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The Complexities of Wildcrafting: A study of knowledge systems' influences on wildcrafting in Chittenden County, VT

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Abstract

Social-ecological systems are based in the belief that the well-being of human systems relies on the well-being of ecological systems (Martin-Lopez, 2015). In a time of diminishing cultural and ecological diversity, many researchers are using the framework of social-ecological systems to find solutions to large-scale problems (Armitage, 2009). A subset of social-ecological systems is known as Traditional Ecological Knowledge (TEK) (Pretty, 2011). This knowledge often encompasses information as to how to collect wild edible plants and fungi (also known as wildcrafting) (Naah, 2017). The act of wildcrafting has been present in human behavior for centuries. However, today some people are experiencing shifts away from collecting wild edible plants and fungi (Pieroni, 2005), while other populations of people are contributing to a resurgence of wildcrafting across the globe (Schackleton, 2017). The ways in which people are learning about how to collect wild edible plants and fungi have historically been rooted in Traditional Ecological Knowledge (TEK), a system of learning which is based off experience and long-term relationships with ecosystems (Berkes, 2000). Foundational aspects of TEK are often seen as starkly different than those of Western Science (WS). WS is most commonly described as a more reductionist approach (Martin, 2010). Many environmental initiatives argue that the integration of both forms of knowledge is necessary for ameliorating large-scale cultural and ecological degradation (Berkes, 2000). My research looked to understand the various ways in which wildcrafting in Chittenden County, VT relies on TEK, WS or both learning systems to inform the basis of wildcrafting practices. Subsequently this research looked understand how wildcrafting fits within a larger conversation of social-ecological systems and the amelioration of human and environment relationships. I interviewed 10 participants using a semi-structured interviewing technique. Then, I carried out a detailed analysis of participant responses using NVivo, a qualitative coding software. The results of this study demonstrated that the majority of participants engaged in both TEK and WS knowledge to inform their wildcrafting practices and motivations. An analysis of the data shows that wildcrafting is complex. Wildcrafting more specifically addresses conservation as wildcrafters practice reciprocity with the natural world and establish a desire to conserve the natural world though interaction. This desire then results practice of sustainable harvesting and active conservation.

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Lastly, thank you to the participants of this study. It was delightful to hear your perspectives and experience your willingness to share personal stories. I sincerely enjoyed the interviewing process thanks to your kindness and generosity. I wish you many seasons of fruitful wildcrafting ahead.

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The Complexities of Wildcrafting

Introduction

Social-ecological systems are based in the belief that the well-being of human systems relies on the well-being of ecological systems (Martin-Lopez, 2015). A sub-discipline of this framework is known as Traditional Ecological Knowledge (TEK) (Pretty, 2011), or the product of learning about one's environment through experience, interaction, and connection with it (Inglis, 1993; Berkes, 2000; Martin, 2010, Sujarwo, 2016; Ramos, 2018). TEK is often defined as a system of knowledge separate from that of Western Science (WS) (Martin, 2010). In some cases, the distinction between culture and nature that is found in WS paradigms has perpetuated ecologically unsustainable behaviors (Martin, 2010). This further divides WS and TEK paradigms; however, some find the harsh distinction between worldviews to be guilty of creating exaggerated or false dichotomies between WS and TEK (Pretty, 2011). This dynamic has made it difficult to integrate both ways of knowing into modern cultural and ecological conservation schemes (Martin, 2010). An important way of understanding how TEK and WS interact is through the practice of collecting wild edible plants and fungi, also known as foraging or wildcrafting. For the purpose of this research, these three terms will be used interchangeably. As noted by Pretty (2011) the act of foraging facilitates human-nature contact and fosters a space for the TEK and WS to intertwine. Along with the varying ideological frameworks behind foraging for wild edible plants, much of modern research has found this practice to be essential to communities' in times of dietary instability, economic or food scarcity (Sylvester, 2016; Delvaux, 2018) and food shortages (Asfaw, 2001), help with the resilience of agricultural and food systems (Bharucha, 2010), and have great value in terms of biodiversity of diet and landscapes (Batal, 2007). Conversely, some conservationists

fear that harvesting for wild edible plants and fungi is risky, considering sustainable harvesting is not guaranteed (Vaughn, 2013). My research explored if and how traditional knowledge systems in conjunction with scientific knowledge systems interact to form the foundational knowledge for wildcrafters in Chittenden County, VT. This research provides insight into the impact of knowledge systems on how and why people choose to forage for wild edible plants and fungi, as well as explore the importance of human nature contact for individuals by way of collecting wild edible plants and fungi. The research looked to further explore if or what the act of wildcrafting could contribute to conversations surrounding ecological conservation and social-ecological systems based on human-environmental health.

Literature Review

Traditional Ecological Knowledge (TEK)

Traditional Ecological Knowledge (TEK) is defined as the product of learning about one's environment through experience, interaction, and connection (Berkes,2000; Inglis, 1993; Martin, 2010; Sujarwo, 2016). Although this definition can vary, including spiritual and cultural aspects of TEK (Ramos, 2018). Usher et al (2000) defines the four foundational constituents of TEK as (1) knowledge about the environment, (2) knowledge about using the environment, (3) environmental values, and (4) a basic knowledge system. TEK is also referred to as indigenous knowledge, and local knowledge, and aboriginal knowledge; however, the aforementioned terms do not always concern natural, ecological systems (Usher, 2000).Other literature in the field more specifically describes TEK as including culturally specific knowledge about local environments such as names local of

taxa, ecological processes (Gomez-Baggethun, 2013), ethnobotanical and medicinal knowledge of plants and fungi (Aswani, 2018), adaptive crop-management practices, conservation of crop-diversity (Gomez-Baggethun, 2013), effective natural resource management, species management, landscape management (Berkes, 2000).

TEK is often attributed to be a vastly different worldview than that of Western Conventional science. TEK is not always linked to aboriginal or indigenous peoples; however, these groups are far more likely to hold TEK than those with Westernized knowledge systems (Usher, 2000). A sub-set of research pertaining to TEK focuses heavily on this dichotomy. In this lineage of research, TEK is highlighted as knowledge acquisition which relies on long-lasting relationships between people and their natural environment (Aswani, 2018) and finds humans as inherently imbedded into natural systems (Martin, 2010; Pretty, 2011). Conversely, Western Scientific paradigms are defined as reductionist (Martin,2010; Ramos, 2018) and tend to separate humans from their natural environments (Berkes, 2000; Inglis, 1993; Martin, 2010). Although this dichotomy is well-established, the differentiation between these types of knowledge systems led to discussions surrounding which system is superior to the other (Petty, 2011). Many researchers argue that integration of these two points of view is important (Martin, 2010), while cautioning that the integration of these two different points of view can play into unequal political power between those who have acquired knowledge through TEK and those who have acquired knowledge through Western Science (Martin, 2010; Ramos, 2018). In a different vein, research documents emerging similarities between the two systems such as nonlinear systems thinking (Martin, 2010) and holistic approaches to problem solving (Berkes,

2000). The latter conversation is also often accredited with facilitating more effective and progressive environmental policies (Usher, 2000).

Loss of TEK

Just as TEK and Western Scientific knowledge are beginning to interact in political and environmental policy schemes, conservationists, ecologists, and anthropologists have begun to fear the degradation of communities' traditional knowledge systems (Bussmann, 2018). The loss of TEK can be attributed to many different factors such as social, environmental and cultural changes (Aswani, 2018). Communities shifting away from land-based livelihood strategies can lose traditional knowledge because people no longer rely on environmental information for their livelihoods, and no longer interact intimately with their environment daily (Pieroni, 2005). A study performed by Bruyer et al, (2016) found that young men attending formal schooling both identified and provided facts about local botanicals at a lower frequency than young male herders, who interact with ecological systems daily. This small sample is a demonstration of the loss of TEK due to the rise in standardized education (Aswani, 2018; Bruyer, 2016; Reyes-Garcia, 2010). Other factors which contribute to the global loss of TEK are identified as rapid changes in social and economic values including the perceived "need" for ecosystem knowledge from younger generations (Bruyer, 2016; Pilgrim, 2008), globalization of Western knowledge systems (Pilgrim, 2008), reduced reliance on land-based livelihoods (Cucinotta, 2018) and the industrialization of agricultural production (Thrupp, 2000). With this wave of concern on the forefront of conversations regarding TEK, much of the research is focused on preserving and documenting knowledge and use of medicinal plants (Voeks, 2004), wild edible plants and fungi (Pieroni, 2005), environmental processes (Pilgrim, 2008) and

ecosystem functions (Berkes, 2000). Capturing and documenting TEK can also be difficult using Western research methods as TEK differs from place to place, (Usher, 2000) and consistent methodologies for documenting this type of information have not been established (Bussmann, 2018).

TEK and Conservation

TEK is often cited as a sustainable and legitimate basis for ecological and biodiversity conservation (Bruyere, 2016; Chipeniuk, 1998; Berkes, 2000; Ramos, 2018; Sujarwo, 2016). Although not all TEK represents perfect conservation strategies (Berkes, 2000;) and can have heavy impacts on populations of local taxa (ibid), cultures that use TEK management practices can manipulate the environment to produce desirable natural resources (Martin, 2010) with care (Pilgrim, 2008). The presence of Western science in traditional communities can perpetuate complex and colonial power dynamics (Bohensky, 2011; Ramos, 2018). It is imperative to note that these power dynamics are rooted in historical political and ethical inequalities which have suppressed Indigenous communities, most of whom hold rich reservoirs of TEK (Ramos, 2018). The title TEK is an example of this power dynamic, as some researchers and indigenous peoples prefer the term indigenous knowledge, because “traditional” was historically noted as a term relating to savage, rudimentary peoples (Berkes, 2000). However, TEK is now an established term, which has become popular the world of policy and research today (ibid). In situations where TEKs and Western conventional science exist extraction of TEK in order to further Western research rather than equal integration of both systems is possible and can be considered exploitation of TEK practicing communities (Ramos, 2018; Raymond, 2010). For this reason, many researchers have proposed possible ways of integration such as

sharing knowledge between key stakeholders and scientists (Raymond, 2010) incorporating adaptive co-management of resources (Armitage, 2009), long-term collaboration of ideas (Bohensky, 2011) and awareness of philosophical and epistemological differences between cultures (Athayde, 2016) as steps towards ethical collaboration. Despite implementation of culturally sensitive and multi-disciplinary research, it is difficult to conclude the most effective and appropriate way in which to incorporate TEK into formal conservation schemes.

Wild edible plants and fungi

Economics

While some communities appreciate the non-material values of wild edible plants and fungi, research based on assessing how wild edible plants and fungi fit into economic structures is common. Without strong traditional values intact to conserve or use wild edible plants responsibly, Berkes et al, 2000 argues that the acknowledging the economic benefits and potential of wild edible plants and fungi is necessary for their conservation as well as for their sustainable use. In most cases economic value of wild edible plants and fungi is quantified by assessing how people use the plants and fungi they collect. Economic importance of wild edible plants differs from setting to setting (de Merode, 2004; Hickey, 2016). Wild edible plants and fungi tend to be important in both subsistence economies (where people devote their time and resources to procuring/producing food), cash-based economy (when households specialize in activities which will yield most monetary return) (Bletcher, 2005) and gift economies (Sylvester, 2016). Monetary values of wild foods can be measured by the amount of money saved when a person collects/consumes wild foods

in lieu of purchasing food, as well in hypothetical payment theories where the time it takes to gather plants and fungi is assessed as if gatherers were earning an hourly wage (Hickey, 2016). Therefore, it is impossible to deduce a consistent economic value of wild edible plants and fungi, as it depends greatly on setting, access, and socio-economic status and markets (Hickey, 2016).For marginalized peoples, such as women and children (Powell, 2015), elderly (Paumgarten, 2018), and those suffering from disease (Paumgarten, 2018), collection of wild edible plants and fungi are consistently economically important. However, some argue there is a potential for the economic value of wild foods to become a farce due to the exaggeration of their economic value (Hickey, 2016) and the lack of limited access to these resources for some populations (Paumgarten, 2018).

In gift-based economies, wild edible plants and fungi are shared among community members, complicating the ways in which research quantifies their economic impact. However, a study done by Sylvester, 2016 suggests those who are not able to collect food (ill, elder, handicap) participate in these sharing communities, and therefore glean a monetary benefit by saving money and time not collecting or purchasing food. The sharing network also suggest potential of wild foods to navigate times of economic scarcity (Sylvester, 2016). However, the overall economic impact and dependence of households on wild edible plants and fungi tends to vary seasonally, increasing or decreasing based on cultivated crop yields and access to market-based food sources (de Merode. 2004). The importance of economics in conjunction with wild edible plant and fungi collection is also variant, as these impacts are more important for some communities during times of famine or food insecurity, allowing foragers to fill gaps in their diets with plants they forage (Sylvester, 2016).

The variability of economic status across regions and countries influence the change in use, and importance of economic value of wild edible plants and fungi (Kalle, 2016). Socio-economic status often plays a role in who uses wild edible plants and fungi as a resource. In developing nations, increasing monetary status allows people to purchase processes foods, rather than rely on their TEK to gather "free" foods (Pieroni, 2005). Wild edible plants and fungi are collected and sold domestically to generate additional household income, generally in households with low socio-economic status (Kalle, 2016). In developed nations, it is often assumed that recreation collectors of these resources have no concern with their economic value (Kalle, 20167). However, in some regions in Italy, a considerably rich nation, local businesses make money selling wild edible plants to high-end restaurants (Peroni, 2005).

Culture and Tradition

While many communities are gaining access to processed and prepared foods, collecting wild edible plants and fungi continues to be an important part of cultural identity, ideals, values (Aworh, 2018; Pieroni, 2005; Sujarwo, 2016; Sylvester, 2016,) and rituals (Farfan-Heredia, 2018). Wild edible plants are often consumed in communities due to traditional social structures which value sharing wild edible plants and fungi with neighbors (Sylvester, 2016). The collection and consumption of wild edible plants and fungi helps maintain cultural traditions and create bonds cross-generationally by way of information sharing, usually from elders to younger people (Batal, 2007). In this way, the collection of wild edible plants and fungi perpetuates traditions for cultures who use these resources. Wild plants are an also an essential part of traditional cuisine (ibid). Current ethnobotanical studies suggest that cultures who use traditional wild edible plants and fungi

prefer the aroma, as well as the flavor to those of cultivated crops (Batal, 2007; Kalle, 2016; Thakur, 2017; Serrasolses, 2016; Sylvester, 2016). In conjunction with the consumption of wild edible plants and fungi, foraging practices are often important for maintain cultural identity of people living in in their ecosystem of origin, as well as those living abroad (Pieroni, 2005; McLain, 2014). For those displaced from their culture as well as familiar ecosystems, gathering wild edible plants and fungi is a means of accessing culturally appropriate food (Poe, 2013). In communities with noticeable declining use of wild edible plants and fungi, socio-cultural motivations are most often associated with motivations behind continuing to gather these culinary ingredients (Thakur, 2017). Collection of wild plants and fungi has also been documented as being important for cultural recreational activities (Schulp, 2014; Soukand, 2016) and is often associated with the pleasure of interacting with nature (Schulp, 2014). Moving into more nuanced definitions of culture, some research suggests that there are spiritual associations with the collection and consumption of wild edible plants and fungi (Soukand, 2016; Sylvester, 2016).

Food systems and Nutrition

Food systems, alongside TEK, are social-ecological systems which include gathering and consumption of wild edible plants and fungi (Allen, 2014). In this perspective wild edible plants and fungi are closely connected with agricultural systems (Bharucha, 2010), as this alternative food source is commonly found growing between and surrounding agricultural fields (Bharucha, 2010; Sylvester, 2016; Tardio, 2005). In some traditional agricultural practices wild edible plants and fungi have been intentionally managed to occupy the space on the outskirts or in between agricultural fields (Powell, 2015). This phenomenon is often referred to as the hidden harvest (Grivetti, 2000). Some

research also focuses how wild edible plants and fungi increases biodiversity in agricultural systems (Shelef, 2017; Thrupp, 2000) as well as the disease and pest resistant nature of wild edible plants and fungi thanks to their genetic diversity (Bacchetta, 2016; Flyman, 2006).Literature supporting this claim also suggests that biodiversity within food systems is important for maintaining local food sources during multiple seasons (Powell. 2015). This form of local biodiversity plays a role in increasing agricultural production and resistance, suggesting that the cohabitation of wild edible plants and fungi and agricultural crops would increase food access for even the most vulnerable groups (N'Danikou, 2017). Although industrialized agriculture has severely compromised the health and biodiversity of the food systems (Thrupp, 2000, Allen, 2014) and risks the in availability of wild edible plants and fungi (Bharucha, 2010; Sylvester, 2016).

The FAO (Food and Agricultural Organization of the EU) states that nutrition and biodiversity both "converge to a common path" leading to food security and acknowledge that wild species play a large role in global nutrition (FAO, 2010). Agreeing with this statement, researchers argue that the diversity of both wild and cultivated crops contributes to landscape diversity and is considered an important for achieving nutritional diversity (Batal, 2007). Diversity of wild plant and fungi sources also suggests that their consumption can improve food security (Aworh, 2018; Delvaux, 2018;Tardio, 2005; Soukand, 2016), diet diversity (Aworh, 2018; Batal, 2007; Belanger, 2008) and provide consumers with nutritional benefits (Bacchetta, 2016; Soukand, 2016; Sujarwo, 2016) such as higher concentrations of micronutrients (Allen, 2014; Bharucha, 2010; Powell, 2015). Harvesting these wild specimens represents an important food source for households and

individuals who face food scarcity (Sylvester, 2016) during periods of low agricultural yields (N'Danikou, 2017).

In recent centuries, about 12 plant species have come to makeup around 80% of the human diet (Grivetti, 2000). This agricultural trend has led groups to abandon traditional wild edible plants and fungi as a main food source, and caused diet simplification (Grivetti, 2000). Conversely, some research has documented the validity of incorporating or maintaining use of wild edible plants and fungi to ameliorate dietary simplification (Bharucha, 2010). However, communities who have historically collected and consumed wild edible plants and fungi, are undergoing the "nutrition transition", gaining access to processed foods that replace traditional wild edible plants and fungi (Sylvester, 2016). In a different strain of research which pertains to the nutritional values of wild edible plants and fungi describes the difficult nature of deducing the actual versus the perceived contribution of wild edible plants and fungi to human nutrition. Wild edible plants and fungi's impact on diet is influenced by availability, frequency of use, and quantity of use (Powell, 2015). There is also limited empirical evidence on nutritional constituents of wild edible plants and fungi (Powell, 2015). Understanding the nutritional and dietary value of local wild edible plants and fungi is also difficult because it is not standardized in nature and corresponds will individual reports on food constituent data (Nesbitt, 2010). The documentation of species' dietary intake, energy, and micronutrient constituents are notably sparse (Grivetti, 2000). Research in the field of nutrition also suggests that micronutrient density and bioavailability of many wild edible plants is affected by how a plant is cooked (Flyman, 2006), adding yet another complication to the quantification of nutrients in wild plant sources. Literature in this field often limits the nutritional value of

wild edible plants and fungi suggesting that broad statements about nutritional values could be inaccurate and suggest that wild edible plants and fungi are not a calorically dense food source and can only be appreciated for their micronutrient properties (Powell, 2015).

Conservation

The relationship between conservation and the collection of wild edible plants and fungi is complex both on global and local scales. Conservation can conflict with communities who rely on wild edible plants and fungi as a major source of nutrition, as policy can restrict local population's access to nearby reservoirs of resources (Broegaard, 2017). Furthermore, there is a connection between biodiversity conservation and foraging as the presence of wild edible plants and fungi enhances ecological systems (Thrupp, 2000). Bharucha (2010) notes that some of the world's biodiversity and thus conservation hotspots experience the most pressure for wild edible plants and fungi to provide food. In this case, efforts to conserve as well as use wild edible plants and fungi as a natural resource collide. However, some researchers argue that conservation methods are employed by individual cultures and communities as Soukand et al (2016) notes that some foragers have decreased their use wild edible plants in order to conserve culturally important species. In a study carried out by Farfan-Heredia (2018) in Mexico management intensity of wild edible plants and fungi was most careful when plants and fungi require high amounts of energy and effort to collect. Therefore, the conservation management practices of wild species depend on both the species being collected, culture and the intention of the forager (Farfan-Heredia, 2018).

Some researchers fear that engaging with wild edible plants and fungi through collection and consumption perpetuates anthropocentric impacts on ecological systems in a negative way (de Merode, 2004; McLain, 2011). Conversely, existing local or traditional practices often establish systems of foraging which sustainably steward natural resources and ecosystems (Berkes, 2000). Many modern wildcrafters and foragers (people who partake in the collection of wild edible plants and fungi) believe that sustainable foraging is not only possible but could be essential to ecological restoration and combating invasive species (McLain, 2011). Modern forest management entities feel pressured, and uncertain about the rising trend in collecting non-timber forest products (of which includes wild edible plants and fungi) (Vaughan, 2013). However, this fear may be attributed to the lack of shared knowledge between conservation entities and foragers (Vaughan, 2013).

Although there are conflicting opinions about foraging and conservation, the demand for wild edible plants and fungi as encouraged some conservationists and policy makers to begin to adapt to foraging behaviors (McLain, 2014). However, creating policy which intentionally conserves wild edible plants and fungi can be difficult due to the localized nature of which species and how species should be conserved (Bata, 2007). Conservation can also conflict with harvesting for selling in the marketplace as it can limits forager's access to wild edible plants and fungi (Sylvester, 2016). Commercialization provokes heavy harvesting of wild edible plants and fungi and can lead to domestication of species, as well as unsustainable practices (Bharucha, 2010; Powell, 2015). Overharvesting practices which conflict with conservation are also attributed to lack of data on what constitutes a sustainable harvest, and lack of effective conservation management of wild edible plants and fungi (Bharucha, 2010).

Wildcrafting Today

Historical Account of Foraging in North America

Approximately 1800 native species of wild edible plants and fungi were collected and consumed by Indigenous peoples of North America before the arrival of European settlers (Turner, 2012). Their skillful harvesting and land-management techniques allowed them to maintain wild populations of desirable edible plant and fungi species, and pass knowledge onto European descendants (Turner, 2012). Although Indigenous peoples relied on some cultivated crops, wild edible plants and fungi maintained stable in their diets (VanDerwarker, 2013) until recent years (Phillips, 2014). While some of native species are still foraged today, many are no longer used by indigenous peoples for their nutritional and cultural importance (Turner, 2012) due to the impacts of colonization (Phillips, 2014). The dynamic between perception and attitudes towards Indigenous food-gathering practices are rooted in problematic race relations. Historical perceptions of Indigenous wild food consumption were harsh. In North America, until recent years, many viewed the collection of wild foods to be primitive (Turner, 2012), unnecessary, or a sign of food and economic instability (Sachdeva, 2018). While some of these perceptions are still relevant in modern-times, there are also shifting perceptions of foraging in the United States. Many people find that Moving into the modern era social perception of foraging in the United States has also began to change and foraging is now more closely tied with luxury and recreational activities (Sachdeva,2018).

The Complexities of Wildcrafting

Resurging Interest

As gathering wild edible plants and fungi has become a modern-practice, the definition of wildcrafters or foragers has been defined as people who harvest wild forest products for recreational, subsistence, cultural, or economic benefit (Vaughn, 2013). Foragers and wildcrafters were once synonymous with indigenous peoples (Turner, 2012) or those who lived removed from large metropolitan areas. McLain (2014) notes that nowadays wildcrafters in both the global north and south span a wide range of demographics. People of all ages, genders and socioeconomic statuses are participating in the harvest of non-timber forest products (most of which include wild edible plants and fungi) (Gianotti, 2018; Robbins, 2008). Trends in literature pertaining to modern foraging focuses on the practice of urban foraging in multiple cities in the United States as well as Europe, Africa, South America and Asia. There has been little research done on populations who have experienced modern, rural foraging practices. This gap tends to be linked to geography, with information about Europe and the America's focused on more urban ecosystems. Urban foraging is more specifically described as the collection or harvest of natural resources in urban, or peri urban settings (McLain, 2014; Shackleton, 2017). Foragers in urban spaces collect plant and fungi material from a multitude of urban green spaces including parks, yards (Charnley, 2018; Mollee, 2017) nature reserves, connecting greenways (McLain, 2014), institutional campuses, and vacant lots (Shackleton, 2017). Many people share concerns about the effects of polluted areas on species, and refrain from collecting plants in places with perceived high levels of pollution (Charnley, 2018; Mollee, 2017). With this in mind, acknowledgement of urban foraging in the United States, is limited and the importance of gathering wild edible plants and fungi

in urban green spaces is often left unconsidered in city planning schemes (McLain, 2014, Mollee, 2017). Due to concerns about anthropocentric impacts on wild plant and fungi populations, wild food harvesting is often prohibited in many land-management schemes in the United States and Europe (Landor-Yamagata, 2018; McLain, 2014; Petersen, 2012; Sachdeva, 2018;). Much of the literature surrounding Urban Foraging notes that it is a common, and every-day activity (Landor-Yamagata, 2018, Shackelton, 2017) which plays a part in shifting power dynamics between humans and nature, allowing humans to become a part of their natural systems (McLain, 2014) and reestablish human-nature interactions which produce social and ecological benefits (Poe 2013).

The strong regeneration of foraging for wild edible plants and fungi can be attributed to an increase in workshops and seminars as well as an increased public awareness of the health benefits of wild local species (Landor-Yamagata, 2018; Luczaj, 2012) and the perceived positive impact of gathering food for human well-being (Shackelton, 2017). Other commonly cited motivations for the collection of wild species in urban landscapes are food for subsistence, medicinal preparations (Schunko, 2010; Mollee, 2017), culinary exploration and personal enjoyment or recreation (Poe, 2013) and food sovereignty (Poe, 2018; Sachdeva, 2018), most of which are common motivations for more traditional, non-urban wildcrafters as well. The resurgence of collecting wild edible foods in some places is also driven by changes in knowledge transmission. For example, increased use of guide books rather than elders and social connections is becoming more common (Luczaj, 2012). Egebjerg (2018) notes that there has been an increase in including wild well cookbooks as well as the focus of some food and nature tours. Menendez- Baceta

(2017) noted that in some cases, the ways in which people learn about wild edible plants and foraging can also change the ways in which plants are used.

Methodology

This research project sought to understand the complexities of wildcrafting as a social-ecological system. This exploration led me to identify three key questions:

(1) How does wildcrafting act as a social-ecological system?

(2) How Do TEK and WS interact to inform learning modalities and create learning processes for wildcrafters?

(3) How does the relationship between learning process, motivation, and practices weave together to address the conversation surrounding conservation?

The methodology which drives my research is qualitative semi-structured interviewing, defined by Jamshed, (2014) as "in-depth interviews where respondents have to answer a series of open-ended questions." Qualitative semi-structured interviews were used to gather information from 10 participants about their experience wildcrafting. Semi-structured interviewing is cited as being best for collecting individual narratives on an experience (Davies, 2014). Therefore, participants were encouraged to share narratives about personal experiences and perspectives related to collecting wild plants and fungi. Interviews were conducted in-person, or on skype if participants were not available to meet. I collected interviewee responses using a small audio recording device. Prior to recording the interview, I asked each participant for their explicit consent in answering my questions and being recorded. Participants were also always free to deny recording or responding to

any and all questions. The purpose of the study was also described to each participant prior to the interview. A foundational interview guide was used to establish continuity among interview topics. The interviews were then based on the six foundational questions found in the guide. These questions looked to address learning processes, harvesting practices and harvesting motivations (see appendix D for detailed questionnaire).

Moreover, the aim of using this open-ended style nature was to allow participants space to express ideas and responses freely. Using semi-structured interviewing techniques allowed me to understand and record the various ways in which participants have gathered knowledge on how to wildcraft in Vermont. The goal of this method is to present themes and topics clearly by guiding interviews efficiently (Jamshed, 2014).

Participants were selected using two different processes, both based on convenience sampling methodology (Davies, 2014). The first selection was based on my previously established connections in community herbalism in the Burlington area. I was aware that wildcrafting for medicinal plants is a common practice, therefore; I reached out to herbalists to solicit their participation. I then employed the snowball sampling technique and asked participants if they knew of any other wildcrafters in the area who would be interested in speaking with me (Ibid). From there, I recruited my second round of interviewees. The second participant recruitment technique was based on internet searches for “foraging classes in VT’ or “wildcrafting classes in VT”. Through these searches, I was able to contact several participants who had advertised classes or instructional courses. I contacted all potential interviewees via email to set up interview times (appendix B).

In seeking out participants, I did not limit my selection based on their demographic or background. Rather, I aimed for a voluntary, small-sample of engaged and interested participants. While a number of participants were contacted, ten people agreed to be involved in this project. Given that I was unable to generate random sample of participants, my data may not be easily generalized to include other groups of wildcrafters. It is also pertinent to remember that I'd had previous relationships with some of my participants. I recognize that this might have influenced interviewees explanations; however, it created a comfortable, candid environment in which interviews took place. The sampling bias evident in this research is rooted in my previous involvement in community-based herbalism. Consequently, several of the participants of this project also have an herbalism background. However, I acknowledge the possible limitations of this study by employing a number of antidotes to counteract any discrepancies. The use of audio recordings, and transcriptions ensured an accurate recount of participant experiences. I used a inductive analysis approach, as well as grounded theory to systematically create universal themes reinforcing my goal to present unbiased analysis.

Analysis

The data collected from semi-structured, qualitative interviews was analyzed using coding techniques. I first transcribed interviews into NVivo, a qualitative research software. From there, I created a guidebook (see appendix A) detailing the specific themes I searched for within my participant's responses. The guidebook is split into three sections (learning modalities, harvesting considerations and motivations). From there, sub-categories were created as new themes and trends emerged from each interview. I used the framework of inductive analysis as well as grounded theory to guide my synthesis of

important information. Inductive analysis is pertinent to analyzing qualitative research. Inductive analysis is the "examination of topics and themes, as well as the inferences drawn from them, in the data" (Zhang, 2005). Therefore, as themes emerge from participant interviews, coding categories will be added, and modified to best fit the actual overarching themes present across participant experiences. The first is conventional qualitative content analysis, in which coding categories are derived directly and inductively from the raw data (Zhang, 2005). This is the approach used for grounded theory development and is useful in creating theories based on raw data.

Results

The results of this study reflect the complexity of wildcrafting within social-ecological system. The data recorded and analyzed highlights the importance of wildcrafters' (1) learning, (2) motivations, and (3) practices. These categories serve to break-down the complexities of wildcrafting, and eventually enable me to explore the ways in which wildcrafting relates to conservation. In this section, I highlight the most salient findings across participant interviews.

Learning

Learning modalities informed by both Traditional Ecological Knowledge (TEK) and Western Science (WS) were important for wildcrafters in this study. To prompt conversations pertaining to knowledge systems I asked two consecutive questions: (1) "when did you start wildcrafting and how did you begin to learn" and (2) "what tools or people are paramount to how you learn about wildcrafting".

Learning Modality	***Number of wildcrafters***	***Frequency***
WS		
Books	*10*	*15*
Institution or Degree	*4*	*6*
Web	*3*	*3*
TEK		
Experience	*8*	*23*
Friendship	*6*	*14*
Intuition	*5*	*8*
Mentorship	*6*	*14*
MIXED		
Community Learning	*5*	*7*
Mixed-Modality	*8*	*9*

Motivation	***Number of Wildcrafters***	***Frequency***
Economic	*4*	*4*
Culinary	*3*	*5*
Community- Building	*6*	*14*
Human-Nature Contact	*9*	*23*

`Joy	*7*	*16*
Medicinal	*8*	*17*
Spiritual	*9*	*21*

Harvesting Practices	***Number of Wildcrafters***	***Frequency***
Abundance	*10*	*32*
Ecosystem Assessment	*10*	*28*
Intention	*9*	*27*
Mindfulness	*6*	*11*
Natural World Communication	*6*	*25*
Specific Consideration	*7*	*19*
Weather Patterns	*6*	*9*

Table 1: The number of responses including themes and frequency of themes (cited across interviews)

Traditional Ecological Knowledge (TEK)

Experience

The most commonly cited TEK sub-category was “experience”. Experience was cited across eight interviews and referenced 23 times. Experience is defined as when participants cited trial and error, or continuous interaction with the environment as a way

of learning how to wildcraft. Kelly cited experiential learning when she said that she would explore local ecosystems in order to "get to know" plants and fungi. Pete noted that trial and error was a pivotal part of learning. He stated that "[he] still made a ton of mistakes when [he] was first starting out." Tom explained a similar sentiment, as he noted that at the beginning of his experience, he first cut mushrooms and through time noticed that this was not a sustainable practice. Kelly expressed that she valued experiential learning. She noted that even after researching wildcrafting topics online she needed to wildcraft in order to solidify practices and techniques. As Kelly demonstrates in the quote above, experience was informative and valuable to learning processes of participants.

Book Learning

The most commonly cited WS category was "books". The category "books" was classified under WS, because they are considered a pragmatic, and non-traditional approach to learning about how to wildcraft. Learning from books was mentioned 15 times across all ten interviews. Most people found books to be an important resource. Kelly started out by "buying some guides" in order to get to know the wild edible plants and fungi visibly before entering the field. Although all participants have used books to help them learn, there were several participants who noted the pitfalls of consulting books. Tom noted that "when you start accessing" books it is possible to come across contradictory information. Nick said that books held a limited place in learning when he said, "books are great, but they are not the end all be all." Brit expressed that she tried to use edible plant guides but "there is just something that doesn't ignite [her] heart to use a guide." Regardless of possible qualms with books, I note that he ubiquitous nature of book-using demonstrates an important finding.

The Complexities of Wildcrafting

Multi-Methods

After analyzing the data, two themes which spoke to the complexity of TEK and WS emerged: *mixed-modalities,* and *community learning*. These two codes were somewhat exempt from the dichotomy of TEK and WS because they straddled both knowledge systems.

Mixed-modalities

Learning through multiple modalities was valued among participants. From this observation, a new code emerged, which I titled "mixed-modalities". Participant responses were coded as mixed-modalities when they expressed that one way of learning could not holistically inform wildcrafting. While experience and books were the two most frequently mentioned categories most participants described the more nuanced ways in which they learned. Nick described that "a book alone is definitely not enough. You definitely have to see it [fungi] in the ground, consult with an expert." In a similar way, Tom valued the knowledge that came from experienced practitioners when he stated that he "realized [he] needed someone who was actually doing this (wildcrafting) in their life or it is a part of their life" to understand and experience things that he "can't read in a book." In a different way, Colin expressed that mentorship can be rooted in experience as well, as he expressed that when he first began learning he had indirect mentors. These people encouraged him to employ experiential learning by participating in wildcrafting, even if he did not know as much as they knew. Erin mapped out his journey through multiple ways of learning when he stated that he "went out and bought books" and then "started really learning how to do keys to identify mushrooms." After beginning his initial journey, Erin took a formal

mycology course, which demonstrates deepening of academic knowledge. At the same time Erin noted that he began noticing more and more plants in the forest, and with experience began to learn about a wider variety of specimens. Here, Erin's journey shows that he employed multiple methods of learning as he continues to master wildcrafting. The themes present in his experience demonstrates the mixture of institution, books, and experience in one participant's practice.

Community Learning

Community learning is practiced when participants learn from workshops, apprenticeships, conferences, and group-meetings with community members who share similar interests. This term is specifically defined as the exchange of information through gatherings of wildcrafters with differing perspectives and backgrounds. Here, people with either/or TEK and WS systems can come together and share information through relational exchanges. This category was present in five interviews and alluded to six times across interviews. Those who expressed importance in community learning. Tom demonstrated community learning when he said that he goes to "conferences which act as intensives" so that he can experience multiple perspectives.

Motivations

In order to deduce participants' motivations, I asked "why do you continue to collect wild edible plants and fungi." Participants expressed three main motivations for continuing to collect wild plants and fungi: (1) human-nature contact, (2) spirituality, and (3) medicinal benefits.

The Complexities of Wildcrafting

Human-Nature Contact

For the purpose of this study, human-nature contact is defined as when participants value their connection to the environment or land around them. This code was cited in nine interviews and was mentioned 23 times across interviews. Terry said that his motivation for collecting wild edible plants and fungi was established by "living close to the earth, as an indigenous person," and that he is "more aware of the plant and animal life" when he wildcrafts. Pete said that he enjoys feeling "connected to [his] place by wildcrafting" For Tim, the human-nature contact he seeks extends past local ecosystems. "Even when [he] travels, it is nice to find some commonality" across ecosystems or engage in a "closer awareness" of local ecology. These two quotations demonstrate the importance of interacting with nature to each participant. While Terry is rooted in indigenous identity and Pete is rooted in finding sense of place through his relationship with wildcrafting.

Spirituality

Spirituality was coded when participants mentioned using plants for ritual or ceremony, as well as when participants cited communicative or personified elements of nature as being paramount in connecting to their experience. This theme presented itself in eight interviews 20 times across these interviews Out of the eight participants who connected to the spirituality of wild harvesting Mika, Brit, Colin, and Tom all explicitly cited their motivations as "spiritual" in nature, while the other participants simply described the communicative and personified properties of plants they interact with while harvesting. While recounting a story about looking for native nightshades of Vermont, Colin noted that wildcrafting often restores his "faith that the natural world is communicative. And when

you look at the natural world as having ensoulment and agency and being communicative it changes your whole perspective of everything you know." This quotation is considered a spiritual motivation because it demonstrates the personification and higher communicative powers of the natural world, and Colin's intentions to reconnect with these elements when he harvests. Brit noted that she created a "beautiful ritual" by getting up early and going wildcrafting near her home. She also noted that she wildcrafting is tapping into "life force" and working to "wild harvest of plant medicine" keeps her engaged and excited about the world around her.

Medicinal

Medicinal use was cited when participants used wild edible plants and fungi for medicinal or health-related reasons. This code was present across eight interviews and was mentioned 17 different times across interviews. When Nova began wildcrafting she "was always looking to know the edible and medicinal" functions of the plant to support her personal health. Nova's motivations express that medicinal properties of wild edible plants and fungi include nutrition. She is like many of the other wildcrafters who mentioned that the healthful properties of wild edible plants and fungi were part of a foundational theory; food is also medicine. Brit noted that prefers not to "break up" food and medicine, because they can become synonymous. Mika said that collecting plants and fungi is fueled by her desire to "eat good food" which refers to her desire to be nourished by food. While Terry "really started wildcrafting so [he] could find herbs for my family to help take care of them." Here, both participants use wildcrafted goods to support their health and well-being.

Harvesting Practices

Harvesting practices are an important constituent of this research, as they demonstrate participants actions in the field. I asked participants "when you go out to wildcraft or wild harvest, are there any rules or considerations you follow?" Participant responses varied, with several themes, which I've organized from most cited to least cited, emergent from the data: (1) abundance (2) ecosystem assessment (3) intention and (4) natural world relationship.

Abundance

The most commonly cited consideration was "abundance" , which was defined as when participants included information such as considering how much of a plant or fungi population is found, if the majority of the population seems healthy, if the plant is considered rare, and or if the specimen's population is isolated. Abundance was cited 31 different times across all ten participant interviews. When speaking about abundance, participants often focused on the amount of plant present in front of them. Nick demonstrated a consideration of abundance when he said; "my general rule of thumb is to never pick more than half of a patch. I often pick much less than that but often there is a limit." Brit had a very similar approach as she stated that she is "mindful" of plant and fungi populations. Like many participants, Brit did not take more than $1/4^{th}$ of the plant population present and is "conscious" of sticking to this rule.

Abundance was also considered in terms of larger ecological systems. Mika described her philosophy on the abundance of plants when she stated that she tries to harvest plants that were "excessive or invasive" in local ecology. If a plant or fungi is

common in Vermont, Erin said he wouldn't be "concerned" with the amount he harvested because the risk of impacting the population is low. Some participants noted the invasive or native status of specimens. Pete considered invasive plants to be less delicate, stating that "in the case of invasive plants" aggressively harvesting large quantities is acceptable. Statements about abundance demonstrated forward-thinking. Many participants noted that indications of impact from other wildcrafters or animals among given plant populations would influence their decision to harvest. Kelly said that she considered "who else was here before [her] and who else will come here after [her]". Locations where there are more people Nick noted that "you might pick half and then the next guy comes along and picks half and then the next day, there can be a tragedy of the commons." Les and Nova noted that before they notice if other plants or animals have already been there. If so, then they would refrain from wildcrafting. Therefore, whilst there was variation amongst participants in how they considered abundance, each participant expressed that the abundance of a plant population would inform their harvesting practices in some way.

Ecosystem Assessment

Ecosystem assessment was defined as the consideration of what plants or fungi might be found based on ecosystem characteristics. The category also encompassed considerations pertaining to the health of the ecosystem. Ecosystem assessment was present in all 10 of the participant interviews conducted and was cited 29 times. Many participants included information and concerns about pollution and contamination of land. For example, Pete said that he wouldn't harvest along roadsides "because there is a lot of runoff." Which causes plants to pick up "heavy metals". Kelly said that she also avoided "anything near roadsides" or "near traffic". Tom noted that as a wildcrafter he has learned

to “make sure that [plants and fungi] are healthy,” adding that he considered the risk of pollutants and toxins before harvesting. This type of concern demonstrated the keen awareness of pollution and human impact on the part of the wildcrafter.

Ecosystem assessment also demonstrates that participants considered the composition of an ecosystem before deciding where to wildcraft. This observation allowed participants to understand what plants or fungi could be found. Terry noted that when he was looking for a Hemlock tree with a friend, he knew if a place was the “wrong habitat” for Hemlocks due to indicators such as “white pines” and “sandy soil”. According to Terry, these two ecosystem characteristics let him know that Hemlock trees would not be growing nearby. Les and Nova also noted that understanding an ecosystem in depth is an important harvesting consideration. Nova stated that “if you know your trees” you will, by default, know where other desirable species can be found. Here, the ecosystem assessment addresses ecosystem composition rather than the aforementioned ecosystem pollution assessment.

Specific Consideration

Specific consideration is considered a subset of ecosystem assessment and or abundance. This category emphasizes species-specific wildcrafting techniques, while taking into account things like overall plant abundance and plant health. This category was cited in seven interviews 19 times. In some cases, this means that participants considered the unique qualities of a species as well as the color, size, shape or overall appearance of a specimen. In other cases, this means that participants understand how different species need to be harvested in order to obtain the most desirable specimens in the most sustainable

way. Mika described species consideration when she stated that harvesting techniques are "completely dependent on what [she] is gathering." She further noted that this knowledge, for her is often based in "science".

Weather Patterns

Weather patterns is defined as the observation of weather and climate. This term was cited across six interviews a total of nine times. Weather pattern observation allows participants to understand how or what will be ready to harvest. Les and Nova demonstrated this idea because they track patterns of climate in the state of Vermont in order to document the long-term cycles of plants based on weather and climate. This demonstrates the employment of phenological observations as well as the significance of long-term observation in determining weather patterns and climate.

Intention

Intention categorizes how participants decided what to harvest. Most commonly, participants of this study expressed fluidity between both premeditated and opportunistic harvesting. Intention was mentioned across nine interviews a total of 27 times. Intention was demonstrated by Kelly, when she spoke of balancing what she would like to harvest and what is available. She stated that sometimes she practices "erratic harvesting of everything and anything" (opportunistic) while other times goes into the forest looking for something specific (premeditated). In this way, Kelly demonstrates that it is common to be fluid with intentionality. Less frequently harvesters were very focused on premeditated intention. However, wildcrafters such as Nick were straightforward as his "approach" is to definitively "go out with an intention." In terms of intentionality participants expressed

varying interpretations of intentionality. More importantly, the data demonstrates that most participants have a practice of intentionality.

Natural world Relationship

Sense of place

Natural world relationship was coded when participants explain that their existing or emerging relationship with nature, land, or plants help them decide what, when, and where to harvest. These relationships are often built on a strong sense of place. Meaning that wildcrafters visit the same spots frequently which creates their relationship with nature. Nine out of ten participants expressed natural world relationship as a harvesting consideration. This theme was coded 36 times across all nine interviews. Colin expressed his relationship with nature when he stated that in Vermont, he has worked “intimately” with “land and in the forest”. This experience connects him to “both place and plant”. This relationship then allowed Colin Les and Les succinctly described the process of creating a relationship with the natural world as they described the importance of revisiting the same spots year after year. The two participants also agreed that in order to wildcraft, you must have an established relationship with the natural world before you begin to collect. These two examples demonstrate that a relationship with nature requires long-term commitments to maintaining natural world relationships. Another strain of nature relationship pertains to the personification of plants or the natural world. This comes about commonly when participants mentioned that they treat nature as a comrade. Mika said that she would not wildcraft without taking the time to acknowledge that the forest is a living entity. She says that she treats her wildcrafting escapades like she would treat “going into somebody’s

house", as she is looking to maintain her natural world relationship in the same way she would treat a person.

Communication

I note that natural world communication, is a relevant sub category of relationship with nature. In this sample of wildcrafters, six participants cited natural world communication a total of 29 times. Participants express that the experience of communicating with the natural world relies on observation of what plants or fungi are present during a wildcrafter's quest to harvest. The appearance of different plants and fungi then becomes an indication of what the natural world gives permission or allows the wildcrafter to harvest. This means that through communication wildcrafters are able to understand what will fill their wild harvesting needs as well as what the natural world would is allowing the wildcrafter to harvest. Colin speaks of his experience communicating with the natural world when he said that plants "present" themselves to him. In explicit terms, this is a "communication" which lets him know what "might be useful" to him.

Discussion

Wildcrafters in this study are largely in tune to the dynamics of the natural world due to their vast amounts of environmental knowledge. They are able to aptly react and respond to the dynamic natural world through their wildcrafting practices. The knowledge systems which inform wildcrafters, while mixed, rely heavily on experience and human-environment relationship building. The culture of wildcrafting presented in this sample is representative of progressive ecological conservation as well as honor of traditional learning and knowledge. In the following section, I turn the discussion to highlight key

relationships between constituents of wildcrafting. The specific relationships between learning processes, practice, and motivations which pointedly address the following topics: (1) social-ecological system (2) dynamic learning, and (3) stewardship and conservation.

Social-ecological Systems

Martin-Lopez (2015), defines human and environmental relationships as social-ecological systems, highlighting the interdependence of human and environmental health. The act of wildcrafting relies on the interaction of humans and the natural world. With this in mind, the wildcrafters in this study bring to light the inherent interdependence of human health and ecological health.

Human and Ecological Health

Deepening the discussion surrounding social-ecological systems, I argue that the relationship between medicinal use (motivation), ecosystem assessment and abundance (practices) is important. Wildcrafters show that without a healthy ecosystem they cannot access healthy food or medicine. The medicinal properties of wildcrafting alluded to the nutritional and therapeutic benefits wildcrafters glean from their harvests. While the harvesting considerations addressed alluded to the importance of ecological health.

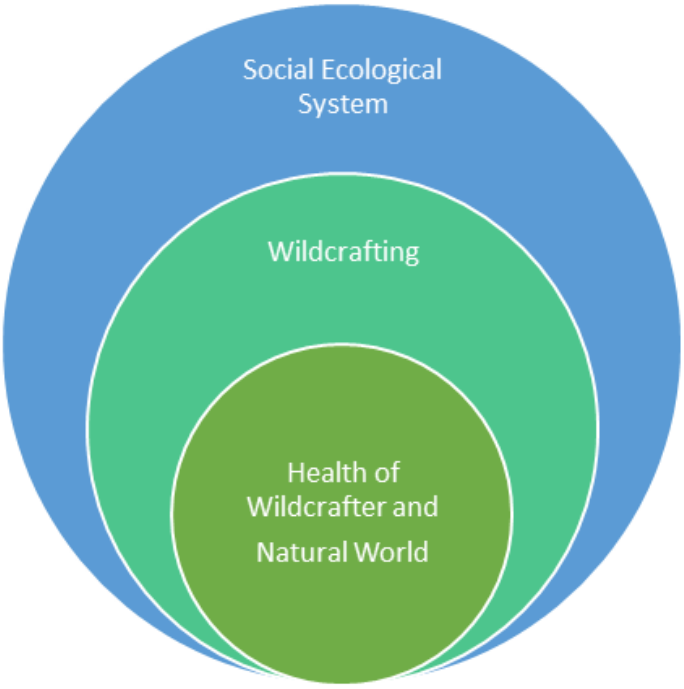

Figure 1: Social-ecological systems encompasses wildcrafting and health and well-being as a result

In previously established literature, medicinal (Mollee, 2017), and nutritional values (Powell, 2015) are cited as important wildcrafting motivations. Landor-Yamagata (2018) and Luczaj (2012) both note that a resurgent interest in wildcrafting is linked to the increased public awareness of the health benefits of wild local species. The participants in this study demonstrate congruent sentiments. Medicinal use is appealing for wildcrafters because it allows them to respond to physical ailments or nutritional needs how they see fit. Moreover, participants prefer wildcrafted goods over cultivars, as they carry unique attributes, influenced by the place and space in which they grow. The ability to wildcraft more specifically demonstrates autonomy and knowledge over personal health. This self-

sufficiency is an empowering and important benefit to wildcrafters' experiences. Similar to Schunko, (2010), who notes that wild foods are foods with medicinal properties, I note that medicinal qualities of wildcrafting also relate to nutritional values. While the research in the field of nutrition argues that micronutrient density and bioavailability of many wild edible plants is affected by how a plant is prepared (Flyman, 2006), the participants of this study felt most strongly that a wildcrafted plant obtained innate healthful properties.

Shackleton (2017) expresses that wildcrafters attribute wildcrafting practices to increase human well-being. I explore this topic by noting that consumption of wild edible plants and fungi was not the only way participants described the health-related impacts of wildcrafting. Some participants felt that spending time wildcrafting enhanced the innate medicinal power of wild edible plants and fungi. The heightened medicinal qualities of plants and fungi was result of caring for the plants and fungi being wildcrafted. I further suggest that for these participants, consuming medicinal plants or fungi which have they have personally collected holds the greatest potential of supporting health.

Reciprocal Relationship

Reciprocity is an important element of wildcrafting for human and ecological well-being. Many participants aimed for mutually beneficial actions between themselves and local ecology. Therefore, as wildcrafters sought medicinal and nutritional benefit, they also expressed express concerns about ecological health. For example, harvesting practices such as ecosystem assessments and abundance were tools that helped wildcrafters navigate how much, if any, of a specimen would be safe to harvest. If an ecosystem had indication of pollution, participants would refrain from harvesting in that location. Refraining from

harvesting due to pollution also yielded sentiments of sadness or empathy with the state of the natural world. If there was not a sufficient amount of healthy plants or fungi to harvest, participants will again refrain from harvesting. Further demonstrating wildcrafters' drive for reciprocity as well as that in order to capitalize on the medicinal qualities of wildcrafting, the environment must first be healthy too. Reciprocity proves to be congruent with literature pertaining to urban foraging, which notes that harvesters are concerned about the effects of polluted areas on wild edible plants and fungi (Charnley, 2018; Mollee, 2017). Many wildcrafters then refrain from collecting plants in places with perceived high levels of pollution (Ibid). This commonality across my study and the existing literature demonstrates direct link between human and ecological health. A healthy ecosystem leads to medicinal wildcrafting, which leads to the support of the well-being of participants.

In exploring human-nature contact and human nature relationship I further the conversation surrounding reciprocity. It is inherent in this sample of participants that human and nature relationships are not one sided. Participants consider their impact in terms of the potentially negative impacts of harvesting (such as: overharvesting, pollution, destruction) and positive impacts of harvesting for the natural world (spreading mushroom spores, plant seeds, honoring the natural world, monitoring the environment). In this way, participants esteem their interactions with the environment to be nourishing for both human and ecology. Similar to the perspective described by McLain, (2011), the participants I interviewed mentioned that they considered their practices to be beneficial to the health of the ecosystem. Through removal of invasive species, honoring the natural world, and stimulation of plant or fungi growth were wildcrafters hoped to give back to the environments in which they wildcraft. This relationship is can be defined as the friendship

between wildcrafters and the natural world. This further suggests that wildcrafters understand the environment to be highly connected to themselves, providing incentive to preserve and respect local ecology.

Dynamic Learning

The ways in which wildcrafters learn are complex. Therefore, I look to further explore the concept of learning processes. I define learning processes as the integration of TEK and WS knowledge systems and learning modalities. The interaction of these two ideas, manifested in the practice of wildcrafting, creates the concept of learning processes. Therefore, learning processes result from the marriage of wildcrafters' systems, modalities, and practices. This concept integrates ideas of Dowsley (2008) who wrote that the relationship between TEK and WS *should* be interactive and conversational in order to best address the dynamic ways in which humans and the environment interact. Participants of my study aptly demonstrated their individual ability to create and sustain this conversation through learning processes.

TEK and WS

While I hope to clearly divulge vestigial impacts of the historical relationship between TEK and WS, the wildcrafters in this study most clearly demonstrated the equal value of both knowledge systems. It is evident through participant responses that both TEK and WS inform learning modalities, which create learning processes rooted in both systems. The discussion of TEK and WS in this section will highlight the spaces in which these worldviews can overlap or come together to aid participants' wildcrafting knowledge.

The Complexities of Wildcrafting

As noted by Martin (2010) TEK is an important knowledge system which impacts the ways in which ecological conservation is improved and adapted to modern and sustaining issues. However, it is impossible to address TEK and WS without acknowledging the established dichotomous nature of WS and TEK, which is often rooted in colonial power dynamics. Thus, rendering integration of both knowledge systems difficult for formal environmental policy and conservation initiatives (Armitage, 2009). The power dynamic to which I often refer is most commonly used to describe the relationship between indigenous peoples who hold TEK and government or scientific institutions. Power and privilege between TEK stakeholders and the state often renders those with less formal titles of power at a disadvantage (Bohensky, 2011; Ramos, 2018). This dynamic is also demonstrated in the history wildcrafting in North America as Western perspectives have judged indigenous gatherers as primitive or savage (Turner, 2012). The wildcrafters in this study bring to light the various ways in which learning processes can create dynamic interactions across TEK and WS within this context, highlighting the ways in which wildcrafters from various backgrounds benefit from integration.

The integration of TEK and WS informs wildcrafters' learning processes further reflects the structure through which participants learned. I call this pattern *dynamic ecological learning*, as it addresses the ebb and flow of information throughout the lifetime of wildcrafters. Wildcrafters seek to understand the natural world through both linear and non-linear ways of knowing. Therefore, the mechanisms through which participants learn demonstrate an integration of TEK and WS. This means that methods such as books or ID guides (WS) are complementary to dynamic experiential ways of learning (TEK). Through

mixed modalities and *community learning* (see results), we can further explore the interaction of TEK and WS.

It is important to note that dynamic ecological learning is a learning process which is not yet void of the historical dynamics between TEK and WS. A few participants addressed the lack of respect given to the traditionally trained wildcrafters in informal conferences. Alluding to the historical context in which traditional wildcrafting was looked down upon. These conferences include university and academically-informed participants, who are typical authorities of WS who have historically held a higher status than TEK informed peoples. Therefore, outside of formal policy and initiatives, the large-spread community of wildcrafters themselves run the risk of perpetuating TEK and WS conflict. For the most part, participants only noted the conflicting dynamics between TEK and WS in terms of *community learning* experiences. Conversely individual learning modalities and *mixed-modality* experiences of TEK and WS were not as wrought with conflict.

A Mélange of Learning Methods

Research has identified difficulties regarding integration of TEK and WS (Ramos, 2018). Regardless of this difficulty, many researchers propose frameworks through which integration of TEK and WS can be achieved, such as joint management or co-management of natural resources (Armitage, 2009, Dowsley 2008, Usher 2000). My findings look at integration in a different way, addressing the individual learning processes which integration TEK and WS. I also note that the integration of TEK and WS was not a stagnant process. Similar to dynamic ecological learning, integration fits into this idea, as it requires time, reflection and experience. Furthermore, as wildcrafters demonstrate the possibility of

holding space for both knowledge systems in the realm of wildcrafting, the dichotomy between the two became somewhat indistinguishable. This further reiterates and supports the notion that honoring both systems create a complex and dynamic learning processes.

Established literature describes a widespread demand and need for the integration of TEK and WS in government and policy (Armitage, 2005, Usher, 2000). *Community learning* and *mixed-modalities* were a reaction to the demand for integration of TEK and WS for wildcrafters. While much of the literature looks to find ways in which these systems can come together to form policy and change for conservation (Martin, 2010), these themes demonstrate a divergent idea, expressing that the need for knowledge system integration is present in fields outside of formal conservation. I've identified how individuals learning processes look to engage in both TEK and WS. I found that on a larger scale, participants were able to engage in *community learning*. Community learning was defined as the exchange of information through gatherings of wildcrafters with differing perspectives and backgrounds. M*ixed-modalities* was a different form of integration, defined when participants consulted multiple learning modalities in order to inform their practices. Therefore, this finding demonstrates is that wildcrafters employ various learning modalities which then allow them to engage in TEK and WS.

Community learning includes various workshops, small classes, informal informational exchanges, symposiums, and conferences which are relevant ways of learning and networking in the wildcrafting community. These events bring together the various perspectives, and backgrounds of wildcrafters which leads to diverse informational exchanges. While community learning is consistent with the integration of TEK and WS, the somewhat homogenous culture of Vermont dilutes the amount of TEK which can be

passed on by elders and indigenous teachers. *Mixed-Modalities* was identified when participants expressed the importance of consulting multiple learning modalities in order to understand the collection of wild edible plants and fungi. This category is adds to the inherent complexity of learning processes as it highlights the importance of multiple learning mechanisms. Participants most often employed a major TEK method (experience) and a major WS method (books) in order to get to know how to wildcraft plants and fungi. Here, the conversation about which knowledge system is superior to one another (Petty, 2011) is muted. It is also valid to note that in some cases the two entities reinforce one another, and in some cases, they are contradictory, leaving the participants to decide how to continue harvesting based on established knowledge.

Therefore, while literature suggests that unequal power dynamics play into policy initiatives (Armitage, 2005), causal communities engaging in integration for the purpose of learning are also susceptible to this phenomenon. Nadsady (1999), also suggests that the "integration" of TEK and WS only benefits the powerful stake-holding populations (such as scientists and policy-makers rooted in WS). Conversely, the benefits of integration were evident for this sample of wildcrafters as they navigated using experiential knowledge as well as established knowledge. This integration yielded a conscientious informed style of wildcrafting in which wildcrafters considered who, what, when and how to harvest. Furthermore, wildcrafters in this study acknowledged the unfortunate persistence of favoring WS over TEK and attempted to dissolve this hierarchy.

The Complexities of Wildcrafting

Reactional Relationships

In this section I highlight a framework which describes reactional relationships. These relationships are more specifically the interactions between information, motivation, and practice which react-and re-react to one another. These reactions then serve to inform and transform wildcrafters' harvesting practices thought their lifetime. This idea is reminiscent of dynamic ecological learning; however, it looks to more explicitly describe wildcrafting as a whole.

Due to the non-linear quality of learning processes, participants also demonstrated that practices and motivations are reactional. Wildcrafters adapted their motivations based on new information emergent from practices and or learning modalities. This relationship then becomes cyclical. Deepening the meaning of reactional relationships also explains that learning, practice and motivation interact with one another based on the wildcrafters personal reflection and the state of the natural world.

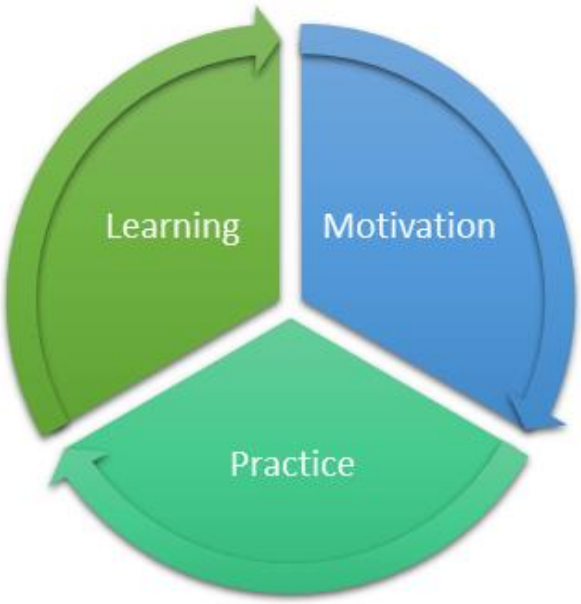

Figure 2: The dynamic nature of motivations, harvesting practices and considerations and learning processes.

Conservation and Stewardship

In previously explored literature studies conclude that engaging with wild edible plants and fungi through collection and consumption perpetuates anthropocentric impacts on ecological systems in a negative way (de Merode, 2004; McLain, 2011). A different perspective rooted in knowledge systems notes that existing local or traditional practices often remedy this issue, as they establish systems of sustainable wildcrafting (Berkes, 2000). These local principles are important as Bata (2007), argues that creating policy which intentionally protects wild edible plants and fungi can be difficult due to the localized nature of species conservation. The anecdotal evidence I've unveiled speaks most congruently with the works of Bata (2007) and Berkes (2000). This evidence is rooted in the ways participants desire to conserve local ecosystems, and consequently take action.

Desire to Conserve

Various forest management entities have voiced concern over the rising trend in wildcrafting, deeming it unsustainable (Vaughan, 2013, Bharucha, 2010). Instead, I note that sustainability is a salient desire for wildcrafters in this study. Diving deeper, I call to attention spirituality and human-nature contact as motivations which help wildcrafters establish a desire to conserve the natural world. At surface level, these two concepts shared many of the same quotations and sentiments through the data. Their presence testifies to

the wildcrafter' ambition to conserve wild edible plants and fungi founded upon relationship building between humans and the natural world.

Spirituality

Soukand, (2016) as well as Sylvester, (2016) noted that in some contexts there is a spiritual association to collecting and consuming wild edible plants and fungi. However, in previously cited literature there is little noted in terms of linking spirituality and conservation practices. Briefly, Ramos (2018) notes that in some lineages of TEK, people balance the earth via their physical interactions as well as spiritual belief systems. However, literature connecting the spiritual practices of those who collect wild edible plants and fungi is not extensive. In the context of this study, spirituality supports participant's commitment to sustainable harvesting practices.

Participants who expressed spirituality more specifically personified the natural world or acknowledged its deep, dynamic consciousness. Spirituality commonly led wildcrafters to feel humbled by their experiences. The experience of wildcrafting to fulfill spirituality further awakens and activates participants' deep introspection. It prompts participants to question how they associate with the natural world, and thus creates a moral compass with which wildcrafters attempt delicate interactions with local ecology. This is a clear rejection of separating humans and nature (Martin, 2010) and speaks to the integral complexities of human-environment relationships and demonstrates the inherent, values of the natural world while further unveiling a link between the sanctity of wildcrafting and the ideas of conservation. As spiritual fulfillment becomes a significant motivation, the desire to comport without negatively impacting the natural world is critical.

As the natural world is given greater value through spiritual connection, participants begin to harvest considering natural world communication. In the context of spirituality, natural world communication is the demonstration of the environment's profound consciousness. This harvesting practice enables participants to understand what the natural world seeks to 'express'. Wildcrafters note that the appearance or lack of appearance of a given specimen is a moment of communicative behavior. Understanding this requires keen observation on the part of the wildcrafter. This leads participants to nourish their relationship with nature, which also requires experience and observation, just as building a relationship person to person would require these elements.

Therefore, the main goal of wildcrafters who acknowledge natural world communication in a spiritual context is to respect what ecosystems need and want before their personal needs and wants. The marriage between spirituality and natural world communication is a unique reason why wildcrafters desire sustainable harvesting. Through the connection of spirit and communication, conservation becomes a metaphysical concern, as well as a practical concern, as wildcrafters who are rooted in spirituality do not ignore more pragmatic harvesting considerations as well. However, without the ability for wildcrafters to listen to the environment around them, their spiritual practice would be stifled. The lack of natural world communication would then prohibit wildcrafters from continuing to monitor and observe what local ecological systems experience.

Human-Nature Contact

Without human-nature contact, of profound importance, spirituality or spiritual fulfillment cannot be achieved. Without the spiritual aspects of wildcrafting through

contact with the natural world, human-nature contact is not as valued for some wildcrafters. The intersectionality between these themes then creates intellectual and emotional intersection between the pragmatic need for conservation and integration of human and environmental well-being. Human nature contact is further entrenched in the concept of relationship to nature, which requires consistent engagement and interaction with the local environment.

The relationship between human-nature contact and experiential learning demonstrates the ways in which learning processes and motivations come together to establish the desire to conserve. Human-nature contact ignites a profound connection between people and the natural world. As I defined in the results section, human-nature contact more specifically describes participant's interest in connecting with the land around them. This interest, then, naturally leads participants to learn through experience. As participants spend time wildcrafting, their experiences further fuel their desire to spend time in the natural world. The marriage of these two themes then enables wildcrafters to become a dynamic part of the ecosystems with which they interact. Again, this pivotal connection requires that wildcrafters act with care when wildcrafting. Without care and intention, wildcrafters run the risk of destroying their personal and profound relationship with local ecology. Further establishing the inclination towards conservation principles.

Conservation in Practice

Explicit harvesting practices described by wildcrafters demonstrate that an establish desire to conserve local ecosystems influences harvesting practices. These practices then directly impact the sustainability of wildcrafting. This conversation responds

to the concern of "overharvesting" (Bharucha, 2010), which has been attributed to the lack of data addressing what constitutes sustainable harvest, and lack of effective conservation management of wild edible plants and fungi. In the following section I explore several major wildcrafting techniques which monitor sustainability of practice.

The most salient considerations for sustainable harvesting can be explored through the concept of intention. Intention is most directly influenced by ecosystem assessment, abundance, natural world communication, weather patterns and relationship to nature. Moreover, these categories demonstrate the nuanced information required for wildcrafters to carry out their practices. I further delineate this categorization by defining which considerations most commonly impact premeditated harvesting and those which most commonly impact opportunistic harvesting. With that being said, this dichotomy is not fixed, and all considerations can influence either type of intention in various circumstances. In the following section, I mention the main harvesting considerations which connect to intention, while in the graphic below, I categories all practices.

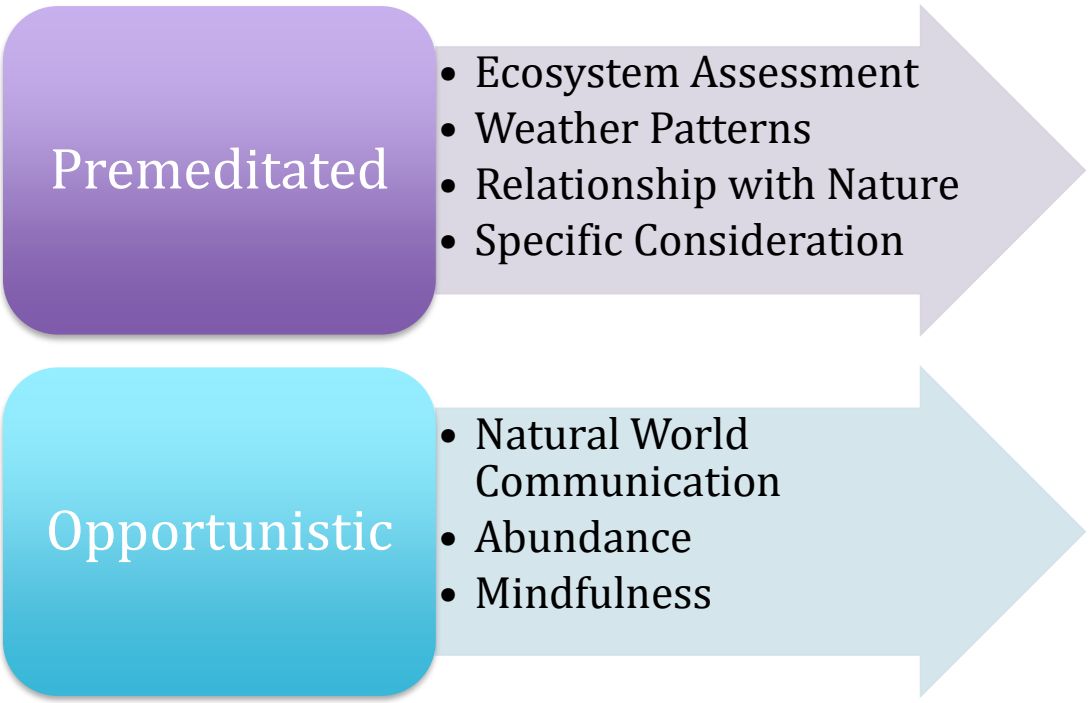

Figure 3: All Harvesting practices and considerations which impact intentional wildcrafting

In previous research, resource management founded in TEK is often based on phenological calendars (Ramos,2018). In this way, the observation of flourishing flora can become a marker of when to harvest wild edible plants and fungi (Ibid). In this study, the category of weather patterns conforms to this idea, and dictates the premeditated intention. Ecosystem assessment is employed when wildcrafters seek to find specific locations where harvesting specific specimens is plausible. Relationship with nature acts upon premeditated intentions of wildcrafters as it demonstrates that knowing the local ecology can determine what or if to harvest. Abundance and natural world communication influence opportunistic intention in similar ways. Both categories demonstrate that participants consider the lack or presence of plants and fungi as an indication of what the natural world deems acceptable

to wildcraft in the moment. In terms of conservation, I note that wildcrafters are working with and in response to the natural world. This again, relies on the closeness of person and environment created by the relationship between experience and human-nature contact. Martin, (2010) attributes this rapport to influence sustainable actions. Moreover, the main harvesting practices and considerations were different mechanisms which helped wildcrafters navigate how much, if any, of a specimen would be safe to take for themselves as well as safe for the sustainability of the wild population. This quality of harvesting practices did not waver across premeditate or opportunistic harvesting. Rather, the fluctuation between these categories reiterated the capacity of participants to respond to the dynamics of the environment. In this way, the participants of this study demonstrated the intention of conservation, and often outrightly cited their sustainable practices.

Considerations for Further Research

This research project connected complex themes of conservation, social ecological systems and wildcrafting experiences. Based on the emergent themes in this small sample of wildcrafters, I identify two key topics which warrant further inquiry: land ownership and economic motivations.

Regarding the topic of land ownership, formal conservation initiatives in my literature review alluded to the possible ways in which conservation schemes can restrict or preserve the collection of wild edible plants and fungi (Broegaard, 2017). Most participants did not mention specific tensions between land and resource conservation and wildcrafting practices. However, a small number of participants mentioned that the status of a plot of land effected their decision to wildcraft. This means that wildcrafters may

consider things like land ownership or government-ruled conservation before harvesting. Some participants noted that it was important to respect the land's title. If an area was conserved in a national park or state forest, where often time wildcrafting is prohibited, they would refrain from collecting. However, some participants mentioned that they were less deterred from harvesting on private land that did not belong to them. The formal title of a plot of land therefore was a passing thought for some harvesters while a careful consideration for some. This information unveils a potential study which focuses on the dynamics between wildcrafters who adhere to land restrictions and those do not. Further exploring the attitudes and actions of wildcrafters based on the status of land would be an interesting inquiry to further address the dynamics of natural resource management and land titles in the world of wildcrafting.

The economics of wildcrafting were addressed extensively in the literature (Sachdeva, 2018), yet did not present itself as readily in my small sample. My research did not dive into the complexity of using economic drivers to describe the motivations for wildcrafting. Those participants who cited economics as a motivation suggested that wildcrafting was either a livelihood strategy or a way in which they could access healthy foods for little to no cost. However, in contrast to the material benefits of economics, all participants who cited economic motivation also cited human nature contact, relationship and spirituality. This could speak directly in contrast with the fear that economic drivers lead to commercialization which then leads to unsustainable harvesting practices (Bharucha, 2010; Powell, 2015). It would be effective and interesting to explore how and if socioeconomic status in VT contributes to wildcrafting or demographics which make up the community. This exploration is further warranted due to contrasting perspectives which

suggest that in the global north wildcrafting is a pass- time or privileged activity (Sachdeva,2018). Deeper analysis needs to be done in order to explore this topic.

Conclusion

> "The neat thing is if you find a plant about a half a mile in the woods and you walk in to pick it every year, within five years, you're going to [know] ten different plants that you could [pick] by going on that same little walk. Then you could divert your walk and go one way or another and what not. I mean it is unreal how many things you might find just because you found the first [plant] and you spent time collecting and appreciating it." - *Les*

Through this research I looked to understand how and if, in the context of Chittenden County, VT, wildcrafting is practiced in a way that balances conserving wild plant populations while allowing participants to engage in a traditional human practice. I then looked to understand how the dynamics between TEK and WS presented themselves and informed participant's knowledge on harvesting wild edible plants and fungi. By investigating these systems, my research provides information on the harvesting practices used by modern wildcrafters as well as what motivations wildcrafters find compelling. Using inductive analysis techniques unveiled the ways in which learning processes, harvesting practices and harvesting motivations fit together. These three subjects address, on a small scale, the conversation between current issues rooted in environmental and human well-being.

Wildcrafters in this study prove to be a group of people who monitor local ecosystems. They esteem themselves to be embedded in the natural world and seek to understand how wildcrafting impacts the health and abundance of plants and fungi. They are able capitalize on wildcrafting to support their own health as a result. Based in the desire to conserve, which is notably founded spiritual fulfillment and human-nature contact

interest, wildcrafters take into account multiple environmental and human factors before harvesting. This desire to conserve and respect nature is a result of an established rapport between wildcrafter and the natural world. Thus, wildcrafters treat the natural world with sensitivity, understanding that their behaviors have the power to impact the natural world in positive or negative ways. The profound connection wildcrafters exhibit with their surrounding environments does not leave room for reductionist paradigms, which see man as a separate entity from the natural world (Martin, 2010). Once the desire to conserve is established, participants are apt to employ dynamic learning processes in order to understand the various facets of sustainable harvesting. Sustainable wildcrafting more specifically employs knowledge about plant species, large-scale ecosystem impact, and local climate patterns. The stewardship present in wildcrafting activities is a direct result of wildcrafter's close ties to nature and their reliance on harvesting wild edible plants and fungi for health and well-being

This research explored the idea that TEK and WS are dynamic systems which, when respectfully considered equals, help the integration of complex ecological information to be considered in the practice of wildcrafting. This sample of participants demonstrated that the community strives towards inclusion of both TEK and WS systems. Whilst, there may be remnants of unhealthy power dynamics with this system, individual wildcrafters in this study show that deeply respecting, understanding, and engaging with multiple learning modalities integrates TEK and WS knowledge systems. Thus, creating dynamic learning processes. This integration often emerged due to lasting experience with wildcrafting

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Appendix

A.

Themes	*Sub-Category*	*Definition*
Western Science	Books	Participants use ID guides or other literature to learn about wildcrafting

	Institution or Degree	Participants have received a degree related to wildcrafting (or taken academic courses) which allows them to develop knowledge about plants, fungi and harvesting techniques
	Web	Participants use the internet as a learning tool
Traditional Ecological Knowledge	Experience	Participants accumulate knowledge through interaction trial-error, and/or observational practices
	Intuition	Participants say that they have innate knowledge which guides their understanding. This knowledge is void of formal

		mentorship or teachings from others.
	Mentorship	Participants learn from an elder or mentor (usually includes ancestral or indigenous knowledge) This relationship is long-lasting and experiential in nature
Emerging Learning	Community Learning	Participants learn from workshops, apprenticeships, symposiums, and group-meetings with community members who share similar interests. Here, both TEK and WS can inform the modality.
	Mixed-Modalities	Participants expressed the importance of consulting multiple learning modalities

		in order to understand the collection of wild edible plants and fungi.
Motivations	Community Sharing	Participants express that they harvest with the intention of sharing their harvests with others.
	Culinary	Participants enjoy the flavors and culinary experiences wild edible plants and fungi provide.
	Economic	Participants are vendors or use plants they've gathered to sell (could be add-value products as well as raw plant material.) Participants could also be paid for teaching classes or workshops on how to harvest plants.

	Connection	Participants express that collecting/consuming wild edible plants and fungi connect them to the natural world around them, often this means wildcrafting creates a sense of place.
	Joy	Participants express that the act of collecting wild edible plants and fungi brings them joy, happiness, excitement or satisfaction
	Medicinal	Participants seek the medicinal, nutritional, healthful benefits of wild edible plants and fungi.
	Spiritual	Participant spend time wildcrafting to engage in a spiritual practice.

		Wildcrafting serves as an act of spiritual fulfillment. This can mean more specifically that plants and fungi engender the same roles as friends or family or are personified into dynamic, communicative beings.
Harvesting Practices and Considerations	Abundance	Participants consider how much of a plant is found and the general state of the abundance or rarity of a plant species.
	Ecosystem Assessment	Participants seek out specific ecosystems/ environments with the understanding of what plants and fungi might be found based on the characteristics of the land. Participants might also express that they assess the health and impact of foraging

		on an ecosystem, as well as the pollution or contamination of the soil in a given area.
	Intention	This consideration is two-fold. Participants either go out looking or needing a specific plant and tend not to harvest what they don't intend to harvest. Or participant have no intention initially but go out and harvest what presents itself.
	Mindfulness	Participants cite that they use mindfulness practices or make other careful, conscious decisions while considering what and how to harvest.
	Natural World Communication	Using cues, signs, signals or direct communicative

		properties of the natural world to decide what, where, and how to harvest
	Specific Consideration	Participants consider the plant in front of them (size, shape, health) as well as the species to inform them how or if they should harvest.
	Natural World Relationship	Participants explain that their relationship with nature, land, or plants help them decide what, when, and where to harvest. These relationships are often due to a strong sense of place, meaning that people visit the same spots frequently and there is a clear bond or rapport between human and nature.

	Weather Patterns	Participants use seasonality or careful understanding of weather patterns to know what plants, or where certain plants will be available to harvest at any given time.

B. Participant Volunteer Initial Email

Greetings _____,

You are being invited to take part in this research study because you have knowledge and experience in collecting wild edible plants and fungi. This study is being conducted by Marissa Pappalardo at the University of Vermont. The project looks to explore the ways in which different traditional and scientific knowledge systems impact harvesting techniques for collecting wild edible plants and fungi in VT.

If you would like to take part in this study, we can set up a time to speak in-person or over the phone. During the interview, I will ask you a few open-ended questions, all of which you are free to answer how you wish. If you take part in the study, you will be asked to explain how you came to learn about wild harvesting and what your personal practices are. This will be a one-time interview that should take no more than 45-65 minutes.

With your permission, I will record the interview. The recorded interview will be kept on a password secured laptop until it is transcribed. It will be deleted upon completion of the study but no later than 5/01/2019

Best,

Marissa Pappalardo

C. Consent script

Hello,

Thank you for taking part in my study about wildcrafting in Vermont. Taking part in this study is voluntary. So you are free to answer or refuse to answer any and all of my questions at any time. If you feel uncomfortable with the audio recording portion at any time during this interview you can tell me to shut it off, pause it, or refrain from answering questions.

After taking part in the interview, you can also change your mind, and ask me to omit portions or the entire interview into the final project. The study is being conducted as the final portion of my undergraduate degree in Environmental Studies from the University of Vermont. The study will be looking at different knowledge systems in conjunction with different harvesting practices and considerations. This project looks to understand sustainability considerations for those who collect wild edible plants and fungi.

I am going to ask you to explain how you came to learn about wild harvesting and what your personal practices are. You will be asked to answer a short list of questions about your personal experiences with collecting wild edible plants and fungi. The interview should take anywhere between 45-60 minutes.

Do you have any questions about the study and is it okay if I record this interview?

D. Survey Questions

When did you first start wildcrafting for wild edible plants and fungi and how did you first learn about this activity?

Are there any resources or people who were paramount in your learning experience?

How do you decide what and when to harvest?

Why do you continue to collect wild plants and fungi? What are the main benefits of collecting wild edible plants and fungi?

Do you have any specific rules you follow when harvesting wild edible plants and fungi?

Any other comments or anecdotes you would like to add?