

Katelyn Vidal

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The Kidneys of the Earth and the Hearts of California Native Americans

Riparian wetlands, commonly known as the “kidneys of the earth,” are vital to maintaining ecosystem health. But behind these ecological benefits of riparian wetlands are cultural ecosystem services, like the cultural and spiritual identity of California Native Americans.¹ These services are also responsible for building the foundation of ecosystem services provided by riparian wetlands, such as erosion control and nitrogen removal. Unfortunately, European colonization has destroyed the majority of riparian wetlands in California, which has altered how we approach the preservation of the cultural ecosystem services of riparian wetlands.² To truly protect cultural and spiritual identity, we must acknowledge and implement traditional ecological knowledge (TEK) and traditional resource management (TRM) practices of California Native Americans and understand the historical implications of these landscapes to continue providing these valuable ecosystem services for future generations.³

At first glance, it’s easy to recognize the ecological benefits that riparian wetlands provide with its lush greenery and vast array of habitats for wildlife. But the deeper we look into these areas, the more we begin to discover these interwoven cultural ecosystem services and how the procurement of these services contributes to the preservation of riparian wetlands. For

¹ Michelle L. Stevens, “Eco-Cultural Restoration of Riparian Wetlands in California: Case Study of White Root (*Carex Barbarae* Dewey; Cyperaceae),” *Wetlands* 40, no. 6 (2020): 2461–75, <https://doi.org/10.1007/s13157-020-01323-3>.

² Robin M. Grossinger et al., “Historical Landscape Ecology of an Urbanized California Valley: Wetlands and Woodlands in the Santa Clara Valley,” *Landscape Ecology* 22, no. S1 (2007): 103–20, <https://doi.org/10.1007/s10980-007-9122-6>.

³ Stevens, “Eco-Cultural Restoration,” 2463.

example, the valley oak riparian wetlands in California's Central Valley provide white root, which California Native Americans use for basket weaving and trade.⁴ A case study by Michelle L. Stevens describes how "Basket and basket weaving were central to the daily lives of California Native Americans and contributed to over 50% of the entire material culture."⁵ This displays how white root not only contributes biological diversity to riparian wetlands but is also responsible for structuring their way of life and deepening their relation to the earth, thus shaping their cultural and spiritual identity. It also influences their relationships with nearby tribes due to white root's significance in trade.⁶ The way California Native Americans derive this cultural ecosystem service also contributes to the endurance of white root and thus promotes the longevity of their cultural practices. For instance, white root is derived through various TRM practices, like prayer, asking permission to harvest, and ceremonial blessings.⁷ They also transplant white root to new sites when gathering sites erode or when new sandbars form.⁸ These cultural gathering practices of white root foster a greater connection to the land, which allows them to protect white root while ensuring the existence of their cultural practices and traditions. So, by nurturing the land, they nourish themselves and ensure the preservation of their cultural identity, along with the ecosystem services cultivated by these identities.

Cultural practices and traditions play critical roles in sustaining several other ecosystem services. For instance, the harvesting and gathering practices of white root conducted by California Native Americans along riparian wetlands across California's Central Valley provide regulating, supporting, and provisioning ecosystem services. These practices influence the distribution of white root, which germinate easily, allowing them to develop complex root

⁴ Ibid, 2467-28.

⁵ Ibid, 2463.

⁶ Ibid, 2468.

⁷ Ibid, 2463.

⁸ Ibid.

systems.⁹ This encourages runoff to infiltrate into the soil and reduces soil erosion, thus offering regulating services, like erosion control. Controlling erosion also provides us with provisioning services, as it allows for the preservation of the medicinal benefits of white root.¹⁰ Reducing soil erosion is also a critical regulating service relevant to farmers as this helps promote healthy soil formation. TRM practices additionally support biodiversity, which allows riparian wetlands to remove excess nitrogen, offering us provisioning and supporting ecosystem services. A study by Sheibley et al. found that riparian wetlands like those along the lower Cosumnes River in California's Central Valley could remove NO₃-N from inflowing flood water through denitrification.¹¹ This helps maintain water quality, which is imperative to ensuring provisioning services like drinking water and water for agriculture. Removing nitrogen from these areas also contributes to supporting services like nutrient cycling, which helps prevent eutrophication and habitat loss. All these ecosystem services define the core of riparian wetlands, and without these TRM practices and TEK, these services would cease to exist, resulting in the loss of services that are vital to both human and ecosystem health.

Multiple factors have challenged the relationship between California Native Americans and riparian wetlands, which have limited the ecosystem services they provide. Sadly, European colonization has destroyed the majority of California's wetlands, but there's been a rise in wetland restoration as more people are beginning to recognize the irreplaceable value of ecosystem services, especially as climate change becomes more apparent. Stemming from this settler-colonial mindset of European colonization, over 95% of riparian wetlands have been destroyed due to agriculture, urban development, and fragmentation from the construction of

⁹ White Root - USDA Plants Database, accessed December 3, 2023, https://plants.usda.gov/DocumentLibrary/plantguide/pdf/pg_caba4.pdf; Stevens, "Eco-Cultural Restoration," 2461.

¹⁰ Stevens, "Eco-Cultural Restoration," 2462.

¹¹ Richard W. Sheibley, Dylan S. Ahearn, and Randy A. Dahlgren, "Nitrate Loss from a Restored Floodplain in the Lower Cosumnes River, California," *Hydrobiologia* 571, no. 1 (2006): 261–72, <https://doi.org/10.1007/s10750-006-0249-2>.

levees.¹² Because of this widespread destruction of wetlands and people across California, the livelihoods, practices, and identities of cultures that are dependent on these landscapes have also been lost and degraded. This has also decreased our awareness of how cultural practices are intricately tied to these other ecosystem services, like erosion control and nitrogen removal. This settler-colonial mentality has also influenced practices that exert control over the land, as seen with constructed wetlands. There's been a recent swell in constructed wetlands used to treat wastewater by taking advantage of the ability of wetlands to remove pollutants.¹³ These constructed wetlands help improve water quality and promote biodiversity, thus providing us with a plenitude of ecosystem services like those aforementioned.¹⁴ Although these constructed wetlands help restore the ecosystem services lost through colonization, this practice ignores other approaches to maintaining wetlands, like TRM and TEK. Neglecting these practices continues this legacy of colonialism and contributes to the suppression of both the cultural and spiritual identity of California Native Americans and the ecosystem services they support.

Therefore, to maintain and enhance the cultural and spiritual identity of California Native Americans, we must not only focus our efforts on these constructed wetlands, but we must also dedicate our time to restoring TEK and the TRM practices decimated by European colonization. For instance, TRM practices, like resource rotation and optimal disturbance regimes, which are heavily shaped by TEK, along with the gathering and tending practices of California Native Americans, greatly influenced the distribution of plants like white root and the overall biodiversity in California.¹⁵ These practices not only ensure ecosystem function but also embed their culture into the land, which allows them to carry on this intergenerational knowledge of the

¹² Stevens, "Eco-Cultural Restoration," 2462; Grossinger et al., "Historical Landscape Ecology, 103–20.

¹³ Rajat K. Chakraborti and James S. Bays, "Constructed Wetlands Using Treated Membrane Concentrate for Coastal Wetland Restoration and the Renewal of Multiple Ecosystem Services," *Land* 12, no. 4 (2023): 847, <https://doi.org/10.3390/land12040847>.

¹⁴ Chakraborti and Bays, "Constructed Wetlands," 3.

¹⁵ Stevens, "Eco-Cultural Restoration," 2462.

land to future generations, contributing to self-preservation. Thus, by restoring TEK and TRM practices, which are essential to the culture and identity of California Native Americans, and recognizing the intersection between cultural diversity and ecological diversity, we can ensure the continuation of cultural and spiritual identity and other ecosystem services cultivated through these practices. Sustaining this cultural connection to riparian wetlands also requires a sufficient understanding of the history of the landscape. As mentioned before, riparian wetlands and those responsible for nurturing them were and still are greatly affected by settler colonialism. So, to enhance these cultural practices and traditions, we must also understand the historical context of the area. This includes recognizing how the relationship between California Native Americans and riparian wetlands has been influenced by a long history of colonialism and how these colonial practices continue today through things like constructed wetlands.¹⁶ Acknowledging this and understanding these historical implications allows us to address the root causes of the decline of these cultural practices associated with riparian wetlands. Knowing this history also allows us to diversify our perspectives and knowledge systems, which helps ensure that we are applying the appropriate methods and legislation to create long-term change and restore both riparian wetlands and the cultural traditions that result. Hence, delving into the history of riparian wetlands allows us to unveil how practices like constructed wetlands are only beneficial for the short term and how continuous management by California Native Americans based on centuries of generational knowledge will allow us to maintain these cultural traditions and practices while maintaining the health of riparian wetland ecosystems.

Acknowledging this interconnection between cultural practices and ecological diversity is imperative if we are to understand the full extent of the ecosystem services that riparian wetlands

¹⁶ Grossinger et al., “Historical Landscape Ecology, 103–20; Chakraborti and Bays, “Constructed Wetlands,” 103–20.

provide. Although constructed wetlands, which utilize Western science and technological expertise, can restore the ecosystem services of riparian wetlands, this fails to address the drivers that led to the destruction of these landscapes in the first place. When we connect these roots of destruction, like European colonization, to the loss of the cultural practices that are deeply intertwined with these ecosystem services, we can recognize how the cultural identity of California Native Americans and the ecological health of riparian wetlands in California's Central Valley work hand in hand, allowing us to maintain both for the long term. By incorporating TRM and TEK into our restoration efforts and protecting and respecting those most knowledgeable about California's riparian wetlands, we will contribute to the preservation of the cultural and spiritual identity of California Native Americans and ensure the longevity of these areas in the future, thus leading to improved health and well-being for everybody, including the earth.

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