developed through a partnership between GRuB's Wild Foods and Medicines Program and Squaxin Island Tribe's Northwest Indian Drug and Alcohol Treatment Center, and was originally funded by Seattle Indian Health Board. Over two years, a team of plant experts, mental health workers, Native cultural experts, movement specialists, graphic designers, and editors worked together to synthesize the toolkit. While each plant is complex and embodies many qualities and teachings, the

team chose only one for each plant that best matches its cultural teachings and uses, natural history, and ecological relationships. This took thoughtful group collaboration and time.

The project team has prioritized protecting and promoting plants and Indigenous knowledge. Guidelines for ethical harvesting and honoring cultural knowledge are included in the book and other materials. Sensitive plants and protected knowledge were intentionally not included but educators are encouraged to incorporate local knowledge, stories, and language as appropriate. The team also aims to promote the value and significance of Native ways of knowing, doing, and being, including experiential learning, the transmission of knowledge through stories, and recognizing and building reciprocal relationships.

# **Plant Teachings in Action**

Plant Teachings is meant to be adaptable to various ages, cultures, abilities, and learning environments. Resources can be integrated into many different settings, including behavioral health programs, community health and wellness classes, K-12 classes, and outdoor education programs.

Several tribal communities have adapted Plant Teachings to their programs, including adding language, stories, and plant traditions. Northwest Indian Treatment Center has a version of the toolkit that aligns with their Dialectical Behavioral Therapy (DBT) as part of their 45-day inpatient program. The Spokane Tribal Network partnered with the team to develop a version that aligns with the Substance Abuse and Mental Health Services Administration's GONA/GOAN curriculum and includes them in community workshops. Muckleshoot Tribal School has fully implemented the curriculum and focuses on one plant per month with weekly activities across K-12 grade bands. A Southeast Alaska version of the toolkit is currently being developed in collaboration with GRuB and Kaasei Indigenous Foodways. The Central Council of Tlingit and Haida Tribes of Alaska and Haa Tóoch Licheesh, Juneau Violence Prevention Program hosted a teacher training for 25 Alaska Native educators across the region. GRuB's Veterans' program is integrating plant teachings into workshops and talking circles for Veterans who are healing from post-traumatic stress disorder.

Our project team offers trainings to tribes, schools, and organizations. To make the content easier to learn and adopt, we organize the plant skills into overarching categories including mindfulness, self-awareness, tolerating stress, and building healthy relationships.

# **Mindfulness**

Mindfulness is an integral skill throughout the *Plant Teachings* curriculum. Practicing mindfulness helps us to be fully present in the moment without attachment or judgment. Life is always changing, and if we are fixated on the past or future, we miss the gifts that are present right now. Mindfulness also opens new ways for us to react to challenges. We can notice our inner state, slow down before we act, and make intentional choices that help us to move toward our goals. We can reduce suffering, anxiety, and



# Mystery Mindfulness Tea Activity

Time: 15 minutes plus tea preparation time

Materials: Prepared tea, paper cups

Make tea ahead of time and pass out samples. Do not tell students what kind of tea they are drinking. Ask them to relax, take a deep breath, and focus their mind and body on experiencing the cup of tea before them. Have everyone be quiet for 2–3 minutes as they engage all of their senses—noticing how the tea tastes, feels, smells, and other body sensations they might have.

Once finished, ask participants what they experienced. Does anyone know the type of tea? Introduce the tea plant—noting the connections between participant responses and the qualities of the tea. For example, if you use nettle tea and someone says it tastes like minerals or broth, you can point out that nettles are mineral-rich and help us build strong bones and healthy tissues. Nettles help us to build inner strength, not only through offering powerful nutrients, but also through waking us up and helping us to be aware of our surroundings.

pain through being in greater control of what we pay attention to. Mindfulness can help us to increase awareness of positive things in our lives.

Mindfulness is an accessible practice that can be done at any time through breathing, movement, awakening our senses, paying attention to our inner and outer world, and cultivating curiosity. Cultural activities including weaving, singing, dancing, making cordage, doing

# Plant Teachers for Mindfulness

Mint – Clarity and Focus
Nettle – Build Inner Strength
Salmonberry – Interconnectedness
Usnea – Both/And Thinking
Willow – Flexibility

art, harvesting plants, cooking, and making medicine can be mindfulness activities.

# **Self-Awareness**

Self-awareness helps us to notice, identify, understand, and regulate our emotions. By paying attention to the way our feelings

and thoughts create our behaviors, we can act in more healthy, kind, and positive ways. Sometimes self-awareness means better recognizing our own strengths (including those of our culture, family, school, and community), which builds our confidence.

Plant teachings can

# Plant Teachers for Self-Awareness

Bigleaf Maple – Willingness
Cottonwood – Wellspring
Dandelion – Problem Solving
Hawthorn – Courage
Hemlock – Humility
Salal – Endurance

help us build skills in self-awareness. Like the deeply rooted cottonwood tree, we can tap into our source and bring our emotions to the surface. We can remember our inner strength and that we belong. As we sit under the bigleaf maple with its branches hosting many other creatures, we are reminded that a spirit of willingness can draw new people, experiences, and positive changes to our life. A dandelion growing in the sidewalk reminds us that we can problem-solve and pursue our goals even in challenging circumstances and environments. In a Coast Salish story, hemlock was not paying attention when Creator passed out cones to evergreen conifer trees. He was last in line and has small cones and a bent top because he hangs his head with humility. This story both helps us to identify hemlock and invites us to remember and practice humility—we can make mistakes while always learning and growing.

# **Tolerating Stress**

Pain and stress are an inevitable part of life. Yet, when we focus on the pain and stress, it can make things even more difficult. Plants show us ways to be resilient in the face of life's challenges. Douglas fir survives fires by making thick bark. It protects itself from insect infestations and makes pitch to heal injuries. What skills might we

# Plant Teachers for Tolerating Stress

Douglas Fir – Adapt
Oak – Patience
Plantain – Self-Soothe
Wild Rose – Love, Protection,
Radical Acceptance
Wild Strawberry – Embrace the
Moment

develop to adapt in stressful situations? Oak grows slowly and invests its energy in making deep roots, hard wood, tough leaves, and nutritious acorns. This patience pays off during drought, storms, and other challenges. By practicing patience and thinking about our long-term goals, we can reduce our own stress as well as the stress of others.

# **Building Healthy Relationships**

Plants must develop balanced relationships with other species around them in order to survive. This interdependence is found everywhere in nature, and reflecting on it can help us build our own social awareness skills. For example, plants that are attacked by

# Plant Teachers for Healthy Relationships

Alder – Build Community
Camas – Reciprocity
Cedar – Kindness and Generosity
Fireweed – Restore
Licorice Fern – Find Your Voice
Salmonberry – Interdependence
Yarrow – Boundaries

insects can communicate warning signals through the air to neighboring plants so they can build their own defenses. Trees share food and medicine with other trees of their kind that need support. Salmonberries demonstrate interdependence as they feed insects, birds, deer, and squirrels. They shade streams and keep waters cool for spawning salmon. In return, these animals care for salmonberry through fertilizing the soil, pruning branches, pollination, and seed dispersal. When we share our gifts with others, the whole community grows stronger.

Plant teachings can help us to heal individual and community discord and/or trauma. Fireweed's downy seeds fly on the wind and take root in clear-cuts, burns, and slides. Over time they establish a network of roots that stabilize and regenerate disturbed soil. In learning from fireweed, we might find ways to heal ourselves and the land. We might also repair the harm we have caused others.

Reciprocity is a foundational teaching in social awareness. For thousands of years, Native Peoples have gathered, and still gather, foods on the prairies, including nutritious bulbs, berries, nuts, and wild greens. In order to keep the prairies open and healthy, people have cultivated optimal environments for preferred species with techniques like burning and pruning. This practice of receiving the gifts of the land and giving back through active stewardship is necessary for upholding camas prairie ecosystems, for example. Reciprocity is also necessary in maintaining healthy relationships with people.

# Plant Teachings at The Cottonwood School



This has been an especially hard year for everyone in schools: for teachers and administrators, staff and students. Coming back to the classroom full time brought more challenges than anticipated, logistically, academically, and emotionally. By the end of the first trimester, it became clear that "getting back to normal" was not going to happen this year.

At the same time, we were continuing a journey we had begun in 2019 to better incorporate Indigenous perspectives across our curriculum. Our staff had all read *Braiding Sweetgrass* by Robin Wall Kimmerer and became inspired to shift how we taught about plants: learning *from* them, instead of learning *about* them. Our newly assembled Indigenous educator advisory group recommended GRuB,

specifically their book on the social emotional teachings of plants. We reached out to Elise Krohn and Kim Gaffi, and soon created a plan for staff trainings. This ended up being the right partnership at the right time: our community was in need of healing and plants had the potential to offer this, both emotionally and physically.

We decided to start slow and focus on the teaching of the cottonwood tree. We had never done any teaching around cottonwood,



Students decorated heart-shaped wooden ornaments honoring our cottonwood tree behind the building and hung them from the branches, letting the neighborhood know that this tree is cared for by children.

despite having adopted the tree as our namesake. The teaching of cottonwood is wellspring: knowing who you are and where you come from, knowing that you are connected to something bigger than yourself, and being able to pull strength from that place deep inside you, just like cottonwoods are able to draw water from the earth and store it in their bodies. In our first staff training in February, we walked to the back of the school to "meet" our very own cottonwood. We observed the buds, learned about the tree's unique biological traits, and listened to a Dakota story about the stars inside the branches. Back inside, Elise and Kim demonstrated how to make a healing salve from oil infused with



Emma Johnson, a Cowlitz tribal member and current GRuB intern, worked with our students to plant a camas micro-prairie in a space along our building that had been ignored and untended for years

cottonwood buds. Each staff member took a canister home.

Working closely with our school counselor, Kirstin, teachers began to bring the teachings of cottonwood into the classroom. Students practiced paced breathing, they took mindful walks to nearby Cottonwood Bay, they listened to the Dakota star story, and some classes even made their own batches of cottonwood salve. In May, we held our first "Cottonwood Gifts Day," where every class gave the school a gift inspired by cottonwood. The kindergarteners created a mosaic to hang in our school. The 8th graders created identity cards for each student, naming them as part of the Cottonwood community. First and second grade students made leaf prints and a cottonwood banner. Sixth graders made jewelry for every student in the school made of cottonwood branches. Fourth and fifth grade students made postcards with cottonwood-inspired art and poetry, and crafted a treaty with Cottonwood Bay for all to sign. Third grade students created native plant ID cards for each classroom, and seventh graders wrote a song to teach the entire school, entitled "Ode to Cottonwood." Students all decorated heart-shaped wooden ornaments honoring our cottonwood tree behind the building and hung them from the branches, letting the neighborhood know that this tree is cared for by children.

After the day of gift giving, the entire student body gathered in the play yard to sing the newly written cottonwood song. We have been physically distancing this year, making it impossible to gather in our multi-purpose room for all-school meetings. This sing-along was the first time the whole school had been in one collective space in over two years. The cottonwood tree brought us together for a communal act of healing, leaving us with a better sense of who we are as a school.

We look to next year with great anticipation. Our character trait program will be replaced by plant teachings. Students and teachers will learn from a different plant each month aligned with the seasons—all plants we can find within steps of our front door. Camas is one of our plants, and in preparation, Emma Johnson, a Cowlitz tribal member and current GRuB intern, worked with our students to plant a camas micro-prairie in a space along our building that had been ignored and untended for years. By getting their hands in the ground, students experienced the connection between plants, Native knowledge, and their own lives. Opening ourselves to the teaching of plants brings us all into deeper relationships with the Earth, with each other, and with ourselves. It is for these connections that we are truly grateful.

"Teaching and learning about plants is so valuable. Through this work, we remember our ancient stories and teachings, and carry them on for current and future generations. This type of education is needed in all communities, schools, and educational programs now more than ever as we experience ever-growing challenges due to climate change and other negative impacts of modern ways of life, which are affecting all life on our planet. Learning how to care for Nature, which takes care of us, and upholding the beauty and wisdom of our ancestors' teachings, is so necessary."

-Chenoa Egawa (Lummi) Plant Teachings development team member

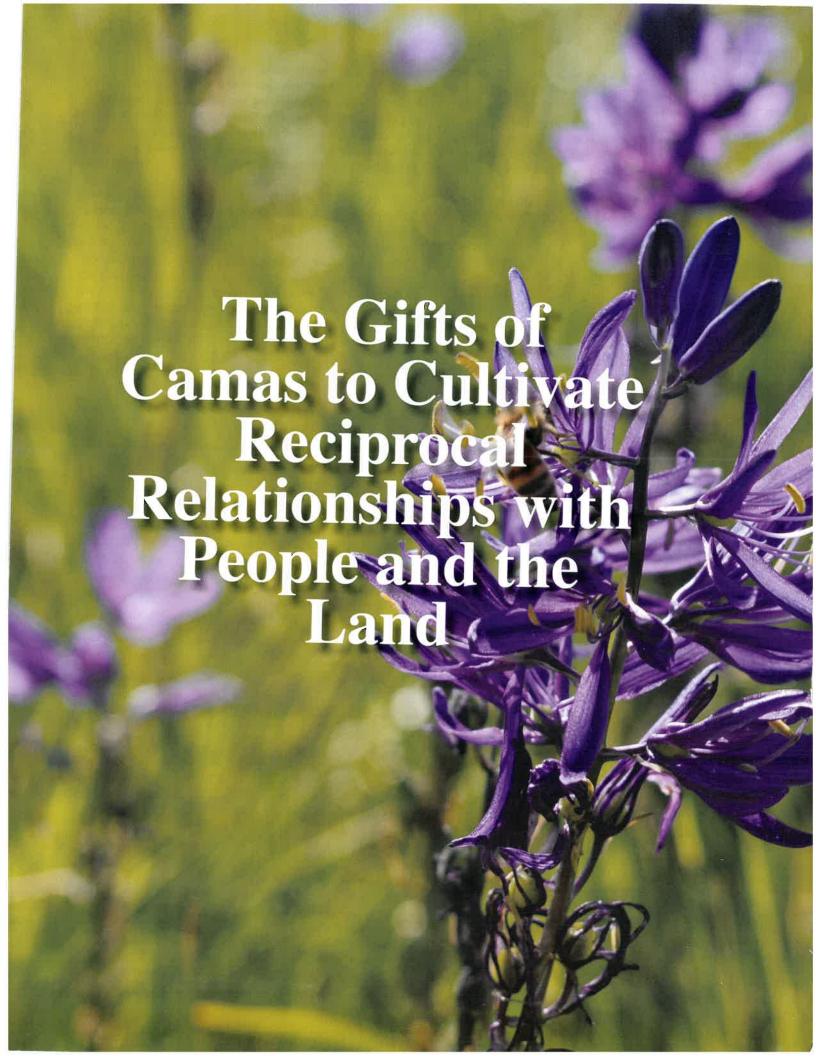
# **How to Access the Toolkit and Trainings**

GRuB offers trainings to give educators hands-on support in adopting and adapting the resources to their teaching

environment. We are also available for technical assistance to districts or organizations that need customized workshops for



their staff. For upcoming trainings at GRuB in Olympia, see <a href="https://www.goodgrub.org/events">https://www.goodgrub.org/events</a>. The *Plant Teachings Toolkit* is available through an online portal at nativeplantsandfoodsportal.org. To contact our team with questions, ideas, and feedback, email <a href="team">tend@goodgrub.org</a>.



# By Judy Bluehorse Skelton and Emma Johnson

amas, as our relative and one of our greatest teachers, has the ability to truly change people's relationship with the land. As a relative who has taken care of Indigenous Peoples throughout western North America since time immemorial, Camas never fails to cultivate friendships amongst those who care for them. We, the authors, were fortunate enough to have Camas bring us together and now find ourselves writing this joint article to express our gratitude and love for Camas. Emma was selected for a Native American Agriculture Fund (NAAF) internship in the winter of 2022. The internship provided her with the opportunity to choose a project related to Native agriculture that she was passionate about. She immediately started thinking about food sovereignty-related projects, but while planting Camas with one of Judy's winter classes on Indigenous Gardens and Food Justice the topic of a Camas curriculum came to mind. It was through the development of this Camas curriculum that Judy and Emma's friendship began.

It is not often that we as humans are provided with the space and time to reflect on what Mother Earth has to offer us every day; but Camas captivates us with their beauty every spring, ensuring we take a moment to connect with all Camas continues to offer. Camas is a geophyte that produces above ground growth from their bulb in late spring to early summer. <sup>1</sup> Their bulbs contain high amounts of inulin: "...a type of dietary fiber. Research has linked it to several health benefits, such as improving digestive health, helping control diabetes, and aiding weight loss." <sup>2</sup> Prior to the introduction of honey, sugar, and molasses by European traders, Camas was utilized as a natural sweetener. They came second to salmon as the most important traded bulb and they continue to be an extremely important food

source among western North American Indigenous Peoples. 3

With an open mind and heart, the many lessons taught by Camas can impact folks in a variety of ways, empowering them to take different approaches for their work alongside Camas. Currently only three percent of Camas prairies remain in Washington State, and they could truly benefit from a larger support system across all regions. Now there is no shortage of wonderful land stewards currently working to restore Camas prairies, but there is always room for more helping hands. Associated with the term reciprocity in Plant Teachings For Growing Social-Emotional Skills, there is no doubt that Camas will provide their caretakers with as much as they provide Camas. That said, one does not have to actively take care of Camas to learn from them. Care and collaboration for Camas come in many different forms and teaching about Camas is one of the best ways to honor them.

It is important to acknowledge that Camas as a teacher is often positioned within the world of Indigenous Traditional Ecological and Cultural Knowledge (ITECK). Providing oneself with the space and time to begin understanding ITECK will help learners connect with Camas – which is why we will introduce ITECK along with a handful of different projects that have focused on Camas and ITECK throughout our article. (contnued)

<sup>&</sup>lt;sup>3</sup> Plant Propagation Protocol for Camassia quamash. N.p.: University of Washington, 2020. https://courses.washington.edu/esrm412/protocols/2020/CAQU2.pdf.



<sup>&</sup>lt;sup>1</sup> Stucki, Devin S., Thomas J. Rodhouse, and Ron J. Reuter. 2021. Effects of traditional harvest and burning on common camas (camassia quamash) abundance in northern idaho: The potential for traditional resource management in a protected area wetland. Ecology and Evolution 11, (23) (12): 16473-16486, http://stats.lib.pdx.edu/proxy.php?url=http://search.proquest.com/scholarly-journals/effects-traditional-harvest-burning-on-common/docview/2609520852/se-2

<sup>&</sup>lt;sup>2</sup> Carney, Tushingham, S., McLaughlin, T., & Guedes, J. d'Alpoim. (2021). Harvesting strategies as evidence for 4000 years of camas (Camassia quamash) management in the North American Columbia Plateau. Royal Society Open Science, 8(4), 202213–202213. https://doi.org/10.1098/rsos.202213

# The Gifts of Camas...

(continued)

# Indigenous Traditional Ecological and Cultural Knowledge (ITECK)—Heal the Land, Heal the People

ITECK provides space for educators to introduce students to Indigenous ways of knowing, which are often new ways of knowing for non-Indigenous educators and communities. ITECK is the accumulation of generations of observations, practices, oral and written knowledge, and beliefs that promote cultural community health, resilience and environmental sustainability, recognizing that all life is interconnected. ITECK is centered in responsible land practices and stewardship of natural relations/ resources to cultivate healthy relationships between humans and diverse ecosystems. It has been applied to phenomena across biological, physical, cultural and spiritual systems since time immemorial and continues to evolve. ITECK "includes insights based on evidence acquired through direct contact with the environment and long-term experiences, as well as extensive



observations, lessons, and skills passed from generation to generation. ITECK is owned by Indigenous people—including, but not limited to, Tribal Nations,

Native Americans, Alaska Natives, and Native Hawaiians." <sup>4</sup>
It's important to provide context for this emerging confluence of education, culture, community, and collaboration. Focusing

of education, culture, community, and collaboration. Focusing on the reclaiming of urban landscapes for food, medicine, and healthy lifeways, Indigenous curricula and related fieldwork have found a timely synergy with numerous agencies and community partners. Together they are working in a culturally responsible way to implement Indigenous restoration, reclamation, and land practices.

Guiding values of this work are:

- Remembering our responsibility to the Seventh Generation
- Remembering our responsibility to the land
- Recognizing the role of the sacred and that all land is sacred



- Reciprocity and interdependence
- Respecting cultural protocols
- Cultivating healthy relationships: "We are all related"
- Living, planning, designing, managing for the Seventh Generation

As the values of this work begin to guide you, an understanding of the history of the land and the People in what is called the United States today is critical. Addressing cultural/social/environmental justice, health, education, tribal sovereignty and treaty rights is the foundation of successful collaborative work.

Key themes to understand are:

- The Doctrine of Discovery (https://www.youtube.com/ watch?v=V3gF7ULVrl4)
- Manifest Destiny (https://www.youtube.com/ watch?v=Qrjg9ulR-xo)
- Removal and ceded lands
- Sovereignty
- Treaties and federal recognition
- Relocation
- Termination
- Restoration
- Reclamation and Resurgence

By developing this awareness, we can honor Indigenous practices with land, water, and cultural ecosystems. These are ecosystems that thrive from human interaction. Our Camas relatives live in cultural ecosystems and benefit from our tending and care.

<sup>&</sup>lt;sup>4</sup>U.S. Fish & Wildlife Service, Traditional Ecological Knowledge Fact Sheet (Feb. 2011), https://www.fws.gov/nativeamerican/pdf/tek-fact-sheet.pdf; Inuit Circumpolar Council, Indigenous Knowledge, https://www.inuitcircumpolar.com/icc-activities/environment-sustainable-development/indigenous-knowledge/.

# Camas Prairie and White Oak Savanna Cultural Collaborations

Camas as a relative and teacher has guided the work and practices of Judy Bluehorse Skelton. She has been sharing the gifts of native plants for food, medicine and ceremony for nearly 30 years in the Northwest by leading nature walks, creating native gardens, making teas and providing cultural activities for Native students, their families and NW tribal youth and communities. These teachings have served as ways to cultivate and strengthen relationships with the land for health and healing. As an Assistant Professor in Indigenous Nations Studies at Portland State University (PSU), Judy continues this work through her courses, which feature collaborative partnerships for students and community to assess urban sites for restoration of native plantings and ecosystems, particularly Oak savanna and Camas prairie opportunities.

### Native Gathering Gardens at Cully Park

The Portland Parks partnership includes the six-acre Native Gathering Gardens at Cully Park. This site features Camas and provides Indigenous communities and tribes with a place to commune, cultivate Indigenous foods and materials for cultural practices and traditions, and revitalize the associated knowledge, skills and ethics in an urban landscape. This is a first-of-its-kind co-management relationship, which recognizes the value of a calendar that urban Indigenous and tribal groups have developed. The calendar is made up of seasonal rounds for tending and gathering from the gardens on the site. It embodies a complex and deep reciprocal relationship that Indigenous Peoples have had with the land since time immemorial.

# Oaks Bottom Wildlife Refuge

The Oaks Bottom Wildlife Refuge is a 140-acre Oak savanna site on the east side of the Willamette River. Here students and communities, in collaboration with Parks employees, have planted over 8,000 Camas bulbs, creating purply blue meadows every spring!

# Metro (tri-county government representing Multnomah, Washington, and Clackamas counties)

Several sites in Metro's portfolio feature collaborative fieldwork with PSU's Indigenous Nations Studies students, Indigenous community partners, and Metro scientists and staff. These activities include:

"OakQuest: Mapping and Restoring Native Oak Prairie." This project identified the cultural significance of White Oak Savannas in the Portland metro area;

"Kelipi Camas: Cultural Restoration of Camas as First Foods." Kelipi is the Chinook wawa word for "Return of, Return to" Camas:

Seasonal celebrations and the tending of Camas at Quamash Prairie, a 300-acre site near the Tualatin River.

### Portland Bureau of Environmental Services

Shwakuk Wetlands in the Columbia River Slough is a 5-acre site where Indigenous community, PSU students and representatives from the Confederated Tribes of Grand Ronde are collaborating to do site assessments that will restore former farmland to its original wetland ecosystem. Shwakuk, which means "little frog" in Chinook wawa, represents one of the native frog species who inhabits the site. In addition to other culturally significant native plants, hundreds of Camas have been replanted here, with seasonal celebrations bringing people together.

# Portland State University Oak Savanna/ITECK Center

Located in the heart of the PSU campus, this project emerged from student conversations to create sanctuary in the city – a sacred space honoring the ancient Oak savannas that once thrived in the Willamette Valley. We began by planting Camas, remembering this enduring relative to bring everyone together and foster good relationships. This 5-acre site is already hosting seasonal celebrations, outdoor classes, conferences and community gatherings. Many of these events are centered around the reclamation of the urban landscape as we plant more native plants, especially Camas!

These projects are steeped in relationship-building through community engagement, mindful land practices and education, and they are a reminder of the gift of Camas to invite folks into a transformative relationship with the land and one another. Collaborative partnerships recognize the role and impacts of ITECK on urban design, planning, and restoration projects in reclaiming and protecting the health of all people, all life, and the land. We are thankful to our ancestors, who were preparing the way for us, and we are thankful to our dear relative Camas, who continues to call us to gather in these places to celebrate. Through our work reclaiming the land, not only do we heal Mother Earth, but we also heal ourselves.



This article, and the Swinomish 13 Moons curriculum, is dedicated to the Elders and knowledge holders upon whose shoulders we stand. Our hands go up in thanks to you for sustaining and passing on your knowledge to the next generations.



Photo by Jamie Donatuto

# 13 Moons: The Swinomish Tribe's First Foods and Technologies Curriculum

by Larry Campbell (Swinomish), Myk Heidt, Joe Quintasket (Colville), Anna Cook (Swinomish) and Jamie Donatuto

In 2019, the Community Environmental Health Program (CEHP) at the Swinomish Indian Tribal Community (Tribe) published the Swinomish 13 Moons first foods and resources curriculum (https://swinomish.org/media/116714/13moonsf reshecurric.finalversion.pdf). CEHP developed the curriculum because we could not find any comprehensive Coast Salish lesson plans that taught about the interconnectedness of all beings and elements. CEHP views "health" as reciprocal relationships between people, other beings, homelands, air, and waters. In this definition, health refers to more than physical human health, or the health of the environment; health encompasses all aspects of a fully functioning ecocultural system and is reflected in continual practice, not as a static status (Donatuto et al., 2016).

The curriculum is founded on a science, technology, engineering, art, and mathematics (STEAM) rubric using identification, harvest, and preparation activities of Coast Salish first foods, medicines and technologies. We named the curriculum "13 Moons," which signifies the traditional Swinomish harvest calendar. Each moon is named for an important seasonal event or harvest that takes place during that moon (Swinomish Indian Tribal Community, 2006).

The project team agreed on eight guiding principles, which formed the curriculum framework for developing activities. We identified the guiding principles based on recommendations from culturally based science education (Ball, 2004; Megan Bang & Medin, 2010; Beaulieu, 2006; Demmert Jr & Towner, 2003; Reyhner et al., 2011), review of research and curriculum implementation notes, insights from collated resources about other Indigenous curricula, and input from Tribal Elders. **Figure** 1 lists the guiding principles, and includes the Lushootseed (Swinomish language) phrase that represents each principle.

During each of the thirteen moons, we designed 2-3 activities that highlight a plant and an animal species. Each Moon's activity starts out with an overview of the season and the plant and animal species that are available. This information comes from the book, 13 Moons: The 13 Lunar Phases, and how they Guide the Swinomish People (Swinomish Indian Tribal Community, 2006). The lesson plan for the activity begins with the following information: approximate length of lesson time; audience age range; setting (e.g., indoors, outdoors); reaching objectives; Lushootseed words; and materials needed. Then each activity is described. Each lesson also contains sections that cover how to promote intergenerational knowledge transfer, offer guiding

# Figure 1: Guiding Principles of 13 Moons curriculum



# Indigenous Environmental Health həi?il

Activities are designed to address the Swinomish Indigenous Health Indicators, which include cultural practices, community connection, self-determination, education, resilience and natural resources security.

# Culturally Relevant Framework g adwadad

The Swinomish 13 Moons lunar calendar is used as the framework for the curriculum. This ensures that the activities are relevant and seasonally appropriate.



# V

# Highlight Place & Natural Resources as Cultural Resources ?ál?altəd

Activities highlight First Foods, including activities that support the harvest, preparation, and sharing of First Foods, such as weaving and woodworking. Activities reinforce cultural values of connection to one another and to place, including intergenerational teaching and learning, generosity, connections to the seascape and landscape, and cross-cultural teaching and learning.

# Intergenerational Knowledge Transfer dx dígwid w

Elders are involved in the activities, including storytelling and teaching about cultural resources and language. Youth extend event invitations to elders where possible. Indigenous science is grounded in cultural practices; processes of inquiry and learning involve storytelling and experiential learning, and are participant and community driven.



# 0

# Integration & Repetition be?ilid

Curriculum activities celebrate and amplify the beauty of the culture. Events are often designed as complementary activities that are integrated into existing community events such as Earth Day, the annual clambake and elders' luncheons. Following the Coast Salish teaching principle of

"repeating" be?fild, the curriculum is designed to reinforce knowledge through repetition with the seasonal round from year to year, revisiting places, plants, and animals at different phases of the Swinomish lunar calendar. Many activities are designed to provide opportunities for older youth to "repeat" the teaching to younger ones.

## Resilience tíb

Activities emphasize that Indigenous science is dynamic, which helps communities adapt to changing environmental and social circumstances. Activities and curriculum are designed to change over time. New stories, knowledge, and activities will emerge through intergenerational sharing and some of this will be incorporated into the curriculum in the future. Early participants in the program will become facilitators of future activities.





# Honoring the Language dx ləšúcid

All activities incorporate the Swinomish language, Lushootseed

# Adaptable Module Design d əšw x

A modular activities design accommodates differences in scheduling, age, knowledge and abilities.



questions and topics for discussion, ways to tie the lesson's activity to the bigger picture of health, and additional activities to "dig deeper." Each lesson ends with notes to the educator and a list of relevant resources.

We developed the curriculum to guide how we as staff engage in the Swinomish community. Therefore, the curriculum is considered community-centered learning. The majority of the lessons are written with a wide age-range in mind: middle school to adult. However, one of the guiding principles of the curriculum development was designing adaptive learning modules. So many of these lessons are easily adaptable to formal schooling environments, and ages younger than middle school. As staff, we have used lesson plans for summer school activities with school district youth grades 1-6. In addition, we have adapted the curriculum in order to facilitate weekly learning within the Swinomish preschool. **Table 1** provides an overview of the Swinomish 13 Moons curriculum.

An example of an activity from the curriculum that we implemented with middle and high school youth is called "Clams, Moons, and Tides," which is listed under Moon of the Salmonberry.

Figure 2 (page 28) are images from the curriculum that describe the activity and show all the pieces of the lesson.

We see the 13 Moons curriculum as a living document. We amend activities depending on the season, availability of first foods, medicines and other resources, potential guest speakers, and new ideas and information. One topic that we are shifting more focus toward is climate change. We are working to update many of the activities to include discussion topics around climate change impacts and adaptive strategies. Again, taking the clam workshop lesson plan as an example, we are currently working on a modified series of lessons specifically about clam gardens. Clam gardens are an ancient Indigenous method of tending bivalves and other nearshore species by building low lying rock terraces below mean low tide. There are many examples of clam gardens throughout the British Columbia coastline, and we believe that clam gardens were maintained in Washington State as well. The Tribe is building the first modern day clam garden on the Swinomish Reservation as a food sovereignty and climate adaptation strategy. And with it, we are building a 13 Moons lesson plans about clam gardens and climate

change. Lessons will touch on climate impacts that we are already experiencing including sea level rise, storm surge, and ocean

(continued on page 27)



A painted crab from the "Clams, Moons, and Tides" activity. We modified many of the lesson plans for a much younger audience—students of the Swinomish preschool.

Table 1. Description of Swinomish 13 Moons curriculum (adapted from Donatuto et al., 2020)

Moon	Natural Resources Focus	STEAM connections	Description of selected activities	Concepts or Principles Addressed	Skills learned or Gained*
Windy Time	Observational learning	Introduction to Env. Sciences and Indigenous scientific methods of observation over time	Local Environmental Observer network	Spatial visualization of data (mapping)	[1-3]
Frog Talks	Spring Greens; Herring	Habitat and ecological relationships/ Food web interactions	Spring greens harvest	Species-habitat relationships; predator/ prey relationships; numeracy	[4-6]
Whistling Robins	Ironwood; Water	Water quality (WQ); Environ. sustainability	Ironwood tools; Earth Day activities	Conservation of natural resources; technology in tool making	[6-9]
Digging Time	Camas; Bentwood Box Traditional Coast Salish Foods & Tools	Sustainable agriculture; conservation of natural resources; phenology	Harvest, prepare camas; Blessing of the Fleet	Use of fire to manage ecosystems; technology in tool making; phenology	[6-10]
Salmonberry	Native berries/ plants; Shellfish	Habitat and ecological relationships/ Food web interactions/ coupled socio-ecological systems; phenology	Salmonberry Soda; Clam shell dig	Conservation of natural resources; phenology	[6-11]
Blackberry	Berries; Salmon	Habitat and ecological relationships/ Food web interactions/ coupled socio-ecological systems; phenology	Jam workshop; Beach seining	Conservation of natural resources; technology in tool making; phenology	[6-11]
Salal	Marine invertebrates	WQ; coupled socio- ecological systems	Clam bake; Invertebrate survey; build water filters	Careers in environmental science; WQ & sampling methods	[12-15]
Silver Salmon	Berries; Seeds	Sustainable agriculture; Phenology	Seed saving & food preservation workshops	Environmental sustainability; phenology	[4,6,8]
Elk Mating Cry	Riparian plants; Salmon; elk	Habitat and ecological relationships/ Food web interactions; WQ	Stream field trip, salmon habitat	Ecology; fisheries and wildlife; environmental sustainability	[4,9,14]
Falling Leaves	Cattail; Elk & deer	Climate change; Phenology	Cattail mat workshop; Pemmican class	Weather systems/meteorology; technology in tool making; phenology	[2,3,14,16]
Dog Salmon	Bentwood Box	Sustainable agriculture; conservation of natural resources; phenology	Traditional foods and resources preservation methods	Sustainability technologies in food preservation; asking questions	[4,11]
Put Your Paddles Away	Conifers	Environmental literacy; phenology	Medicine of the Trees workshop	Conservation of natural resources; technology in tool making; phenology; numeracy	[5,6,8]
Sacred Time	Cedar; Clams	WQ; coupled socio- ecological systems	Night-time clam dig	Careers in environmental science; WQ & sampling methods	[12,13,17]

<sup>\*</sup> Skills: ¹Scientific Practice. ²Record environmental/scientific observations. ³Mapping. ⁴Increased understanding of ecological relationships. ⁵Weight and volume measurements/ conversions. ⁵Beneficial impact of humans on the ecosystem. ¹Environmental sustainability practices. ⁵Proper harvest/care of environmentally important plants. ⁵Active learning. ¹oPresentation skills. ¹¹Food safety. ¹²Increasing understand ing of water quality. ¹³Methods for scientific/environmental testing/monitoring. ¹oPeductive reasoning skills. ¹oProblem solving skills. ¹oCorrelating weather patterns to animal migration/invasive plant species. ¹¹Data-driven decision-making.

# 13 Moons Curriculum (continued)

acidification. To learn more about clam gardens, please visit: https://clamgarden.com/ To learn more about Swinomish climate adaptation strategies, please visit: https://www.swinomish-climate.com/

We thank you for your interest in the Swinomish 13 Moons curriculum. We hope that you find some pieces of it useful in your own work. If you are interested in keeping up with our work, please follow us on Facebook at 13MoonsAtWork. We find Facebook to be one of the most utilized communication networks in the Swinomish community. We post weekly information on seasonally available plants, medicines, and technologies, as well as upcoming workshops and other learning opportunities for all ages. tigwicid

Sincere thanks to Dr. Joyce LeCompte and Sonni Tadlock for their work in developing 13 Moons curriculum lesson plans.

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First Nations Development Institute

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Figure 2: Clams, Moons and Tides workshop, 13 Moons curriculum

# **Activity 2: Clams, Moons, and Tides Workshop**

Participants learn how to identify clam species and why clams are important to the Swinomish people in this activity. It includes a trip to a local beach with clam habitat where participants learn about tides and harvest practices. Youth will also find and choose empty clam shells to take with them and paint designs on. Participants may then present a painted shell to an elder as a gift and ask if the elder would share a story. The clam art project is from the Mother's Roots Curriculum created by Tanisha Cobert in partial fulfillment of her master's degree in Environmental Education at Western Washington University (2017). The full activity is described by Tanisha on the next page.



# **Activity Description**

Tanisha: This workshop took three days of preparation and cooperation from several community members who came forward to help when they heard about the event. I worked with a community member who is familiar with tides and clams to choose the best low tide and coordinated with Swinomish Youth Center staff regarding a time the youth could come to the beach. The time was scheduled so kids could enjoy a healthy, cultural meal before heading home at 6 p.m. A knowledge keeper also offered to assist. As he worked with us, he shared how his knowledge of moons and tides was handed down to him. "The fuller the moon the lower the tide." he said.

**Day 1:** We developed a plan by looking at tides, prepped for diggling, pre-selected areas to dig, prepared our gear, and obtained a tribal shellfish permit.

Day 2: We cut and chopped wood and dug clams. We let the clams spit overnight.

Day 3: We refreshed the saltwater for clams to continue spitting. Another community member helped bring wood to the beach and cut willows for marshmallow sticks. Meanwhile, I made clam soup by layering com on the cob pieces, potatoes, onions, and clams. We cooked the soup over a fire at the beach! I went back to my house to make fry bread and hot chocolate while it was cooking.

Another facilitator suggested using big marshmallows to illustrate the size of the sun and the smaller marshmallows to represent the earth and moon, and when they are all lined up, they influence the low tides. Creat group learning!

We read the Swinomish Christmas Clams book out loud while the youth were trying the clam soup. Later, some adults talked about their memories of using lanterns when they were young.



# 13 MOONS Preschool Lesson Plan Matching Clams Game (Sensory Lab/ Play Harvest)

Length of Lesson: 30 minutes (or more)

### Vocabulary (Lushootseed):

stxwub (sst-whoab) - butter clam

sxa?a? (s\*ha-ah) -little neck steamer clam\* is a throat clearing sound sxapab (s\*hup-obb) -cockle clam\* is a throat clearing sound ha?əc (hah-utz) - horse clam

### Materials Needed/Harvest/Prep Time:

- -plastic tub(s) half full of clean sand
- -small digging sticks
- -assorted clam shells (butters, cockles, little necks, and horse)
- -clams are traditional foods 3D poster

# Circle Up!

I would like everyone to find a spot to have a seat on the carpet. To get ready to learn, let's place our hands on our knees and take a deep breath.

### Okay, let's begin!

Please raise your hand if you would like to share something that you know about clams.

Allow time for thought and answers.

### So what is a clam?

Allow time for thought and answers.

A clam is an animal that lives inside of a shell. It has two shells that can open and close.

\*Pull out two halves of a clam shell and demonstrate how they can open and close.\*

The animal inside of the shell is a very healthy food for us!

What are some of the ways that we can eat clams? (Steamed in a pot or pit, grilled on a fire, clam chowder or soup, or smoked/dried. There are many options!)

Did you know that there are many different types of clams? They all have different names too! Let's practice some of the different names for clams in Lushootseed.

\*Pull out the poster to point to each different type of clam shell while you practice these different names!\*

Let's try stx Wub (sst-whoab) who is also called butter clam.

### Ssssst....whoab....stxwub!

Practice a couple more times slowly, piece-by-piece if needed.

Now let's try sxa?a? (s \*ha-ah) who is also called little neck steamer clam. Sss.....\*clearing throat sound....ha.....ah....sxa?a?!

Practice a couple more times slowly, piece-by-piece if needed.

Now let's try s xəpab (s\*hup-obb) who is also called cockle clam.

Sss...\*clearing throat sound....hup....obb.....s xəpab!

Practice a couple more times slowly, piece-by-piece if needed.

One more to try! Let's say ha?ac (hah-utz), who is also called horse clam. Hah....utz......ha?ac!

Practice a couple more times slowly, piece-by-piece if needed.

Great work learning and trying different clam names!

# **Sensory Lab**

Now I would like you to use your eyes and your fingers to tell me things that you notice about the clam shells.

How are they different from each other?

What do you see?

What do you feel?

Ex. Ridges, smooth, rough, shape, edges, size.

Repeat names of the different clams out loud to them as they point things out.

Ex. "This one has lines!" "Yes, you are right! Sxəpab (s \*hup-obb) does have lines."

Does anyone know where clams live? Where can we find them? (Clams live buried in the sand in the ocean, rivers, and lakes!)

Let's play a game of harvesting clams, and figure out which types we find.

# Play Harvest

\*You will likely want to do this activity outside, as it could get a little messy. Prep 4-5 buckets or plastic bins with several inches of sand, burying an assortment of different clam shells (butters, cockles, little necks, and horse) in the sand. You will also need the 3D clams poster.\*

When the children are outside and ready, give each of them a small digging stick.

Here are some sticks for you to help harvest clams. When you find one clam, please bring it up to the poster, and we will find which type of clam it is!

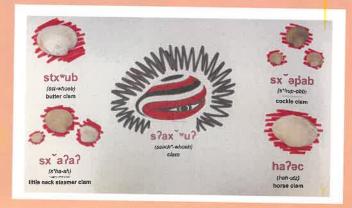
Allow them to dig and play finding the clam shells, and help them to match the types of shells and practice saying the different names.

### Optional/Additional Ideas:

For a clear pronunciation guide to the different clam names: https://tulaliplushootseed.com/?s=clam

Student Objectives/Outcomes - students will be able to ... :

- Tell what a clam is, and that it is good food.
- Practice different sounds in clam names in Lushootseed
- Recognize different clam shell shapes, and try to match them to other examples.





















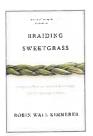


# **Additional Indigenous Perspectives Teaching Resources**

# Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants

By Robin Wall Kimmerer (Paperback)

As a botanist, Robin Wall Kimmerer has been trained to ask questions of nature with the tools of science. As a member of the Citizen Potawatomi Nation, she embraces the notion that plants and animals are our oldest teachers. In *Braiding* 



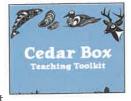
Sweetgrass, Kimmerer brings these two lenses of knowledge together to take us on "a journey that is every bit as mythic as it is scientific, as sacred as it is historical, as clever as it is wise" (Elizabeth Gilbert).

Drawing on her life as an indigenous scientist, and as a woman, Kimmerer shows how other living beings-asters and goldenrod, strawberries and squash, salamanders, algae, and sweetgrass-offer us gifts and lessons, even if we've forgotten how to hear their voices. In reflections that range from the creation of Turtle Island to the forces that threaten its flourishing today, she circles toward a central argument: that the awakening of ecological consciousness requires the acknowledgment and celebration of our reciprocal relationship with the rest of the living world. For only when we can hear the languages of other beings will we be capable of understanding the generosity of the earth, and learn to give our own gifts in return.

Available on Amazon

# The Cedar Box Teaching Toolkit

Created by the Muckleshoot Traditional Foods Program, this Toolkit



is an educational resource featuring important native foods in Salish Country and the rich cultural traditions that surround them.

The toolkit includes:

 A cedar bentwood box, cooking tongs, cooking rocks, display containers, teaching cards and preserved samples of 13 native foods.

- Videos about foods and food traditions that feature native storytellers.
- A curriculum including Salish food descriptions, recipes, stories and activities.
  - A Feeding 7 Generations poster.
  - A Feeding 7 Generations recipe book.

Educators can use the cedar box toolkit in a variety of settings including classrooms, community workshops and other educational events. Possible presentation formats include a "show and tell" overview of Salish foods, an exhibit, or a complete curriculumfor teaching in depth classes on individual foods.

The information in this curriculum only scratches the surface of the vast culturalknowledge for each food. We hope that you can add your own community knowledge, stories, artwork, preserved foods and language to your toolkit over time.

Available online at http://www.npaihb.org/download/authoring\_project/weave-nw/Cedar-Box-Teaching-Toolkit.pdf

# Knowing Home: Braiding Indigenous

Science with
Western Science

Knowing Home attempts to describe the creative vision of Indigenous scientific knowledge and technology that is derived from an ecology of a home place. The



traditional wisdom component of Indigenous Science—the values and ways of decisionmaking—assists humans in their relationship with each other, the land and water, and all of creation. Knowing Home weaves Indigenous perspectives, worldviews, and wisdom practices into the science curriculum. It provides a window into the scientific knowledge and technological innovations of the Indigenous peoples of Northwestern North America, providing numerous examples and cases for developing science lessons and curricula. Knowing Home shows how Indigenous perspectives have the potential to give insight and guidance as we attempt to solve the complex environmental problems of the 21st

PDF versions are available at: https://dspace. library.uvic.ca:8443/handle/1828/7821







# Landscapes of Reciprocity:

# Cultural Ecosystems in School Gardens

By Shawna Zierdt, Kim Gaffi, and Elise Krohn

nowledge of Native American cultural and land management practices is a powerful way to counter the story that humans are apart from, and only destructive to, the natural world. Native stories and cultural practices passed down through the generations teach us how landscapes including camas prairies, food forests, saltwater beaches, wetlands, and mountain huckleberry meadows have been cultivated like gardens. We call these places "cultural ecosystems" and they are often dependent on humans for their continued existence.

Camas prairies are a well-known example of cultural ecosystems. These open landscapes are home to many edible plants including camas, lily bulbs, bracken fern rhizomes, biscuit root, acorns from oak trees, and several types of berries. Since time immemorial, many Native families have traveled to prairies and camped for several weeks to harvest camas bulbs and other foods. Cultivation techniques, including burning, aerating the soil with digging sticks, and weeding out unwanted plants helped to prevent the prairies from becoming forests. Without these practices, most of the prairies would have turned into dense forests thousands of years ago. Native People have taken care of the prairies and the prairies have taken care of them in return.

What we see today are tiny remnants of vast prairies that were common just a few generations ago. Colonial land management practices, such as farming, grazing, and fire suppression, reduced prairies to less than three percent of their former size. This is an incredible loss, not only to Native Peoples who have had a deeptime relationship with prairies, but also to the many plants, birds, butterflies, and other species that depend on these ecosystems for their continued survival. Tribal, Native community, and multiagency partnerships are supporting the revitalization of cultural ecosystems including camas prairies while centering Indigenous landcare practices that increase access to culturally significant foods for Northwest Indigenous peoples. An additional way to support these efforts is to integrate cultural ecosystem plants into school gardens.

# Ecosystem Gardens

Ecosystem gardens provide opportunities for people to cultivate healthy relationships with plants, local ecosystems, and Native American cultural traditions. These gardens can have real environmental benefits—especially where development and disruption have occurred. They provide habitat for species while educating the public about conservation and restoration efforts. Creating and caring for ecosystem gardens can also limit the negative impacts and harvesting pressure that novice learners and large groups can have on sensitive remnant habitats. As historic and ongoing settler colonial practices have made Indigenous Peoples' important cultural foods difficult to access, it is critical that our interactions with cultural ecosystems do not negatively impact these increasingly rare and vulnerable places.

Creating an ecosystem garden requires a commitment of time, attention, and care. Here are some of our recommendations for creating and maintaining a successful garden:

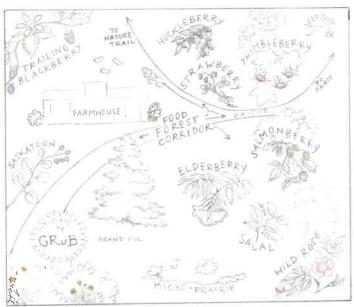
# **Engage Your Community**

Planning and implementing a school or community-based garden of any kind can be a rich, hands-on, relevant learning opportunity for youth and community members. However, as with many projects, the leaders can get carried away with the visioning, logistics, budgeting, and implementation without involving the very people who will be "served" by the project. Program participants *can* guide, if not lead, most of this project. What an opportunity for interdisciplinary learning! A garden is most sustainable when its care is integrated into the activities, curricula, and operations of a school or program, and is supported by more than one or two people.

# Get to Know the Land

Before you plan your space and *especially* before you plant, get to know the terrain. This takes time but will be valuable in helping you decide where and what to plant. Students or community members can assess and map the land together. Small groups can plan different quadrants of the site or research the following questions:

- What was here before? What exists here now? What plants grow here?
- What kind of soil is present? Does the soil have any contaminants? What "weeds" are growing, and what can they tell you about the soil?
- What areas are shady throughout the day? How does shade change with the seasons?
- Are some areas windy? Are there warm spots up against fences and other built structures?
- Do certain areas flood in the winter?
- Are there already pathways that people and other animals are using? How might you keep/use those to promote a natural flow through the garden?



Artwork by Ariel Page

 What insects, birds, and other animals visit this space? Do the plants need protection — for example, from deer or rabbits?

# Design

Once you have taken time to learn from the land, apply this new knowledge. Natural features like sun, water, slope, trees, and soil conditions can work for you instead of against you. For example, if there is an area that has standing water most of the year, plant wetland plants. If there are places where people and animals already walk, turn them into pathways. Place pathways around or through beds so that tending and harvesting will be easy. Make the garden accessible for Elders and people with varying physical abilities.

Draw a map of your garden with measurements in square feet. Find out how large plants will eventually grow, then add them to your map so you know how many to bring in. Sketch plants into areas that match their needs for sun, water, soil, etc. Will they change the conditions of an area as they grow to full size? For example, some plants grow into shrubs and shade out other plants that need sun. Take the opportunity to integrate habitat features like nurse logs and boulders.

# Invite Gifts of Labor and Resources

Start by assessing the resources already present. Do you have lots of willing hands? Do you already have a water source, building materials, tools, or plants you can use? Are there partner organizations or groups who can offer expertise or services? What other kinds of support and resources does the community have to offer? Ask your students, families, and community for plants, help, and materials. Building relationships from the beginning of the project will add more long-term sustainability. Practice reciprocity by sharing the harvest and gifts of the garden back with your community.

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# Landscapes of Recipirocity

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Elizabeth Campbell (Spokane/Kalispel) planting with youth at the Squaxin Island Tribe's Salish Roots garden.

# Find the Plants You Want to Grow

While the focus of an ecosystem garden is native plants, there may be non-native varieties that you choose to include due to availability, edibility, or seasonality. For example, lavender and chamomile are easy to grow, attract pollinators, have a pleasant smell, and can be made into many things. Starting plants from seed, bare root, or cuttings can be a part of learning and skill building. Propagation can also become a fun science experiment.

# **Plant**

This is the fun part! Plan a work party with students, program participants, and/or community members. Make sure you have an organized plan ahead of time and that you have enough tools for everyone. Bring in helpers who know the plan, so one person is not directing everyone. Make prior preparation for plant selection and placement, soil and mulch delivery, improving soil conditions specific to plant requirements, and ensuring all underground utilities are located.

# Maintain

Most plants will benefit from regular care. Watering new plants is essential during their first season. If they are matched to the right site, native plants should not need ongoing irrigation after a year or two. When trees and shrubs are pruned correctly, they produce more fruit and remain healthier. Plan for seasonally amending soil, mulching and seeding until the garden is established. In time, care needs will be less intensive.

# Observation and Succession

As gardens become established, record observations to inform future decisions. Is a certain plant species thriving especially well and is there room to plant more? Is there a beneficial plant relationship that could be further encouraged like establishing ground cover under an herbaceous shrub layer? Where do you

envision growth in three years, ten years, or even a generation ahead? Also include in your planning the human power and resources required to ensure ongoing site care, community involvement, and associated learning growth. What seasonal events and tending activities are you observing that improve the health of your evolving ecosystem and can be replicated annually?

# Celebrate with the Community

Garden celebrations help keep the community involved in the garden. Celebrate the completion of your planting work with food, music, or festivities! Host demonstration classes where folks can share what they are learning in the garden, including cooking, medicine making, propagation, art, etc. Some communities have seasonal harvest celebrations and feasts. Bring youth and Elders into the garden for interactive walks.

# Types of Ecosystem Gardens

# **Camas Micro-Prairies**

For thousands of years, Native Peoples have received gifts from camas prairies and have cared for prairies in return. Tribal communities are returning traditional cultural and ecological care and tending to remaining prairies where that relationship was disrupted—healing both land and people through restoration and co-management. We can collaborate with this effort on a variety of scales—even in-home gardens and school grounds.

Imagine patches of lawn transformed into mini-prairies — connecting like a mosaic with our intact prairie systems! Unlike grass, micro-prairies are beautifully diverse, increase wildlife habitat, and offer a connection with nearby ecosystems by indicating when it is time to visit nearby prairies in bloom. Simple and well-timed maintenance like mowing and weeding can help plants gain strength and multiply. In order to minimize overgathering, we recommend that camas harvesting on the few intact prairies should be reserved for Indigenous communities. Non-Indigenous people who are hungry for camas can grow their own plants to harvest in backyards, schoolyards, or community spaces.

Growing Camas: Camas thrives in full sun (though it will



tolerate partial shade) and a variety of soils with good drainage, especially native loamy, sandy, or pebbly soil similar to the glacial outwash of the prairies. It will grow in seasonally wet areas as well. Camas can easily be started from seed or planted as bulbs.

- <u>Seeds</u>: It is best to start seeds in trays in a greenhouse or in a designated nursery bed, as plants closely resemble grass for three to seven years before their first bloom. Scatter the small black seeds and lightly cover with soil or compost.
- <u>Bulbs</u>: Local native plant sales and nurseries specializing in native plants may offer mature bulbs. They are best planted in fall or early spring. Bulbs should be planted about 4 inches deep, keeping in mind that you will eventually want them to be easy to dig up.

Maintenance: Keep camas bulb nursery beds carefully weeded to avoid confusion with grasses. As young camas grow to maturity, they will seed future bulbs that are as small as a grain of rice. These will eventually mature to sizes as large as a small potato depending on the variety. As bulbs increase in size and cluster in one spot, you can try the traditional practice of digging in the fall or spring, separating bulbs, and spacing them out. This practice promotes vitality, reduces density, and increases bulb size.

Other prairie plants that you can add to your camas micro-prairie include: common camas (Camassia quamash), great camas (Camassia leichtlinii subsp. Suksdorfii), chocolate lily (Fritillaria affinis), kinnikinnick (Arctostaphylos uva-ursi), potentilla (Potentilla gracilis), Puget balsamroot (Balsamorhiza deltoidea), Roemer's fescue (Festuca roemeri), Henderson's shooting star (Dodecatheon

"One teaching that comes up a lot for me is that we must be mindful about these plant relatives, and not put them where they don't belong or where we won't continue to be responsible to them. Acknowledge that there is significant responsibility to these relatives when we plant them. It's not just a project. There is complex cultural relevance and an ongoing relationship as well."

-Shawna Zierdt

hendersonii), violet (Viola adunca), wild strawberry (Fragaria spp.), yampah/wild carrot (Perideridia gairdneri), yarrow (Achillea millefolium). Once established, this meadow community will outcompete weeds, require minimal to no watering, and also feed important native pollinators that prairie plants have evolved with.

# **Food Forests**

Since time immemorial, Native American people have actively managed and maintained forest ecosystems through careful observation and in-depth knowledge of seasonal patterns, lifecycles, and symbiotic relationships. By balancing their own needs with what the forest had to offer, they have learned how to gather food from the forest using practices that continue to steward the life and interdependence already present. Human food production and consumption has been not just sustainable,

but beneficial to the forest environment and the interrelationships that exist there. For example, pruning wild rose or evergreen huckleberry stimulates the plants to produce more flowers and berries. Foraging animals like deer can also stimulate the growth of many plant species by pruning as they feed. Forest disturbances, like fires or cutting down trees, open up sunlight on the forest floor and allow certain edible plants, like blackcap raspberry and huckleberry, to become more productive.

Got trees? The easiest way to establish a food forest is to add understory plants to an existing wooded area. Consider including the following species in your food forest: wild berries, crabapple (Malus spp.), beaked hazelnut (Corylus cornuta), native ferns, Garry oak (Quercus garryana), miner's lettuce (Claytonia perfoliata), candy flower (Claytonia sibirica), nettles (Urtica dioica), violet (Viola spp.), wild rose (Rosa spp.), wild strawberry (Fragaria spp.), and wood sorrel (Oxalis stricta). Removing invasive species such as Himalayan blackberry or English ivy is often a first step in making room for native plants. Food forests are especially diverse and abundant at forest edges. If your site conditions and

sun exposure are ideal, you may be able to transition from food forest to berry garden to meadow or prairie. This can be mimicked at the smallest of scales.

Starting from a lawn? Creating a food forest from scratch is



a worthy, but longer-term, project that involves planning and planting for multiple forest layers. Check out the Beacon Food Forest (https://beaconfoodforest.org/resources/what-is-a-food-forest) project in Seattle for an example of a permaculture-based food forest that includes both native and non-native plant varieties in an urban setting.

# **Native Berry Gardens**

Berry gardens are a favorite among youth and adults! They make beautiful additions to schools and public landscapes and offer activities in each season, including observing flowering and pollinators, eating berries, noticing what other types of animals enjoy them, cooking and baking, learning about seeds, and watching seasonal changes. Berry gardens can be large or small, and can integrate both native and non-native berries.

Native berries are uniquely adapted to the Pacific Northwest — often needing less water and care than non-native species. This is especially helpful in summer when watering school gardens can be a challenge. Berry plants can be found at most plant nurseries. You can propagate many berries from cuttings by placing them in water with a natural rooting hormone like apple cider vinegar or willow. Plants will usually take about three weeks for roots to grow. You may also be able to get berry starts from friends, neighbors, or other community members. For example,

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# Landscapes of Recipirocity

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Shawna Zeirdt and Tom Condon at the Marshall Middle School CSI garden.

strawberry, salmonberry, thimbleberry, and raspberry send out new shoots every year that can be dug up and planted elsewhere.

Planting during cooler, wetter conditions in spring or in fall will be most successful. Young plants can become stressed with hot, dry weather in late spring through summer. You can plant taller growing berries like serviceberry to provide shade for berries that cannot tolerate as much sun. Native edible berries that can be represented in a berry garden include black cap raspberry (Rubus leucodermis), blue elderberry (Sambucus spp.), blueberry (Cyanococcus spp.), cranberry (Oxycoccus spp.), currant (Ribes spp.), gooseberry (Ribes uva-crispa), evergreen huckleberry (Vaccinium ovatum), red huckleberry (Vaccinium parvifolium), Oregon grape (Mahonia aquifolium), salal (Gaultheria shallon), salmonberry (Rubus spectabilis), serviceberry (Amelanchier spp.), soapberry (Sheperdia canadensis), thimbleberry (Rubus parviflorus), wild blackberry (Rubus ursinus), and wild strawberry (Fragaria spp.).

# An Ecosystem Garden in Action

The Citizen Science Institute (CSI) is located at Marshall Middle School in Olympia, Washington. Throughout most of the school year, students participate in regular field investigations, and many of them include trips to local ecosystems where they explore, learn, and engage in restoration work. Students learn about Coast Salish land stewardship practices, both in the classroom and in the field.

In spring 2022, CSI teachers worked with members of GRuB's Tend, Gather and Grow team and students to transform a grassy area beyond the cultivated garden area and native plant nursery into a micro-camas prairie and food forest. After learning about cultural ecosystems in the classroom and doing a visioning session, students added their ideas to a garden visioning box. Through student and staff feedback, a design emerged including a "portal" (kids love portals!), an archway entrance that promotes respect and a sense of entering an important space, and food forest mounded beds that include habitat-improving elements like nurse logs, boulders, rock stream bed, oyster shell mulch, and multi-layer planting, which provide a partial-shade forest edge. Building on the success of the first micro-prairie mound installed at GRuB, three prairie mounds were integrated into the design, intentionally interconnecting with three round tables. This explicitly interconnects student outdoor learning activities with camas prairie plantings.

Students in the program are especially adept at working together and brought significant skill to installing the first phase of the 4000 sq ft. garden in a matter of days. Students measured and staked the garden (a great applied math activity), shaped garden beds with rocks, moved dirt and mulch, and planted prairie mounds. Within a few days students noticed butterflies and bees enjoying nectar from newly-planted prairie flowers. Next year's students will be responsible for the task of finalizing planting plans, developing art features, and creating signage. An Americorps member will ensure watering and care until the students return in the fall.

As lead science teacher Tom Condon points out, the school site is the most significantly degraded site within the Green Cove watershed, similar to many other school developed sites. Restoring plants in an ecosystem garden here enlivens STEAM and Next Generation Science Standards, and aligns with Washington State learning mandates (SEL, STI, Environment and Sustainability) while at the same time connecting with lessons in the *Tend Curriculum*.

CSI is especially unique, as this project becomes another component of their citizen science efforts within their local watershed, including an active partnership with local environmental agencies to restore habitats with native plants that students grow themselves. They have also identified culverts that impact salmon spawning and engage in advocating for passage improvement. School ground ecosystem connectivity and improvement is also well underway beyond their outdoor classroom, including extensive removal of invasive plants. Building on success, partnership, increased capacity through grant funding, and momentum, students and staff are energized and are creating a model that is replicable at other schools.

This article is an abbreviated version of the Ecosystem Garden Guide, which accompanies the Tend, Gather and Grow Cultural Ecosystems Field Guide. The purpose of the guide is to help people connect with and grow plants featured in cultural ecosystems, and to plant them in a learning garden setting — mimicking and integrating with surrounding intact ecosystems. Ecosystem gardens are living classrooms that promote stewardship skills, connect us to ecosystems that might be farther away or inaccessible, and provide plants for many of the activities in the Tend Curriculum, which is available through an online portal at nativeplantsandfoodsportal.org. For upcoming teacher trainings, see goodgrub.org. To contact our team with questions, ideas, and feedback, email tend@goodgrub.org.

# Telling Our Stories

"Telling stories is fundamental to being Indigenous peoples. Stories are a method and means for understanding the consequences of lived experience. Indigenous evaluation is about telling stories."

- LaFrance and Nichols, 2012

# by Martell Hesketh (Michel First Nation)

s more educators incorporate Indigenous plant and food curricula into their teaching, we need culturally appropriate and engaging ways of evaluating these programs. We are at an exciting point where increased awareness and interest in Indigenous plants and foods teachings means this knowledge is spreading beyond just the tribal and urban Indian communities. This is shown not only through the growth of plants and food programming but also in the Since Time Immemorial Tribal Sovereignty curriculum. Now we know the word "evaluation" may come with a lot of baggage but evaluating the impact of these Indigenous plants and food curricula is critical to continue spreading this knowledge and advocating for funding and resources. A curriculum led by Indigenous knowledge requires an evaluation plan that is also grounded in culture to accurately capture and share the outcomes and impacts. This can be done through designing an evaluation plan centered on Indigenous evaluation values and practices.

Indigenous evaluation is a way of approaching evaluation that asserts Native people have always collected data and conducted evaluation for the benefit of their communities. It recognizes Indigenous ways of knowing such as stories, art, and conversations as equally valid as "western" ways of knowing like surveys, interviews, and focus groups. Indigenous evaluation is not just a specific type of survey or interview method, instead it is a collection of values that guides the entire evaluation process (see **Figure 1**). At Urban Indian Health Institute our Indigenous evaluation framework consists of four core principles:

- <u>Community is Created Wherever Native People Are</u>: An evaluation starts in the creation of these communities.
- <u>Resilient and Strengths-Based</u>: We use the tools of evaluation to identify solutions by and for the community.
- <u>Decolonizing Data</u>: Rigorous data must be collected with the intent to benefit Native communities.
- <u>Centering the Community</u>: Community involvement in evaluation is crucial to the process of reclaiming data, understanding how the work is valuable, and including community perspective.

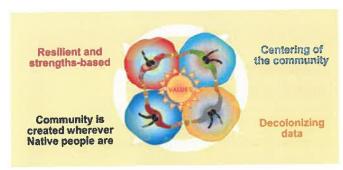
By grounding ourselves in these values we develop evaluation plans that accurately capture the impact of these Indigenous

foods and medicines programs. At Urban Indian Health Institute, evaluation is storytelling and the stories that our communities tell us are sacred. These stories hold important lessons about both impact and challenges faced by a program that we can use to both improve future programming and share lessons with others.

Throughout the rest of this article, we will share how GRuB's Wild Foods and Medicines Program utilizes participatory evaluation grounded in an Indigenous evaluation framework to improve programming and understand the impact of its curriculum on the community. We will also illustrate how linking program outcomes to relevant imagery, such as plants, can help create a more meaningful storytelling practice in your own evaluation. The Wild Foods and Medicines Program offers teacher trainings and educational resources that connect people to local plants, ecosystems, and cultural traditions including Tend, Gather and Grow and Plant Teachings for Growing Social-Emotional Skills.

# **Visualizing Program Goals**

One tool we love to use to center the community and tell the story of our programs are visual logic models. While standard logic models usually include a lot of detailed text organized into boxes, visual logic models are more creative and engaging. They use visuals to tell the story of the program and provide an



[Figure 1: A visual representation of Urban Indian Health Institute Indigenous evaluation framework]



[Figure 2: Visual logic model depicting project outcomes for the Transforming American Indian and Alaska Native STEM Learning funded by a grant from the National Science Foundation]

# **Telling Our Stories**

(continued)

opportunity to ground the program in culture and community. The Wild Foods and Medicine program in collaboration with the Swinomish 13 Moons Project developed a visual representation

outlining the program goals, the group engaged in a discussion to talk about how to best visually represent the program goals. Once they had an idea of what would be included in the visual logic model, project leads contracted with a local artist to create the image. This image is also accompanied by a document that explains each project outcome and outlines the corresponding evaluation

data and metrics that are used to measure progress towards the outcome. For example, this document states how alder represents the outcome of community building and includes an overview of program strategy stating how to achieve that outcome. It also includes a list of the qualitative and quantitative metrics that the program plans to use to evaluate progress towards that program goal. With this information, this document provides a detailed roadmap for the evaluation of the overall program. It is a useful tool for sharing both internally among

partners and externally with the community and funders. While we don't recommend shredding all your regular logic model drafts just yet, building a visual logic model is a good first step to endure you are grounding the program in the community and thinking through what the story of your program may look like.

# Check-in Questions What is your favorite plant? Why? If your mood was a weather system, what would it be? Who made it possible for you to be here today? If you could be any animal (or plant), what would you be and why? What is one thing you're looking forward to (or excited about learning) in class today? Closing Circle Activities Rock, Stick, Leaf: Ask students to reflect on "what rocked about today, what's going to stick with you, and what's something you want to 'leaf' behind." (Option: pass around an actual rock, stick, and leaf.)

[Figure 3: Examples of participatory data collection questions]

of the primary program outcomes that depicts different plants as distinct program outcomes (see **Figure 2**).

By visualizing program goals in this creative and meaningful way, this document becomes something that we can share with our community as well as our funders. It roots this work in the landscape and values that this program is driven by. After

# Summary — 2 New environment In March, all workshops were moved online. Manigating this near environment was challenging, but evaluations results show that interns still left the amount of material they received was just sight, and still left like they had a good opportunity to ask questions. The amount of material was. Epring Edibina Sulturous Backhoa Collanti Euniquisma Tree Communition Tree Communities Tree Communit

[Figure 4: An example of a page from a report created with evaluation data from across Wild Foods and Medicines classes]

# **Making Data Collection Easy**

If we are truly abiding by the values outlined in the Indigenous evaluation framework, then data collection should not be a burden to participants or the program. It should be integrated into the programming as a natural part of a reflection process as much as possible. We used a variety of different data collection methods to develop a culturally grounded evaluation of the Wild Foods and Medicine program. Some of these tools include a reflective survey for participants who went through cohort training. We also developed strategies to collect information through the opening or closing circle of a class and incorporated a method to measure the number of connections made between trainees and organizations (see Figure 3).

We have so many distinct types of data collection because we recognize that if we want to accurately capture and share the story of this program, we cannot just hand out a dozen surveys after each class. Each data collection tool must serve a specific purpose and be appropriate for the audience and context of the programming. For example, when teaching a wild foods and plants class to young children, a survey would be inappropriate and not helpful for getting feedback from the young participants. So instead, we developed a facilitator reflection form that the instructor completes after each class. During the class, the instructor facilitates various activities including opening and closing circles. These activities are especially valuable because they can help the instructor observe the level of knowledge among participants and gain important insight and perspective into their students' experiences. After the class is complete the instructor fills out a form that asks them to share observations

about any opening and closing activities done with participants as well as a few multiple-choice self-reflection questions such as "Was the lesson effective increasing student knowledge and skill?" and "Was the lesson effective in increasing students' sense of season and place?" Some other methods we use are more complex and time-intensive, such as the social network analysis that we mentioned earlier. For these methods, we do things like offer additional incentives for community members to respond to surveys or participate in interviews.

As we mentioned before, there is no one right way or tool to conduct Indigenous evaluation. Instead, it is about finding the right tools that work for your community and your program. Evaluation should not pose a burden and should be able to document the story and impact of the work.

# **Sharing Our Stories**

All the data collected through the evaluation is collected for a purpose. That purpose could be to highlight the impact of the program or identify how to improve the curriculum for future use. This means that you need to have a plan for how evaluation data will be used and shared prior to even collecting it. How you share back data will depend on the audience but developing summaries of survey data with basic information and participant feedback and quotes is a simple way to track progress. These summaries may be used internally just to make changes to the program or to apply for future funding opportunities. They could also be shared externally with partners and the community or others doing similar work. It will look different for different programs and organizations.

One way that the Wild Foods and Medicines program at GRuB uses survey data is through creating visual reports. This starts with collecting and then consolidating survey data from across the different programs. The quantitative survey data is then analyzed and presented along with direct quotes from the open-ended feedback questions included in the survey. An example of some of the information included in the visual report is shown in **Fgure 4**.

On this page, you can see survey data presented in a way that shows the results from three questions across multiple workshops along with direct participant quotes illustrating challenges and inspirations at the bottom. This type of simple report can be shared both internally and externally to support program funding or share the success of a program with the community. There are many other ways besides written reports to share evaluation data back with the community to which it belongs. We encourage people to get creative and integrate photos or art into the evaluation and use those to share the program's impact with others.

We are also using an online tool called ArcGIS Story Maps to show the results of our community of practice evaluation (see Figure 5). Our StoryMap shows the connections made between wild foods and medicine educators along with photos, videos, and written stories describing the impact this work has on the community. It is a useful tool for sharing stories rooted in place that include images or videos.

Whichever way you choose to present your evaluation data, make sure you are highlighting what matters to the community. Reporting data is also a great opportunity to get creative and make the story of your successes and challenges just as engaging s the program itself!

## **Letting Indigenous Knowledge Lead**

As more educators adopt, adapt, and teach curricula utilizing traditional Indigenous knowledge systems we need to ensure that the impact of these programs is documented in an accurate way that is grounded in culture. We believe the lessons we have learned through taking an evaluation approach grounded in an Indigenous evaluation framework provide rich information that can be used to improve programs and benefit the whole community. Telling the story of each of these programs will look different- and they should! But we hope that by grounding in the four core values of Indigenous evaluation that these powerful stories of all the excellent work can be shared and celebrated.



[Figure 5: A screenshot from the Native Plants and Food Network StoryMap]

# **CONTRIBUTORS TO THIS ISSUE**

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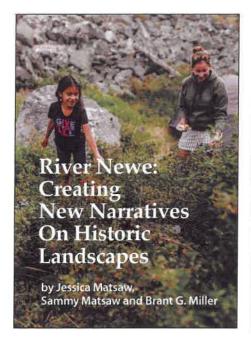
Elise Krohn is the Wild Foods and Medicines Program director at Garden Raised Bounty in Olympia, WA. During her 20+ years of experience teaching in tribal communities, she has worked with elders and cultural specialists to create community gardens, food sovereignty resources, a program on healing addiction, and curricula on chronic disease prevention.

Laura Lynn, Ph.D. serves as the interim Executive Director with the Office of Native Education (ONE) within the Office of Superintendent of Public Instruction. She facilitates trainings and initiatives with the Since Time Immemorial tribal sovereignty curriculum to ensure the curriculum is fully implemented in every school through collaboration with federally recognized tribes as required by RCW 28A.320.170. Laura also supports legislative processes and has developed and is supporting the implementation of multiple American Rescue Plan Act (ARPA) projects focusing on the identification of American Indian and Alaska Native learners and data practices, mitigating the impacts of intergenerational trauma and strengthening social emotional supports in schools, enhancing tribal language grants, and finding ways to bring more Native educators to our schools.

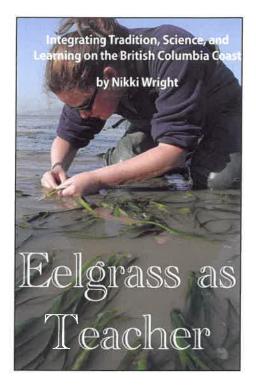
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Shawna Zierdt is a community educator and consultant serving initiatives and projects across the Pacific Northwest Region in support of Tribal communities. Her work focuses on ecosystem restoration that activates relationships between people and plants, centering Indigenous Traditional Ecological Culture and Knowledge at sites including school grounds, academic institutions, public parks and lands. She is a citizen of the Cow Creek Band of Umpqua Indians.

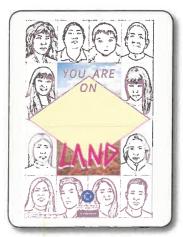
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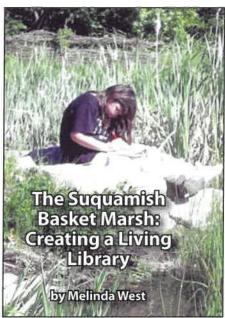


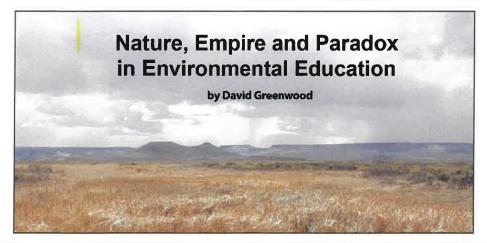


A New Tool: Land Acknowledgment Resource Cards (LARC)



by Grace Crowley-Thomas







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