

A PLACE FOR PLANTS:
ETHNOBOTANY, BIOREGIONALISM, AND FOLKWAYS
IN APPALACHIA

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Abstract

A PLACE FOR PLANTS: ETHNOBOTANY, BIOREGIONALISM, AND FOLKWAYS IN APPALACHIA

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While our world experiences immense leaps in technological advances, we still find ourselves standing on the same soil our ancestors trod upon thousands of years ago. Today most American children can identify more fast food company logos than plant or animal species, yet remain dependent on ethnobotanical relationships between environments and cultures nonetheless. Ethnobotany, defined as "the study of the interactions and relationships of people and plants over time and space" (The New York Botanical Garden Press), provides a framework for identifying mutually-beneficial human-environmental interactions and re-educating the public about ethnobotanical sustainability. However, developing these opportunities requires several questions to be answered. What frameworks are available to discuss ethnobotany in terms of specific bioregions and places? How can traditional ethnobotanical knowledge support the sustainability of bioregions and places? To what extent can ethnobotanical knowledge, which is premised on sustaining human and environmental interactions over time, effectively function in a market-based economy?

This thesis will answer these questions by bringing the literature on ethnobotany into conversation with literatures on bioregionalism and folk ways to examine mutually-reinforcing strategies for the preservation for local economies, ecosystems, and cultures in southern Appalachia.. Bioregionalism is defined as a “life-territory, a place defined by its lifeforms, its topography and its biota rather than by human dictates” (Sale, 336). defined by historian David Hackett Fischer as, “the normative structure of values, customs and meanings that exist in any culture (7).”. This thesis first reviews the merits of ethnobotanical approaches to environmental and socio-economic sustainability. It then examines Appalachian ethnobotany and bioregionalism, including comparisons to other biogeographic regions which provide inspiration for similar ethnobotanical initiatives and programs. Next, it examines the folk ways revival in Appalachia and the ways in which it has been and can still be used for bioregional sustainability and economic opportunity. Synthesizing these insights, this thesis provides a short inventory of key plant, shrub and tree species and their ethnobotanical uses in Appalachia. The thesis will conclude by discussing untapped ethnobotanical opportunities in Appalachia from entrepreneurial craft to sustainable botanical product creation utilizing common southern Appalachian flora.

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Introduction

How humans see themselves within the natural world has changed dramatically since the rise of agriculture 11,700 years ago (Gorlinski, 1). From literature to theology, humans have been portrayed as either destructors or saviors of a system that they stand apart from. Despite this idea which now permeates cultures across the globe, humans still depend upon natural resources, especially plants, for all aspects of survival. We are still a part of the natural world, no matter how alienated we have become from it. While our world experiences immense technological advances, we still find ourselves standing on the same soil our ancestors trod upon thousands of years ago. Despite the fact that most children can identify more fast food company logos than plant or animal species from their bioregion does not mean that we are not dependent upon them.

Humans and plants have a unique evolutionary history. Often mutualistic, we cannot survive without plants in their various forms, wild and cultivated. Understanding the many ways to use plants has become a niche area of expertise today. Ethnobotany is defined as, "the study of the interactions and relationships of people and plants over time and space (The New York Botanical Garden Press). Where do ethnobotany and Traditional Ecological Knowledge (TEK) fit in today's society? Is ethnobotany still a relevant field of study? Is it antiquated? How does it serve us? This thesis examines the value of bioregional thought, TEK and the revival of ethnobotanical folk arts in Appalachia in conjunction with the ways in which similar regions have utilized ethnobotany to revive rural economies; the research objective is to use ethnobotany to identify strategies for small, low-tech businesses and rural economic revival in Appalachia.

This thesis addresses the question of where ethnobotany fits in today's Appalachia by bringing the literature on bioregionalism into conversation with literature concerned with the folkways of Appalachia; ethnobotany will be examined a means of overlapping the goals of each. Briefly, bioregionalism is defined as "life-territory, a place defined by its lifeforms, its topography and its biota rather than by human dictates (Sale, 336)." This sense of place which draws deeply from its more-than-human lifeforms is imperative to cultivate in our increasingly modern world. Folkways are defined by historian David Hackett Fischer as, "the normative structure of values, customs and meanings that exist in any culture (7)." I argue that ethnobotany grounded in bioregionalism and folkways provide mutually-reinforcing strategies for the preservation and sustainable promotion of local economies, ecosystems, and cultures.

This information is largely diffused across many different resources from folklore to biological research, but rarely is it condensed for use as a reference for practical use. It is not far-fetched to promote ethnobotany, or the knowledge of the uses of local flora, as an enjoyable, healthful and reasonable pastime or livelihood that can have a multitude of beneficial effects on the people of Appalachia. This thesis will examine the sustainable use of plants and our natural resources in the context of Appalachia's unique history and biota through biological and cultural comparisons with other regions. There is a long history of these interactions in the Appalachian region.

Literature Review: Ethnobotany and the Botanical Industry in Southern Appalachia

The knowledge of ethnobotany in Appalachia exists because at one time, most people in the region relied upon a working understanding of the useful plants that surrounded them.

Appalachians have a long history of eking out a living from the forests and fields. Wildcrafting plants, or root digging as it was more commonly known in the region, was once an important part of the rural Appalachian economy (Price, 242). It was said by World War I that three-fourths of all American crude drugs were sourced from the Appalachian region (Manget, 161). Unfortunately, this has led to many issues with over-harvesting plant species like ginseng (*Panax quefolium*). This is due in part to a great demand from Asian botanical markets where ginseng has plays an important medicinal role in traditional medicine (Khim, 64). Appalachia has 1100 plants which have been identified as having medicinal uses, displaying the wide availability of useful botanicals in the region (Cavendar, *Folk Medicine in Southern Appalachia*, 59). The broad diversity of flora in Appalachia is both a strength for the region as well as a concern when examining the ways in which humans can foster a more direct relationship with the local plant world. With careful planning, over-harvesting and other potential dangers can be addressed before they threaten Appalachia's biodiversity further.

Native Americans in North America gathered and used almost 1,800 different plants, algae, lichens and fungi (Turner and von Aderkas, 295). In contrast, only twelve plant species make up over 75 % of our entire food supply today, and only fifteen mammal and bird species make up more than ninety percent of global domestic livestock production ("What is Happening to Agrobiodiversity?"). This reliance upon just a few species for global food security is dangerous due to the threats of disease and epidemics within closely related plant and animal communities (Pongsiri et al. 945). Not only is biodiversity threatened, but our cultural diversity is as well. Above all else, this thesis aims to provide clear reasoning for the contin-

ued relevance and need to promote the study and practice of ethnobotany in the Appalachian region for its myriad practical uses and its cultural value.

The study of useful plants is relevant today despite its antiquated associations, especially in a biological resource-rich place like Appalachia. The bioregionalist perspective can aid Appalachia in creating solutions for effective preservation, planning and development of this unique, biodiverse ecozone. Bioregionalism is not only important for ecological preservation and study, but it is imperative for addressing cultural issues at hand world-wide (Young, 46). It becomes abundantly clear the deeper one looks into our current global ecological crisis: humankind is rapidly losing a connection to the natural world, and with it, the plant kingdom itself. This bodes poorly not only for humans and their collective botanical knowledge, but also for the ecosystems that are supported by these plants which we no longer deem valuable. Appalachia, as a region ravaged by extractive industry and ecological devastation, is especially vulnerable to losing the rich plant knowledge-bases which were born out of a unique mixture of cultures which found themselves in these mountains (Courtney, 104). Conservation efforts can diversify and divert away from traditional scientific models and discover how folk knowledge and folk healing are valuable in their functions of conservation as well, and even in their innovation for modern cures.

Appalachia as a region boasts a large body of medicinal plant knowledge that preserves a mix of European, African, and Native American plants and healing modalities (Light). Bioregional ethnobotany, or a plant-use system and body of knowledge firmly grounded in a certain ecosystem, provides local solutions for the struggles that are being felt here and abroad through supporting the protection, growth, and use of plants from one's im-

mediate surroundings. As climate change and careless extractive practices such as mountain-top removal continue to alter the surface of Appalachia, learning about the plants and their uses in our biome is the first step towards fostering a feeling of value and identity with plants who are a part of the Appalachian ethnobotanical lexicon which still holds medical, culinary and economic value today (Poe).

Ethnobotany also provides a support to the continued preservation of ecological biodiversity. Genetic biodiversity helps to ameliorate against crop losses as well as disease and pest epidemics. It also enhances the human diet and promotes health, as a multitude of plant foods offer different minerals and nutrient profiles when compared with relying on a few simple carbohydrate grain foods to support a population (Kowalewski, 50). By preserving and supporting the use and study of ethnobotanically useful plants, not only can cultural ways remain intact, but this ethnobotanical knowledge can be a part of the effort to achieve and preserve cultural biodiversity and modern human health (Bagelman, 6).

While many deep ecologists will rally to the cry of “save the Earth for its own sake!” this thesis also considers the current mindset and cultural reality that most people face: many people do not ascribe an intrinsic value to nature. However, when a plant is seen as useful to humans, it is much more difficult to categorize it as an “other” or to ignore it completely when engaging in planning, development or managing personal property. We must also look at the socio-economic factors contributing to habitat and species loss in Appalachia. Inspiring people to see value in plants and ecosystems can help to preserve them, for we now live in an anthropocentric world, and our sustainability in the long term depends upon the choices we make now (Araujo). By inspiring, or sometimes re-inspiring perceived value in the ecosys-

tems of Appalachia, we cannot only combat species loss and habitat destruction, but we can also combat the loss of traditional practices and bioregional folkways by making this knowledge accessible.

The call to instill value in plants and their habitats in an effort to prevent their destruction is not the only reason to study and support ethnobotanical knowledge. Tapping into traditional healing systems and using the tools of modern science, new discoveries for the age of antibiotic resistant bacteria and mega viruses have been made. For example, a recent study of an ancient Anglo Saxon herbal remedy has been found to kill MRSA bacteria very effectively ("Anglo Saxon Potion Kills MRSA"). There is ample evidence that plant-derived compounds are effective against a wide variety of harmful disease-causing bacteria (Sharif et al. 1237). More research is needed, but much has already been done around the efficacy of herbal remedies in modern medicine (Ernst 408-409). The sale of locally-derived plant products is a growing market and current research is identifying ways in which small-scale businesses can have a vital place in our economies (Ludvig, et al.). Multiple studies have found that from 25% to 57% of prescription drugs sold in the U.S. or worldwide have at least one active compound that are derived from or inspired by constituents in botanicals (Grifo et al., Ernst 405). The study of the medical uses of plants is just one aspect of ethnobotany that provides unique income sources and entrepreneurial creativity when combined with permaculture and ecological agricultural practices. Many untapped opportunities lie in wait of a business-minded individual who values ecological preservation.

The abundance of invasive species which have damaged much of the country's ecosystems are ironically an untapped resource . These plants, however harmful ecologically,

are here now, so in our efforts to combat their spread why not utilize them? Kudzu (*Pueraria spp.*), a iconic invasive plant in the Southern United States. It has a myriad of uses for which is was first imported; animal fodder, human food, and even fibers used to weave silken cloth. It has been researched as a treatment for alcoholism in Japan with some success (Lukas). Japanese knotweed (*Fallopia japonica*) is currently being studied for its use in treating Lyme disease (Wood, 38-51) (Bruhner, 31) , while Barberry (*Berberis spp.*) hides berberine-rich roots beneath the soil that are as useful medicinally as the endangered Goldenseal (*Hydrastis canadensis*) (Lazavi, 170).

In summary, ethnobotany continues to be a useful tool for a wide range of cultural and ecological issues. The places where ethnobotany can best fit in today's Appalachia will be discovered by finding the places where bioregionalism, TEK and folkways meet in Appalachia. These practices can therefore stand to serve as models for other locations worldwide seeking to preserve ecological and social culture while finding new ways to economically support the revival of ethnobotany within their community. By examining the successes and failures of the Arts and Crafts revival in Appalachia, the examination of bioregional place-making and regionally sustainable economies can find inspiration for models on which to provide education on the practical uses of plants and their corresponding crafts. In these ways, folk practices can play a new role in economic renewal and resilience when coupled with shifting attention from vulnerable plant species to abundant invasive species. Ethnobotany can be utilized for small-scale, community-centered businesses and provide meaningful economic opportunities in the places it's needed most.

Methodology

In order to provide a resource for citizens, students, and researchers, this work provides a framework for examining the usefulness of bioregional studies using Appalachia as an example. The first two chapters of this work shall rely on a critical review of the literature on bioregionalism, ethnobotany and folk arts while examining the places in which they intersect for economic and cultural revival and preservation in Appalachia. By seeking inspiration from the ways in which other regions with cultural or climactic resources in common have utilized ethnobotany, the lenses of bioregionalism and traditional ways can reveal ideas for implementation in Appalachia. Cultural tourism, eco-tourism and agro-tourism can all reveal the places in which the revival of ethnobotanical knowledge can have multi-functional purposes: from supporting the preservation of culturally significant sustainable wildcrafting, to promoting the continuation and marketing of basketry and other arts. The history of the folk arts revival in Appalachia shall also be examined in as inspiration and evidence for the importance and effectiveness of bioregional cultural preservation in local economies.

The first two chapters of this thesis shall provide context for the final chapter of this work. This thesis will culminate by providing a short inventory in Chapter Three documenting the ethnobotanical uses of local Appalachian flora and their practical applications today, which shall effectively consolidate and make accessible knowledge that has been spread about in many different resources from folklore to biological research. Recommendations for education about these ideas and next steps are given through the use of examples of current implementation and comparative programs worldwide. By examining the existing and emerg-

ing literature and media on the functional uses of Southern Appalachian flora, new opportunities for entrepreneurial craft and sustainable forest product production are possible.

Organization of Thesis

Chapter One will examine the usefulness of ethnobotany in the unique ecological and cultural climate in which Appalachian region exists. The Appalachian Regional Commission defines Appalachia as, “a 205,000-square-mile region that follows the spine of the Appalachian Mountains from southern New York to northern Mississippi. It includes all of West Virginia and parts of 12 other states: Alabama, Georgia, Kentucky, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, and Virginia” (“The Appalachian Region”). Though there are debates around what does and does not constitute Appalachia, for the purposes of this thesis we shall use this definition. Bioregion is taken to simply mean “an area that shares similar topography, plant and animal life, and human culture” as we examine cultural phenomena in this largely mountainous zone (“Bioregionalism”). The history of the revival of folkways in Appalachia, specifically folk arts utilizing ethnobotany, shows us that there is still much to be studied about traditional ways and how they can continue to be utilized for sustainable, rural economic stability and cultural revitalization today.

Chapter Two will address the ways in which the Folk Arts Revival in Appalachia can continue to be an important economic resource today, both culturally and financially. Examining the contributions of the Arts and Crafts revival in Appalachia also feeds this examination of bioregional place-making and regionally sustainable economies. It provides a living example of the importance and relevance of a variety of folkways in economic renewal and

resilience (Fariello). I endeavour to show and parallel this with the TEK systems and their relevance in natural systems management to show the ways in which ethnobotany can be tapped into for modern economic growth (Falkowski). There is a great need for change in the ecological management thinking paradigm globally, and bioregional research and revivals of folk practices can be a part of that shift. Sometimes it is true that one does not need to “reinvent the wheel” to find innovative solutions to modern problems and breathe new life into struggling systems. Instead, new opportunities to revive the wisdom of our predecessors can present themselves through exciting interdisciplinary applications.

Ethnobotanical folkways have value in Appalachia and beyond. We can see this in history through an examination of the Folk Arts movement in Appalachia with the advent of settlement schools and traditional craft promotion. Bioregionalist planning should be encouraged in America as we trade nationalism for a more grounded sense of place where citizens feel rooted to the ultimate destiny of an ecosystem in which they dwell. By documenting and preserving the uses of plants and trees in Appalachia, both historic and modern, as well as the promotion of education grounded in the natural world, we can potentially ensure that generations to come can find meaning, connection and even livelihood in their bioregion. They may even become inspired to protect it from destruction through the actions of short-sighted extractive lumber, non-timber forest products (NTFP) and fuel industries. By examining the revival of folk arts in Appalachia in conjunction with the ways in which similar regions have utilized ethnobotany to revive rural economies, new ways forward may be paved in our region for small, low-tech businesses and rural economic revival.

Many sustainable economic possibilities lie within the plant world. Both old uses and new research can provide Appalachia with an array of exciting prospects. Many do not know that the first cloth most likely made by humans was woven from none other than stinging nettle (*Urtica dioica*). It produces a fine, soft cloth still used today in countries like Nepal. This fast-growing plant prefers poor soils and provides a multi-use function of nutrient rich edibility, medicinal properties, low ecological impact, and luxurious textile products (Harwood, 107-119). Further study into seemingly bothersome plants like stinging nettles (*Urtica dioica*) can yield inspiring economic opportunities that build rather than deplete the environment through choosing plants which are non-native, abundant and especially invasive.

Chapter Three develops a concise inventory of key plant, shrub and tree species related to opportunities for entrepreneurial craft and ethnobotanically-derived sustainable business production with Southern Appalachian flora. Current research on the practical applications of ethnobotany, and especially the bioregional implications of its promotion and instruction, is little discussed in the literature. However, there is much great work being done around issues and topics in bioregional studies and the importance of Traditional Ecological Knowledge (TEK) in the construction of conservation tactics (Ianni et al.). Moreno (2015) addresses the case for place-based research aptly. The politicization of place-based decision-making models is heavily addressed in this piece, as well as imploring a reintegration and “rehabitation” of landscapes as a method of restoring and maintaining natural systems. Through this and other similar works, a picture of a vibrant, bioregionally focused land ethic can be woven together through the reintegration of using plants from one’s bioregion in their everyday life (Moreno).

The continued relevance and necessity for ethnobotany and its corresponding crafts, practices and knowledge bases is evident in many places globally and has been studied in Africa, East Asia and other exocitized locales (Bennet, 115). However, here in the mountains of Appalachia, a place both othered and revered, loved and stereotyped, a place of immeasurable natural beauty and of wanton environmental destruction, it has been given little thought. The Appalachian person's connection to nature and their place within it has been seen as everything from idyllic to destructive. These oppositional, yet simultaneously existing stereotypic idealizations and condemnations stem from ideas of "our living ancestors" due to the local color writers of the early 20th century and more modern views of Appalachia perpetuated by a media market with sensational appetites (Becker, 42).

Despite these complex and often problematic ideas about Appalachians and nature, there are still many locally applicable opportunities that ethnobotany offers which have unfortunately been thrown aside in lieu of industrialized "one-size-fits-all" approaches to rural economic revival. We can use appropriate technology, cottage industries and folk arts to revive and continue to support the living practice of using plants and natural resources in creative place-making, sustainable livelihoods and fostering a reverence for an ecosystem that holds some of the most unique species of animals and plants in the world. Imagine living in a town where you know where your food, fiber, and heat come from as you move through a landscape that reflects your basest needs back to you in abundance. A place that is protected rather than exploited, preserved rather than remembered. These small scale approaches to creating new jobs, community building, and placed-based entrepreneurship are conveniently of-

ten the most low-tech and locally tailored to meet the unique needs of bioregional communities.

Chapter One

Bioregionalism, Traditional Ecological Knowledge and the Place for Modern Ethnobotany

It is of utmost importance when discussing practical ethnobotany to not think of it as a concept in a vacuum, but place it specifically in time and space. This chapter will examine the ways in which bioregional thought and Traditional Ecological Knowledge (TEK) are both useful modalities of analysis when examining the ways in which ethnobotany is continually relevant in a modern world. Bioregions are places in multiple senses of the word, and the places that we speak of define the ways in which other concepts operate within those systems. For example, a desert town in Arizona will require the ways in which we discuss water treatment different from how we discuss it in places like West Virginia, which has robust rainfall. By exploring concepts of bioregionalism and how they can apply in Appalachia, the ways in which ethnobotany can be utilized most effectively for positive change can be uncovered.

The term bioregion was first coined by Allen Van Newkirk in 1975 who defined it as a technical process of identification of “culturally and biogeographically interpreted zones... called regions” (Van Newkirk). Noted bioregionalist scholar Kirkpatrick Sale defines them as, “life-territory, a place defined by its lifeforms, its topography and its biota rather than by human dictates” (Sale, 336). While the physiology and topography of a landscape, as well as the unique flora and fauna that inhabit these distinct regions, stand as ways to categorize or separate the different ecological zones, bioregionalism as a concept goes beyond the confines of the environment and into the realm of the human observer. 1970’s bioregional activists and

scholars Peter Berg and ecologist Raymond Dasmann suggested that the final boundaries of a bioregion were those best described by the people who have lived and currently live within a certain region, the ‘human recognition of the realities of living-in-place’ (Berg and Dasman, 399). Bioregionalism for the purposes of this thesis holds these two key concepts; it is a phenomenology of place created through an integration of culture and nature (Moreno, 44).

Peter Berg made a clear distinction between environmentalism and bioregionalism as two separate, and often opposing concepts. Bioregionalism includes the human animal as a part of nature, an integral part of the system. Conversely, most modern environmental thought posits that humankind stands outside of, and often in opposition to, nature (Moreno, 45). While there are many extreme examples of the environmental devastation caused by human actions, the root of *why* humans allow these things, and sometimes strongly support things like mountaintop removal, are the questions bioregionalists seek to answer. When a person identifies themselves as outside of nature, it does not seem to be self destructive to wreak havoc on the natural systems one is embedded in. The illusions of the separation of civilization and nature have caused a false divide which has allowed catastrophic natural destruction that, at risk of doomsaying, may well be irreparably wrought. Place-based learning can aid in preventing the continued erasure of wild nature as an illusive ‘progress’ attempts an impossible march infinitely onwards through finding the ways in which humans fit into the regions they dwell in.

Another concept Berg brought to the table in the 1970’s when bioregional thought was born was the idea of a kind of land ethic surrounding the notions of these ecoregions. Not only were there ways in which places of common culture and biota could be identified,

compared and contrasted, but bioregions made space for the development of unique ‘reinhabitory’ activities. These include the development of place-based ecological philosophies, such as choosing methods of remediation for damaged grounds: activities like replanting mined areas and stream restoration. These were projects born out of proactivity not protest: actions that would attend to the unique ecological and cultural needs of the location. They were part of a movement that was a means to combat the ‘disinhabitory aspects of industrialism’, or actions that degrade and destroy rather than rebuild and conserve (Glofelty, 33-34). The ways in which we manage a space we have no ownership in is very different from spaces in which we have settled into as ‘home’. Just as mustering up the energy to paint a rented house would feel very different to an inhabitant than the same action in a newly purchased home, performing actions that affirm one’s residence and care for a place are shaped by how a person internally identifies with that space.

Essentially there are three common threads that run through the ways in which bioregionalism can be identified: a regard for nature and the natural boundaries of place as opposed to arbitrarily imposed political or administrative borders in which to organise human activity; the call for a practical land ethic, ideally one applied at a local to regional scale; and the need to reestablish or shore up regionally diverse cultures to steward environmental projects (Moreno, 44). There tends to be two camps in all debates about traditional ways: an all or nothing approach. However, the inclusion of a diversity of traditional and non-traditional cultures that inhabit a space together utilizing a practical land ethic has the strength of both centuries-old wisdom, which has stood the test of time, as well as modern science, which appears today to hold its own sort of magic. One does not have to throw out in favor

of the other. The type of reductionist thinking that would encourage the exclusion of either traditional knowledge or western science entirely has seldom provided nuanced solutions to complex ecological and cultural issues (Prober et al.). Interdisciplinary approaches can not help but address issues from multiple angles due to their very nature of including many different perspectives and analytical tools.

Aside from serving categorical purposes, bioregionalism is useful in creating a sense of 'home' and community that fosters creative place-making and feelings of identity with a specific place. When one has invested time and energy in caring for a place, it can render that land more "loved" and deserving of protection than a landscape devoid of community input and tenderness. People are less likely to destroy that which they viscerally know to sustain them. This is played out interestingly in the world of ethnobotany and is important to note when discussing how value is instilled in a landscape.

One of the benefits and failures of ethnobotany is that it places plants on a hierarchical scale of value as determined by their usefulness to humans, rather than their intrinsic value as beings that we share our homes with. While the current environmental movement has relied upon ascetics and abstract ecological reasonings for conservation, due to the nature of the diverse educational and political beliefs held by the American population, this type of argument is often seen as either too academic or non-essential (Kowalewski, 50). David Kowalewski (2015) has used the metric of nutrition to advocate for the protection of places which harbor wild food plants:

Why save wilderness? Environmental educators usually offer ecosystemic and aesthetic reasons, yet clearly this abstract approach has failed to resonate with the wider public. In this article I adopt a nutritional strategy based on a broad array of sources. Wild plant food, in terms of economics, ubiquity, and other measures, performs very well compared with supermarket competitors. This pragmatic method, I've found, offers a far more attractive and therefore popular grounding for appreciating wilderness than does highly theoretical argumentation (Kowalewski, 50).

While focusing on the usefulness of a plant is not necessarily in line with the values of environmentalists, conservationists and deep ecologists, it is an undeniably useful tool which can transcend the different social classes to provide concrete reasoning behind supporting the preservation of what could be seen as a useless weed or tree. Understanding how class and educational access play into ecological issues and the value seen in the environment is key when examining the ways in which ethnobotany can be reinvigorated in today's materialist and technocratic cultural climate.

Connections to Place and Traditional Ecological Knowledge

Connections to a region can be created in a variety of ways, and all serve to render the area as a 'home place'. This place is filled with emotional and spiritual ties that can ground a land management philosophy that serves to integrate human activities in the landscape. This can ensure the continued availability of the landscape to inhabit do to its internalized value created by its denizens. By adopting activities and management practices that draw people closer the natural world, environmental issues of human needs versus nature's needs can

cease to be two separate, opposing desires and mutually beneficial management practices can be born which address the needs of all of the living things dwelling in a region (Young, 46).

This synthesis of land, culture and how these two meet to create sustainable management techniques is not a new concept for humankind, for this is the way in which TEK has been practiced for Millenia. Humans have learned by living and doing. When these pathways are interrupted or destroyed, the chaos that ensues in land management and natural resource access is remarkable to say the least. The arrival of Europeans on North American soil is a great example of these interruptions, for without the First Nation's wisdom our forefathers would have starved. Europeans had been divorced from a sustainable land ethic long before their arrival. It would take another few hundred years for them to see beyond the profit in their soil and value the land beneath their feet, but by then their once kind hosts would be nearly physically and culturally eradicated, much like the ecological communities and great forests they had written about with awe in the 1600's.

How can a globalized, often mobile, population form connections to a land base? The "placeless-ness" with which certain populations of mobile persons move through our modern world has presented unique challenges to creating place-based identities, but it is not very difficult or out of the question for migrants to find meaning and value in their new homelands (Lyle, 11). Perhaps it is best to define place at this point. Place can be broadly defined as space endowed with meaning, understood as a "meaningful connection between humans and the world" that involves attachment to a particular location, to other humans, and to the more-than-human world (L. Johnson et al. 1). When place is defined in this manner, its loss is suddenly imbued with deeper communitarian connotations instead of a purely physical space.

It helps to establish and enforce a relationship that goes beyond simple resources. It important to note that this concept of a “sense of place” is not solely defined by abstract experience of the observer, but relies on expectations of a place’s people and institutions as well (Bridgette, 3).

The creation of these place-based values and experiences relies upon one institution in particular: education. The current interest in bioregional and place-based learning has produced many studies and works exploring the possibilities and outcomes of educational programming within the bioregional context. Place-based education is essentially the process of using the local community and environment as a starting point to teach concepts in language arts, mathematics, social studies, science and other subjects across the curriculum (L. Johnson et al. 1). Just as Berg and Dassman explored in their ideas of bioregionalism, the interconnectedness of the microcosm of the self to the macrocosm of the environment one inhabits can be seen as fertile ground for the development of unique opportunities for learning. It is the sense of place and sense of self which are firmly bound up together in this movement to unite two forces which have been portrayed in opposition (Hensley, 5). The ultimate goal of this way of learning is to live in a sustainable manner long term in a specific location. Here, sustainable is understood in both an ecological sense as well as a metaphysical one: through choosing management and livelihood methods that are ecologically sustainable, a spiritual connection to a place can be created and nurtured. By enmeshing the sense of self with the sense of place, as our ancestors most likely did, modern humans can find new value in the landscapes they inhabit.

Interesting work has been done looking at how engaging with the local environment, in this instance through foraging for plants and mushrooms, can lead to grounding place-based identities and strong relationships with the other-than-human life of a bioregion. Poe (2014), examined the ways in which foraging for plants and mushrooms informed three topics: cultural belonging and identity, belonging and place, and belonging and more-than-human agency. By interviewing informants from different cultures as well as recent immigrants who inhabited the Seattle area they were studying, it was noted that plant and mushroom foraging aided people in establishing connections to place. Interestingly, it also reinforced differences between people who related with nature and places distinctly through their unique cultural lenses from which they viewed the world. Contrary to ideas held by its critics, bioregionalism is not a homogenizing force, but allows for distinct cultures and lifeways to co-exist within the same locale.

There has been some outcry about the dangers of taking too much pride in one's homeland, and bioregionalism has been criticised for potentially supporting nationalism (Brennan, 215). Little is offered in lieu of the problems of "placelessness" and wanton environmental destruction by these critics, instead they focus on ideas of totalitarianism and draw parallels to Germany's authoritarian ecology (Olsen, 73). Though it is important to examine all the complex repercussions for supporting various ideologies, a cursory glance at the literature will reveal the intent of bioregionalism to be one of creating connections, not delimitations between the diverse inhabitants of a unique place and fears of these ideologies breeding nationalism is a distractive critic of a useful thought experiment. All ecological and social policies can be taken to an extreme when placed in the hands of an imbalanced person, and

this alone should not negate all the value that bioregionalism has been shown to have in its abilities to address complex social and ecological issues. Another interesting idea to surface in Poe's work is the idea that creating a sense of place and belonging through foraging for plants allowed the participants to see value in themselves reflected back by the provisions of nature, regardless of their country of origin (Poe, 919).

Looking at ecosystems similar to our own in Appalachia is helpful when examining how direct experience in nature can generate impetus to form mutually beneficial relationships with bioregional ecologies. Japan's mountain ecosystems are ecologically very similar to Appalachia's, such as moist cove forests because of their shared biogeographical history. To provide context for these examples and the unique and robust biodiversity of specific plants that will be addressed in Chapter Three, it is necessary to understand how this region came to be so, and how similar regions hold insightful examples of nature-based cultural and economic revitalization techniques.

Seventy-five million years ago there were two super-continentals known as Laurasia and Gondwanaland, as well as other smaller island land masses. What we know today to be Appalachia, Europe and Eastern Asia occupied the same landmass, called Laurasia. Over millions of years, they found themselves separated by the Atlantic ocean due to continental drift and other geological forces (Xiang et al.). In simplified terms, this drift is important to understand similarities between the once continuous landscapes that today is separated by thousands of miles of ocean and land. Through looking at fossil evidence, it has been discovered that this Northern Hemisphere landmass was once covered with temperate forests, much like the ones extant today in Appalachia and Eastern China (Manos and Meireles, 780).

During the Paleozoic era, the Appalachian mountains existed as a large mountain chain. Interestingly, they have been relatively geologically stable since that era, which provided the necessary time for complex evolutionary processes to proceed within the plant communities that came to reside here (Ricketts, 183). As the Pleistocene glaciers advanced in subsequent epochs, these relatively stable mountains acted as refuges for plants fleeing colder, drier climatic conditions with their mesic, or moist forests. The Appalachians harbored a wide variety of microclimates during this time, much like they do today. This allowed the mountains to act as refuges for cold-adapted plant species, such as bog plants like cranberries, as the glaciers retreated (Ricketts, 183).

The varying terrain and elevational gradients of the Appalachian mountains are usually regarded as separate ecosystems. The temperature, moisture and soils of each elevational area all act as limiting factors as to what types plant life can exist there by offering unique challenges for each plant species to overcome for survival. These elevational changes allow for the large variety in the types of forest communities we find here. The mixed oak forest is found at lower elevations, between 800 and 3000 feet. Higher up, we find the old-growth cove forests at mid-elevations. These forests contain giant tulip poplars (*Liriodendron tulipifera*), chestnuts (*Castanea dentata*), red spruce (*Picea rubens*), and oaks (*Quercus spp.*). Above 4500 feet, the northern hardwood forests populate an Alpine-like cold tolerant community (Ricketts, 183). These different plant communities are closely mirrored in the East Asian region, where broadleaved, deciduous forest trees and herbaceous understory plants occupy similar niches in their environments. The patterns in these plant communities that we

see today are known as Tertiary¹ relict disjunctions (Boufford and Spongberg, 423). These were plants that, before the Miocene, were distributed across the supercontinent Laurasia, forming part of the ancient mixed mesophytic forest community (Xiang et al.).

Japan and other areas of eastern Asia face similar issues to Appalachia in terms of rural brain drain, loss of traditional food ways, and declining health in elderly populations. Chen Bixia and Qiu Zhenmian (2012) examined current and possible future utilization of edible wild plants as one important non-timber forest product (NTFP) by clarifying the attitudes of consumers and exploring the challenges of harvesting edible wild plants in Ishikawa Prefecture, Japan. The wild mountain vegetables and mushrooms, or *sansai*, harvested seasonally in rural Japan are a part of folk foodways and TEK bases held by their aging rural population, much like the harvest of wild foods like poke (*Phytolaca americana*) and so-chan (*Rudbeckia laciniata*) each spring in Appalachia (Wigginton, 49).

By examining the multiple functions that the harvest of these foods provides, it was concluded that wild food harvest can be seen as a tool for creating socioeconomic relationships that are dependent on healthy, biodiverse ecosystems. It was noted that loss of these food products affected the health of the aging rural populations, but they also held innovative economic opportunities in tourism and recreation. It was recommended that urban populations, especially the younger inhabitants, be educated on the harvest of these foods to foster diversity in their diet as well as their interaction with the elderly rural populations who hold this knowledge. This system has multiple functions, rendering it an efficient, low-tech way to promote rural tourism, the eating of nutritious wild vegetables and dependency on healthful,

¹ Tertiary period was 65 million to 2 million years ago. It is divided into five epochs; Palaeocene, Eocene, Oligocene, Miocene, and Pliocene.

diverse ecosystems as a part of a sustainable rural economy (Bixia and Zhenmian, 16). This study serves as a fantastic example for Appalachia who boasts similar vegetative populations due to its aforementioned geographic similarities.

Appalachia can learn from the ways in which similar climatic regions in Asia utilize their botanical resources do to the long history of plant harvesting in the mountains. A belief was held by many that the environment is essentially benevolent and healthful to be in. These mountains were viewed as an essentially healing landscape by both Native and settler folks alike. This was sure not only to its impressive mountains, but the fine climate, diverse botany and many water features and springs. Appalachia has 1100 plants which have been identified as having medicinal uses, however there are generally about 90-100 plants which people largely relied upon (Cavender, 62).

Root digging was once an important part of the rural Appalachian economy. It was said by World War I that three-fourths of all American crude drugs were sourced from the Appalachian region (Manget, 661). This is still practiced today in some areas by different people. The author has spoken with a neighbor in Madison County, North Carolina in his sixties who harvested bloodroot to make extra money as a boy and got 12.00\$ per coffee can full of dried root in the 1960's. The environmental destruction of the Appalachian mountains by extractive industries like coal mining, fracking and clear-cut forestry have threatened this culturally significant wildcrafting. Another threat to wild medicinals is over-harvesting of sensitive desirable species like ginseng (*Panax quefolium.*) do to a combination of factors ranging from educational access, economic desperation, to a large demand from Asian botanical markets abroad (Khim, 64).

There is much more research needed to examine the ways in which wildcrafting medicinal plants can be done sustainably, but this does not mean that it should be excluded from the conversation about which ethnobotanical practices should be promoted for our region. Some solutions could be actions like focusing on abundant, non-native plants like chicory (*Cichorium intybus*) while using diverse tactics to prevent over-harvesting. These could be done in a large array of methods, but some examples include providing more stringent regulation for buyers and sellers of botanicals, as well as focusing on public education surrounding these resources (Fritsch, 180-182). Protecting these pieces of TEK is imperative today to ensure these ways are not lost forever.

Traditional Ecological Knowledge

Wildcrafting is a type of Traditional Ecological Knowledge (TEK). This practice serves as a fine example of the value that these knowledge bases hold. One way TEK is defined is, “as a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment’ (Fikret, 1251). This can encompass everything from religio-magical practices to the uses of medicinal plants. The practical applications of TEK in modern environmental management has been examined in a variety of cultural contexts and has yielded exciting and important research into the continued relevance of traditional ways and knowledge bases in humankind’s relationships with the natural world.

Indigenous peoples have a unique insight into the location that they have historically inhabited namely due to the powers of long-term observation and the strength of oral tradi-

tion. Using TEK in combination with purely modern western scientific management practices allows for the creation of long-term sustainable solutions versus the general capitalism-driven one-size-fits-all fixes espoused by modern science. From medicine to forestry, it is evident through the healthcare and environmental crises faced worldwide that current practices are severely lacking. TEK can provide modern societies with long-term data on ecosystem interrelations and assist them with analysis, monitoring, and actions in the context of global change (Ianni et al. 145). The weakness in TEK has been declared as its intense specificity. While it is important to acknowledge the appropriate applications of TEK, this factor should be seen as one of its many strengths when correctly used. The knowledge that an individual group of indigenous people has is very specific to their locale (Menziés, 2). The modern land management dialogue is still often drafted by forces external to the land they governing rather than by people embedded in the very unique bioregional needs of a given space. Using TEK as a method of specifying the unique needs of a specific location can be hugely beneficial for long-term resource management strategies and building ecologically and socially resilient systems.

At the risk of commodifying TEK as a tangible product to be consumed much like the rest of indigenous people's land, culture and traditions, it is important to see TEK as a living, adaptive knowledge base, rather than a frozen snapshot of traditional ways. In efforts to quantify and revitalize TEK in the rural Italian Alps, Ianni et al. (2015) made note of several very important things about TEK which are imperative to its study in Appalachia as well.

Ianni et al. wrote that:

[e]fforts to conserve traditional knowledge in modern rural societies have often been associated with eco-tourism, the promotion of local products or the folk recreation of traditional practices and rituals. One of the crucial weaknesses of these initiatives is that they are rarely triggered by actual residents' needs. (Ianni et al. 152).

This is an insightful observation which has been mirrored in cultural revitalization efforts in Appalachia, which is further examined in Chapter Two. Avoiding the alluring nostalgia of “freezing” traditional ways to provide a facade for agro and eco-tourism is of vital importance when discussing promoting TEK for economic revitalization and involving the residents' remains ever important when attempting to create truly sustainable solutions.

A lack of attention to current residents' needs was one of the biggest criticisms of TEK-based revitalization efforts that was noted in this study, yet it can be addressed simply by recognizing the natural changes in rural communities and seeing the protection of TEK as one part of sustainable community development (Ianni et al. 153). This should not be seen as a roadblock, or deterrent from exploring the multitude of possibilities presented by TEK for cultural, economic and even spiritual community work. Instead, it can function as a question in the community planning process and adapt and change with the times, just as it always has, for how would the unique cultures that make up a region become so specialized if they had not grown and adapted over time? Go'mez-Baggethun and Reyes-García (2013) aptly identify this when they propose seeing the loss of TEK not as whether a specific amount of knowledge is lost or kept, but whether the society retains the ability to generate that knowledge and the role that it assumes in the new society. This implies that communities conserve

autonomy and control over the process of producing and regenerating knowledge (Go'mez-Baggethun and Reyes- Garcia, 647).

In Prober, O'Connor, and Walsh's (2011) study which examines Aboriginal Australians TEK for its usefulness and relevance for modern natural resource management. It is made clear in this study that Aboriginal natural resource management, developed over thousands of years of adaptive management within a worldview that stresses respectful relationships with natural resources, provides useful informatics and models for modern planners and managers. This type of knowledge contrasts with models built on Western science that traditionally focus on reductionist explanations and are born out of a worldview that sees humans as separate from and superior to the natural world (Csiro, 12). This is directly in opposition to the bioregional visions examined earlier in this chapter.

It is noted that reductionism has its place in understanding simple systems, however, nature and its diverse ecosystems are not simple. Reductionist science and systems management modalities do little to address the complex needs of sustainable natural resource management solutions. Interestingly enough, modern sustainability science and sustainable development studies have more in common with the indigenous TEK holistic worldview than other types of Western science (Csiro, 12). This is due to the attempts to take into account diverse factors such as social, economic, spiritual and natural systems present on a landbase. This study concludes that due to these similarities and the effectiveness that has been observed with holistic management models, further research into indigenous TEK in Australia can aid in creating robust natural resource management systems that address long term sustainability.

Climate change has always been an important part of the discussions surrounding natural resources management and access issues. As we have seen, TEK can be especially useful when addressing long-term patterns that climate change challenges present in natural resource management due to the often very long timelines of habitation that indigenous people have to a specific region. Turner and Clifton (2009) outline specific ways in which TEK and the wisdom of indigenous lifeways can be useful in long-term climate-based planning and mitigation of the harmful environmental effects of climate change: TEK can provide direct knowledge and insights relating to weather, environments, and species and habitats; it can contribute to development of models for accommodating and adapting to ongoing and imminent climate change; and it presents alternative pathways and approaches to sustainable living for future generations (Turner and Clifton, 180). As aforementioned, these skills, observational forces and traditions do not exist in a vacuum and can co-exist and inform modern scientific processes to develop unique, highly specified tactics for addressing climate change and other unique needs of specific bioregions.

Hunting traditions have near universally been created out of the need to be flexible, adaptive and resourceful. Changing climatic conditions throughout human history have necessitated these types of changes. These models of thought and flexibility provide countless useful tools for livestock management and forestry in modern practice. Inuit communities have faced extreme challenges in an often unforgiving Arctic environment yet flourished until the arrival of white settlers by relying on these skills. Their observational and oral traditions aside, cultural practices like food sharing and intercommunity trade continue to be important strategies for addressing differences in food availability and nourishing a culture of

self-worth, independence, and reciprocity (Tristan et al. 233). These lifeways are not meant to be frozen for a historical reenactment or nostalgic remembrance in a novel, but stand together as examples and inspiration for community resilience here in Appalachia and elsewhere.

There is a clear need to integrate more indigenous ways of seeing into Western thought beyond the cultural appropriation of spiritual practices rampant today. Seeing the interconnectedness of all life and one's place within that continuous feedback loop of cause and effect is an invaluable asset when developing long-term natural resource management strategies that do not focus on short term economic gain and minimize apparent and avoidable long term destruction of life forms and valuable cultural components. It must be continuously stressed that abandoning western science in favor of an approximation of indigenous lifeways is not what will lead us forward in bringing people into closer relationship with nature and therefore promoting its preservation and sustainable utilization. Instead, it would be advantageous to look at the ways that barriers exist which prevent the consideration and validation of TEK alongside scientific methods of observation and management. As an example, story telling grounded in the oral history traditions of local indigenous peoples can serve as useful tools of place-based nature education for children when metaphor can convey more than flow charts for curious young minds.

Management is a useful term to describe what humans currently do to the landscapes that they inhabit, yet it is limited in how it conveys the rest of what must be dealt with in a bioregion. Waterways, forests, agriculture lands, roads, homesites and public greenscapes all require consideration and integration into a system which addresses all of their needs, inputs

and outputs. TEK and bioregional thought both provide countless tools to look at the ways in which humans interact and live *within* the environment, not act upon it as separate, autonomous entities. Who enacts and creates these plans and projects however, must also be grounded in and dependent upon the bioregion in question, or the usefulness of bioregional thought and education is not applicable. The community dwelling within a bioregion must be empowered to practice autonomous decision making and resource management that meets their needs.

Self-regulated initiatives within communities are beneficial when TEK is taken into consideration for the following five reasons as outlined in the 2013 study, “Community-Based Conservation and Traditional Ecological Knowledge: Implications for Social-Ecological Resilience” based on a current review of the literature:

(1) they maintain a decision-making system, based on local observations, beliefs, and perceptions, that guarantees the conservation status of a resource; (2) in decision making, they respect the role of customary institutions that rely on cultural values (i.e., sharing and reciprocity), taboos, and customary sanctions, which also hold the transmission of the cumulative body of ecological knowledge; (3) they have developed an institutional learning and have integrated formal and informal mechanisms for flexible and rapid decision making; (4) they have reinforced community networks through trust building and social bonds to incentivize regulatory compliance; and (5) they are guided by local leaders who have a commitment to their community traditions and cultural values and who support sustainable management practices to enhance both the well-being of local people and biodiversity conservation (Ruiz-Mallén and Corbera). These are all vitally important factors in determining what prac-

tices will create space for TEK to be useful and continue to grow in a community which have been demonstrated and observed to be effective.

In Appalachia, all of the aforementioned five points can be applicable in own decision making processes and planning. By tailoring our ecological and social institutions to the unique needs of our region, we can ensure that we have ways of managing things such as systems of education to the use of our public lands in a way that is supportive and explicit to our locale.

Bioregional and TEK Education in Appalachia

In Appalachia, bioregional planning and education can look a variety of ways. Because of our unique ecosystems and impressive biodiversity, there are many opportunities to better-integrate relationships between humans and the environment we wish to invest them in. Aside from the myriad of untapped or underutilized natural resources of the region, Appalachia also boasts a culture which acts as an asset in itself. This culture has been treated as a regional asset since the 19th century when local color writers began to define Appalachia as a, “place out of time” home to our “modern living ancestors” (Becker, 42). The ways in which Appalachian communities in, for example, western North Carolina choose to plan and engage with their resources will look very different from how Pocahontas County, West Virginia will choose to interact with theirs. The bioregional differences, encompassing everything from cultural to purely geographical features will affect how the people of those places come together to make choices about tourism, development and natural resource management. While our collective history has complex cultural resource implications and has pre-

sented challenges and benefits for our region, the conversation about how Appalachia can best use all of its resources comes down to the community level.

What can bioregional planning look like? There are of course innumerable ways to look at a planning process grounded in place, but the 2006 piece, "The Future of Bioregional Planning in the Southern Appalachian Man and the Biosphere Region" provided an excellent example of what it could look like here. Respondents in Appalachia were asked to define the following, what is bioregional planning? The following definitions were representative of their responses:

Planning that takes into account the unique cultural, historical, and natural features in the region and the attempts to preserve them, planning that protects biological diversity on a landscape scale, planning that considers the wide range of natural systems without regard to political boundaries, planning that takes into account biodiversity and the stakeholders' perspectives; long-term design for human activities (Tonne et al, 504-504). All of these definitions are useful and as a whole encompass a way to ask questions about community planning decisions in Appalachia and beyond.

Community and Economic Revitalization in Appalachia

Community and economic revitalization in Appalachia have been tackled from many angles and provide enough issues for entire thesis examinations, but for the sake of the scope of this work, the ways in which Appalachia as a region can utilize ethnobotany, TEK and bioregional thought to tackle these issues shall remain the focus. There are communities which have already begun to implement and see the benefits from using their natural resources sustainably to create new jobs, create a sense of place and ground themselves into a

more bioregionally-based identity in a globalized world. In the community development publication from the National Endowment for the Arts, “How to Do Creative Placemaking”, the chapter entitled “Can Arts Drive Rural Economic Development?” by Chris Beck and Tracy Taft provides examples of towns and regions in Appalachia using a variety of tactics influenced by these methods to revitalize rural areas economically. In southwest Virginia, a rural region on the edge of Appalachia, towns are focusing on reopening venues for performance, while businesses such as bed and breakfasts, food service, and outdoor outfitters are working to cater to tourists seeking inspiration and a refuge from the city. The rural location is being used as an asset, rather than continuing to be seen as a weakness, while corresponding small businesses are responding to the creation of outdoor recreation activities (Beck and Taft).

Agro-tourism and eco-tourism can additionally provide solutions for sustainable economic revival in rural Appalachian communities. Eco-tourism can be defined as "any tourism practice the purpose of which is to engage directly with some aspect of a local community's relationship to its environment while agro-tourism can be understood to mean the same but focusing on people's relationships to agricultural activities (L. Johnson et al. 1). Just as with TEK they are ecotourism is not a panacea to the multitude of challenges faced by the region, but it has been demonstrated to not only provide jobs which are healthful, meaningful and provide impetus to protect natural resources, but also provides a way to profit off of said resources without destroying or compromising them.

Diversified incomes are often necessary in rural areas, and are often part of strategies to provide resilient solutions to economic issues in places far from economically desirable city centers. The loss of the family farm, farmland and small scale sustainable agricultural

knowledge can also be addressed by these types of businesses through the promotion of agrotourism and farm-stay experiences (Chesky, 88). The popularity of programs like World Wide Workers on Organic Farms (WWOOF) and related enterprises as well as agrotourism on small farms can provide the income needed to make small organic farms viable in the long-term, preserve family farmland, and make agriculture and living closer to nature more visible. Through the use of creative entrepreneurship, agritourism and ecotourism, new economic incentives to preserve and share culture and ethnobotanical lifeways can be created and sustained.

Agrotourism in Appalachia

Agro-tourism can also provide opportunities for place-based sustainability education within our own Appalachian communities. This can be accomplished by partnering with local schools, colleges and universities as well as working with nonprofits and NGO's to seek funding for classes, workshops and demonstrations on farms and historical properties. Place-based education can be defined as, "the process of using the local community and environment as a starting point to teach concepts in language arts, mathematics, social studies, science and other subjects across the curriculum. Emphasizing hands-on, real-world learning experience, this approach to education increases academic achievement, helps students develop stronger ties to their community, enhances students' appreciation for the natural world, and creates a heightened commitment to serving as active, contributing citizens. Community vitality and environmental quality are improved through the active engagement of local citizens, community organizations, and environmental resources in the life of the school" (L. Johnson et al. 1).

It is through instilling value in the landscape that the ultimate conservation work can be achieved. The multitudinous process of living within and engaging with a place is the first step in the complex process of breaking down the walls between humans and nature. Turning to the work of bioregionalists and indigenous thinkers can provide the framework and know how to take the screen addicted people of today and reintroduce them to more healthful, meaningful mode of connection between people, each other and the land they inhabit. By using TEK and place based learning, a reverence for one's home place and the utility of the natural resources which inhabit it can take on new meaning and provide impetus for more people to protect and engage with them. By reviving old ways of thinking and operating in the landscape and combining them with new ideas from Western Science, a new land ethic can be born which promotes the wellbeing of all its inhabitants, both human and otherwise.

This chapter has examined the ways in which bioregional thought and TEK can work together to inspire new languaging methods and land management practices in Appalachia and beyond. By looking at the ways in which we address the issues of "placeless-ness" and find value in the knowledge and life ways of the indigenous peoples of a region: old ways of looking at a question may become new. This chapter further examined the ways in which bioregional thought and TEK are both useful methods of inquiry when examining the ways in which ethnobotany is still relevant in our modern age. Chapter two will explore the connections between ethnobotany and Appalachian folkways as key concepts in economic revitalization.

Chapter Two

Ethnobotany and Appalachian Folk Ways as Economic Revitalization

This chapter shall explore the connections between the Appalachian folkways, more specifically folks arts, revival and those ways in which ethnobotany and place-based learning can come together to help create sustainable entrepreneurship opportunities in Appalachia. This region boasts the most biodiverse ecological regions in the United States (Spira, 11). This, combined with the diverse mountainscapes, water features, the Appalachian Trail, and the Blue Ridge Parkway have made certain parts of Appalachia tourist destinations for decades. The long history of devastating coal, timber and mineral industries owned outside the region have created a biogeographical story wrought with contradictions: a land of extreme beauty and ugliness, preservation and barrenness, abundance and degradation.

The immense environmental and cultural richness of this bioregion, combined with many other factors, make Appalachia a much-mythologized realm which has boundless opportunities for sustainable ethnobotanical entrepreneurship development. In this Chapter, the term bioregion is taken to simply mean “an area that shares similar topography, plant and animal life, and human culture” (“Bioregionalism”). The history of the revival of folkways in Appalachia, specifically folk arts utilizing ethnobotany, shows us that there is still much to be studied about traditional ways and how they can be utilized for sustainable, rural economic stability and revitalization.

Useful plants in Appalachia and their contributions to local economies are often taken for granted in an ever industrializing world. The wide diversity of small businesses, local entrepreneurial inspiration and long-term economic sustainability that they have and can pro-

vide is seldom addressed. By examining the revival of folk arts in Appalachia in conjunction with the ways in which similar regions have utilized ethnobotany to revive rural economies, new ways forward may be paved in our region for small, low-tech businesses and rural economic revival. These enterprises can serve to preserve our diverse regional heritage, support healthful ecological identities and affirm a sense-of-place in Appalachia among its dwellers. While the Appalachian folk arts revival had many positive effects, it is important to examine the ways in which it did not service its inhabitants and how it can be done differently going forward.

The folk arts revival is a complex topic that includes important discussions of outsider influence and regional autonomy. Appalachia as a “place out of time” which housed “our contemporary ancestors” was born as an identity after the Civil War. Many forces outside of the mountains came together to press Appalachia into the cultural diamond it is today at the turn of the century. A plethora of eyes turned their sights on our region, envisioning, observing and applying what they saw as a balm to the struggles, both real and imagined. Extractive industries, from coal to timber, had ravaged the mountains in some areas and made agrarian life increasingly unprofitable or impossible as Appalachian people moved to work in mill towns, coal mines and urban factories (Becker). Social and cultural reforms were also on the move through the hands of missionaries and college educated middle class white women from the North seeking to provide aid to Appalachia, or what President of Berea College, William Godell Frost, called the “ward of the nation” (Frost, 9).

Appalachia presented a unique challenge to the missionary and social reformer. On one hand, due to the mythologizing from local color writers after the Civil War, Appalachia

had gained a reputation as a sort of time capsule inhabited by sturdy Anglo-Saxon stock unchanged by time. The dances, language, song and craft traditions which the Appalachians were believed to hold caused them to be viewed as a repository for culture that the rest of Antebellum America wanted desperately to believe in and identify with (Becker, 45). These writers, who essentially acted as travel writers in the early days of tourism, spoke of Appalachians as peculiar and backwards yet also charmingly living a century behind the rest of America. They used Appalachia as an example for comparison to the rest of America to show how much they had progressed in comparison to this strange land of strange people (Seaton, 4). This effort to both preserve Appalachia as a place out of time, a place rich with what would become American folk culture, as well as a place to be modernized by outside forces would determine the outcomes and nature of the Folk Arts revival that was about to take place.

While many handcrafts and arts are seen as drudgery to create, there is no denying the beauty of an expertly handcrafted table or deftly woven basket. The loss of the artisan or craftsman was keenly felt quickly to those of the middle class living through the age of industrialization and as early as 1851, an Englishman named John Ruskin complained of the lack of character and sameness produced by manufactured goods. His lamentations inspired others like fellow Englishman William Morris, who went on to found Morris and Co., which was dedicated to craft designs in England and was a key player in the creation of the Arts and Crafts movement. He was an intellectual and philosopher among the ranks of Pre-Raphaelites who saw the degradation of labor as synonymous with the rise of the machine. He saw an interconnectedness among art, nature and morality. The idea that craft could be a moral force

in society took hold in America a few decades later in response to this and other movements of the time. Ruskins thought that if a design could be improved and perfected, so too could the craftsperson (“Roots of Arts and Crafts.”). This moral connection gave the missionaries who would pour into the mountains of Appalachia the fodder they needed to make craft practices an integral part of their work improving the moral character of the Appalachians they decided were morally lacking.

The arrival of missionaries in the Appalachian mountains was perhaps one of the first steps towards the reintroduction of craft practices in the region. At the height of industrialization in Appalachia, owning store bought items and clothing was seen as a mark of prosperity, just as it was elsewhere in the industrializing world. With this new mindset, the art and knowledge of making homemade and handmade food stuffs and useful objects began to wane around the industrializing Western world. Just as in the birth of the English Arts and Craft movement, Americans too began to see the art of craft as a moral force. The art of physically creating was seen as moral, for idle hands were truly the devil’s playground. This idea was seized upon by missionaries from the North who had identified Appalachia as a region in desperate need of their aid due to the multitude of stories and beliefs seeded by the early local color writers. It was said by Allen Eaton, a member of the Arts and Craft movement, “Every kind of work will be judged by two measurements: one by the product itself...the other by the effect of the work on the producer.” This is the idea that made the Craft revival in Appalachia unique from the rest of the world; it went beyond the aesthetics of the object and addressed the social welfare of its maker (Fariello).

There existed a strong lineage of handicraft in Appalachia, but just like the rest of the America, young people had stopped practicing the land-based skills of their parents and had begun moving onto better economic opportunities away from rural life. The settlement school era that would mark the beginning of the 1900's brought handicraft to a unique space in Appalachian history which still occupies the American imagination. Its history can also serve as a very useful example for reviving and promoting ethnobotanically derived crafts in our communities today. There are many iconic schools, some still extant today, which helped to form the manner in which craft and folk skills function in Appalachia, yet we will focus on two institutions: Allansand and Joseph Campbell Folk School in North Carolina and examine the ways in which they continue to play roles in the local economy and where further opportunities lie.

The Rise of the Appalachian Folk School

The formation of Allansand Cottage Industries is a good example of the story of many settlement schools. It begins with Frances Louisa Goodrich (1856-1944), who was a Presbyterian missionary. After being gifted a hand woven coverlet and witnessing the reaction from her Northern Middle class friends, she was inspired to utilize the power of craft as an economic, social and spiritual force in the mountains of Western North Carolina. Appalachia being the prime place for a Northern missionary of her education and standing, she started out around the Asheville area, but soon chose Madison County, North Carolina to start her craft program due to its distance from the city center of Asheville, as well as her observations of the survival of "old time thrifty ways". She worked with young mothers in "mother groups" and organized the women of the area to begin weaving, none of whom knew how to

weave despite the persistent legends of the unchanged mountaineer. She had them learn from an elderly woman from nearby Flag Pond, Tennessee, Emelda Walker, one of the few who still knew how to weave with the traditional looms.

The name Allanstand was born after Goodrich acquired “Allen’s Old Stand”, an old store front and one of the few places of commerce in the rural area. Thus in 1902, Allanstand Cottage Industries was born as a place to card, dye, spin and weave wool and cotton into traditionally woven coverlets which were then sold by mail order and to the occasional passer-by. This generated income and focused on meeting Goodrich’s three goals: bring money to women in homes too far from markets, give them the pleasure of producing beautiful things and to save old crafts from extinction (Caldwell). She identified with the idea that the production of these crafts was useful spiritually to the crafters when she said, “Not texture of wool...alone is woven, but also...texture of character” mirroring the philosophical ideals of the European founders of the Arts and Crafts Movement (Fariello).

The old location stands as a ruin today in Shelton Laurel, North Carolina, as the shop was given to the Southern Highland Craft guild in 1931, where it still serves as an important location for craft commerce and celebrating mountain arts. Goodrich was a prime example of the Northern missionary intent on giving aid to the people of Appalachia. She did not discover rich, living traditions of craft production hidden in the hollers she sought out. Instead, she needed to rejuvenate the practice, often interjecting her own preferences for patterns and even northern styles and techniques. Though much good has come of it, this movement is not without critique. What is important to note is that it did provide an enjoyable, meaningful supplement to the rural livelihoods of the women who chose to become involved in these

programs and schools. Even today, Appalachia still plays host to many folk schools and learning centers which attract tourism, students and even immigrants to the region while acting as repositories for a variety of folk and artisanal craft.

There are few as successful and iconic as the Joseph C. Campbell Folk School in Brasstown, North Carolina. While the dawn of the folk school and the settlement school was taking place in the early 1900's, the newly invented philanthropic foundational charity conveniently also came to life to fuel them. The Russell Sage Foundation funded John C. Campbell, Olive D. Campbell, and Allen Eaton to take surveys of the cultural conditions of the Southern Highlands where the eyes of the nation were focused on social and cultural reform. While their own idealism about Appalachia prevented them from effectively enacting certain types of social change, they did provide the invaluable service of recording what they saw, however skewed through their cultural, social and personal economic lenses (J. White). The works born from their efforts were threefold: two written texts, "The Southern Highlander and his Homeland" and "Handicrafts of the Southern Highlands", and the John C. Campbell Folk School.

The Campbell's found inspiration in the Danish folk school models and saw the cooperative movement as a useful force for improving the organization and education of rural people (J. White, 45). It can be argued that it was here, at the school founded by Dame Olive Campbell in 1925 after her husband's death, that mountain culture as we know it today was born. The promotion of archaic ways upon a people seen by the rest of America as hopelessly primitive supported the view of mountaineers as "living artifacts". Using the word "folk" also allowed the perceived peculiarity of the mountain people to be explained in a more posi-

tive light. America was both fiercely proud and familiarly ashamed of the “folk” who were invaluable to a country desperately seeking cultural self-definition. It was only as recent as 1915 at the Conference of Southern Mountain Workers that the notion of Southern mountain ‘folk culture’ was articulated as a singularly unique phenomena (Becker).

Were Appalachian folk ways entirely born from the region or imposed upon it? The answer lies somewhere between the two. Clearly the social actors in these settlements school, folk schools and cottage industries had a large effect on what crafts were promoted and which were discouraged, for it was not from within the region that the folk revival was born. Regardless of their origins, the economic benefit of these institutions is very certain.

In 2006, it was estimated that the John C. Campbell Folk School had a direct economic impact in Western North Carolina with a revenue of \$5,200,000 (Stoddard et al. 49). As a small institution in a rural area of the region, this is no small contribution to the economics of our state. The idea that Dame Campbell and others had, that folk skills were valuable for their therapeutic value and their ability to reconnect people with everyday life, cultural traditions, and bodily knowledge, has continued to live on today. Current research is still asking the questions of just what value do folkways have today? How can they serve us? How do folk arts play a role in our sense of place and how we care for, identify with and relate to that place? Where do folkways and arts fit into our future? These ideas aside, the real economic impact of these practices can be felt throughout the region.

When connected to place, a craft or folk practice is often bound up in a specific cultural context. Due to the pressure of outside forces and the diverse cultural inputs in Appalachia through the various European, African and Indigenous American influences of its

inhabitants, it is impossible to say that the rich variety of folk arts and crafts in Appalachia today do not contain something uniquely Appalachian about them. Nothing is created in a vacuum, and certain art forms and craft styles were promoted to the detriment or erasure of others over time due to the multitude of pressures from outside missionaries and social workers each holding their own unique perspectives, prejudices and ideals. Industrialization has shown that it is a culturally disruptive phenomena worldwide due to out migration and other economic and social factors, and it is no different in these mountains.

The craft production industry today looks different than it did 100 years ago. Today styles are mixed and matched across cultural lines and are generally created for tourist markets. This is not necessarily a criticism, for one of the observations which is important to note when taking stock of the effects of the Folk Arts revival on Appalachia and elsewhere is that folk arts are living traditions. The settlement school workers and missionaries sought to preserve rather than allow these arts to progress to serve the people who practiced them. They also imposed crafts or craft styles from other parts of the country where they did not find the folk ways preserved as they imagined they might have after being exposed to popular ideas about Appalachians.

Folk arts preservation techniques have been criticized for not allowing the folkways and arts to grow and change with the cultures that birthed them. Just as in the practice and promotion of TEK, it does not necessarily matter if the specific piece of knowledge is lost or kept, but whether the society retains the ability to generate that knowledge and the role that it assumes in current society. This also implies that societies undergoing folk revivals must be

autonomous in their process to ensure that the practices in question truly serve the communities and continue to be relevant (Claude and Fikret, 533).

In 2001, the Craft Organization Development Association performed a study on “The Impact of Crafts on the National Economy” and discovered that the U.S. craft industry was identified as having a \$13.8 billion economic impact nationally. It was conducted for coda by the Center for Business Research, Appalachian State University and managed by HandMade in America. The results provided information vital to understanding the connections between craft, tourism and the economy which can allow us to measure the success of initiatives to revive and promote folk arts today. Much like ethnobotany and other niche or low-tech industries, crafts and folk arts are often seen as relics, outdated or unimportant in our regional economies. This study served to show just how impactful the economic contributions craft has within the economy of western North Carolina, especially when you compare the craft contribution to the region’s Coal and Fuel oil contribution of 13.2 billion (MacDowell).

Craft creation and culturally specific craft production can act as important avenues for sustainable income generation in rural areas today worldwide. By examining the history of the Craft Revival in Appalachia, we can see the ways they have already undertaken this role, as well as the criticisms which have been made about the authenticity and outsider influence over how these practices were revived and taught. Much more can be done to expand the reach and accessibility of these low-tech culturally significant ways to help address the economic struggles of rural Appalachian areas and beyond. Cultural tourism is alive and well in America today, and while controversial for reasons of authenticity, exploitation and cultural appropriation, when done in ways that support community autonomy, marginalized social

groups and sustainable production, these practices can help to ensure a viable alternative to the extractive natural resource economies that have dominated Appalachia for centuries (Duxbury, Keurvorst, and Campbell).

Appalachia's Natural Resources and Ethnobotanical Opportunities

Ethnobotany and folk arts can come together to provide Appalachia with meaningful opportunities to preserve the heritage of its diverse social groups, create small sustainable businesses while also encouraging a healthful ecotourism industry that promotes ecological preservation and recreation rather than destruction and exploitation. Some of the beauties of these types of endeavours are their general low-cost startups, low-tech executions and interdisciplinary educational possibilities. Appalachia has a host of unique factors which make it a particularly rich region for sustainable small businesses in ecotourism in which ethnobotany plays a unique role. The complex cultural stereotypes and questions of how cultural tourism is participated in is imperative when examining how to foster these businesses and entrepreneurial ideas.

As we have seen in the history of the settlement schools and folk schools in Appalachia, the ways in which Appalachian culture has been manufactured, sold and interacted with by outsiders has been in both beneficial and problematic ways. Knowing this, how can ethnobotanically-based Appalachian cultural tourism play a role in the sustainability of the region while addressing these issues? It's imperative to first understand what problems are often involved in tourism as a whole. These issues are also necessary to address when referencing the usefulness of the final chapter of this work for practical applications of ethnobotany in Appalachia. Ecotourism can be a great way to promote and inspire love of the envi-

ronment and unique bioregions, but it must be carefully monitored and evaluated to ensure that these benefits are not arising out of ecological destruction.

Appalachia has unique waterfalls, rivers and mountains which all help to garner its reputation as a magical ecological environment that draws many visitors every year. Between the Appalachian Trail and the Blue Ridge Parkway, thousands of people visit hoping to immerse themselves in an otherworldly ecological experience in a region characterized by its mythic and romanticized natural beauty. Ecotourism is often seasonal, meaning it provides few reliable well-paying jobs. The needs of a seasonal tourism industry can also drive up housing, food and service prices for residents in heavily trafficked areas (Frische and Johannsen, 43). How tourists interact with the local public is also important to consider. Appalachians have a history of being subject to stereotypes such as being seen as a place largely inhabited by ‘hillbillies’ and poverty stricken drug addicts, all of which began in the late 19th century. These views were once again characterized through the lense of the local color writers and continued to develop with poorly done exposés and documentary dramas in more recent times (Frische and Johannsen, 53). Cultural tourism can go beyond living history and preserving historical folk practices as a static moment in time to involve museums, festivals, art galleries and more. It can showcase the diverse history of our region without sensationalizing or romanticizing it and by incorporating the use of local flora in order to breed appreciation and impetus for preservation and protection of our incredible natural resources.

Case studies of folkways and ecotourism-based revitalization efforts already in effect have show sound ways to promote and incorporate these into local economies and towns in realistic ways. By finding relevant and innovative ways to incorporate TEK, and therefore

topics of folk practice, alongside more conventional topics in education, these practices can be made available and tangible to residents within different bioregions. This can be done by creating interdisciplinary learning moments including hands-on learning with plants (Ianni et al., Mehta).

For example, river cane (*Arundinaria gigantea*) is an important native plant that was a vital part of Cherokee life in Western North Carolina. Once common, it is now rare to see a large stand shading the riversides it used to dominate. Used in basket making, and other parts of various tool production processes, only a few people still know how to make this plant in traditional ways. This could provide an opportunity to begin a lesson on the unique riverside habitat loss of this plant, its ecological niche and life cycle, its botanical attributes, its ethnobotanical history, and finally, it could include hiring and inviting in members of the community who know how to make baskets from this plant to lead a demonstration or hands on learning experience making baskets. This type of place-based, hands-on learning is invaluable for fostering value in these plants, these practices and the cultures who practiced them. This is already in action. In 2017, volunteers began planting river cane at Sequoyah National Wildlife Refuge as an act of cultural revival. They are not only learning how to craft this plant into baskets, but also to grow it and care for the stand to ensure their basketmakers have material for the future (ICT Staff. “Bringing Native American Culture Back With River Cane”). It can also help inspire those called to the art of making these baskets to learn how to craft them from a person within the community and continue on the tradition outside of the Folk School model.

By incorporating ethnobotany and TEK into formal education, the tools needed to cultivate a healthful cultural tourism economy can be acquired by more Appalachians. If the ecological knowledge of a region becomes a central component in public education, it can help to foster value in the learner's land base. One business in Asheville, North Carolina has found a way to create a thriving eco-tourism business that finds ways to give back to the community by interacting with local school children in nature doing a cultural activity: foraging for wild food. No Taste Like Home, founded by Asheville resident Alan Muskat, is a wild foraging tour company where one can purchase a ticket to take a one and one-half or three-hour wild foraging walk with a local expert. Participants go for a short, easy walk while gathering, tasting and even cooking wild foods in the field with their instructor. His company aims to help dispel fears about being in nature, inspire a love for wild food and healthy eating, as well as create space to experience a feeling of being provided for by nature.

These walks generate income to employ local people, and to send their instructors to schools in the areas for presentations and field trips demonstrating the magic of local plants to school children. This initiative is called the Afikomen Project and on their website it is described as,

“...a public wild foods education program. Conceived in 2003, our goal is to have, by 2030, every child in the United States be able to safely identify and harvest the ten most common wild foods in their area. As of 2016, we have embarked on Phase I, a pilot program in Asheville, NC. We are seeking funding for Phase II: developing foraging curriculum materials and a science teacher continuing education program...By foraging, children gain sunshine, exercise, wholesome food, and a sense of *home*. In this natural way, The Afikomen

Project addresses childhood obesity, diabetes, nature deficit disorder, and much more. Children contribute both to their family and their community, building their sense of self-worth in the process.” (Muskat).

If children could identify just 10 wild plants safely, that would mean 10 free, nutritious foods that could feed each of those children and their families. This can be especially important for those living in poverty with little access to fresh, nutritious vegetable foods. There has been research examining the effects of not just the gathering and sale of Non-Timber Forest products in rural economies, but the utilization of gathered wild foods and their effectiveness in the battle to alleviate poverty. The findings indicate that wild food gathering is an effective way to challenge food security and access issues (Delang, 286). Businesses like No Taste Like Home have taken eco-tourism and asked what it can do for their community. These types of efforts are just beginning to tap into endless ideas for other businesses and nonprofits centered around these ideals: engage people in nature, foster love and value for it, and hopefully inspire them to protect it in the future.

Moving Forward with Folk Arts: Education

The revival of folk arts in Appalachia has a complicated history, but it is imperative not to view it as a phenomenon of the past. It is still occurring and is an incredible, somewhat invisible opportunity for rural Appalachian communities. Folk arts and practices have been seen to revive rural economies at home and abroad. By incorporating them into regional education systems both in public and private institutions, these practices can help to preserve and grow diverse regional heritage, and contribute to a sense of place among its inhabitants.

Incorporating ethnobotanical lessons and, when applicable, their corresponding crafts into the public education sphere can serve multiple purposes from fostering respect for ethnic diversity to encouraging a more practical experience of the biological sciences. These ideas can be introduced through online learning resources, school gardens and green spaces and many other interdisciplinary projects and initiatives (Keating, 22). Direct experiences in nature, such as attending a foraging tour like those offered by No Taste Like Home, plant collection, nature journaling and other hands on learning can also work as methods to aid in fostering feelings of connectedness to nature and the biota of a student's home-place (Babaian and Twig, 220). Some very innovative videos called AcademIK Connections out of Pennsylvania State University were created with the goal of,

“provide engaging stories about the importance of indigenous knowledge systems in developing entrepreneurial solutions to address community challenges. The video clips feature stories by individuals that, collectively, represent decades of experience in engaging with indigenous communities. These individuals come from diverse disciplines and scholarly research traditions and are known to consciously and respectfully employ indigenous knowledge in their academic activities” (Mehta, 83).

Not only do these videos showcase indigenous voices, they address the problems that TEK faces when attempting to integrate into a classroom. Breaking down barriers between different types of knowing and transmitting knowledge in academic settings from purely Western to a more holistic and culturally inclusive model is paramount if we are to move

forward with cultural preservation (Mehta, 90). There are also many opportunities for ethnobotanical learning in all tiers of education that can provide the knowledge necessary for young Appalachians to best take advantage of the cultural richness of the region and utilize the ethnobotanical stores for future entrepreneurship or appreciation.

The ways in which the Craft revival was problematic can be addressed going forward by placing Appalachians at the helm of the ways in which Craft, TEK and ethnobotany are used to provide inspiration for environmental protection, small business creation, regional cultural heritage and rural economic stability. By observing and serving the needs of the people here now, the mistakes of the past do not have to define the future. The final chapter shall examine real examples of where ethnobotany, bioregionalism and folk arts converge in Appalachia through the creation of a plant encyclopedia complete with history, current uses and calls for further research.

Chapter Three

Ethnobotany in Appalachia, an Inventory for Best Use

This chapter will explore the practical applications that the ethnobotanical information gathered about certain key plant species in Appalachia can have in reference to their economic and sustainable use potentials. In Chapter One, the ways in which bioregional thought and TEK are both useful modalities of analysis when examining the ways in which ethnobotany is continually relevant in Appalachia today were explored. In this chapter, the theories can be viewed through a practical lens. The ways in which these pieces of ethnobotanical information can be utilized are inspired by the information explored in Chapter Two concerning the ways in which folkways can play a role in economic revitalization. In this Chapter, the ways in which these plants fit into the folk ways revival, which is arguably still occurring in Appalachia and elsewhere, is explored in depth. To navigate the following chapter, plants have been separated by species with the following informational format.

1. Plant Name (Latin), Folk Names
2. Origin and Cultural Associations
3. Uses Past and Present
4. Recommended Uses for Appalachia Today

This is intended to act as inspiration for bioregional businesses, sources of crafting materials, and historical ethnobotanical research and preservation. It is the hope of the author that this small sampling of plants serves as examples of the incredible diversity of sustainable economic ethnobotanical opportunities that our region holds. I've included the folk uses where necessary due to the continued interest in folk cultures and practices as addressed in Chapter

Three. It can also be useful to provide meaning and context when looking for a plant's place in our society and history.

Sustainable Harvesting

The plants mentioned in this chapter were chosen based upon the fact that they are either invasive, abundant or not effected by the harvests recommended in order to combat the historical overharvest of sensitive Appalachian plant species like ginseng. Wild food foraging and the harvest of NFTP has come under fire since the early 1990's due to a variety of factors as a practice that is inherently damaging to the environment (Love, 111). Unfortunately, the seeds of humankind's disconnection to nature are planted so deeply that is difficult for scientists today to see the ways in which human activity in nature, when properly managed, is not ipso facto destructive. The creation and enforcement of sustainable harvesting certifications and techniques is also explored throughout the chapter. Just as the Forest Service manages the access hikers have to the woods and how the public can interact with them, the harvesting of NTFP and wild foraging can, and in some places already is, regulated. There is also much opportunity for the creation of workshops and programming on the methods of sustainable harvest. Programs like this are already in effect around the world (T. Johnson et al.) Some of the key things to take note of when asking about the sustainability of foraging wild plants is that it is not being promoted as an activity all people would or should want to do. It does not have to sustain the whole populace to be a sustainable activity (Michail).

Plants in this section that are not invasive can also be grown intentionally. The other important thing to note about wild harvesting is that you can grow "wild" plants and trees.

This is another great way to combat depleting the environment through overharvest and ad-

dressing concerns in the ecological planning process. The author currently grows native plants like spicebush (*Lindera benzoin*), sassafras (*sassafras albidum*) and so-chan (*rudbeckia laciniata*) with minimal inputs on her Western North Carolina farm and has developed workshops and classes around growing and stewarding ethnobotanical important plants, trees and shrubs.

Invasive Species

Promoting the utilization of invasive plants as a means in a diversity of tactics to control them has faced much criticism. The critics claims vary and involve everything from fears that the product made from the plants will become culturally significant and therefore become a protected resource by the populace, to concerns over the creation of a market demand for the invader (Nunez et al.). Both of these arguments are dependent upon wider markets and grander scales of production than is recommended in this thesis. These suppositions also follow very all-or-nothing approaches to plant use which are not realistic or always applicable in micro-enterprise situations. The following plants and their uses are recommended for small-scale, locally driven initiatives which are organized ideally around an educational institution or initiative. The fears around invaders and invasives go far deeper than the ecological world and are important issues to address as an aside before delineating which plants are “good” and which plants are “bad”. This chapter will address these issues throughout in reference to the unique challenges proposed by each plant. Even if locally harvesting kudzu can’t control the total population, isn’t it still worth trying all avenues to control it rather than condemning them on vague fears of future market demands? This chapter says yes, for if

ecology teaches us anything, it is that complexity is one of the only things we can be guaranteed in nature.

Kudzu (*Pueraria spp.*)

1. Plant Name (Latin), Folk Names, Species

The name kudzu describes one or more species in the genus *Pueraria* that are closely related, and some of them are considered to be actual varieties rather than fully separate species. Interestingly enough, they are not very different physiologically and they can breed with each other. The introduced kudzu populations in the United States also have ancestry from more than one of the species. They are: *P. montana*, *P. lobata* (*P. montana* var. *lobata*) *P. edulis*, *P. phaseoloides*, *P. thomsonii* (*P. montana* var. *chinensis*), and *P. tuberosa*.

2. Origin and Cultural Associations

It is not certain but it likely originated in Japan, spreading to Korea and China later.

3. Uses Past and Present

Kudzu has been used as a medicine for thousands of years in the East and is currently being researched for its medicinal value today. Known as *ge-gen* in Chinese medicine, the earliest known writing about kudzu as a medicine dates back to 100 A.D. In traditional Chinese medicine it is used to treat dysentery, allergies, migraine headaches, diarrhea, fevers, colds, intestinal problems and angina pectoris, to help with the digestion of food and reduce blood pressure. One of kudzu's more fascinating traditional uses is that it has served as a treatment for alcoholism, and this has become a main focus of modern kudzu medical research today (Duke).

Its use as a valuable dietary supplement for metabolic syndrome, a condition that affects 50 million Americans, is also promising according to researchers at the University of Alabama at Birmingham. In findings published in the latest *Journal of Agriculture and Food Chemistry*, studies on animals showed that substances called isoflavones found in kudzu root improve a variety of health conditions. One particular isoflavone, called *puerarin* is found only in kudzu and seems to be the one with the greatest beneficial effect.

It was introduced to the United States in 1876 at the Centennial Exposition in Philadelphia, Pennsylvania. Its lovely flowers and stately leaves impressed American gardeners. In the 1920's, Florida nursery operators Charles and Lillie Pleas promoted its use for forage. Their Glen Arden Nursery in Chipley sold kudzu plants through the mail. During the Great Depression of the 1930's, the Soil Conservation Service promoted kudzu for erosion control. Hundreds of young men were given work planting kudzu through the Civilian Conservation Corps. Farmers were paid as much as eight dollars an acre as incentive to plant fields of the vines in the 1940's (Grimes and Becnel). As we have seen, the widespread planting of Kudzu had unintended consequences that have severely harmed Appalachian ecosystems.

Kudzu's incredible growth rate lead to its take over of the southern forest edges, pulling down trees and smothering other plants. Today, it is destroyed on sight usually by chemical means. This plant grows aggressively and can take over areas when left to its own devices, but this does not mean that while this plant is in our region, we cannot benefit from it. Kudzu's unique physiology and nutritive properties make it useful in many areas of self sufficient and sustainable living practices.

Its use as a valuable dietary supplement for metabolic syndrome, a condition that affects 50 million Americans, is also promising according to researchers at the University of Alabama at Birmingham. In findings published in *Journal of Agriculture and Food Chemistry*, studies on animals showed that compounds called isoflavones found in kudzu root improved regulation of contributors to metabolic syndrome, including blood pressure, high cholesterol and blood glucose.

J. Michael Wyss, Ph.D., a professor of in the UAB Department of Cell Biology and lead author on the study said the greatest effect was in its ability to regulate glucose, or sugar, in the blood. "Puerarin, or kudzu root, may prove to be a strong complement to existing medications for insulin regulation or blood pressure, for example," said Jeevan Prasain, Ph.D., an assistant professor in the UAB Department of Pharmacology and Toxicology and a study co-author. "Physicians may be able to lower dosages of such drugs, making them more tolerable and cheaper" (Shepard).

Kudzu also contains several other medically important chemicals such as daidzen, used to fight inflammation and microbial infections, dilute coronary arteries, relax muscles, and promote estrous cycles. It also is used to prevent cancer. Kudzu also contains genistein, an anti-leukemic. Overall kudzu is not only an important free or low cost fodder, but it is also a useful medicine worth further examination. Kudzu has not been around long enough to become an integral part of the folk medicine practices of the Southeast, but I think it should be, since it may be here with us for awhile.

Kudzu will provide a good ground cover which is long-lived, if not overgrazed or mowed too often, in two to three years. It makes a good coarse hay, retaining its leaves after

cutting, does not shed an appreciable amount of leaves during growing season, and it can be fed with very little waste. Kudzu with its heavy, vine-like growth is difficult to cut, particularly the first time, because the vines catch on the divider board of an ordinary mower; modified mowers have been developed just for this purpose. Hay should be harvested when vines and the ground are dry. Leave the hay in swath for several hours before windrowing. The following morning when the dew is off, cut plants should be put in small stacks or turned, and in the afternoon it should be put up in a barn or baled (“Kudzu, Aerial Part, Fresh”).

Kudzu can make a good pasture, wherein steers can gain more than 3.3 lbs/day. However you cannot graze plants until third year. If growth is vigorous, it may be grazed lightly the second year. For maximum production and utilization, rotation should be employed. Livestock should be taken from pasture before growth starts in the spring. Kudzu is prone to overgrazing so take care on young stands not to let them be eaten to nothing. Conversely, if you need to get rid of a stand, let livestock graze until the kudzu is removed.

Aside from being palatable to animals, kudzu is also an edible plant to humans. The leaves, vine tips, flowers, and roots are edible; the vines are not. The leaves can be used like spinach and eaten raw, chopped up and baked, cooked like collards, or deep fried. The young leaves can be consumed as a green, or juiced. They can be dried and made into a tea. Shoots can be eaten like asparagus. The blossom can be used to make pickles or a jelly — a taste between apple and peach. Older leaves can be fried like potato chips, or used to wrap food for storage or cooking. The root is also full of edible starch.

You can make a salad, stew the roots, batter-fry the flowers or pickled them or make a make syrup. Raw roots can be cooked in a fire, roots stripped of their outer bark can be roast-

ed in an oven like any root vegetable; or grated and ground into a flour to make a thickener, a cream or tofu.. Only the seeds are not edible. It is best to gather shoots in spring, young leaves anytime, blossoms July through October, and roots best in fall or early spring (Deane).

Kudzu vines make a high quality bast fiber that has been used for about 750 years by artisans and weavers throughout East Asia. The fibers are extracted by hand and are translucent and generally considered finer than silk and quite strong. Kudzu is also very useful as a basket and container making material. It can be woven by hand and is easily harvested as an essentially abundant free, craft supply. Many people are beginning to tap into the beauty of kudzu baskets in the Southeastern United States and sell the baskets in stores and online. It can be a valuable material for crafts persons looking for an inexpensive, useful craft to pursue.

Building with kudzu has not been done extensively in the United States, but with the rise in popularity and practicality of green building practices, kudzu bales can find a place as a useful wall mass material as well. There are two cabins built of kudu bales today in the Southeast, both of which have been visited by the author and are not very different than standard straw bale construction.

4. Recommended Uses for Appalachia Today

As we have seen, kudzu boasts an amazing amount of uses and could be used for the creation of the following products sustainably in Appalachia:

Flowers: locally made cocktail ingredients, jellies, jams, natural purple food coloring, candies, confections.

Leaves: dolma grape leaf alternative, sustainable food grade packaging material, food products involving green vegetables, animal fodder.

Roots: Natural medicines for alcoholism and aforementioned health conditions, locally produced starch, flour for gluten free and allergenic baking, animal fodder.

Vines: kudzu silk, material for building and insulation, basket making materials, paper making materials (leaves included), animal fodder.

This plant's unique status as an invasive makes harvesting and utilizing this plant not only free for entrepreneurial minded folks, but utilizing it is a chemical-free way of helping to control its spread and aid in the effort of eliminating it. Kudzu has diverse prospects in almost every sector of the craft, local food and sustainable building arenas in our region, and despite our best efforts, it has become an iconic plant of the South.

Oak (*Quercus spp.*)

1. Plant Name (Latin), Folk Names

Here in Appalachia we have quite a few species. White oak (*Quercus alba*), Northern and Southern Red Oak (*Q. rubra* and *Q. falcata*), Black oak (*Q. velutina*), Swamp oak (*Q. bicolor*), Chestnut oak (*Q. montana*), and many more depending on what habitat.

2. Origin and Cultural Associations

The genus *Quercus* is native to the Northern Hemisphere, which includes deciduous and evergreen species extending from temperate to tropical areas in the Americas, Asia, Europe, and North Africa. North America contains the most oak species which is about 90 in the United States, while Mexico has 160 species of which 109 are endemic. The second greatest

center of oak diversity is China, which contains approximately 100 species (Hogan). This corollary between tree species in Asia and Appalachia is another example of the disjunct plant populations referenced in Chapter One.

3. *Uses Past and Present*

Oaks are one of the most recognizable trees in the Northern Hemisphere, most likely due to the dramatic leaf shapes and ubiquitous acorns produced by these trees yearly. Medicinally in the mountains white oak bark tea was used by Pennsylvania Germans as a Spring and Fall tonic for children. The direction from which the bark is harvested also depends upon the season: The bark is taken off the north side of the trees in the spring and off the south side in the fall.

It was also used in charms for toothache. In Alabama it was said to cure a toothache you should go into a lonely part of the woods with someone of the opposite sex, who should carry an ax. The bearer of the ax chops around the roots of a white oak, cuts off, with a large jack-knife, nine splinters from roots of the tree, then cuts around the roots of the aching tooth with the knife, dips each of the splinters in the blood that flows from these cuts, and finally buries the splinters at the foot of the tree from which they came. While doing this a secret charm was spoken (White and Brown). The water from a white oak stump was also used to wash away warts, so long as you aren't seen by anyone while doing it. This same water was also said to remove freckles (Davis).

Red oak bark was more often used in Southern Folk medicine. Alabama herbalist Tommie Bass suggested boiled red oak bark to remove hard calluses by soaking the feet in it. He also suggested 2-3 cups of red oak bark tea a day for cirrhosis of the liver, often in com-

bination with wild cherry bark (Patton). All oaks contain differing amounts of tannins, sometimes enough to tan leather. These are the chemicals that made them so useful medicinally for a wide variety of ailments and sometimes even as tonics. It was used as a tea to both bathe in and drink for rheumatism. It was also used as a tonic to keep the blood cool in the spring, and fevers down, specifically by using the bark peeled from the north side of a red oak tree. The same keeps the fires going in winter. The rise and fall of the blood is a foundational modality in Southern Folk medicine and its best to think of blood in a person like the sap of a tree (Cavender, 75).

Further medicinal uses in folk medicine aided by red oak's astringency are for boils, make a poultice of fresh red oak bark between the outer rind and the tree, boil, and mix with corn meal. A poultice recipe from North Carolina called for red oak bark and sage made into a tea, mixed with borax, sulphur, and honey for boils. For diphtheria, take red oak bark and boil it to make a tea and rinse out the throat, (in diphtheria a terrible whitish coating comes over the throat). Red oak bark tea is was also a cure for dysentery, which perhaps speaks to it's astringent powers best. Sometimes just chewing red or live oak bark or buds was enough. The tea mixed with honey was also used for sore throats to tighten the inflamed tissue as well as in a muslin bag boiled hot for a bleeding tooth socket after an extraction (White and Brown).

Acorns, or the seeds produced by many oak trees, are one of the most unsung food sources in the temperate world. Though cultures are divided by continents and practices, indigenous Europeans and North Americans both relied upon acorns and other wild nuts as a wild subsistence food. One can think of it like a staple grain that requires no tillage, no wa-

tering, no weeding, and ample reward. The Roman natural philosopher, Pliny the Elder, regarded the oak tree as the “tree which first produced food for mortal man” (Brothwell).

Though little utilized by humans today, they were once a staple food, much like cereal grains, providing valuable fats, proteins and carbohydrates to First Nations people across North America, and throughout much of the ancient world. Acorns are higher in caloric content than cereal grains when it comes down to it, and they are also nutritious; providing vitamin C, magnesium, calcium and phosphorus. Acorns are also delicious and make wonderful flours.

They are a healthful and good food for humans when processed correctly. If you’ve ever eaten an acorn raw, you know that it is often too bitter to eat. That flavor is caused by tannins, polyphenols that exist in many plants used for food and medicine. Some North American Indigenous people found a way to deal with this by drying, pulverizing and then leaching acorns in either hot or cold water to remove the unpalatable chemicals (Tannenbaum, 445). Some 30 species in the United States have been used for food and oil. White oak is generally sweeter, though also smaller and harder to harvest, than the Red oak. Chestnut oak falls somewhere in between and is often preferred because of its size and middling tannin content (Austin). Oaks also are already here and they are already producing valuable food. They are also more calorically efficient than the grain crops, such as wheat and also provide healthful fats: acorns average 2,265 calories/ lb. vs. 1,497 for wheat (Bean & Saubel, 125).

4. Recommended Uses for Appalachia Today

Acorns: sustainable, gluten free, calorie dense staple food. There are a number of local endeavours to harness the bounty of oaks already growing in the Southeast which planting

many species of edible nut trees in Asheville North Carolina, The Acornucopia Project has started an organization to do this whose,

“mission is to develop perennial based agriculture as an economically viable, environmentally beneficial, and socially dignified human endeavor. Regional hubs of worker owned cooperatives will increase the demand for highly nutritious tree products incentivizing farmers and landowners to transition their pastures and croplands into native tree orchards, bringing balance to our check-books, our environment, and our diets” (Whipple).

Bark: Oak bark was used in tanning and still is by hide tanning hobbyists today. Bark can be saved from the lumber industry and marketed to tanners, as well as reintroduced as a medicinal. It can also be collected from dead and dying trees. Finding ways to use all parts of plants and trees in Appalachia can aid us in further degrading or over-harvesting threatened species. Re-popularizing the traditional Appalachian folk medicinal uses of plants which show efficacy and are safe, like oak bark, can add value to a locally produced product. As mentioned in Chapter Two, folkways and historical ties can lend nostalgia and credibility to a product.

Stinging Nettle (*Urtica Dioica*)

1. Plant Name (Latin), Folk Names

(Urtica dioica), Stinging Nettle

2. Origin and Cultural Associations

Nettle comes from the Anglo-Saxon word “needle” due to the stinging hairs in the plant (Joshi and Pandey, 133). The Urticaceae family is widespread and has 500 species world-

wide. Though most reside in the tropics, the stinging nettle dwells in temperate climates. It is not native to North America, yet it has naturalized to all but one state in the U.S. Very common in Europe and Asia, the stinging nettle has a long history of many uses.

3. Uses Past and Present

Nettle has been used to make fabric since prehistoric times. It is even speculated that nettle may have been the first fiber plant made into cloth. This makes sense, since it is actually related to flax. They were even cultivated in Northern Europe to make coarse sail cloth, fishnets and clothing. A burial shroud fragment found in Denmark from the Bronze Age (3000-2000 B.C.E) was discovered to have been composed entirely of nettle cloth (Joshi and Pandey, 133). Flax eventually overtook nettles in the clothing race, but up until the 19th century you could find nettle based "scotch cloth", a crude, household cloth in Scotland. Nettle even produces a "finer and silkier" fabric than flax.

The plant not only made clothing, but it also dyes it. You can make a few different shades of green/yellow with a decoction of the plant. It was used all over Europe for this purpose. It was Poland from the 12th century until the 17th century when its use was replaced by silk (Zajaczkowa). Nettles were also used as cordage for fish nets and ropes and for weaving cloth by many of the North American Native peoples, including the Cherokee.

This tradition even made its way into Appalachia. Some of the first white settlers in Kentucky,

"... in the fall of 1775 lessened their dependence on deerskin by applying what the wilderness had taught them on other frontiers. In the spring of 1776, after the home weavers had built looms, and snow and rain had rotted fallen

nettles, settlers gathered and broke the stalks, hackling and spinning the wild fiber as they would hemp, trading meat and hides for the weavers' skill with the shuttle. Weavers mixed thread spun from nettle fiber with that of buffalo wool to make a substitute for linsey-woolsey. The combination of a nettle warp and buffalo wool filling was "very strong" according to Olive Boone" (Farish).

Nettle is also highly nutritious and a delicious cooked wild edible green. It was used as a nourishing Springtime food to flush the sluggish winter body with minerals in many of its native lands and in Appalachian history. It is rich in pro-vitamin A, polysaccharides, iron, potassium, manganese, calcium, phosphate and vitamin C. Modern studies have confirmed its natriuretic, diuretic and hypotensive effects (Jan et al. 433). The tea is also a useful vegetarian rennet for cheesemaking, and a natural green dye. It can even be used to make paper.

4. Recommended Uses for Appalachia Today

Nettles have so many varied uses it would be difficult not to find a way to benefit from their use in Appalachia. The most low-tech ways to utilize this plant is to forage it wild or grow it for the use in the natural health industry as a dry herb for tea or foods, as well as selling fresh as a potherb. The author currently sells nettle to local restaurants, and this "weed" is a highly sought after food item on high end menus. The harvest only requires a sharp set of scissors and a thick pair of gloves to avoid the sting. The leaf powder could also be mixed with other flours such as acorn, wheat or other nuts or grain flours to add nutrition and much needed

vitamins. It is used in this way in Nepal as a sort of fortified flour as a way to address nutritional deficiencies which diets heavy on grains can promote.

A more labor and start-up intensive use would be to revive interest in nettle cloth as a more sustainable alternative to cotton or even hemp. Nettle needs no fertilizer, weed control or real management due to its tenacious growth, and the stalks, which are used to make the fiber, also yield a crop of edible leaves. The plant must be soaked, yielding the green dye so even the water used to process the fiber can be utilized as a product. A case study by Bob Crebas and Jeroen Bos studied production research in the UK, Czech Republic, Germany and the Netherlands and demonstrated that one hectare provided six tons of nettle which delivers 600 to 780 kilograms of nettle fiber. The nettle fiber still commands a price on the market which is four to five times higher than the cost of cotton. They discovered a new, more efficient way to separate the fibers and produce an eco-friendly fiber product lighter than cotton (Pauli). This serves as a fantastic example for application in Appalachia.

Autumn Olive (*Elaeagnus umbellata*)

1. Plant Name (Latin), Folk Names

Elaeagnus umbellata, Russian Olive, Japanese Silverberry

2. Origin and Cultural Associations

The autumn olive is a native shrub of China, Japan and Korea that made its way to the United States in 1830.

3. *Use Past and Present*

In the 1950s it was widely promoted as a great way to provide wildlife habitat and erosion control in environmentally disturbed areas. The tree is considered an invasive in the U.S. due to its plentiful berries, drought resistance, and ability to thrive in poor soil. All these factors have allowed it to proliferate very successfully, spreading into waste places in the Eastern United States. It was declared invasive in the 1970's, and since then there have been many organized efforts to control its spread.

The small silver speckled red fruits are an almost unknown choice edible in the United States. In studies it has shown to be rich in antioxidants phenolics acids (benzoic acid, cinnamic acid) and flavonoids (myricetin, epigallocatechin gallate). Its fruits contain an abundance of antioxidant lycopene. Owing to these factors, the perceived health benefits of the fruit are then blood alcohol removal, pain alleviation, wound healing, cancer prevention, antimicrobial and expectorant (Patel 191). High fruit-yielding varieties are being used for edible landscaping. The fruits are delicious, sour and sweet, and can be used in jam, fruit leather, salsa, wine and pies. The dried berries of the related species *E. angustifolia* are consumed in Turkey during the winter months (Ayaz and Bertoft, 508). It is also incorporated into teas in Lebanon and Syria.

Not only is this shrub beautiful and prolific in its food production for wildlife and humans, it also is a nitrogen fixer, and can grow in conjunction with trees like black walnut, which secrete the chemical juglone which prevents many plants from thriving beneath it. The wood can be used for kindling, and for crafting spoons. Using this shrub by harvesting its

fruits and wood is a far more sustainable way to manage it than by applying glyphosate herbicide which is the recommended control method.

4. *Recommended Uses for Appalachia Today*

Fruit: All manner of beverages, jams, jellies, and food products can be made with this sweet and tart berry. A ketchup can be made from it that is extremely delicious. Due to the rising seriousness of blight in tomatoes in humid parts of Appalachia, this can also offer other organic and free fruit option to craft into this classic condiment.

Wood: Firewood and craft wood for spoon carving or other wood crafts.

Autumn olive should not be planted without the knowledge of its spread for there are many places where the shrubs have taken over and are readily available to wild harvest from, including the woods surrounding Appalachian State University in Boone, North Carolina. Harvest and use as a method of invasive species control is rarely if ever mentioned in the literature. Efforts should be mounted to promote these harvests as a great way to involve Appalachian communities in environmental stewardship while also gaining access to free, nutritious wild food or fuelwood.

Japanese Knotweed: *Fallopia japonica*

1. *Plant Name (Latin), Folk Names*

Fallopia japonica, fleecflower, Himalayan fleece vine, monkeyweed, monkey fungus, Hancock's curse, elephant ears, pea shooters, donkey rhubarb.

2. *Origin and Cultural Associations*

It is native to Japan, China and Korea. It has established itself as an invasive species in various areas of North America and Europe.

3. *Uses Past and Present*

It is used in traditional Chinese medicine and traditional Japanese medicine to treat fungal infections, various skin inflammations, and cardiovascular diseases; one active ingredient is thought to be resveratrol and its' glucoside piceid (Wenzel and Somoza). It is called *itadori* in Japan and it is commonly eaten with other *sansai* or mountain vegetables in spring (Nakahara). There is a long tradition still upheld by many elderly residents of Japan of wild foraging these spring edibles and preparing them each year. Much like in Appalachia, most young people no longer have the ability or knowledge to forage, but with the rising interest in natural lifestyles sweeping the modern world, this will hopefully not be the case for long. As mentioned in Chapter One, the ecological similarities between Eastern Asia and Appalachia make comparative studies useful to compare how these types of knowledge serve to inspire new economic opportunities between regions.

Sansai in Japan are wild harvested and sold to eagerly waiting restaurants and markets throughout Japan. It is thought that because these plants grow in the mountains, and therefore are at higher altitudes, they are closer to the heavens and embody more *qi* (Hollis). This feeds into the belief in the nutritive and medicinal value of these foods in Japan and helps to inspire cultural value in them and their conservation. This type of foraging is also seen as a way to connect with and preserve traditional food culture and is garnering attention as a way to revitalize rural areas in Japan, just as it could in Appalachia.

4. *Recommended Uses for Appalachia Today*

Japanese knotweed could act as a part of a new Appalachian *sansai*. This type of foraging is not as extractive and intensive as farming, using tillage and clearing acres of land. This is a type of agriculture that can be practiced in the forest. Joe Hollis, of ‘Mountain Gardens’, an educational property in Madison, County North Carolina, has compiled a list of the vegetables he feels, as an expert on Chinese and Appalachian folk herbs, would do best in this type of system here in the Appalachian mountains. Some examples of these plants include ramps (*Allium tricoccum*), solomon’s seal (*Polygonatum multiflorum*), indian cucumber root (*Medeola virginiana*), ostrich fern (*Matteuccia struthiopteris*), and more (Hollis). Appalachia can also seek inspiration for cultural preservation of traditional food ways in the methods that Japan is using for the same goals. The harvesting of *sansai* can be performed in both regions, while the plants vary slightly and their cultural significance is different, *sansai* harvesting is an untapped micro-agricultural niche that could thrive as a small business in Appalachia.

Summary

This chapter has examined the entrepreneurial and ethnobotanical value of key invasive and non-invasive species in Appalachia. The following species were identified for a variety of purposes to support sustainable livelihoods grounded in mutually-beneficial human-environmental interactions: Autumn Olive, Japanese Knotweed, Kudzu, Oak, and Stinging Nettle. Identifying and promoting these ethnobotanical benefits can support the development of bioregional businesses, sources for crafting materials, and opportunities for historical ethnobotanical research and preservation. It is the hope of the author that this small sampling of plants serves as examples of the incredible diversity of sustainable economic ethnobotanical

opportunities that our region holds. Information about the folk uses of some species were also highlighted to indicate continued interest in folk cultures and practices.

Conclusion

Ethnobotany is often associated with far away lands and ancient history, but it does not need to remain so. Bioregionally-focused ethnobotanical initiatives can create incredibly innovative solutions for a variety of local challenges. This thesis has attempted to tackle a variety of useful ways in which ethnobotany can further serve Appalachia through ecologically-based economic incentives, folk arts and cultural revival. By examining the precise ways in which bioregionalism and folk ways provide cohesive solutions for the preservation and sustainable promotion of local economies, ecosystems, and cultures, the relevance of teaching and preserving the knowledge of useful local flora become apparent. By looking across the globe, other cultures and landscapes have provided powerful examples of small-scale initiatives to make ethnobotany a key player in combating the loss of cultural and ecological biodiversity in a myriad of ways. The goal of this thesis is to provide a meaningful and thorough examination of the ways in which the study of the uses of plants continues to be necessary, and even innovative, in a technologically driven society.

Chapter One examined the ways in which ethnobotany and TEK can help to imbue value and meaning into the landscape through the philosophy of bioregionalism. By exploring the unique needs of Appalachia, the ways in which bioregional thought and TEK can provide useful tools and impetus to study ethnobotany in Appalachia can be seen as practical, rather than theoretical or academic pursuits. Communities in the Alps, elders from the mountains of Japan and other cultures worldwide provide examples of ethnobotanically-based so-

lutions for cultural loss, biodiversity issues and creative economic opportunities from NTFP to ecotourism. Folk knowledge and folk healing are valuable in their functions of conservation not just of antiquated knowledge, but as we have seen they may even hold inspiration for modern cures ("Anglo Saxon Potion Kills Mrs. a."). By exploring concepts of bioregionalism and how they can be applied in Appalachia, the ways in which ethnobotany can be utilized most effectively for positive change can be revealed. This chapter identified the ways in which humans in the developed world generally see themselves as apart from nature and looked at various ways in which the connections between the land and people can be reinvigorated (Moreno, 45). Creation of a sense of "home" and facing the issues of "placeless-ness" with an increasingly mobile population are issues where ethnobotany and place-based education can work effectively to help foster these grounding feelings.

TEK and bioregionalism are intimately tied together as a knowledge base which can push the boundaries of western science to new useful heights. TEK can provide examples of how important the emotional and spiritual ties people feel with their home place can ground a land management philosophy that serves to integrate human activities in the landscape. This chapter shows the ways in which making management decisions with sets of criteria which incorporate the best of the western science and TEK can create innovative solutions.

The inclusion of TEK in ecological management issues also is a valuable step towards ensuring that the voices of indigenous peoples are heard, valued and respected in the communities they have inhabited for thousands of years. This longevity of habitation provides unique viewpoints which can only help to complete a healthful plan for long-term land use. By looking at communities from Japan to Australia, inspiration can be found on how

best to integrate these seemingly divergent methods of analysis and birth a more holistic approach to how humans can best be a part of their environments with their sights set on an abundant future.

The richness of medically useful plants in Appalachia is further reason to study and support ethnobotanical studies. The spaces where traditional healing systems and modern Western science overlap hold great promise for future drug synthesis and small business development (Kala). The small-scale botanical businesses that have sprung up internationally can inspire Appalachians even in a global economy (Ludvig, et al.). The study of the medical uses of plants can provide resources for sustainable natural products creation and even cultural tourism focused on the healing traditions of Appalachia. Medical ethnobotany is just one branch of utility within the study ethnobotany today.

Chapter two looked into the history of the Appalachian folks arts revival and those ways in which ethnobotany and place-based learning have come together to help create sustainable entrepreneurship opportunities in Appalachia. Both successes and failures during the birth of the folk school in Appalachia provide valuable information about how to best organize educational initiatives in the region going forward. Appalachia's mythologized reputation as a place out of time inhabited by our "living ancestors" has made it a uniquely challenging place to accurately provide for by the largely Northern social workers engaged in founding and propagating the folk school model (Becker, 42).

This chapter explores the ways in which the people providing aid to Appalachia's own beliefs about what folkways *should* look like in the mountains versus what they actually were has become muddled beyond separation. Despite these complications, the folk school

model of teaching folkways is indispensable from the conversation about how ethnobotany can continue to serve Appalachia. The remarkable botanical richness of the region makes plant-based craft, art and appreciation all the more relevant when taught within the walls of an iconic learning institution which has become a part of Appalachian culture itself. Crafts and artisan products provide a creative solution to diversifying rural incomes while simultaneously preserving vital folk arts and practices in their very making.

This chapter also addressed the fact that ethnobotany is a facet of folkways, and discovering the ways in which folk arts and practices are still valuable can be an important step towards finding ways to stir economic revival in rural and underserved areas of Appalachia. The cultural diversity of the region, from Cherokee and Western Europe, or from Africa and beyond, can also be preserved and continue to grow and thrive when the arts are supported and taught to the next generations. The place that the craft industry occupies economically in Appalachia is also a hopeful reminder that it is not an insignificant contributor to the local economy. Further research is needed to best allocate resources to the creation and promotion of craft as a viable small business model for the region.

Chapter Three provided a brief inventory of the practical applications of ethnobotanical information gathered about certain key plant species in Appalachia. The history of use as well as country of origin was explored, providing information that is intended to be used by educators or researchers into the living tradition of utilizing these plants for a myriad of purposes. The plants selected were intended to act as inspiration for bioregional businesses such as sources of crafting material such as kudzu for basket making. This short list of plants

serves as just the beginning of a much needed longer look into the incredible diversity of sustainable economic ethnobotanical opportunities that our region holds.

Sustainable harvesting is addressed and especially important to note when beginning the process of the “re-inhabitation” of nature. The creation and enforcement of sustainable harvesting certifications and techniques is also explored throughout the chapter and strongly recommended. The sustainability of foraging wild plants is not being promoted as an activity all people would or should want to do. It does not have to sustain the whole populace to be a sustainable activity. While most of the plants recommended for use in this chapter are invasive, do to the act of harvest being a useful tool for control, the rest are recommended for planting and propagation by harvesters to ensure continued sustainable harvests in the future.

The uses of invasives is also addressed in this chapter and it is made clear why promoting the utilization of invasive plants as a means to control them has faced much criticism. The critics claims vary and largely revolve around concerns that the products made from the plants will become culturally significant and therefore become a protected resource by the populace, to concerns over the creation of a market demand for the invader. These are not relevant in a discussion of small, micro-businesses and locally driven product initiatives. However, these questions are of vital importance as a diversity of tactics are adopted to halt the spread of destructive invasive species. This chapter promotes the use of invasive plants as a means of eradication and control. The resulting list of plants provides examples and inspiration from other makers and projects which utilize locally abundant plants for innovative small business and craft creation.

Though there is much to be done in regards to planning, research and assessment before ethnobotany can play a larger role in the modern life of Appalachias, there are still many small actions which can begin the journey towards rural economic revival through the applications of useful plants. Through the investigation of which appropriate technologies, cottage industries and folk arts should be revived and which should be changed to reflect the needs of modern people, the living practice of using plants and natural resources in creative placemaking in Appalachia can be reborn. Imagine living in a town where you know where your food, fiber, and heat come from as you move through a landscape that reflects your basest needs back to you in abundance. A place that is protected rather than exploited, preserved rather than remembered.

These small scale approaches to creating new jobs, community building, and placed-based entrepreneurship are conveniently often the most low-tech and locally tailored to meet the unique needs of bioregional communities. Though technology has surpassed many of our wildest dreams in our increasingly globalized world, the fact that we depend on nature to meet our most basic needs is still a reality. Instead of seeing this as a limitation, I invite Appalachian's to see the ways in which a closer relationship with the environment and it's floral inhabitants can create new opportunities to engage in a more healthful land ethic while still providing a myriad of options for sustainable economic engagement.

Works Cited

- "Anglo Saxon Potion Kills Mrs. a." *Podiatry Now*, vol. 18, no. 8, Aug. 2015, p. 7.
- Austin, Daniel F. *Florida Ethnobotany*. CRC Press, 2004.
- Andrew, Brennan. "Bioregionalism - a Misplaced Project?." *Worldviews*, no. 3, 1998, p. 215.
- Araujo, Elcida, et al. "How Ethnobotany Can Aid Biodiversity Conservation: Reflections on Investigations in the Semi-Arid Region of NE Brazil." *Biodiversity and Conservation*, vol. 18, no. 1, n.d., pp. 127-150.
- Ayaz F.A., Bertoft E., *Sugar and phenolic acid composition of stored commercial oleaster fruits*, J. Food Compos. Anal. 14 .2001. pp. 505–511.
- Bagelman, Jen, et al. "Feasting for Change: Reconnecting with Food, Place & Culture." *International Journal of Indigenous Health*, vol. 11, no. 1, Dec. 2016, p. 6.
- Bean, L., & Saubel. K. *Temalpakh: Cahuilla Indian Knowledge and Usage of Plants*. Molki Museum Press, 1972.
- Beck, Chris and T. Taft. "Can Arts Drive Rural Economic Development?" *How to Do Creative Placemaking*, by Chris Beck, National Endowment for the Arts, 2009, pp. 60–73.
- Becker, Jane S. *Selling Tradition : Appalachia and the Construction of an American Folk, 1930-1940*. University of North Carolina Press, 1998.
- Bennett, Bradley C. "Ethnobotany Education, Opportunities, and Needs in the U.S." *Ethnobotany Research and Applications*, vol. 3, 2005, pp. 113-122.
- Berg, P., and R. Dasman. "Re-inhabiting California." *The Ecologist* 7 (1978): 399-401.

- "Biodiversity and Food Production." *Center for Health and the Global Environment*. Harvard University Library, n.d. Web. 27 Feb. 2018.
- "Biodiversity and Food Production." *Center for Health and the Global Environment*. Harvard University Library, n.d. Web. 27 Feb. 2018.
- "Bioregionalism." *Great River Earth Institute*. Great River Earth Institute, 4 Apr. 2004. Web. 27 Feb. 2018.
- Bixia, Chen and Qiu Zhenmian. "Consumers' Attitudes Towards Edible Wild Plants: A Case Study of Noto Peninsula, Ishikawa Prefecture, Japan." *International Journal of Forestry Research*, Jan. 2012, pp. 1-16.
- Boufford, D. E., and S. A. Spongberg. "Eastern Asian-Eastern North American Phytogeographical Relationships-A History From the Time of Linnaeus to the Twentieth Century." *Annals of the Missouri Botanical Garden* 70.3 (1983): 423.
- Bridgette, Rivers, et al. "Pungent Provisions: The Ramp and Appalachian Identity." *Material Culture*, no. 1, 2014, pp.1-25.
- Brothwell, Don Reginald., and Patricia Brothwell. *Food in Antiquity*. Thames and Hudson, 1969.
- Buhner, Stephen Harrod. "Considerations in the Clinical Treatment of Lyme and Its Coinfections." *Journal of the American Herbalists Guild*, vol. 11, no. 2, Sept. 2013, pp. 27-37.
- Caldwell, Katherine. *From Mountain Hands : The Story of Allamstand Craft Shop's First 100 Years*. [Asheville, N.C.: Southern Highland Handicraft Guild], 1995.

- Cavender, A. "Folk medical uses of plant foods in southern Appalachia, United States." *Journal of Ethnopharmacology* 108, (January 1, 2006): 74-84.
- Cavender, Anthony P. *Folk Medicine in Southern Appalachia*. Chapel Hill: University of North Carolina Press, 2003.
- Chesky, Anne. "Can Agritourism Save the Family Farm in Appalachia? A Study of Two Historic Family Farms in Valle Crucis, North Carolina." *Journal of Appalachian Studies*, vol. 15, no. 1/2, Spring/Fall 2009, pp. 87-98.
- Claude, Peloquin and Berkes Fikret. "Local Knowledge, Subsistence Harvests, and Socio-Ecological Complexity in James Bay." *Human Ecology*, no. 5, 2009, p. 533.
- Courtney, Lewis. "The Case of the Wild Onions: The Impact of Ramps on Cherokee Rights." no. 2, 2012, p. 104.
- Csiro, Saf, et al. "Australian Aboriginal Peoples' Seasonal Knowledge: A Potential Basis for Shared Understanding in Environmental Management." *Ecology and Society*, vol. 16, no. 2, 2011.
- Davis, Donald E. *Southern United States: an Environmental History*. ABC-CLIO, 2006.
- Deane, Green. "Kudzu Quickie." *Eat The Weeds and Other Things, Too, Eat the Weeds*, 9 Sept. 2017.
- Delang, Claudio O. "The Role of Wild Food Plants in Poverty Alleviation and Biodiversity Conservation in Tropical Countries." *Progress in Development Studies*, vol. 6, no. 4, Oct. 2006, pp. 275-286.
- Duke, James A. 1983. *Handbook of Energy Crops*. Unpublished.

- Duxbury, Keurvorst, and Campbell. "Developing and Revitalizing Rural Communities Through Arts and Culture." *Creative City Canada*. Creative City Network of Canada, 2009. Web.
- Ernst, Edzard. "The Efficacy of Herbal Medicine – an Overview." *Fundamental & Clinical Pharmacology*, vol. 19, no. 4, Aug. 2005, pp. 405-409.
- Falkowski, Tomasz B., et al. "How Valuable Could Traditional Ecological Knowledge Education Be for a Resource-Limited Future?: An Energy Evaluation in Two Mexican Villages." *Ecological Modeling*, vol. 300, 24 Mar. 2015, pp. 40-49.
- Fariello, Anna M. "Making History: Revival in Context." *Craft Revival: Shaping Western North Carolina Past and Present*. WCU, 2007. Web.
- Farish, Mitchell Grant. "Homespun and Buckskin". <http://people.virginia.edu/~mgf2j/clothes.html>. June 4, 2012. Web
- Fikret, Berkes, et al. "Rediscovery of Traditional Ecological Knowledge as Adaptive Management." *Ecological Applications*, no. 5, 2000, p. 1251.
- Fischer, David Hackett. *Albion's Seed: Four British Folkways in America*. Oxford University Press, 1989.
- Fritsch, Albert J., et al. *Healing Appalachia : Sustainable Living Through Appropriate Technology*. University Press of Kentucky, 2007. pp.180-182.
- Fritsch, Albert J., and Kristin Johannsen. *Ecotourism in Appalachia: Marketing the Mountains*. Lexington, KY: U of Kentucky, 2004. Print. P.43.
- Frost, William G. *Our Contemporary Ancestors in the Southern Mountains*. Atlantic Monthly Company, 1899.

- Glofelty, C, Quesnel, E. *The Biosphere and the Bioregion: Essential Writings of Peter Berg*.
Glofelty C & Quesnel E (eds.), Abingdon:Routledge, 2015. p. 33-34.
- Go´mez-Baggethun E, Reyes-Garci´a V. “Reinterpreting change in traditional ecological
knowledge”. *Human Ecology* 41(4). 2013. pp. 643–647.
- Gorlinski, Gini. *The History of Agriculture. [Electronic Resource]*. New York : Britannica
Educational Pub. in association with Rosen Educational Services, 2012.,
2012.p.1.
- Grimes, David, and Tom Becnel. *Florida Curiosities: Quirky Characters, Roadside Oddities
& Other Offbeat Stuff*. GPP, 2011.
- Harwood, J., & Edom, G. “Nettle Fibre: Its Prospects, Uses and Problems in Historical Per-
spective.” *Textile History*, 43(1), 2012. pp. 107-119.
- Hensley, Nathan. "CIDER: An Acronym for Understanding the Educational Possibilities for
Bioregionalism." *Journal of Sustainability Education*, Feb. 2013.
- Hogan, C. Michael (2012) Oak Archived 23 May 2013 at the Wayback Machine.. ed. Arthur
Dawson. *Encyclopedia of Earth*. National Council for Science and the Envi-
ronment. Washington DC.
- Hollis, Joe. "Mountain Gardens." *Sansai On Beyond Ramps towards an American Sansai*.
Mountain Gardens, n.d. Web.
- Ianni, Elena, et al. "Revitalizing Traditional Ecological Knowledge: A Study in an Alpine
Rural Community." *Environmental Management*, vol. 56, no. 1, July 2015, pp.
144-156.

ICT Staff. "Bringing Native American Culture Back With River Cane." *Indian Country Media Network*, National Congress of American Indians (NCAI) Embassy of Tribal Nations, 19 Feb. 2017, indiancountrymedianetwork.com/culture/health-wellness/bringing-native-american-culture-back-river-cane/.

Jan, Khan Nadiya, et al. "Stinging Nettle (*Urtica Dioica* L.): A Reservoir of Nutrition and Bioactive Components with Great Functional Potential." *Journal of Food Measurement and Characterization*, vol. 11, no. 2, n.d., pp. 423-433.

Johnson, Laura, et al. "Placing Local Food Systems: Farm Tours as Place-Based Sustainability Education." *Journal of Sustainability Education*, Mar. 2016.

Johnson, T. Sudhakar, et al. "Non-Timber Forest Products as a Source of Livelihood Option for Forest Dwellers: Role of Society, Herbal Industries and Government Agencies." *Current Science (00113891)*, vol. 104, no. 4, 25 Feb. 2013, pp. 440-443.

Joshi, Neeshu and Sunita T. Pandey. "Stinging Nettle (*Urtica Dioica*)- History and Its Medicinal Uses." *Asian Agri-History*, vol. 21, no. 2, Apr-Jun 2017, pp. 133-138.

Kala, Chandra Prakash. "Review: Medicinal and Aromatic Plants: Boon for Enterprise Development." *Journal of Applied Research on Medicinal and Aromatic Plants*, vol. 2, 01 Dec. 2015, pp. 134-139.

Khimm, Suzy. "The Thrill of the Hunt: Chinese Customers Paying Hundreds of Dollars per Pound of Wild Appalachian Ginseng Are Feeding a Digging Frenzy That Threatens to Decimate the Revered Root for Good." *Foreign Policy*, no. 220, 2016, p. 64.

- Kowalewski, David. "Why Save Wilderness? Fruits and Veggies!" *Australian Journal of Outdoor Education*, vol. 18, no. 1, Jan. 2015, pp. 50-54. P. 50.
- "Kudzu, Aerial Part, Fresh." *Kudzu, Aerial Part, Fresh | Feedipedia*, Food and Agriculture Organizations of the United Nations, 24 Oct. 2012.
- Lazavi, Fatemeh, et al. "The Barberry Juice Effects on Metabolic Factors and Oxidative Stress in Patients with Type 2 Diabetes: A Randomized Clinical Trial." *Complementary Therapies in Clinical Practice*, vol. 31, 01 May 2018, pp. 170-174. p.170.
- Light, PD. "A History Of Southern And Appalachian Folk Medicine." *Journal Of The American Herbalists Guild* 8.2 (2008): 27-38 12p. CINAHL Complete. Web. 19 Nov. 2015.
- Love, Thomas and Eric T. Jones. "Why Is Non-Timber Forest Product Harvesting an 'Issue'? Excluding Local Knowledge and the Paradigm Crisis of Temperate Forestry." *Journal of Sustainable Forestry*, vol. 13, no. 3/4, Nov. 2001, p. 111.
- Lukas, S., Penetar, D., Su, Z., Geaghan, T., Maywalt, M., Tracy, M., & ... Lee, D. (2013). A standardized kudzu extract (NPI-031) reduces alcohol consumption in non-treatment-seeking male heavy drinkers. *Psychopharmacology*, 226(1), 65-73.
- MacDowell, Marsha, Ph.D. "A Report on Traditional Crafts and Economic Development in Michigan." *MSU Museum*. Craft Works Michigan, n.d. Web.

- Manget, Luke. "Nature's Emporium: The Botanical Drug Trade and the Commons Tradition in Southern Appalachia, 1847-1917." *Environmental History*, vol. 21, no. 4, n.d., pp. 660-687.
- Manos, P. S., and J. E. Meireles. "Biogeographic Analysis of the Woody Plants of the Southern Appalachians: Implications for the Origins of a Regional Flora." *American Journal of Botany* 102.5 (2015): 780-804.
- Menzies, Charles R. *Traditional Ecological Knowledge and Natural Resource Management*. University of Nebraska Press, 2006.
- Michail, Niamh. "Can Sustainable Foraging Go Mainstream?" *Food Navigator*, William Reed Business Media, 24 June 2015, www.foodnavigator.com/Article/2015/06/25/Can-sustainable-foraging-go-mainstream.
- Montira J. Pongsiri, author, et al. "Biodiversity Loss Affects Global Disease Ecology." *Bio-science*, no. 11, 2009, p. 945.
- Moreno, Elise. "A Case for Bioregionalism in Place-Based Research." *Melbourne Journal of Politics*, vol. 37, Apr. 2015, pp. 43-60.
- Muskat, Alan. "The Afikomen Project." *No Taste Like Home*. Web. 25 Feb. 2018.
- Nakahara, Tetsuo. *Weeding through Japan's Edible Wild Flora*. Stripes Japan, 8 Apr. 2014. Web.
- Newman, David J., et al. "Natural Products as Sources of New Drugs over the Period 1981-2002." *Journal of Natural Products*, vol. 66, no. 7, 2003, pp. 1022-1037.

- Nunez, Martin A., et al. "Invasive Species: to Eat or Not to Eat, That Is the Question." *Conservation Letters*, vol. 5, no. 5, 2012, pp. 334–341.
- Olsen, Jonathan. "The Perils of Rootedness: On Bioregionalism and Right Wing Ecology in Germany." *Landscape Journal*, vol. 19, no. 1/2, Mar. 2000, pp.73-83. p. 73.
- Patel, Seema. "Plant Genus *Elaeagnus*: Underutilized Lycopene and Linoleic Acid Reserve with Permaculture Potential." ["Les plantes du genre *Elaeagnus* : une source sous-utilisée de lycopène et d'acide linoléic accessible en permaculture"]. *Fruits*, vol. 70, no. 4, July 2015, pp. 191-199.
- Patton, Darryl. *Mountain Medicine: the Herbal Remedies of Tommie Bass*. Natural Reader Press, 2004.
- Pauli, Gunter. "*Blue Economy: 100 Innovations - 10 Years - 100 Million Jobs*. N.p.: The Blue Economy, n.d. PDF.
- Poe, Melissa R., et al. "Urban Foraging and the Relational Ecologies of Belonging." *Social & Cultural Geography*, vol. 15, no. 8, Dec. 2014, pp. 901-919.
- Price, Edward T. "Root Digging In The Appalachians: The Geography Of Botanical Drugs." *Baseball, Barns and Bluegrass: A Geography of American Folklife*. 242-262. New York, NY: Rowman & Littlefield, 1998.
- Prober SM, O'Connor MH, Walsh FJ (2011) Australian Aboriginal peoples' seasonal knowledge: a potential basis for shared understanding in environmental management. *Ecol Soc* 16(2):12.
- "Researchers Find Possible Use for the Vine That Ate the South." *News and Articles on Science and Technology*. Phys.org, 3 Sept. 2009. Web. 27 Feb. 2018.

Ricketts, Taylor H. *Terrestrial Ecoregions of North America: A Conservation Assessment*.

Washington, D.C.: Island, 1999.

Ruiz-Mallén, I. and E. Corbera. "Community-Based Conservation and Traditional Ecological Knowledge: Implications for Social-Ecological Resilience."

Ecology and Society, vol. 18, no. 4, 2013.

“Roots of Arts and Crafts.” *An Exhibit at the Ward M. Canaday Center for Special Collections, Carlson Library, The University of Toledo.*, The University of Toledo, 26 Mar. 1999. www.utoledo.edu/library/canaday/exhibits/artsandcrafts/roots.html.

Sale, Kirkpatrick. "Bioregionalism - a Sense of Place." *Nation*, vol. 241, no. 11, 12 Oct.

1985.

Seaton, Carter Taylor. *Hippie Homesteaders : Arts, Crafts, Music and Living on the Land in West Virginia*. West Virginia University Press, 2014.

Sharif, Mahdi, et al. "The Efficacy of Herbal Medicines against *Toxoplasma Gondii* during the Last 3 Decades: A Systematic Review." *Canadian Journal of Physiology & Pharmacology*, vol. 94, no. 12, Dec. 2016, pp. 1237-1248.

Shepard, Bob. “Possible Medicinal Use For Kudzu, The Vine That Ate The South.” *Medical News Today*, MediLexicon International, 4 Sept. 2009. Web.

Shurtleff, William, and Akiko Aoyagi. *The Book of Kudzu: A Culinary & Healing Guide*.

Wayne, NJ: Avery Pub. Group, 1985.

- Spira, Timothy P. *Wildflowers and Plant Communities of the Southern Appalachian Mountains and Piedmont : A Naturalist's Guide to the Carolinas, Virginia, Tennessee, and Georgia*. vol. 1st ed, University of North Carolina Press, 2011.
- Stoddard, James E., Dr, Dinesh S. Dave, Dr, and Michael R. Evans, Dr. "RESOURCES." *The Economic Impact of the Craft Industry in Western North Carolina*. Blue Ridge National Heritage Area, Sept. 2008. Web.
- Tannenbaum et al. *Vitamins and Minerals, in Food Chemistry*, 2nd edition. OR Fennema, ed. Marcel Dekker, Inc., New York, 1985, p. 445.
- "The Appalachian Region." *The Appalachian Region - Appalachian Regional Commission*. N.p., n.d. Web. 27 Feb. 2018.
- The New York Botanical Garden Press. "Ethnobotany, the Science of Survival: A Declaration from Kaua'i." *Economic Botany*, vol. 61, no. 1, Spring 2007, pp. 1-2.
- Tonn, Bruce, et al. "The Future of Bioregional Planning in the Southern Appalachian Man and the Biosphere Region." *Futures*, vol. 38, no. 4, May 2006, pp. 490-504.
- Tristan, Pearce, et al. "Inuit Traditional Ecological Knowledge (TEK), Subsistence Hunting and Adaptation to Climate Change in the Canadian Arctic." *Arctic*, no. 2, 2015, p. 233.
- Turner, Nancy J. and Helen Clifton. "'It's so Different Today': Climate Change and Indigenous Lifeways in British Columbia, Canada." *Global Environmental Change*, vol. 19, no. Traditional Peoples and Climate Change, 01 Jan. 2009, pp. 180-190.

- Turner, Nancy Jean and Patrick von Aderkas. "Sustained by First Nations: European New-comers' Use of Indigenous Plant Foods in Temperate North America." *Acta Societatis Botanicorum Poloniae*, vol. 81, no. 4, 2012, p. 295.
- Van Newkirk, A. *Institute for Bioregional Research, Hetherton: Institute for Bioregional Research*, 1975.
- Wenzel E, Somoza V; Somoza (May 2005). "Metabolism and bioavailability of trans-resveratrol". *Mol Nutr Food Res*. 49 (5): 472–81.
- Whipple, Bill. "Acornucopia." *Acornucopia*. N.p., n.d. Web. Feb. 2018.
- "What is Happening to Agrobiodiversity?" *What Is Agrobiodiversity?*, Food and Agriculture Organization of the United Nations, 1999, www.fao.org/docrep/007/y5609e/y5609e02.htm.
- White, John Howell. "The Preservation of Handicrafts in the Southern Highlands: Northern Philanthropy and Social Idealists." *Visual Arts Research*, vol. 30, no. 1, 2004, pp. 44–52.
- White, Newman Ivey and Frank Clyde Brown. *The Frank C. Brown Collection of North Carolina Folklore; the Folklore of North Carolina*. Durham, N.C., Duke University Press [1952-64], 1952.
- Wigginton, Eliot. *Foxfire 2: Ghost Stories, Spring Wild Plant Foods, Spinning and Weaving, Midwifing, Burial Customs, Corn Shuckin's, Wagon Making and More Affairs of Plain Living*. Anchor Press, 1973.
- Wilson, Claire. (2015, March). *New Scientist*. *Anglo-Saxon remedy kills hospital superbug MRSA*. Retrieved from <https://tinyurl.com/yaa5jry7>.

Wood, Matthew. "Treatment of Lyme Disease with Teasel and Other Herbs." *Journal of the American Herbalists Guild*, vol. 11, no. 2, Sept. 2013, pp. 38-51.

Xiang, Qiu-Yun, Douglas E. Soltis, and Pamela S. Soltis. "The Eastern Asian and Eastern and Western North American Floristic Disjunction: Congruent Phylogenetic Patterns in Seven Diverse Genera." *Molecular Phylogenetics and Evolution* 10.2 (1998): 178-90.

Young, Terence. "Belonging Not Containing: The Vision of Bioregionalism." *Landscape Journal*, vol. 19, no. 1/2, Mar. 2000, p. 46.

Zajackowa, Jadwiga. "Hemp and Nettle: Two Food, Fiber, Medical Plants in Use in Eastern Europe." *Slovo: Slavic Interest Group* (2002).

Vita

Rebecca Beyer was born in Pittsburgh, Pennsylvania to Gary Beyer and Julie Junker. She graduated from Montclair Kimberley Academy in 2005. She entered Bard University that fall to study Medieval History and transferred to the University of Vermont in 2007. She received a B.S. in Plant and Soil Science from the University of Vermont in 2009. In 2015, she began study towards a Masters of Arts in Appalachian Studies at Appalachian State University.

The botanical atlas : a guide to the practical study of plants containing representatives of the leading forms of plant life with explanatory letterpress [Vol. 1]. Item Preview. remove-circle. The botanical atlas : a guide to the practical study of plants containing representatives of the leading forms of plant life with explanatory letterpress [Vol. 1]. by. McAlpine, Daniel. Even these plants contribute to our economy. People in many countries rely on plant products for their livelihood and income. Read more on facts about plants. Plants people relationships are so much interlinked that we need them to survive. They can convert and store the light energy in the form of carbohydrates. This process takes place in the leaves (chlorophyll) by use of carbon-dioxide and water. From this manufactured food, they consume some of it and store the remaining. This is stored in the form of fruits, seeds, tuberous roots, etc.