

Applications of Vegetation In Archaeology

Unbeknownst to many archaeologists, a diversity of uses of the surface vegetation section of site forms exists. Drawing from behavioral archaeology, historical ecology, case studies, and relating the findings from a national survey of archaeologists' methods and perceptions towards documenting site vegetation, this presentation raises awareness of the breadth of possibilities of what archaeologists could do with their descriptions of site vegetation. Through expanding the archaeologist's imagination of the research potential of vegetation, greater attention could be given to it and thus produce records of research value regarding its overlooked use regarding the subjects of identity, belief, place, landscape, and trade.

A little imagination, or awareness of data potential, is the beginning of knowledge of what to look for and how to 'see' what pertains to the human past. Thus, in this presentation I propose a list of different archaeological applications that surface vegetation has to offer, resulting from both a survey of 161 archaeologists across 12 states and a review of literature.ⁱ But first for further clarification, I will not be addressing the well-covered subjects of botanical remains in the purview of paleoethnobotany, or the lifeway-preservationist's perspective of valuing plants according to their uses among particular cultures. Rather, I will focus on how the underrepresented surface vegetation of archaeological sites may serve interpretive uses among archaeologists, in the hope of convincing listeners of the value of vegetation and endearing them to different methods of recordation needed to realize these interpretative applications.

I will begin with some of the most commonly accepted archaeological uses of site vegetation. Ground cover has been used to inform the research design of pedestrian surveying (sampling) and for offering context for future readers on why something was missed.ⁱⁱ Flora is also used for erosion control, preservation, and site integrity indicators, meaning plant descriptions demonstrate disturbance or non-recent disturbance, and plants can actively be used to prevent lootingⁱⁱⁱ or natural soil erosion.^{iv} Plants can also relate to subsistence, having been left deliberately or inadvertently over middens^v, near original plantings/garden^{vi}, along trails^{vii}, anthropogenic fire-dependent forests^{viii}, gathering grounds^{ix}, or playing a factor in environmental predictive models^x.

Site vegetation can be also used to date sites/features in four ways: 1) dating regrowth to establish time since abandonment and the nature of land use^{xixii}, 2) narrowing down the date

range of use or ascertain the antiquity of the construction of stone features, such as cairns and fasting beds (using lichenometry)^{xiii}; and 3) establishing a postmortem interval^{xiv}.

The use of vegetation as site or feature indicators is one of the most accepted uses of site vegetation, though largely under-credited in site forms and unfortunately has remained in the domain of archaeological folk wisdom and could use further systematic study. For example conspicuous changes to surface vegetation can occur in a species' cover; dense vs. meager spatial distribution of a given species; and signs of plant stress among a particular species in proximity to a cultural feature, and can be just as important as the presence of a particular species^{xv}. These qualitative shifts are due to human activities that modified soil conditions, which in turn invite particular plant communities to inhabit it. Describing these vegetal signatures are important for their potential to assist archaeologists in 1) locating sites over large areas; 2) giving clues to the presence and nature of buried archaeological remains, and clues as to past human activities; 3) assisting in re-locating a site, for later research; and 4) recognizing social roles plants directly have and how flora may respond to ideologically guided human activities.

Beyond plants indicating the general presence of a site, vegetation can indicate boundaries and cultural feature orientation. There are three ways for vegetation to be related to boundaries and feature orientation: 1) the deliberate creation of boundaries with vegetation, both native and introduced species, for the purpose of marking boundaries^{xvi}; 2) the deliberate use of vegetation to add to or accompany a linear feature for drawing attention to a cultural feature^{xvii}; and 3) the unintentional or consequential creation of vegetal boundaries, through the differential treatment of the soil on either side of a fence, causing vegetation to grow differently long after the fence has disappeared^{xviii}.

Vegetal indicators of boundaries and site layout are important as living memory markers for several reasons, 1) to locate former ephemeral cultural features/structures^{xix}; 2) to guide understanding of the interactions between features and relocating the whereabouts of 'lost' ones (with archival clues, e.g., GLO maps)^{xx}; 3) to ascertain special use or activity areas^{xxi}; 4) to aid in establishing archaeological site boundaries^{xxii}; and 5) communicate where social space was located, how it was divided, and intended to be experienced^{xxiii}. For example, boundaries can convey concepts of private property; delineate a place for a certain labor/activity; guard privacy;

and communicate social realities like the need for protection from danger of outside beings and forces^{xxiv}.

Vegetation may seem innocuous, but it can underline how humans moved through space and where plants were artificially selected over time. Plants can be linked with transportation, travel/migration, and trade, through the approaches of spatial analysis, genetics, and an understanding of a plant's spreading mechanisms. These approaches will help with recognizing: 1) spatial connection to some originating place^{xxv}; 2) movement through space, through a pathway distribution pattern across space suggestive of travel routes^{xxvi}; 3) exchange, through the relationship between separate places with an exchange of their endemic species^{xxvii}; and 4) selection by humans (however seemingly weedy), which may leave morphological traces^{xxviii}.

Plants also play an important, but overlooked role, in 1) the recognition and making of place^{xxix}; 2) the indication of the seasons and guiding the timing of seasonal activities^{xxx}; 3) psychological transformation of identity (or 'becoming') such as the process of homeplace-making making ourselves who we are^{xxxi}; and 4) commemorate story and memory in the form of living monuments or relics^{xxxii}.

For example, a cemetery is not just human remains and headstones, they can have grave marking trees or flowers which don't just indicate the location of a grave but can symbolically stand-in for the presence of the dead or live as a memorial of hope^{xxxiii}. Plants may be treated as a seasonal indicator, like a farmer's almanac, which may affect the nature of interactions of people and the environment at sites, such as hunting, gathering, and ritual activities^{xxxiv}. Plants can also be used a means of "becoming", in the sense of meaningfully affecting therapeutic emotional, psychological, or spiritual change within their creators, or planters, in the act of their creation and establishment^{xxxv}. Archaeologist Koji Ozawa (2017) offers a poignant example of which with the role growing castor beans and gardens had among Japanese-Americans in restoring their dignity in the midst of incarceration camps^{xxxvi}. He explains that these gardens gave Japanese-Americans a sense of normalcy in a state of constant uncertainty and a sense of control through the act of territorialization. Vegetation may simultaneously be used to mark events and be objects of memory. For example, weddings may be marked by plantings of holly or "marriage"/ "coffin" trees^{xxxvii}, buying or building a new house may be commemorated with plantings^{xxxviii}, and births of children with "birth trees" out front of the house^{xxxix}. A forest's composition can

strongly influence how a forest landscape is perceived as one of many kinds of forested landscapes^{xi}. Some other examples include plants: pertaining to the sacred sites of stories and cosmogeny (e.g. medicine trees, world trees, etc.); characterizing horticultural/agricultural sites, traditional gathering grounds^{xli}, gallows trees; meeting or treaty trees; expressing a cemetery landscape^{xlii}, foreign places^{xliii}; and delineating places of power, danger, worlds, and abodes of other entities^{xliv}.

Plants, like other objects of belief, can be part of cosmologies, offering explanations for how and why things happen, and may be perceived as persons/beings or imbued with power from the beings they are associated with or worlds they 'originate' or 'serve'^{xlv}. Plants may be used as symbols of teachings or expressions of religious identity^{xlvi}. Like other religious-magical objects, plants are used as coping mechanisms for dealing with the otherwise out-of-control world by serving as omens^{xlvii}; providing protection of one's livelihood, health, property^{xlviii}; attracting luck or love^{xlix}; and manipulate weatherⁱ and fertility^{li}. Like previous discussion on plants left as a consequence of past human activities, ritual activities may unintentionally or intentionally leave behind vegetation^{lii}. Archaeologists should contemplate how plants were perceived, ritualistically used, and extensions of a people's beliefs, since botanical vestiges of belief can live on, such as elder and rowan trees on the island of Skye, stand where highland Scottish houses once stood, for protection from witches and/or faeries.

Now, further research is needed on plants and their significance to group identity, so here I will suggest some incipient notions of how vegetation can hold vestiges of the performance of identity. Class, social status, and prestige could be recognized by the presence of rare and exotic plants to the site period in question, but also plants positioned in what would have been the public's view of a site, as form of expressing stylishness, civility, and power^{liii}. Power can also be botanically expressed through intricate arrangements or garden landscaping, because of the means needed to maintain such an undertaking, and preference for plants predominately serving aesthetic purposes^{liv}. By contrast, some have also noted the use of only plants (e.g. lilies and irises) to mark graves when a family was not privileged enough to afford a headstone, meaning lower classes may have been more inclined towards using plants for subsistence and economic purposes^{lv}.

Nationality, ethnicity, and flora have connections through the use of plant color schemes to convey patriotism through emulating flag colors^{lvi} and national character being embodied in certain plant behaviors, but also xenophobic nativists have interchanged botanical language to describe immigrants and racially charged language to describe non-native species^{lvii}. For example people can be “naturalized” when described as swarms or by various associations with disease. Plants can be anthropomorphized with ethnic, nationalistic, and geographic appellations in common names for flora, regardless of their natural ranges, places of origin, or ethnic associations^{lviii}. The conflict between groups’ ethnicity (or nationality) can also manifest in how floral or faunal species identified-with are ‘managed’ and their fate in the court of law and public opinion. Thus nature, past and present, is a metaphor and instrument of revitalization, resistance, and colonialization^{lix}. Finally, flora may also be tied to ethnic or national identities because it brings a sense of the familiar, affects taste preferences, food heritage, the social systems involved in the acts of gathering, processing, customary means of consumption of certain plants, and a conduit for resilience in foreign lands^{lx}. Regarding the last point, food is connected with identity by summarizing each act of the consumption of traditional food as an act of communion with one’s culture, and this is true for both the colonized and colonizer.

Because of the ability of some plants to survive beyond direct human intervention, knowledge of anthropogenic soil and floral reactions to past human activities, and the realization of the various social roles that plants have in the lives of people, it follows that closer attention is needed to our recording habits of site vegetation and original archival research is needed to uncover the interactions between culture and environment. For example, anecdotally, people in the Northern Rockies know that settlers carried the roots, bulbs, cuttings, and seeds of cherished plants across vast distances, but why, how, and when did they do so? Thus future research will investigate the compelling stories of these plants passed down to us, as these heirlooms of the landscape are part of a chain of tradition that deserve to be told and are pivotal to finding the social applications of site vegetation.

ⁱ (Harris 2018)

ⁱⁱ (Schiffer 1987:257; Schon 2002; White and King 2007:111; Burke et al. 2009:81-82)

ⁱⁱⁱ (Sanford 2015:67; Moschelle and Sydney 2017)

^{iv} (Dale and Weaver 1974; Wood and Johnson 1978; Miksicek 1987:234; Schiffer 1987; Hill et al. 2002; Burke et al. 2009:81-82)

- ^v (Brown 1936; Minnis and Plog 1976)
- ^{vi} (Leighton 1987; Hanselka 2010; Kerrigan 2012)
- ^{vii} (Warren 2016)
- ^{viii} (Deur and Turner 2005; Turner 2014)
- ^{ix} (Zedeño 2007; Burke et al. 2009)
- ^x (Harris 2018)
- ^{xi} (Mobley and Eldridge 1992; Neumann et al. 1993; Forbes 1996; Neumann and Sanford 2001; Speer and Hansen-Speer 2007; Arno et al. 2008; Tømmervik et al. 2010; Towner and Creasman 2010)
- ^{xii} (McWilliams 2017a; McWilliams 2017b)
- ^{xiii} (Armstrong 2004; Benedict 2009; Osborn et al. 2015; Scott 2015)
- ^{xiv} (Lane et al. 1990; Tibbett and Carter 2003; Cardoso et al. 2010; Hawksworth and Wiltshire 2011, 2015)
- ^{xv} (Brooks and Johannes 1990)
- ^{xvi} (Cunningham 2001:248; Watts 1999:104-110; Sumner 2004:302-305,307; Sanford 2015)
- ^{xvii} (Hall 1969; Sanford et al. 1995; Cunningham 2001; Fukamachi et al. 2003; Boyd et al. 2007; Sanford 2015)
- ^{xviii} (Russell 1997; Sanford et al. 1997; Egan and Howell 2001; Neumann and Sanford 2001; Weatherford 2010; Sanford 2015)
- ^{xix} (Stewart 1977; Egan and Howell 2001; Sanford 2015)
- ^{xx} (Egan and Howell 2001; Boyd et al. 2007; Lunt et al. 2016)
- ^{xxi} (Stewart 1977; Sanford et al. 1997; Sanford 2015)
- ^{xxii} (Harris 2018)
- ^{xxiii} (Tilley 1994; Jones and Cloke 2002; Jacks 2007)
- ^{xxiv} (Cunningham 2001:247-254; Jones and Cloke 2002; Fukamachi et al. 2003; Low and Lawrence-Zúñiga 2010; Augé 2013; Lullfitz et al. 2017)
- ^{xxv} (Brooks and Johannes 1990; Huisinga 2001; Larrue et al. 2010; Turner 2014:157-158)
- ^{xxvi} (Beckes et al. 1982; Blasing 1986; Brooks and Johannes 1990; Warren 2016)
- ^{xxvii} (Brooks and Johannes 1990)
- ^{xxviii} (Cowan and Smith 1993; Gremillion 1993; Wegars 1993; Brown 1999; Ford 2000; Ritland et al. 2005; Kerrigan 2012; Gómez-pompa et al. 2016; Kinder et al. 2017; McWilliams 2017a)
- ^{xxix} (Weisel 1951; Tuan 1974; Jones and Cloke 2002; Dafni 2006; Johnson and Hunn 2010; Mazumdar and Mazumdar 2012; Tuan 2013; Harmanşah 2014)
- ^{xxx} (Ingold 1993; Johnson and Hunn 2010; Turner 2014; Kootenai Culture Committee 2015)
- ^{xxxi} (Stilgoe 1982; Samuels 1999; Helphand 2006; Mazumdar and Mazumdar 2012; Riggs 2015; McMillen et al. 2017; Ozawa 2017)
- ^{xxxii} (Weisel 1951; Fukamachi et al. 2003; Dafni 2006; Mazumdar and Mazumdar 2012; McMillen et al. 2017)
- ^{xxxiii} (McMillen et al. 2017; McWilliams 2017a, 2017b)
- ^{xxxiv} (Kootenai Culture Committee 2015)
- ^{xxxv} (Helphand 2006; Riggs 2015; McMillen et al. 2017; Ozawa 2017)
- ^{xxxvi} (Ozawa 2017)
- ^{xxxvii} (Samuels 1999:31)
- ^{xxxviii} (Samuels 1999:28)
- ^{xxxix} (Stilgoe 1982:165; Samuels 1999:28)
- ^{xl} (Jones and Cloke 2002:24-25)
- ^{xli} (Deur and Turner 2005; Harmanşah 2014:143-145)
- ^{xlii} (Florin 1977; Stilgoe 1982; Jones and Cloke 2002; McMillen et al. 2017; McWilliams 2017a, 2017b)
- ^{xliii} (Jones and Cloke 2002; Coates 2006)
- ^{xliv} (Stilgoe 1982:220-229; Tallbull 1995; Jones and Cloke 2002; Fukamachi et al. 2003; Tuan 2013; Gómez-pompa et al. 2016)
- ^{xlv} (Folkard 1892; Weisel 1951; Mercatante 1976; Stilgoe 1982; Altman 2000; Baker 2001; Rival 2001; Lehner and Lehner 2003; Thiselton-Dyer 2008; Carvalho 2011; Humphrey 2012; Turner 2014:254-315)
- ^{xlvi} (Folkard 1892; Mercatante 1976; Stilgoe 1982; Altman 2000; Baker 2001; Lehner and Lehner 2003; Thiselton-Dyer 2008; Carvalho 2011; Humphrey 2012)
- ^{xlvi} (Folkard 1892; Baker 2001; Thiselton-Dyer 2008; Humphrey 2012)
- ^{xlvi} (Folkard 1892; Baker 2001; Thiselton-Dyer 2008; Humphrey 2012)
- ^{xlvi} (Baker 2001; Cunningham 2001; Thiselton-Dyer 2008; Augé 2013; Turner 2014)

- ^{xlix} (Baker 2001; Cunningham 2001; Thiselton-Dyer 2008; Turner 2014; Houlbrook 2015)
ⁱ (Baker 2001; Cunningham 2001; Augé 2013)
^{li} (Altman 2000; Baker 2001; Rival 2001; Lehner and Lehner 2003)
^{lii} (Baker 2001; Gazin-schwartz 2001; Augé 2013; Brien 2015)
^{liii} (Stilgoe 1982; Leighton 1986, 1987; Favretti 1990; Watts 1999; Mitchell 2002; McWilliams 2017a)
^{liv} (Leighton 1986, 1987; Favretti 1990; Graham 2011)
^{lv} (Samuels 1999:31)
^{lvi} (Jones and Cloke 2002; McMillen et al. 2017)
^{lvii} (Coates 2006)
^{lviii} (Coates 2006:16)
^{lix} (Crosby 2004; Helphand 2006; Ozawa 2017)
^{lx} (Carney and Rosomoff 2009; Crowther 2013)

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