



Trail Trees: Living Artifacts (*Vivifacts*) of Eastern North America

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Abstract: *Living trees historically modified by human populations, oftentimes referred to as “culturally modified trees” (CMTs), are found throughout the North American landscape. In eastern North America specifically, indigenous populations bent thousands of trees to mark trails, and some of these still exist in the region today. In this article, we present a synthesis of current knowledge on trail trees, including their speculated functions, formation, and selection. We also examine the theoretical implications of these living artifacts (or vivifacts) and how they may open new avenues for investigation by archaeologists, environmental historians, and ethnobiologists. To conclude, we make a call for expanded public recognition and documentation of trail trees, discussing the need for their incorporation into forest and park management plans.*

Keywords: Culturally modified trees (CMTs), Trail trees, Living artifacts, Vivifacts

Introduction

Living trees historically modified by human populations, oftentimes referred to as “culturally modified trees” (CMTs), are found throughout the North American landscape. These include trees modified by harvest activities and bark stripping (Arno et al. 2008; Jett 2005; Josefsson et al. 2012; Mobley and Eldridge 1992) as well as pruning, coppicing, and pollarding (Turner et al. 2009). Some trees have also acted as trail and boundary markers and even mediums of art. Of the various CMTs, these latter examples are perhaps the most culturally significant because they exhibit the ways in which people have employed trees as living signs and symbols.

Many instances of Native North Americans’ use of trees to convey symbolic meanings appear in the anthropological and historical literature (e.g., Parker 1912). Creek warriors stripped bark from “conspicuous places” and “painted red and black hieroglyphics” as warnings to their enemies of further bloodshed (Swanton 1928a:415). The Creek also stripped bark and removed limbs from the eastern side of trees during healing rituals (Swanton 1928b:665). Among the Choctaw, human bodies and trees could be marked with the same symbol as a way to alert strangers to the identity of the family who dwelled in the area (Swanton 1928b:686). West of the Mississippi River, the Comanche placed tally marks on trees as they moved along trails, leaving signals for

those who might follow behind (Barr 2011:33). They also planted tree saplings with split trunks to mark watering holes, orienting the saplings to point in the direction of the water source. They even carved and painted tree trunks with scenes of everyday life.

On their journey across North America (1804-1806), Meriweather Lewis and William Clark noted culturally modified trees as evidence of indigenous presence. When their party approached the Rocky Mountains in 1805, they “saw several Indian camps [and] trees peeled” (DeVoto 1953:160). As they returned to the United States, they again noted scarred trees in the Bitter Root Mountains that had been “peeled by the natives for the inner bark of which they scraped and ate [sic]” (DeVoto 1953:404). The “Corps of Discovery” in turn modified trees to mark trails, assist with river navigation, and memorialize their trip, including a series of *arboglyphs* that commemorated their brief occupancy at Fort Clatsop on the Pacific coast (DeVoto 1953).

Basque immigrants in California and Nevada left similar modifications of trees after their arrival to the area following the 1848 gold rush. Many of them found a niche in shepherding and made carvings in aspen trees (*Populus tremuloides* Michaux Salicaceae) during their leisure time. Basque arboglyphs are widely distributed, with over 20,000 examples found to date, including names, icons, and even erotic



Figure 1. An oak trail tree found on a private property in Monterey, TN. Photo by Dennis Downes (2001), reproduced under a Creative Commons Attribution-Share Alike 3.0 Unported license.

images that lonely shepherds etched into the trunks of the region's aspens (Mallea-Olaetxe 2001).

In the eastern woodlands of North America, many different sources have reported on Native Americans' use of trees as trail markers (Allison 2005; Amerson 1999; Downes and Samor 2011; Elliott 1993; Jannesen 1941; Jordan 1997; McClain 2006; Ritzenthaler 1965; Sander 1965; Wells and Wells 2011). Much of this literature, however, is limited to journalistic pieces and non-academic publications, often produced by a small group of enthusiasts and self-published writers. In this article, we present the first comprehensive overview of trail trees of eastern North America, synthesizing current knowledge of these trees, including their speculated functions, formation, and selection. Since these trees are considered "living artifacts" for which no technical designation currently exists, we also introduce the term *vivifact*. This concept should encourage archaeol-

ogists, environmental historians, and ethnobiologists, to open a broader investigation into the ways that living organisms modified by human populations continue to thrive in the environment while also reflecting its past use. To conclude, we urge for greater recognition of trail trees and other vivifacts, which can be documented and shared publicly through open-source databases online and incorporated into cultural heritage management plans. This is especially important as such trees are quickly disappearing from the North American landscape.

The Forms and Functions of Trail Trees

Across eastern North America, trees bent in peculiar forms with severely angled trunks and deformed branches appear in many old tracts of forest (Figure 1). These trees have taken on various names, including "trail marker trees," "signal trees," "thong trees," "Indian bent trees," and simply "trail trees." They have garnered special attention for once having served as blazes on paths traveled by Native North Americans. However, these trees do not conform to just one particular shape, and their morphology is said to vary depending on their past marking purpose (Janssen 1941; Jordan 1997).

Most trail trees are bent a few feet from the ground at an acute angle (Janssen 1941). These "standard" trail trees are identified as having once marked indigenous footpaths and travel routes. However, there is also documentation of "rider trees," which were bent parallel to the trail path at the same acute angle, approximately eight feet off the ground to allow riders on horseback to easily spot them (Jordan 1997). Other trail trees are considered to be boundary markers. Such "boundary trees" are bent with multiple branches forming acute angles, similar to a pitchfork or a candelabra, and define the borderline of a given territory or rangeland (McClain 2006).

Many writers claim that Native North Americans also used living trees to indicate bodies of water, important landmarks, and burial sites. Some argue that they even used such deformed trees to conceal objects in their nooks (Jordan 1997). The bent leader branch of most trail trees is usually absent, either because it died off or was removed. The knob or end of the tree that is left remaining is commonly referred to as the "nose." It has been suggested that the noses of such trees were expanded through the insertion of moss or other materials into the hollowed end (Jordan 1997). Trees with hollowed noses are sometimes referred to



as “message trees,” although their use for such a purpose appears to be wishful conjecture.

As noted here, many of the past uses of trail trees are speculative. There is little direct documentation regarding the use and management of such trees by Native North Americans. Still, it is widely recognized that indigenous peoples did use trees as markers, as has been found in other parts of the world (Andersson 2005; Carver 2001; Drslerova and Mikulas 2010; Ostlund et al. 2003). And what is unique about these trees is that while they carry signs of the human past, they often outlive the very people who shaped them, remaining enduring features of the landscape.

Trail Tree Formation

It is likely that Native American populations experimented with a number of different materials to shape trail trees into their distinctive forms. Branches, sinews, vines, and bundles of rocks tied to the tree have all been suggested as possible materials used in the process. Although the precise methods employed were never historically documented, several different techniques have been proposed (Amerson 1999; Downes and Samors 2011; Elliott 1993; Jordan 1997; McClain 2006; Ritzenthaler 1965). Ritzenthaler (1965) reasoned that after a young sapling was bent toward the ground, its trunk was tied to a stake that was attached by sinew or animal skin. Others have speculated that a bundle of rocks may have been used to weigh it down. It is also frequently claimed that a “y”-shaped stick (sometimes referred to as a “thong”) was used to support the sapling’s trunk, preventing it from bending too close to the ground while securing it firmly in place until the supporting stick rotted away or was removed (Amerson 1999:54; Elliott 1993). Over time, the leader branch of the tree slowly died off or may have been cut off, where the “nose” then formed.

Trail Tree Biology and Selection

North America possesses a total of 652 known tree species (Elias and Sargent 1980). The majority of the trail trees that have been discovered and recorded in eastern North America can be reduced to just six of these. Don Wells, president of the Mountain Stewards organization in Georgia, maintains a database of several hundred recorded trail trees that have been found throughout the eastern United States. His organization has determined that the most commonly used species is the white oak (*Quercus alba* Linnaeus Fagaceae) followed closely by the red oak (*Quercus*

rubra Linnaeus Fagaceae) (Wells and Wells 2011:7; see also Elliott 1993 and McClain 2006). Oaks are very strong yet pliable when young, allowing for easy manipulation by humans. Although they grow slowly, they can live for several hundred years, which makes them ideal long-term markers. They also exhibit strong resistance to disease and insect infestations (Petrides and Wher 1998:281). It should be noted, however, that oaks represent a very large percentage of the hardwood trees used in the lumber industry, which means many trail trees are potential targets for economic exploitation.

In addition to white and red oaks, the Mountain Stewards have identified trails marked by live oaks (*Quercus virginiana* Miller Fagaceae), sweetgums (*Liquidambar styraciflua* Linnaeus Altingiaceae), and tulip poplars (*Liriodendron tulipifera* Linnaeus Magnoliaceae). In southern reaches of the Midwest, the Mountain Stewards have also encountered a large number of pines that were bent in a similar manner, especially loblolly pine (*Pinus taeda* Linnaeus Pinaceae). This is in contrast to western North America where native peoples primarily used the ponderosa pine (*Pinus ponderosa* Douglas ex C.Lawson Pinaceae).

Other hardwood trees were used as trail trees as well. These include hickories, maples, and elms (Sander 1965). Although hickories are not as resilient to insect infestations and decay as oaks (Petrides and Wher 1998:239), they are both strong and flexible, and evidence shows that hickory species were heavily utilized by Native Americans in the past (Weeks et al. 2005:246). Maples and elms (with a combined total of 20 species in North America) also have strong, pliant wood, although somewhat less than oaks or hickories, and Frank Reed Grover noted in 1901 that the trail trees found along Chicago’s north shore were mostly “large elms” (p.21).

Vivifact: A Conceptual Contribution

An artifact is generally defined as “an object made or modified by human workmanship, as opposed to one formed by natural processes” (OED 2015). This includes, for example, stone tools, woven baskets, bronze sculptures, and cellular phones. Living organisms, like trees, are generally excluded from this category. Archaeologists also employ the term “ecofact” to refer to biological materials (e.g., pollen) that are found in the archaeological record, but are considered “natural remains” (OED 2015). Lewis Binford (1964) described ecofact as “the term applied to all culturally relevant nonartifactual data” which



“can be broken down into subclasses representing different populations such as pollen, soil, and animal bone” (p.432; see also Neustupný 1993). Although Binford’s definition is relatively open-ended, the subclasses he outlines consist of the remains of biological organisms found in the archaeological record. Trail trees, which are essentially “living artifacts,” thus present a curious case that fits outside of traditional archaeological classification. They are living biological organisms that have been manipulated or modified by humans in the past, but continue to live on and persist in the environment. For this reason, we introduce the concept of the vivifact to occupy this categorical lacuna. In adopting this concept, we aim to encourage archaeologists along with environmental historians and ethnobiologists to investigate the ways by which human populations, and especially indigenous populations, have physically modified living organisms in the environment that continue to live on today.

Culturally modified trees are perhaps the best-known examples of vivifacts. These include trail trees as discussed here, but also the scarred rubber trees (*Hevea brasiliensis* Müller Argoviensis Euphorbiaceae) of Amazonia that were tapped to produce latex for the burgeoning tire industry in the early 20th century and, then later, for the Allied Powers during World War II (Dean 1987). Others examples include cacti that exhibit carvings left by migrants during border crossings in the Southwestern U.S. (Sundberg and Kaserman 2007) and the Japanese bonsai, which illustrates that the production of vivifacts can be a distinctive art form itself (e.g. Liang 2005).

Many other organisms modified by humans may be worthy of future investigation, from wild macaws with clipped wings to tortoises with perforated carapaces. Landscapes that reflect past human modification and management, including clam gardens, may even be considered *vivifeatures* (see, for example, Deur et al. 2015). Rather than outline numerous lines of future investigation, our intention here is to simply draw attention to some of these living artifacts with the hope that they may open new paths of inquiry into human-environmental relations.

Conclusions

Since many of the trees historically modified by indigenous populations of North America are disappearing from the landscape, greater public recognition and documentation of these trees is needed. Currently, the organization Mountain

Stewards maintains a geo-database of trail trees identified in eastern North America, but these data are not available to the public. While the members of the organization are concerned that a public database could lead to undesirable attention or even destruction of these historic landmarks, we strongly believe that an open-source geo-database or Geographic Information System (GIS) could help these trees gain greater public appreciation and support.

It is important to highlight that the past uses of these trees is still largely speculative, and many of the trail trees identified today require more vigorous investigation to determine whether they are in fact the product of past human management or manipulation. Clearly, every tree with a bent limb is not a trail tree. How to distinguish indigenous trail trees from aged trees with distinctive bends due to other forces will be important for cultural heritage management. The measurement and dating of trees in addition to consultation of the ethnohistorical record can aid in verification. The mapping of recognized trail trees in relation to identifiable historic trails and travel routes may also be necessary. Lastly, dendrochronological analysis and research involving the coring of some recognized trail trees will help to identify distinctive characteristics related to stress and past use. To avoid the unnecessary destruction of living trees, this may be appropriate in the case of dying trail trees.

In parts of Canada, culturally modified trees are protected by law. Under British Columbia’s Heritage Conservation Act, for example, culturally modified trees dating before 1846 have legal protections that prevent them from being logged (Stryd 2001). However, such protections have been disputed and even overturned in the court of law (McNeil 2010). In the United States, the Department of Natural Resources (DNR) can prohibit logging of areas that contain cultural resources, such as archaeological sites, but there is no specific state or federal legislation that protects culturally modified trees. While some parks and recreation areas feature signage that draws attention to culturally modified trees, their inclusion within forest and park management plans is sorely needed.

Lastly, trail trees, and other vivifacts mentioned above, would benefit from greater investigation by anthropologists, environmental historians, and ethnobiologists. Since vivifacts are by definition “living artifacts,” we know that one day they will die.



And for that reason, they require our attention now while they are still alive.

References

- Allison, R. B. 2005. *Every Root an Anchor: Wisconsin's Famous and Historic Trees*, 2nd edition. Wisconsin Historical Society Press, Madison, WI.
- Andersson, R. 2005. Historical Land-Use Information from Culturally Modified Trees. Unpublished Doctoral Dissertation, Department of Forest Vegetation Ecology, Swedish University of Agricultural Sciences, Uppsala, Sweden.
- Amerson, A. D. 1999. The Cherokee Trail Trees. *North Georgia Journal* Summer:52-57.
- Arno, S. F., L. Östlund and R. E. Keane. 2008. Living Artifacts: The Ancient Ponderosa Pines of the West. *Montana: The Magazine of the Western History* Spring:55-67.
- Barr, J. 2011. Geographies of Power: Mapping Indian Borders in the "Borderlands" of the Early Southwest. *The William and Mary Quarterly* 68(1):5-46.
- Carver, G. 2001. An Examination of Indigenous Australian Culturally Modified Trees in South Australia. Unpublished Doctoral Dissertation, Department of Archaeology, Flinders University, Adelaide, South Australia.
- Dean, W. 1987. *Brazil and the Struggle for Rubber: A Study in Environmental History*. Cambridge University Press, Cambridge, England.
- Deu, D., A. Dick, K. Recalma-Clutesi and N. J. Turner. 2015. Kwakwaka'wakw "Clam Gardens": Motive and Agency in Traditional Northwest Coast Mariculture. *Human Ecology* 43(2):201-212.
- DeVoto, B., ed. 1953. *The Journals of Lewis and Clark*. Houghton Mifflin, Boston, MA.
- DeVoto, B., ed. 1953. *The Journals of Lewis and Clark*. Houghton Mifflin, Boston, MA.
- Downes, D. 2001. This Classic Oak Tree is One of Two Trail Marker Trees on Private Property Near the Town of Monterey, TN. Available at: https://commons.wikimedia.org/wiki/File:Trail_marker_tree_one_of_two_classic_oak_trees_on_private_property_near_the_town_of_Monterey,_TN.jpg. Accessed on May 20, 2015.
- Downes, D. and N. Samors. 2011. *Native American Trail Marker Trees: Marking Paths Through The Wilderness*. Chicago Books Press, Chicago, IL.
- Dreslerova, D. and R. Mikulas. 2010. An Early Medieval Symbol Carved on a Tree Trunk: Pathfinder or Territorial Marker? *Antiquity* 84:1067-1075.
- Elias, T.S. and C. Sargent. 1980. *The Complete Trees of North America. Field Guide and Natural History*. Van Nostrand Reinhold Co., New York, NY.
- Elliott, D. R. 1993. Thong Trees: Living Indian Relics. *Central States Archaeological Journal* 40(1):16-19.
- Grover, F. R. 1901. *Our Indian Predecessors—The First Evanstonians*. Evanston Historical Society, Evanston, IL.
- Janssen, R. E. 1941. Living Guide-Posts of the Past. *The Scientific Monthly* 53(1):22-29.
- Jett, S. C. 2005. Navajo-Modified Living Trees and Cradleboard Manufacture. *Material Culture* 37:131-142.
- Jordan, E. 1997. *Indian Trail Trees*. Jordan Ink Publishing, Ellijay, GA.
- Josefsson, T., E. K. Sutherland, S. F. Arno and L. Östlund. 2012. Ancient Barkpeeled Trees in the Bitterroot Mountains, Montana: Legacies of Native Land Use and Implications for Their Protection. *Natural Areas Journal* 32(1):54-64.
- Liang, A. 2005. *The Living Art of Bonsai: Principles and Techniques of Cultivation and Propagation*. Sterling Publishing Company, New York, NY.
- Mallea-Olaetxe, J. 2001. Carving Out History: The Basque Aspens. *Forest History Today* Spring/Fall:44-50.
- McClain, W. 2006. Mysteries of the Trail-Marker Trees. *Illinois Steward Magazine* Summer 15(2). Available at: <http://web.extension.illinois.edu/illinoissteward/openarticle.cfm?ArticleID=26&Page=1>. Accessed on February 10, 2014.
- McNeil, K. 2003. Culturally Modified Trees, Indian Reserves and the Crown's Fiduciary Obligations. *Supreme Court Law Review* 21(2d):105-138.
- Mobley, C. M. and M. Eldridge. 1992. Culturally Modified Trees in the Pacific Northwest. *Arctic Anthropology* 29(2):91-110.



- Myer, W. E. 1928. Indian Trails of the Southeast. *42nd Annual Report of the Bureau of American Ethnology for the Years 1924-1925*, pp. 727-857. US Government Printing Office, Washington, DC.
- Neustupný, E. 1993. *Archaeological Method*. Cambridge University Press, Cambridge, England.
- Östlund, L., T. S. Ericsson, O. Zackrisson and R. Andersson. 2003. Traces of Past Sami Forest Use: An Ecological Study of Culturally Modified Trees and Earlier Land Use within a Boreal Forest Reserve. *Scandinavian Journal of Forest Research* 18 (1):78-89.
- OED Online. 2015. Oxford University Press. Available at: <http://www.oed.com/view/Entry/11133?redirectedFrom=artifact>. Accessed on May 25, 2015.
- Parker, A. C. 1912. Certain Iroquois Tree Myths and Symbols. *American Anthropologist* 14(4):608-620.
- Petrides, G. A. and J. Wehr. 1998. *A Field Guide to Eastern Trees: Eastern United States and Canada, Including the Midwest*. Houghton Mifflin, Boston, MA.
- Ritzenhaler, R. E. 1965. Trail Marker Trees. *The Wisconsin Archeologist* 46(3):183-189.
- Sander, P. 1965. A "Trail Marker Tree" at Twin Lakes. *The Wisconsin Archeologist* 46(3):189-190.
- Stryd, A. H. 2001. Culturally Modified Trees of British Columbia: A Handbook for the Identification and Recording of Culturally Modified Trees. British Columbia Ministry of Forests, Victoria, BC, Canada.
- Stryd, A. H. and M. Eldridge. 1993. CMT Archaeology in British Columbia: The Meares Island Studies. *BC Studies: The British Columbian Quarterly* 99:184-234.
- Sundberg, J. and B. Kaserman. 2007. Cactus Carvings and Desert Defecations: Embodying Representations of Border Crossings in Protected Areas on the Mexico-US Border. *Environment and Planning D: Society and Space* 25(4):727-744.
- Swanton, J. R. 1928a. Social Organization and Social Usages of the Creek Confederacy. *42nd Annual Report of the Bureau of American Ethnology for the Years 1924-1925*, pp. 23-472. U.S. Government Printing Office, Washington, DC.
- Swanton, J. R. 1928b. Aboriginal Culture of the Southeast. *42nd Annual Report of the Bureau of American Ethnology for the Years 1924-1925*, pp. 673-726. U.S. Government Printing Office, Washington, DC.
- Turner, N. J., Y. A. F. Berkes, I. Davidson-Hunt, Z. F. Ertug and A. Miller. 2009. Cultural Management of Living Trees: An International Perspective. *Journal of Ethnobiology* 29(2):237-270.
- Weeks, S. S., H. P. Weeks, Jr. and G. R. Parker. 2005. *Native Trees of the Midwest: Identification, Wildlife Values, and Landscaping Use*. Purdue University Press, West Lafayette, IN.
- Wells, D. and D. Wells. 2011. *Mystery of the Trees: Native American Markers of a Cultural Way of Life that May Soon Be Gone*. Mountain Stewards Publishing, Jasper, GA.

Biosketches

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