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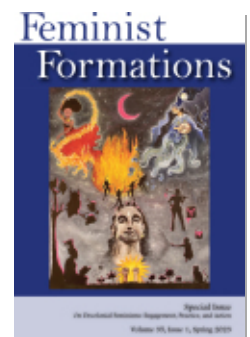
Decolonial Feminist Storying on the Coquille River: A Digital Humanities Approach to Human and Non-human Communication and Prevention of the Fall Chinook Salmon Extinction

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Decolonial Feminist Storying on the Coquille River: A Digital Humanities Approach to Human and Non-human Communication and Prevention of the Fall Chinook Salmon Extinction

Ashley Cordes and Micah Huff

The Coquille River Basin has long been a steady stream of stories, peoples, animals, and non-human objects. The basin has, however, been polluted, invaded, and subjected to myriad maltreatments, the most recent result of which is the decline of the Coquille River fall Chinook salmon. This article contributes to the "On Decolonial Feminisms" special issue by addressing this decline through a participatory action research project based in the digital humanities, Indigenous feminisms, and land-based pedagogy. From this theoretical framework, we produce a method of critical cartography and storied land utilizing ArcGIS story-mapping technology to educate viewers on the history of the Coquille River Basin and the decline of Chinook salmon. This project challenges settler narratives, particularly settler environmentalism and patriarchal control of land, by rejecting dichotomies that deanimate non-human beings and by demonstrating Indigenous feminist stewardship of land through love, desire, care, and prayer. The article ends by providing an overview of the ways digital art projects can continue challenging settler colonialism and by encouraging feminist scholars to theoretically expand their work to interrogate and challenge the patriarchal subjugation and oppression of all beings.

Ji-la, my name is Ashley Cordes, I am Kōkwel, white-coded, and a descendent of Susan Adulsa Wasson. This article is an invitation to visit our website, which contains a StoryMap[1] about the Coquille River and its intelligences, communications, stories, and crises. First, as a Native feminist protocol of respect, we wish to acknowledge the Indigenous peoples and homelands that deeply inspired this project (Celia Boj Lopez 2015). Ashley was afforded opportunities to pursue this project partly on her ancestral homelands, and partly in a place where her Tribe's congressionally prescribed service area overlaps with the traditional homeland of the Kalapuya people. Ashley and Micah Huff, an ally, were employed by an institution situated on lands occupied by Eastern Shoshone, Paiute, Goshute, and Ute peoples. The Coquille River itself flows through various regions of the Coquille Indian Tribe's (CIT) cultural oversight areas in what is now known as southwestern Oregon, places we steward and continue to care for.

The Coquille River Basin has long been a place where stories, peoples, animals, and objects have flowed. However, it has been polluted, invaded, and forced to experience myriad maltreatments (Arkoosh et al. 1998). Currently, it is the site of the decline (nearing the critical point of extinction) of the Coquille River fall Chinook salmon (Coquille Indian Tribe 2021). CIT Chief Jason Younker expresses the urgency of the situation:

> We need to rebuild the original Coquille River Basin so it is able to heal itself. It once was one of the largest estuaries on the West Coast. With heavy diking, clear-cut timber practices, over-farming, pollution, and others, the oxygen needed for healthy salmon runs does not exist. South Slough National Estuarine Research Reserve on Coos Bay is nearing 50 years without logging and only now are we seeing the original channels removed from heavy siltation. Chinook salmon smolt were recently spotted and the Eagles have returned. All we had to do is let the estuary heal itself by getting out of the way.[2]

This project is a response to the continuing violence against salmon in the Coquille River Basin and translates the river into a digital format after a period of deep place-based learning from it. In contributing to this special issue, "On Decolonial Feminisms," we offer multimedia art, text, further learning resources, and an annotated map to respond to all three of the issue's goals: engage, practice, and take action. This article's additional specific contribution is to vividly illustrate a collaborative decolonial feminist approach to art and activism that engenders different modalities of understanding and storytelling in digital environments. In the process of translating the Coquille River into an Indigenous digital river system, we aim to expose others to the intelligences and relational communication of non-humans.

Two statements in the Vision and Values of the Coquille Indian Tribe motivated us to offer this project and accompanying article. The first is, "considering the impacts to our people, land, water, air and all living things," and second is, "practicing responsible stewardship of Tribal resources" (Vision and Values

2017). These values underscore an urgent need to form better relationships with waters and lands. If we do not forge relationships rooted in kinship, stewardship, and reciprocity, we risk conferring master/slave relationships (Lewis et al. 2018) under the guise of making lands, waters, and machines that interface with them more "fruitful, productive" (Calderón 2014, 326). We are constantly negotiating choices to move in a more positive direction with these relationships. Otherwise, we continue to concretize violence in the Anthropocene, this age in which humans have profoundly impacted the environment and have not adhered to Indigenous epistemologies regarding care for the more-than-human world (Whyte 2017). We are learning to live with troubles of mass extinction of plant and animal life (Haraway 2016), in what many Indigenous peoples consider a postapocalyptic state (Gross 2002).

This article accompanies the StoryMap and is organized as follows: first, we discuss Indigenous feminisms, digital humanities, and musings on human and non-human relationships, particularly with respect to land and water as pedagogy. Next, we introduce the specific mapping, artistic, and analytical approaches used to carry out this project. We then move into a description of the texts and image elements on our digital river. This project, created on the ArcGIS platform, includes several points of conversation (salmon, dentalium, a fluid dynamics phenomena known as vortex shedding, plant architecture and biophilic design, and a song). Points comprise areas on an interactive digital illustration. When visitors of the map scroll over points and click, they are given opportunities to learn more. The project provides original mixed-media art, descriptions, stories, multimedia content links, and lesson plans. It does so through the format of "scrollytelling," a mode of digital interactive storytelling in which scrolling and other digital interactions are used alongside traditional techniques such as prose and song (Pascal Schneiders 2020), and storied land. Storied land is the process of utilizing geography and mapping to tell stories about the movement of humans and non-humans or the history of specific geographical locations (la paperson 2014). To center a core example, this section ends with a StoryMap detailing the salmon decline and efforts to prevent it by the CIT. Lastly, we discuss the overarching implications of the project and situate it within a call for additional complementary Indigenous art and digital humanities projects with decolonial implications.

Digital Humanities and Indigenous Feminisms

We ground our work at the intersections of the digital humanities and Indigenous feminist thought and activism. The digital humanities, defined broadly, is a body of scholarly, theoretical, and practical study that, according to Kathleen Fitzpatrick (2012), is distinguished "in its exploration of the difference that the digital can make to the kinds of work that we [humanities scholars] do as well as to the ways that we communicate with one another" (14). While "digital

humanities" connotes a human-centric approach, this project is ecocritical (Buell 2009), concerned with the environment and non-human beings as kin. We draw on Indigenous feminisms, which are uniquely positioned in this ecocritical grounding to provide portals for accessing and growing our understandings of overlapping systems of oppression as well as connections among sovereignty, gender identity, interspecies communication, climate change, technology, and more. Furthermore, we find Indigenous feminisms to have inherently decolonial aims of returning Indigenous lands and restoring sovereignty over those lands and ways of life. Jaqueline Wernimont (2018), when discussing feminisms in the digital humanities, states, "the language of desire and love weave across twentieth- and twenty-first-century feminist work… I wonder how love, desire, care, and prayer might transform the futures we create, how they are already transforming the presents we currently inhabit" (641–642).

From this foundation of decolonial love (Figueroa 2015), care, desire, and prayer, Indigenous feminists interrogate gendered social conventions and perform research that, according to Leece Lee-Oliver (2019), "makes intelligible that which is obscured by institutional erasure, [in particular] how anti-Indianism and the dehumanizing trope of the 'Indian squaw' are embedded as technologies of human difference and materialize in colonial ideology, and negatively impact Native American peoples and societies and beyond" (3). For example, counter to gendered social conventions, Indigenous feminists act as stewards of the land rather than practicing patriarchal ownership, extending care to non-human kin and guarding against pollution and environmental degradation concerns (Cordes 2020, 287). This stewardship is upheld through a relational approach, which according to Kate McCoy, Eve Tuck, and Marcia McKenzie, sees all beings, including the non-human, the "inanimate," and the digital, as beings we are related to, focusing on connections that are "familial, intimate, intergenerational, and instructive" (2016, 9; See also Lewis et al.). Through this relational approach, Indigenous feminists uphold love and care as central tenants of theory and practice.

Additionally, Indigenous feminists are grounded in desire and prayer by tying cultural and spiritual practices into pedagogy and activism. Pedagogical practices bring together Indigenous storytelling methods and spiritual connections to land to emphasize Indigenous futurity, responsibility, and care for land, and to challenge dominant Western patriarchal ways of thinking (Morgan Mowatt et al. 2020; Elizabeth Fast et al. 2021; Marie-Eve Drouin-Gagné 2021). The practice of storytelling has been utilized to challenge settler mapping and environmentalism, as noted by scholars la paperson (2014, 127) and Katja Sarkowsky (2020, 108–109). With this wide body of research, pedagogy, and activist work, Ranjan Datta (2018) states Indigenous feminists "serve to preserve Indigenous voices, build resistance to dominant discourses, create political integrity, and most importantly, perhaps, strengthen the community" (36). Our project is inspired by the practices of love, care, desire, and prayer that

Indigenous feminists engage in through their community roles, addressing institutional erasure, and encouraging relational cultural and spiritual expression.

From this lens of Indigenous feminism, we further tie ourselves to Indigenous thought through a practice of land-based pedagogy, which Matthew Wildcat et al. (2014) define as "forms of education that reconnect Indigenous peoples to land and the social relations, knowledges, and languages that arise from the land" (1). A land-based practice, according to Jennifer Redvers (2020), "implies a deep connection with and non-separation between human beings and the natural world. . . . [including] all aspects of the natural world: plants, animals, ancestors, spirits, natural features, and environment (air, water, earth, minerals)" (90). This practice of understanding complex relationality has been a part of many Indigenous groups' approaches to education and healing, especially across what is currently known as North America. From land-based pedagogy and healing programs, researchers and activists have created learning environments welcoming to Two-Spirit, nonbinary, and others under the LGBTQIA+ umbrella, fostered positive mental wellness outcomes in Indigenous populations, and adapted academic curricula to Indigenous students instead of forcing students to adapt to Western pedagogies (Fast et al. 2021; Redvers; Mowatt et al.).

While a land-based pedagogy may initially appear to counter digital projects, cyberspace is not separate from land. The infrastructure that maintains the Internet, such as servers, cell towers, and underground cabling, are physical instruments built on the land (Duarte 2017). We cannot wholly separate physical and digital terrains. Furthermore, as Ashley Caranto Morford and Jeffrey Ansloos (2021) have noted, "cyberspace provides a connective means by which Indigenous people are tethered in relationship to place, even in and through digital environs" (297). While certainly a different experience of land-based pedagogy than exclusively in-person experiences of land, digital projects, as we will significantly demonstrate, still provide meaningful connections to the land.

Within a land-based pedagogy, we further commit to extending care to non-human entities by upholding what Kim TallBear (2011) calls "an aversion to the human/nonhuman split because of an explicit understanding that it engenders violence" (para. 26). This split perpetuates violence by allowing individuals and structures to deem non-humans as lesser and therefore worthy of exploitation through a process of deanimating. This makes some beings "seem less alive in order to justify hierarchies" (TallBear para. 26). As Suzanne Kite (in Lewis et al.) reminds us, "no entity can escape enslavement under an ontology which can enslave even a single object" (para. 39). Instead, we use land-based pedagogy to emphasize that humans are just one part of large, interrelated ecological systems, rather than the center and height of creation (Lewis et al.; Finn, Herne, Castille 2017; TallBear; Mowatt et al.; Redvers). Sentiments of posthumanist scholars such as Haraway (2015) are useful in their suggestions that "all earthlings are kin in the deepest sense, and it is past time to practice better care of kinds—as

assemblages (not species one at a time)" (162). Indigenous feminisms often provide more particular, place-based, *and* plural perspectives. Zoe Todd (2014), for example, discusses the many place-based ways of knowing and defining fish for the Inuvialuit of Paulatuuq and the ten species they regularly harvest. Sometimes certain "species" indeed do need care on a specific basis. In the case of the extinction of the fall Chinook salmon detailed in this project, this species needs particular attention, in addition to an understanding of their relation to assemblages of species (e.g., lamprey, smallmouth bass, seals, humans). We learn of those needs through land-based pedagogy.

Lastly, a land-based pedagogy also emphasizes storytelling as a means of understanding and connecting to the surrounding world. Sarkowsky (2020) notes that storytelling is a key element of the struggle for land and rights, as it inscribes our relationship with land through literature (108). Storytelling centers Indigenous knowledge and epistemologies, serving as a reminder of Indigenous connections to a place and its history (Archibald 2008; Twance 2019; Mowatt et al.; Iseke & Moore 2011; Datta 2018; Powell, Weems, & Owle 2007). As Calderón argues, land-based practices "must start from the supposition that all places were once Indigenous lands and continue to be … there has to be an acknowledgement of this reality to critically examine what it means to inhabit lands that were once (and continue to be) the homelands of Indigenous nations" (Calderón p. 27). Further, to challenge settler historical and environmental narratives, Thomas King (2003) tells us, "Want a different ethic? Tell a different story" (164).

Methods and Materials

Critical Cartography as Feminist Practice

In this project, we take the suggestion of King to tell a different story on terms discussed with the CIT. We bring together digital humanities, Indigenous feminist thought and activism, and land-based pedagogy through a practice of critical cartography, storied land, and participatory action research. Critical cartography "is the mapping of structural oppression, as well as the critique of mapping as an exercise of power," focused on the ways maps act as master narratives by creating "taxonomies of land, water, and peoples" (la paperson, 123). Sébastien Caquard and William Cartwright (2014) note critical cartography is especially focused on how maps act as spatiotemporal storytellers, tracking the movements of beings, borders, and lands across time (104).

Mapping as a feminist practice, as argued by Meghan Kelly (2019), acknowledges that "all knowledge is situated in personal subjectivities and social contexts" (37). Therefore, a feminist approach to mapping draws on relevant feminist themes and theories based on the understanding that a researcher is trying to come to or the hegemonic structures they challenge. We draw from the themes of Indigenous feminisms to form our method, one that is grounded

in Indigenous ways of knowing, such as the aforementioned storytelling, land-based practice, and relationality.

The cartographers' mapping combined with Indigenous storytelling methodologies follows the tenets of storied land, "a method of land education, by extending critical cartography's spatial analysis with a temporal analysis implied by Indigenous struggle and Black resistance: the when of land, not just the where of place" (la paperson, 115). As a practice, "storied land moves place back, between, and beyond to Native land, providing a transhistorical analysis that unroots settler maps and settler time" (la paperson, 124). Through Indigenous storytelling within the context of a StoryMap, maps move beyond just mapping out locations, providing answers to questions of who lived there, when, how, and what cultural stories, myths, practices, and performances they shared.

Storytelling and Art

Many Indigenous storytelling styles also include interactive elements that adapt stories for the target audience (Fernández-Llamazares and Mar Cabeza 2016, 3; see Powell, Weems, and Owle). To add an interactive narrative to our map of the Coquille River, we work with ArcGIS mapping technology, which allows us to overlay text, images, and video elements on an interactive map ("ArcGIS Online"). With this, we implement a style of scrollytelling where readers can move through the webpage and map at their own pace and interact with the map elements nonlinearly, further disrupting the linear settler spatiotemporality of mapping. Songs, stories, and art can be placed into context within the map, tying the river to Coquille knowledge and histories. Jarrett Martineau (2015) suggests, "Indigenous communicative media (visual art, performance, film and video, literature, storytelling, and diverse digital and new media arts) comprise a complex prism through which to reflect, understand, critique and interpret our reality" (140). Notably, the finished map is a multilayered form of artistic decolonial imagining.

An essential part of Indigenous methodologies includes properly crediting the artists and thinkers included in a project. A simple acknowledgement line at the end is insufficient; thus, we share the specific roles and collaborations here and in the project itself. For the map and website components, Justin Sorensen in Creativity and Innovation Services at the University of Utah provided ArcGIS services. Micah Huff composed and produced the song, "The River's Melody," which is embedded in the project. All the art (ink on paper and digital) of the dentalium, salmon, leaf blueprint, camas, and roots as well as the photographs of the river are by Ashley Cordes. These were edited by Ashleigh McDonald using a Photoshop application for visual consistency. Sudhanshu Sane procured a dataset and created the visualization of the von Kármán Vortex Street with Ashley Cordes. Gary R. Vonderohe, assistant district fish biologist at the Oregon Department of Fish and Wildlife at the Charleston Field Office, was consulted for essential fish data.

Community Engagement

The project is also concerned with community research, or participatory action components (Weber-Pillwax 2009), and working with the Indigenous community in an iterative and respectful manner. Throughout this project, various historians, cultural bearers, artists, and natural resources activists from the CIT were consulted. They provided important feedback and information that shaped the project's trajectory. Expert interviews were also conducted with Brenda Meade, chair of CIT, and Chief Jason Younker in September 2021. Lastly, Kassie Rippie, Coquille Tribal historic preservation officer (THPO), Clark Walworth, CIT communications director, Denni Hokema, CIT anthropologist, and Helena Linnell, CIT biological planning and operations manager, provided reviews, information, clarifications on dates, cultural material, and internal contacts. This StoryMap and its code repository will be given to the CIT to use as they see fit, for example on their website concerning the salmon crisis, as references in newsletters, or to share with the broader community.

Description of the Project

When stepping into a river, we experience a corporeal connectedness of being submerged in that water, which can serve as a time machine, transporting us to storied places and prior historical memories. This website is a digital step into the river. The project begins with opening text to frame the project and then draws readers by having them scroll over a digital representation of the river as though they were wading through it, experiencing art, stories, and the history of the land along the way. The following is a brief overview of each section on the website, detailing the reasons for each section and what they aim to accomplish.

Salmon Relatives

This first point of the StoryMap is "Salmon Relatives" visualized by salmon art, a video, and text explaining the relationship of the Coho and Chinook salmon to the Coquille people. It discusses respect for the salmon and their environment, particularly due to their sacrifice of providing themselves as food to those in the region. This relationship is used to articulate a mutually caring relationality with the world around us and, in particular, how our social systems can impact that relationship. In this case, we focused on how ignoring salmon as kin to the Coquille justifies the pollution of their habitat by settler industries.

Dentalium

The StoryMap leads the viewer to an illustration of a dentalium necklace. The accompanying text explains that many dentalium necklaces or pieces thereof lie buried in the soil under the river or have been carried by streams to the
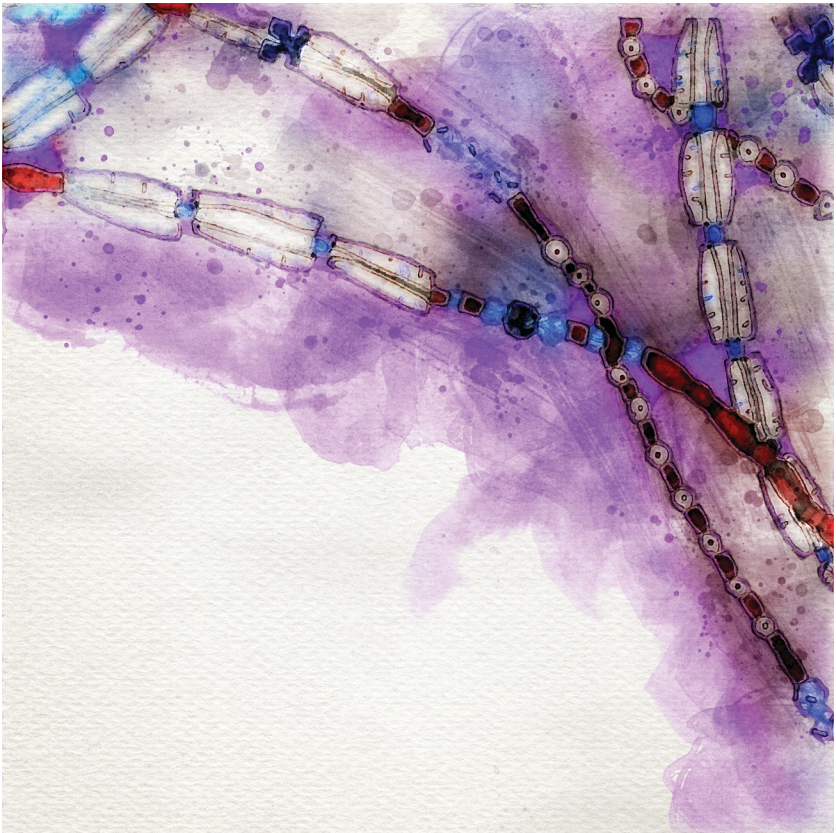
Figure 1. Ink on paper by Ashley Cordes.

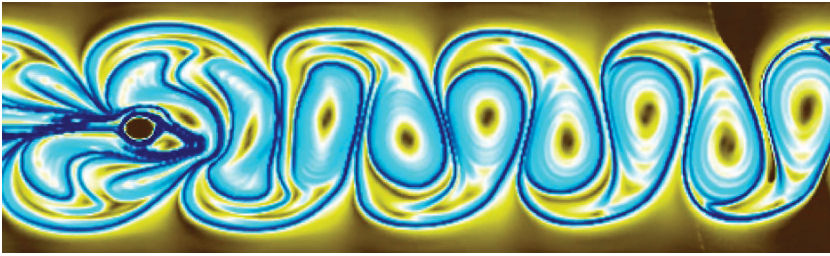*Figure 2.* Ink on paper by Ashley Cordes.

Figure 3. Visualization of the von-Kármán vortex street. The data were generated using Gerris Flow solver (Stéphane Popinet, 2003) and visualized by Sudhanshu Sane and Ashley Cordes.

ocean. Furthermore, it describes how dentalium has been used historically, with particular attention paid to how they were used to build relationships between people and salmon. This attention to history and relationality is used to both emphasize relationships between humans and non-humans while storying the land of the Coquille River via the sharing of its history.

von-Kármán Vortex Street
With the relationship to salmon firmly established, the StoryMap then moves to a time-varying flow visualization of the von-Kármán vortex street as an example of our attempts to comprehend the intelligence and dynamics of water. This change in topic expands the scope of consideration in our relational approach to beings which are not commonly considered to be sentient or intelligent. It asks the reader to explore their relationships to the phenomena around them and expand their consideration and care to what is often overlooked.

Plant Architecture and Biophilic Design
With the viewer having been put into the position of considering the intelligences of the phenomena around them, they are then brought to illustrations of plants and a discussion of how the witnessing of nature influences our built environments through social processes. Stories of architecture and infrastructure based on the patterns found in nature work to reduce deanimating human/non-human splits based on limited views of intelligence and design. Instead, it is shown that humans are constantly learning from nature, a relationship that we should respect and care for rather than assert forceful control over.

The River's Melody
After discussing biophilic design, the StoryMap presents a song inspired by the river's melodies with an accompanying description discussing how the land both makes and inspires music and what the readers can learn about their relationship to land in recognizing the everyday melodies that surround them. This section
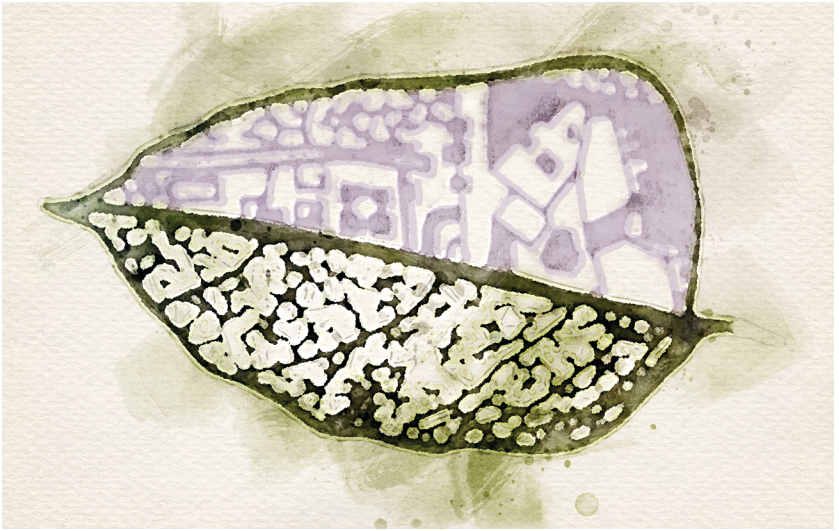
Figure 4. Ink on paper by Ashley Cordes.

Figure 5. Ink on paper by Ashley Cordes.

further solidifies the lesson of the previous section, demonstrating directly how the Coquille River inspires artistic creation and expression. Additionally, the section explicitly asks the reader to consider how they listen to the world around them and how listening differently could lead them to better, more fulfilling decolonial networks of care.

A Return to Salmon as Relative and Core Example of the Fall Chinook Salmon Decline

> *Indians do not talk about nature as some kind of concept "out there." They talk about the immediate environment in which they live. They do not embrace all trees or love all rivers and mountains. What is important is the relationship you have with a particular tree or a particular mountain.*
>
> —Vine Deloria, "The New Materialisms of Indigenous Theories of Non-Human Agency"

When I, Ashley Cordes, began the river StoryMap project, I intended it to include only the river art section, the first half of the website. However, news began to circulate about the potential extinction of Coquille River fall Chinook salmon. The number of fall-run Chinook adult spawning fish declined from more than 30,000 in 2010 to 275 in 2019 and remains low (Coquille Indian Tribe 2021). Tribal Chair Meade called this the third crisis in 2021, happening alongside the pandemic and rampant wildfires.[4] The salmon crisis became a more urgent story to include in this project, particularly because of the importance to citizens of the CIT. The story is told through a series of map points and features to help visualize statistics, locations, and pedagogy important to understanding the salmon decline and the urgent need to address it. The Coquille River is in crisis, and thus the CIT, which has stewardship responsibilities, is responding. Oregonians and some key partners are not adequately reciprocating, but the goal is to work to find substantive solutions.

On April 27, 2021, the CIT exercised its sovereign powers to declare a state of emergency for the salmon. One of the first important points on the StoryMap contains a copy of the CIT's Resolution CY21085 "Declaration of Emergency (Coquille River Salmon)." This point on the map corresponds with North Bend, the location of the government of the CIT where it was signed and processed. The resolution authorized Tribal executives to take all lawful measures to restore the salmon, appropriated a budget, and called on community partners to address the crisis. The opening statement of the emergency declaration highlights how the Tribe's history and identity are tied to the lands, waters, animal life, resources, and lifeways of our ancestral territory. The emergency declaration continues:

Figure 6. Distribution of wild Chinook salmon, smallmouth bass, and striped bass in the Coquille Basin. Legend is provided in the StoryMap.

> Since time immemorial, Tribal members have transmitted traditional ecological knowledge about how to use, respect, nurture, live with, learn and take care of our salmon. . . . The sharing of this traditional ecological knowledge between generations of Coquille people depend on healthy and resilient salmon populations [and] part of the Tribe's intergenerational teaching is that salmon are the Tribe's relatives, and that Tribal members must protect their relatives from termination or extirpation. (Coquille Indian Tribe 2021)

This declaration stresses interrelationships between species and our responsibility to protect salmon for the good of all. It also stresses the commitments, visions, and values of the CIT as a sovereign Nation that is part of larger geopolitical entanglements. The emergency declaration was critical in bringing attention to the declining numbers of fall Chinook salmon.

Reasons for the Declining Numbers
There are many reasons why the fall Chinook salmon numbers are declining, contributing to what Chair Meade, calls a perfect storm.[5] The river is experiencing habitat issues such as erosion. Humans have contributed to the problem through excessive wastewater discharges into the river (Andrew Sheeler 2016). The water is also becoming warmer, a phenomenon that can be partially remedied by a sustained effort to plant more trees.

Critically, "invasive species" are thriving in those warmer conditions and eating the salmon at high rates. Smallmouth bass were illegally dumped in the river more than a decade ago. Along with striped bass, these fish are devouring native Chinook smolt before they can reach the ocean. On the map, colored lines with corresponding species show the distribution of Native Chinook salmon, smallmouth bass, and striped bass in the Coquille Basin. Notably, the smallmouth bass occupy a lot of the same rearing/spawning areas as the salmon in the Coquille Basin, and the majority of smallmouth bass predation on juvenile salmon is upstream of the city of Coquille.[6]

Overfishing of salmon is also a factor—for example, as noted on the map, at the Port of Bandon and many other locations. The past two years witnessed a high exploitation rate, with 40 percent of the fish that came into the Coquille River being harvested (moving the population from around 500 fish to under 300).[7] In 2020 and 2021, all salmon fishing on the river was closed for the purpose of building back a hatchery brood and to preserve wild fish. As a result of these factors, in recent years the Oregon Department of Fish and Wildlife (ODFW) has less than half of the Chinook salmon outlined in its hatchery plan.[8]

Strategies to Help

Several strategies are being used to help the salmon. For example, electrofishing, no-limit angling and even spear fishing have been employed to remove invasive bass species from areas key to the life cycle of salmon. To increase broodstock and improve hatchery production, the CIT has organized volunteers and community partners to collect returning adult salmon with nets. The CIT is also urging additional maintenance of rundown fish hatcheries.

The map shows a point on Ferry Creek, a Coquille River tributary, where ODFW works to collect adult salmon for its hatchery program. Adult salmon returning from the ocean to spawn need to be protected from seals at Ferry Creek. The Coquille successfully called for the installation of a seal excluder, a fence that prevents predators from chasing the salmon upstream. Broodstock may also be collected in other areas besides Ferry Creek, and alternatives are being considered. For example, the CIT considered setting up a black garden tarp cover to create cooler, safer essential areas for the salmon. The fish also find refuge under the bridges in Ferry Creek where the temperature is cooler.

Chair Meade said that these efforts are critical, but we also need help from Mother Nature including wetter years, cooler springs, and good ocean conditions to help fish get to prime spawning habitats and from the estuaries to the ocean.[9] For this salmon crisis, the CIT is calling for co-management of the Coquille Valley watershed with ODFW, for legislative fixes at the federal level, and for the community, including landowners in the area, to recognize how essential salmon are to the CIT as kin.

Additional Map Points Related to Coquille Traditions
The map includes additional points. For example, there is a pin just above the city of Powers, which is one of many locations where the CIT harvests lampreys. Today we use many miles of river for harvesting, but traditional harvesting would take place along the entire river and estuary. Lampreys are important as they contribute to a healthy ecosystem by feeding off dead fish and providing nutrients to the water. Resembling eels, lampreys have existed for at least 300 million years. Their bodies are boneless, but their distinct sucking mouths have an abundance of teeth. Salmon and lampreys have long relied on each other, and both are essential to Indigenous peoples in the Pacific Northwest. Like salmon, lampreys are being eaten in large numbers by smallmouth bass and are subject to the Coquille River's habitat issues.

This point on the map presented an opportunity to include the traditional words for lamprey ("singtae" in the Miluk language of the Lower Coquille people; "magulnah" in the Athapaskan dialect of the Upper Coquille; and "scoquel" in Chinuk Wawa, the trade language shared by Pacific Northwest tribes).[10] It was also a unique opportunity to include an oral history quotation suggesting the lamprey abundance years ago. Lottie Evanhoff, a Coos Tribal member who lived until 1944, said: "Eel swarmed in the river. They wriggled through the rapids, and they sucked on the rocks. Men speared the eels of the rocks and they set funnel shared nets in the stream. They used canoes in deep places and dipped up the eels with long handled dip nets."[11]

Per the suggestion of the THPO, the map includes another point at the Coquille Culture, Education and Learning Services building, a place that stores a leister spear, a traditional technology. A leister spear is used in the salmon migration season and is a reminder of the importance of salmon as an essential first food. Making the spear requires materials from elk, cedar, vine maple, and spruce. It exemplifies the interconnectedness among assemblages of species needed for the CIT to catch and connect with salmon. For this point, we included a Coquille Tribal seal and flag that prominently display the leister spear and connote that salmon is key to who we are as a people.

Termination Empathy
One of the most important points of the maps is at Bullards Beach, the location of the first annual salmon ceremony after Restoration in 1988. The CIT has held salmon ceremonies from Bullards Beach up to North Fork since time immemorial, but this ceremony in 1988 celebrated the newly re-established Tribal government. It marked a symbolic next chapter after the Tribe's termination.

Importantly, the emergency declaration resolution, shared earlier, also expresses empathy, a capacity to tend to the struggles of others with fortitude and historical memory. Empathy is critical in the declaration's mention of termination as a human-fish shared experience. The Coquille peoples, along with other tribes in western Oregon, were terminated by the Western Oregon

Termination Act (1954). The Coquille peoples know the realities of genocide and assimilation that settlers systematically enacted, particularly in the mid-1800s with removal to reservations, and a century later with the act that withdrew federal recognition (Cordes, 2021). We know the resulting devastation. There was loss, and that loss remains to this day even as we work hard to rebuild a strong sovereign Nation.

We do not want our salmon kin to experience this loss, nor do we want to experience their loss. Humans and fish have long experienced the complexities of colonialism together, and we should listen to the philosophies of fish that have survived for millions of years (Todd, 2018). Presumably, by the time this article is published, the situation for fall Chinook salmon will have changed. The hope is that the efforts being made by the Coquille with community partners will improve the numbers of the fall Chinook salmon rather than lead them to extinction. There was a time of abundance when the salmon nourished us, and we work toward restoring that abundance for the benefit of future generations.

We express gratitude to those who have navigated the StoryMap, taking a digital step into the Coquille River. To help the salmon, the CIT suggests writing about concerns to then Governor Kate Brown, getting involved with community partners such as the Coquille Watershed Association, and spreading word about the crisis. To learn more from the CIT, please access the online K–12 place-based curriculum produced as part of Senate Bill 13: Tribal History Shared History.[12] Particularly relevant are Grade 4 Lesson 5 Plan: Coastal Lifeways,[13] Grade 8 Lesson 2 Plan: Coquille Potlatch Culture,[14] and Grade 10 Lesson 3 Plan: Survivance and Tribal Government.[15] Lastly, more information on salmon and the tribes and nations in what is now known as Oregon can be found on the Oregon Department of Education website.[16]

Thoughts on Decolonial Feminist Potentiality and Project Implications

This project afforded a unique opportunity to layer stories, to understand general ideas of environmental intelligences and thereafter link to the very particular salmon crisis. The first half of the StoryMap, the river art section, assisted in a broader understanding of relationships and communication between humans and non-humans by analyzing several points related to the Coquille River. It was motivated by the sentiment that if we sought to affectively understand the different intelligences of elements of the river and relationship between them with more nuance, we would be more inclined to change our relationship to the river and the beings within it. The second half of the StoryMap was an opportunity to illustrate where we fell short in our capacity to honor the wisdom of salmon and to protect the salmon of the Coquille River Basin. It detailed points of interest regarding the imminent extinction of the fall Chinook salmon and the CIT's efforts to prevent it, based on our *particular* relationships with them as kin.

This project demonstrates how digital humanities praxis intertwined with the love, care, desire, and prayer of Indigenous feminism can produce artistic and cartographic means of challenging oppressive colonial "master" narratives. Hierarchical human/non-human splits, which de-animate in order to enslave (TallBear; Lewis et al.), were challenged through animating and expressing love for the Coquille River and the salmon that inhabit it. When we recognize the intelligence on display in the von-Kármán Vortex and the ways the river produces its own melodies, we break down hierarchies of human and non-human intelligence, demonstrating how our knowledges intertwine and inspire one another. When we recognize and honor the salmon's sacrifice, especially through gifts of dentalium, we challenge hierarchies of love, care, and prayer by extending these tenets of feminism to non-human kin.

Settler environmentalism presents "'nature' as rape-able, and 'development' as the normalized aim of modernity" (la paperson, 117). We choose instead to tell the stories of the CIT, the Coquille River, settler colonialism in the Pacific Northwest, and the Chinook salmon. We present land as something to be respected as its own animated entity, interconnected with humans rather than separate from them. By mapping how the salmon use the river and marking key points of historical and modern interest to the CIT, the project upholds its decolonial aims by upending stories of settler maps and replacing them with Indigenous stories, human and non-human alike. As a result, the Coquille River StoryMap demonstrates how decolonial Indigenous feminist praxis can be performed in a digital space.

From this Indigenous feminist praxis, we both demonstrate and propose a theoretical shift in the view of who or what the "subject" of feminism is. Just as Judith Butler (1999) and Lee-Oliver interrogated the subjects and research focuses of feminisms, we interrogate the idea of humans (or the patriarchal oppression/subjugation of humans) as the subject of feminism through a practical refusal of deanimating human/non-human dichotomies (TallBear). As a result of this praxis, we argue that feminism should theoretically shift to focus on interrogating and challenging the patriarchal subjugation and oppression of *all* beings. As Butler argues, "the identity categories often presumed to be foundational to feminist politics, that is, deemed necessary in order to mobilize feminism as an identity politics, simultaneously work to limit and constrain in advance the very cultural possibilities that feminism is supposed to open up" (187). We are not saying we should do away with identity politics as a whole; identity as an analytic highlights important differences, such as the specific needs of the Chinook salmon and where they overlap and/or diverge from the needs of the CIT. Instead, we propose that feminists emphasize their subject as the processes of patriarchy and their varied effects on all beings. Women can still be, and arguably should be, a primary focus of feminism in this theoretical shift. However, if we recognize that "no entity can escape enslavement under an ontology which can enslave even a single object" (Lewis et al., para. 39), then

feminism, and especially decolonial feminisms which combat the enslavement of lands and people, must theoretically and practically expand to challenge the patriarchal enslavement of all beings.

This project has limitations due to technological constraints, timing, and complex histories accompanying our methodologies. For example, we acknowledge that mapping and cartography can be problematic because they are often beholden to artificial boundaries that have been colonially imposed and lead to erasures of Indigenous conceptions of land (Harris 2004). Our map includes settler cities, rather than the names of the nations and Indigenous communities that have lived there for many millennia. Even adding these or displacing settler cities with Indigenous cultural oversight areas could be fraught, as Indigenous Nations often occupied the same areas or stewarded them at different historical times. Putting a line on a map is political and often dangerous. Another limitation is that this story is still unfolding; by the time this article reaches the reader, efforts to save the salmon may have changed. To remedy this limitation, we plan to periodically update the StoryMap in an iterative manner and honor requests from the Coquille.

We also recognize the accessibility issues at multiple levels with our work. There are digital divides preventing individuals from many marginalized communities from visiting our website (Duarte, 75). Additionally, even if one can access the webpage, the page may not be suitable for audience members with various disabilities. We have tried to mitigate this by ensuring that some accessible elements are always present-text that a screen reader can read for those with low/no vision or a high-contrast mode for the map for those who are colorblind. However, we are limited by ArcGIS's built-in accessibility settings and recognize that accessibility is an ongoing process and conversation that requires numerous tweaks.

Despite limitations, this StoryMap project also importantly demonstrates how situating a project within the community leads to a better, more expansive project. Collaborating with the CIT had immense benefits. The THPO, for example, was generous in her time, and she suggested different points to address (such as the lampreys and the leister spear) and she suggested quotations and images to include to make the map more meaningful to our history. She also suggested including language groups on the map, such as Miluk, adding an important layer that ties language to land and life. Chair Meade suggested including points on the map that show the actual hard work Coquille peoples engaged in to help our salmon kin. Further, working with those in the community has meaningful ethical benefits. For example, we received a suggestion to remove a point that included potentially dangerous information about an archaeological site that could lead to looting. Ultimately, many people helped to make this project come together. This collaboration is essential to activating community activist momentum and avoiding harm that otherwise might have been overlooked.

Like other scholars and artists, we agree that creative community-engaged projects tend to bring attention to critical issues in ways that cut through noise and activate momentum for healing and understanding. For example, Theresa May and members of the Klamath Theatre Project (2015) produced a community-based play about the death of more than 30,000 coho and Chinook salmon in the Lower Klamath River. It detailed the trauma of the salmon deaths, possibilities of storytelling to transform communication between Indigenous and non-Indigenous communities impacted by disasters of the Klamath watershed, and connections between Indigenous peoples and salmon that Western epistemologies fails to recognize. Another important project is by the Tribal Government of the Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians. They recently created a StoryMap called Abundance, a web-based narrative about their lifeways and languages. Abundance was produced to demonstrate care for their healthy communities and ecosystems and to complement the curriculum of Senate Bill 13, a mandated curriculum about the Native experience in Oregon in K–12 public schools. Land-based pedagogy has been translated by Indigenous peoples in a variety of different media including web-based stories, video games (LaPensée 2021), lesson plans (Sabzalian, Morrill, and Edmo 2019), traditional and digital art, theater, graffiti, and music. More projects like these are necessary and should be shared with appropriate audiences with the permission of Indigenous communities and the content creators.

Final Thoughts

As scholars working at the intersections of Indigenous studies, feminisms, and digital media, we are particularly attentive to the blurring experiences of flows, boundaries, digital interfaces, and "natural" environments. We translate the elements that we touch, swim in, walk through, drink, eat, and gain life from into digital formats to tell new stories. Learning from the land-based and digital pedagogies of the Coquille River provided a new modality to imagine the experiences of previous and future generations, forging better relationships with sentient beings and objects along the river's pathways. Rivers are dynamic vectors of historical memory and are indeed pedagogy.

In the project's process, we learned that critically oriented Indigenous art-making and cartographic storytelling afford decolonial dreams of different futures and imaginaries. As Martineau (2015) suggests, "creativity activates possibility, and with it, decolonial potentiality" (50). Our hope is that some potentiality is activated when people visit the Coquille River or our digital map. We hope it may encourage healing of the Coquille River Basin and replenish the fall Chinook salmon. The story needs to be told in various formats to all who are listening, to activate a prism of decolonial potential for an even larger goal—the full return of the Coquille River Basin to the Coquille peoples' stewardship.

Author's Note

The authors of this article are happy to report that after the writing of this article, Oregon Department of Fish and Wildlife Commission unanimously approved of the CIT's bid for a historic co-management agreement. Under the agreement, the CIT will share responsibility for managing fish and wildlife in Coos, Curry, Douglas, and Lane counties. This includes the Coquille River Basin and will significantly impact the CIT's ability to work toward restoring the salmon.

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Notes

1. The web address for the StoryMap: storymaps.arcgis.com/stories/3678bc6932c7 4332b0d57adf3434aa55
2. Jason Younker, email interview with Ashley, September 16, 2021.
3. See Note 2.
4. Brenda Meade, Zoom interview with Ashley, September 24, 2021.
5. See Note 3.
6. Gary R. Vonderohe, phone interview with Ashley, September 1, 2021.
7. See Note 6.
8. See Note 6.
9. See Note 4.
10. Kassie Rippie, phone interview with Ashley, September 7, 2021.
11. See Note 10.
12. Senate Bill 13: Tribal History Shared History: www.coquilletribe.org/?page_id =9266.
13. Particularly relevant are Grade 4 Lesson 5 Plan: Coastal Lifeways: www.coquille tribe.org/wp-content/uploads/2021/02/gr.-4-Lesson-5-Plan-Coastal-Lifeways.pdf
14. Grade 8 Lesson 2 Plan: Coquille Potlatch Culture: www.coquilletribe.org/wp -content/uploads/2021/02/gr.-8-Lesson-2-Coquille-Potlatch-Culture.pdf
15. Grade 10 Lesson 3 Plan: Survivance and Tribal Government: www.coquilletribe .org/wp-content/uploads/2021/02/gr.-10-Lesson-3-Plan-Survivance-and-Tribal -Government.pdf

16. Information on salmon and the Tribes and Nations in what is now known as Oregon found on the Oregon Department of Education website: www.oregon.gov /ode/students-and-family/equity/NativeAmericanEducation/Pages/Senate-Bill-13-Tribal -HistoryShared-History.aspx#:~:text=In%202017%2C%20the%20Oregon%20Legislature ,provide%20professional%20development%20to%20educators.

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