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Situating wild product gathering in a diverse economy: negotiating ethical interactions with natural resources

Introduction

Human communities share much with more-than-humans, including coupled biogeographies. Now, more than ever, those in the natural and social sciences acknowledge that the biogeography of the entire biota (including humans) is inter-connected through economic and ecological processes (Tredici 2010). Unfortunately, the unsustainability of these inter-connections has also never been more evident. Today there is a great need for humans to re-examine our practices and consider living in ways with less detrimental environmental effects. In this chapter, I ask: can resource management, a realm consistently understood in relation to the logics of industrial and consumerist capital, be re-centered on ethical choices among humans and the more-than-human world? I turn for inspiration to the literature on diverse economies that is deconstructing capitalist language, de-centering the human subject, *and* rejecting a totalizing separation between humans and the environment (Gibson-Graham 1996, Gibson-Graham 2008, Gibson-Graham and Roelvink 2010). This intervention builds on, and is co-constituted by engaging with the diverse economies project.¹ Drawing on research on the interrelationships between humans, plants, and fungi in the eastern United States and Scotland I develop the concept of econo-ecological ethical practice.

The concept of “econo-sociality” as developed by Gibson-Graham and Roelvink (2010) brings the economy into our everyday lives and practices and helps to locate, engage and build social networks that “reclaim the economy as a site of ethical decision-making and practice” (2009:329). In my (re)envisioning of resource management, this econo-sociality is extended such that non-human biota are integral to “social” networks which are the basis for ethical decision-making. In this case, we can speak of “econo-ecologies” which might work to foreground everyday economic practices and choices into not only the social dimensions of natural resource use but the ecological dimensions of natural resources themselves. Building upon and merging

economic and ecological models of diversity, the concept of econo-ecologies makes clear the intimate and heterogeneous relationships that exist among biota (human and non-human). Thus, it becomes possible to reclaim the concept of natural resources as other than commodified inputs into “the” economy and see them instead as resources for human and more-than-human inter-relationship.

In this chapter, I demonstrate the power of the performative practices of community building, care of the environment, and ethical decision making (Gibson-Graham 2008) that often are inherent in the gathering of wild plants and fungi. Data from rural, urban, and suburban locations provide grounded examples of contingent local knowledges and practices of gathering which, in turn, could be foundational to an alternative resource management discourse. By documenting active engagements between people, plants, and fungi in the United States and Scotland I reveal diverse economic practices that are highly productive (in terms of subsistence, livelihoods, and cultural survival) yet are not industrialized or driven by formal markets. This creates an opportunity to (re)envision economies and resources as econo-ecologies supportive of diverse and productive interactions that will nourish and hopefully sustain both humans and more-than-humans.

The first section of the chapter situates the gathering of wild plants and fungi within mainstream economic and resource management framings. In the second section I present examples that demonstrate the diversity of gathering practices and emphasize the discursive fluidity necessary to engage in this type of (re)envisioning. Close attention to the places and practices of wild product harvesters reveals not only a variety of production forms (in terms of transactions, labor, and enterprise) but also forms clearly aligned with community economies and which are here re-thought as ethical econo-ecologies. In the final section I explore the impacts econo-ecology practices might have on natural resources management in three areas: sustainability, biogeography, and concepts of access.

Framing Natural Resources: the Case of Nontimber Forest Products

Capitalocentric orientations towards nature have been growing in social and cultural consequence in U.S. land management since the early 20th century, when American nature was re-conceptualized in terms of natural resources, and the growth of industrial forestry lead to the professionalization of natural resource management (Nash 1990). During the rapid accumulation

of land by the United States government in the early part of the 20th century, many federal resource management policies became grounded in the applied sciences of resource utilization. Natural resource management emerged as a field closely connected to “the scientific management of physical commodities and [one that] brought together technical specialists for a common purpose” (Nash 1990:148). It developed, as a field, emphasizing water for farming and urban settlement, soil for agricultural productivity, trees for timber, and wildlife as a recreational commodity. Ecosystems underwent major changes as a result of industrial forestry and agricultural practices, including significant shifts in overstory and understory species composition, soil erosion, alterations in the nutrient cycle, and shifts in associated fungal, invertebrate, and vertebrate communities. Through this highly capitalized process, the forest was recast into a space of “man’s” making (Scott 1998).

As resource extraction became increasingly politicized with the rise of a national environmental movement in the U.S. in the 1960s and 1970s, nonconsumptive (i.e. non-extractive) recreation became increasingly important to the economy, facilitating the creation of new markets in tangible and intangible commodities to enhance one’s enjoyment of nature (Pouta et al. 2006). Industrial resource consumption had been based on large scale harvesting and production of timber and paper products. Nonconsumptive recreation created markets in tangible goods such as outdoor equipment and intangible experiences like “getting back to nature” or enjoying a beautiful sunset in a landscape seemingly unadulterated by human manipulation. In the context of these framings wild plants and fungi and their collection can be categorized as consumptive resources, as commercial commodities (Pilz et al. 1999), and as recreational amenities (Barron and Emery 2009). In the contemporary U.S. federal management system, harvesters are most often categorized as either “commercial” or “recreational” based on the type of permit they require for their desired harvesting activities.

Materials collected from wild plants and fungi for food, medicine, and other purposes are known collectively by a variety of terms including nontimber forest products (Emery and McLain 2001), specialty forest products (Emery 1999), special forest products (Emery et al. 2002), and non-woody forest products (Taylor 1996). The common denominators in these monikers are (1) the normative status of timber and wood (*the* forest product), and (2) the rhetorical construction of these organisms as products. How the extraction of these products is referenced also varies, often in relation to what type of organism and product is “collected,”

“harvested,” “foraged,” or “gathered” and for what purpose. I acknowledge the historical and wide-spread usage of the term nontimber forest product (NTFP) but here, since our interest is in the economic-ecological relationship, I also refer to these organisms simply as wild products.ⁱⁱ Furthermore, I use extraction terms interchangeably to acknowledge a range of management choices and practices.

In classic Marxian terms wild products can be a source of use and exchange values. Indeed, it is common for both use and exchange values to be the objective of a single gathering outing. Self-provisioning is usually the primary goal and only that which is regarded as “surplus” is sold through informal markets (Carroll et al. 2003, Emery 1998, Barron and Emery 2009). However, because the term “product” in “nontimber forest product” is often conflated with commodities, exchange value has a privileged standing in the broader literature (Robbins et al. 2008).

Wolff and Resnick (1987) point out that “in all human societies, people take objects given in nature (land, water, plants, animals, etc.) and transform them to meet human needs and wants...The useful fruits of human labor are called ‘products’” (1987:155), but not all products are necessarily ‘commodities.’ For a product to be a commodity, it must be exchanged for money or for another commodity through a market, such as, for example, when mushrooms are harvested from the Sisters Ranger District in the Deschutes National Forest and sold to mushroom buyers who then sell the mushrooms to companies for distribution to domestic and international markets (McLain 2008, Tsing 2009).

The subtle difference between products and commodities is often lost in current American economic discourse, where they are regularly considered as synonymous. Indeed, the use of the word ‘product’ in the naming of wild plants and fungi harvested out of the woods often invokes some sort of commodity chain connection, economic development strategy, and/or commercial activity (Alexander 2002, Millennium Assessment 2005, Pilz and Molina 2002, Robbins et al. 2008). Building on Wolff and Resnick’s definition, I understand the ‘products’ in our use of the terms ‘nontimber forest products’ and ‘wild products’ as any plants or fungi gathered for human use from a variety of forested landscapes.

The reframing of ‘products’ in this way takes the focus from commodities and re-centers it on the role of wild products in contemporary subsistence practices, where subsistence is defined as “any direct use of natural resources to meet the requirements of material and cultural

survival outside the formal market: that is, hunting, fishing, trapping and gathering to obtain food, medicine, and utilitarian materials for the individual and his or her social network” (Emery and Pierce 2005:983).ⁱⁱⁱ While a small subset of American wild products are global commodities (Matsutake Worlds Research Collective 2009), the vast majority do not enter formal markets (Emery 1998), meaning that the collection of these materials falls within this expanded definition of subsistence practice.

Subsistence practices have been the subject of a range of studies on social, emotional, and cultural connections between people and place. In all of these cases, requirements for material and cultural survival are set by harvesters rather than driven by the demands of the formal market. Even when it does occur, the transition from product to commodity does not consistently result in large-scale commercialization and valuing of wild products through the processes of supply and demand. For example, Robbins et al. (2008) have recorded the everyday practices of gathering for self and family in New England. Hinrichs (1998), Carroll et al. (2003) and Barron (2010) present examples of the material and cultural value of wild products using concepts of identity and embeddedness. Hinrichs (1998) shows how maple syrup production in Vermont and Quebec provides supplemental income, a source of rural and agrarian identity, and strengthens family and community ties. Wild huckleberry harvesting in Washington state and Northern Idaho (Carroll et al. 2003), and mushroom hunting in Eastern Maryland and south central Pennsylvania, also provide supplemental household income and are often significant parts of local identity and cultural heritage (Barron 2010). Where wild foods and medicines are gathered for sale, exchanges in local markets and informal economic exchanges are very common. These examples demonstrate the social significance of living with nature. I extend this work by presenting the diversity of inter-related economies and ecologies inherent in wild product gathering.

I see wild product harvesting as offering fertile ground on which to seek an “emotional grasp of possibility” in the economy (Gibson-Graham 2006:68). Adopting a diverse economies framework embraces the affective and performative aspects of (political) economic practices together with social and cultural practice. A focus on the diversity of values inherent in gathering further de-centers capitalist language around biotic relationships, creating space to consider ethical interdependence and negotiation not only between humans but between humans and the more-than-human. Gibson-Graham and Roelvink (2010) provide a series of examples emphasizing how individuals and communities engage in reciprocal processes where both the

earth and humans are “transformed through a living process of inter-being” (2010:322). Implementing a language of the human and more-than-human in nontimber forest products discourse begins to interrupt human/other binary interpretations of nature commonly encountered in society/nature and human/all-other-biota divisions of humans and the environment. Positioning plants and fungi as “more-than,” rather than “less-than” human generates a theoretical unsettling within the binary frame. Where “less-than” organisms are subsumed within human systems of sociality and economy, “more-than” organisms invoke interrelationships and a level of agency that demands responsible engagement and an ethics of inter-being. In our view the use of the word “products” invokes this ethical stance, while the use of the word “commodity” does not. More-than-human plants and fungi are products in economic, cultural, and social discourses, but are not default commodities in any market. Rather than hierarchical relationships that privilege one view of the human economy, the concept of econo-ecological relationships integrates human wellbeing and ecological wellbeing within webs of relation (Rocheleau 2008).^{iv}

Wild Product Harvesting: Community, Care of the Environment, and Ethical Decisions

Practices of gathering in forests bring humans, plants, and fungi into direct, intimate relationship. As with relationships between individuals and amongst social groups, such relationships may be nurturing and sustaining, careless or harmful. Until relatively recently, much ecology literature emphasized the human-environment relationship as one in which human action often resulted in environmental degradation. This ignores the variety of econo-ecological relationships that have resulted in sustainable environments as is often evident when we examine human gathering of plants and mushrooms.

To be certain, there are examples where plant species have entered markets, both capitalist and pre-capitalist, which have led to social injustice (Hanson 1992), species extinction (Parejko 2003), or ecosystem damage. Brazilian agroeconomist Alberto Homma (1992), for example, offers an econometric model of commodified Amazonian plant-based products which demonstrates the coupled economic and ecological progressions that result in the impoverishment of both people and ecosystems. He analyzes the process whereby commoditization leads to ecosystem simplification which increases the density of the valued species of wild plants. Furthermore, the model predicts that increasing market demand eventually

leads to the development of domesticated and synthetic substitutes, which in turn leads to the eventual collapse of the wild-harvested market. In contrast, ethnographers working in the western U.S. and Canada have documented historical and contemporary practices of indigenous peoples that actually enhance and sustain populations of wild plants and mushrooms (Anderson 1996, Peacock and Turner 2000, Richards 1997). Peacock and Turner (2000), for example, examine historical land management practices by tribes of the interior plateau of British Columbia and highlight the centrality of an ethics of reciprocity in which human actions promote the long-term survival and flourishing of plants, people, and other animals.

It would seem that I do not need (to quote Gibson-Graham) to “presume that relationships between distinct sites of the diverse econo[-ecology] are structured in predictable ways, but observe the ways they are always differently produced according to specific geographies, histories, and ethical practices” (2006:71 insert added). Just as St. Martin (2005) has highlighted the presence of fisheries-related artisanal practices, community spaces, and local knowledge in the first world to show economic difference, with Marla Emery I have traced diverse knowledges and economic practices throughout the eastern U.S. and Scotland in the wild product harvesting sector (Barron 2005, Barron 2010, Emery and Barron 2010, Emery and Pierce 2005, Emery et al. 2006, Robbins et al. 2008). Our research has documented a wide range of econo-ecological relationships between people of diverse ethnic heritages and the plants and mushrooms they use. Through this work, we “explore the [previously] uncatalogued engagements of diverse populations, who are constantly re-imagining and remaking the [econo-ecologies] around them, in the face of very real hegemonic forces that might have them do otherwise” (Robbins et al. 2008:274 inserts added). To do so we use the diverse economy framing (Gibson-Graham 2006:71) which has allowed us to recognize a wide range of econo-ecology types. We found that within wild product harvesting there exist diverse types of transactions, diverse forms of labor, and diverse enterprises. A number of examples will serve to illustrate the wide range of our findings.

Capitalist econo-ecologies that resemble agriculture and include standard capitalist relations and labor processes do emerge from wild product harvesting. One example is the transition of Maine’s wild blueberry industry from traditional practices of gathering to an industrial “agricultural” enterprise which is now tracked by the National Agricultural Statistics Service. In 2007, exports of wild blueberries totaled almost \$50,000,000 (Alexander et al. 2011).

In Maine wild blueberries are actually planted and grown in monocultural fields, often maintained through the use of herbicides and labor practices like those of industrial agriculture. While technically undomesticated (and often state owned), the blueberry is also a raw material for capitalist production. Another example of wild product gathering closely tied to capitalist enterprises is the gathering of fungi by Hmong immigrants in the western U.S. for sale to Asian markets via complicated supply chains (Hosford et al. 1997). These capitalist econo-ecologies are, however, exceptional once one recognizes the wide range of econo-ecologies which exist in gathering and exchanging wild products.

In addition to the transaction of wild products in formal commodity market transactions, they are exchanged in a variety of alternative markets. For example, ethical ‘fair-trade’ markets for wild products have been proposed. These include the formation of a Sustainable Wildcrafting Guild in the U.S. Pacific Northwest (Oregon, Washington, and Idaho) and a FairWild certification system. The now defunct Sustainable Wildcrafting Guild emphasized long-term sustainable harvesting of wild plants and fungi through proper harvesting techniques. The FairWild certification program is still functioning and requires legal and sustainable sourcing as well as the distribution of economic benefits to those local communities harvesting certified wild products. Other alternative markets include farmer’s markets and crafts fairs where wild plants, mushrooms, and items derived from plants and mushrooms are sold (Emery 1998, Emery et al. 2006). Also, there is almost certainly an underground market for psychotropic mushrooms and plants, although our first hand knowledge of this is confined to pointed questions following lectures. Finally, many types of informal markets abound, including exchanges such as back door sales to restaurants, friends, church communities or neighbors. Of all the cases I have engaged with, the proportion of gatherers actually selling their products is small and it is regularly made clear that family and friends’ needs are met first before any sales are made (Barron and Emery 2009).

Our research suggests that nonmarket transactions are the most frequent type of exchange of wild plants and mushrooms, although they may not account for the largest volume. Household flows or personal consumption are the most frequently mentioned economic use according to a wide range of interviews (Barron and Emery 2009, Emery 1998, Emery et al. 2006) and surveys (Butler 2008, Emery et al. 2006, Robbins et al. 2008). For example, wild plants and mushrooms are offered as gifts just as they come from the woods or are made into items such as baskets or

wild berry preserves. Such gifts have qualities not available in commercial products and convey with them the expertise and time of the giver (Emery 1999). Furthermore, wild plants are central to indigenous cultures and sharing of species with special importance is a fundamental cultural practice in many communities, particularly to ensure that elders can still enjoy foods, medicines, and craft materials that they can no longer harvest for themselves (Emery and Pierce 2005). Gathering is the practice through which people obtain wild plants and mushrooms for use. The act of gathering often falls into a legal gray area but sometimes clearly constitutes theft or poaching, as when species such as ginseng (*Panax quinquefolius*) is removed without the permission of a private landowner who had planned to pick or use it.

In addition to transactions, forms of labor are similarly diverse in wild product gathering and range from paid employment to various forms of self-provisioning. In our experience, where the labor of finding and harvesting wild plants and mushrooms is exchanged for a wage economies are indeed less diverse but they rarely reduce to standard capitalist relations. For example, paid gatherers are often self-employed “independent contractors” rather than waged employees. Such an arrangement is common in wild product commodity chains even when the gatherer has no other contact with the commodity chain structure and gathering is part of a diverse income generation strategy (Barron 2005). Gathering for household flows and gift giving is a form of unpaid self-provisioning labor which can take many forms. Self-provisioning is, however, often subsumed within a “recreational gathering” category by official resource management systems despite being economically and socially distinct.

Finally, there is a rich diversity of enterprises engaged in wild product harvesting. Indeed, wild product enterprises range from global capitalist firms sourcing and selling wild crafted herbal medicines, dietary supplements, and cosmetics to one-person cottage businesses. Most are, however, micro-enterprises whose business goal is to meet basic livelihood needs rather than maximize profits, with green goals also a high priority (Chamberlain et al. 1998, Emery et al. 2006). To further capture the diversity of transactions, labor practices, and enterprises found in wild product harvesting, I now turn to the stories of individuals who have participated in our research. These stories illustrate the diversity of econo-ecologies in wild product harvesting but they also speak to the affective and vital relationships that exist between human beings and wild plants and mushrooms.

Gathering Stories

Jerry and Dianne Pierce started Superior Wild Mushrooms when a motorcycle accident ended his employment as a prison guard. From the outset, their goal was supporting themselves while assuring the long-term welfare of the plants and mushrooms they have supplied to upscale restaurants for nearly four decades. Their original business plan stressed sustainable harvesting as much as sound business practices. Finding wild mushrooms year after year requires close observation of temperature, precipitation, and forest health. In my research with Emery, when one of us first met Jerry, he had more than 20 years of notes on the dates, locations, and weather conditions associated with wild mushrooms. His interactions with the forests in which he hunts for wild products have deepened his sense of connection to his surroundings. He tells the story of once picking mushrooms on hands and knees when he sensed that he was being watched and looked up to find a wolf eyeing him from a few yards away. He had noticed a strong smell when he arrived in the spot and realized he must be in a place the wolf had marked as his or her territory. Taking care not to look the wolf directly in the eyes, Jerry apologized for being there in a quiet, low voice and slowly backed away.

Over the years, demand for some seasonal wild foods has exceeded what Jerry, Dianne, and their family could harvest and they saw an opportunity to provide income for other members of their rural community. Located in a region of northern Michigan, U.S.A. where unemployment levels can be twice the national average, they have provided modest but meaningful cash income to local women, high school students, and others for whom formal employment is especially scarce. They insist, however, that anyone harvesting for them does so sustainably. To this end, Dianne and Jerry train new gatherers to harvest in a manner that promotes the health and reproductive capacity of target species and respects their habitats. This has meant visiting recently harvested spots to confirm that appropriate practices were used and refusing to buy from people who fail to do so. In econo-ecological terms, these business practices are based in ethical interactions with the biota. Dianne and Jerry make seasonal decisions about what is *necessary* for their livelihoods, and how much *surplus* can be sustainably harvested from the *commons* to support them and their employees. Dianne and Jerry are (re)envisioning sustainability and resource access by practicing specific econo-ecologies, and making sure that their employees do as well.

Craig Martin (a pseudonym) has been a small businessman and has held several jobs. Like many people in northeastern Scotland, he also has found himself unemployed or underemployed for extended periods. Picking wild mushrooms (referred to in the United Kingdom as fungi) has kept him going body and soul through the ups and downs. A day spent in the woods can be both peaceful and exciting, especially when the hunt leads to a big find of boletes or chanterelles. For years, Craig's fungi forays helped to feed markets in southern England and continental Europe as he sold choice edibles to a local wholesaler for immediate payment in cash. While the wholesaler's subsequent transactions almost certainly took place in the formal economy, the exchanges in which Craig participated occurred in the informal economy. There were no official records of these transactions and they did not generate revenue for the state. In addition, Craig's net earnings were unclear because he was not in the habit of tracking his expenses or earnings.

After some years, Craig decided to keep a complete accounting of this income and declare them as formal earnings. The results were sobering. Deducting the expense of petrol, his earnings for a typical 10 to 12-hour day might be less than £20 and, on some days, they could be negative. To be sure, there were times when money earned selling fungi helped pay the bills, but Craig realized that on a long term basis selling fungi did not make good sense. In capitalist economic terms, Craig's wild product harvesting was unsustainable because he could not make a living wage. Rather than rejecting his chosen livelihood, Craig rejected this vision of sustainable living. Instead, he turned to bartering with shopkeepers in the fishing village where he lives. Trading with the baker for loaves of bread or the local pub for a pint or two has proven more fulfilling than engaging with wholesalers for the international commodity market. In ecological terms, Craig sustained his economic livelihood and emotional well-being by choosing ethical engagement based on *necessity* rather than wage labor.

Linda lives in the mountainous U.S. state of West Virginia. She and her husband endeavor to live a subsistence lifestyle to the greatest extent possible. They fish, garden, gather, and try to minimize their need for cash from outside work. Drawing on knowledge Linda received from her American Indian grandmother, she is the first source of health care for her family and their animals. Wild plants make up the majority of her pharmacopeia, as well as an important part of her diet. She learned from her grandmother to respect plants and regard them as other living beings. Mountaintop removal mining has destroyed many of her gathering spots.

Linda experiences this as a profound loss that is at once bodily and spiritual. In response, she and her husband have mounted salvage efforts, going to mountains slated for mining, digging up, and transplanting plants they use to other more protected locations, including their own land. In econo-ecological terms, Linda and her husband are affecting their local environment by choosing to alter biotic communities in a way that is consistent with their traditional knowledge about the environment and their ethics of engagement with the more-than-human. In terms of ethical negotiation, they are remaking the *commons* to maintain ecological communities they engage with. Contemporary biogeography sometimes demonizes such human-environment engagements with the language of invasive species or (inappropriate) redistribution of genotypes. To be certain, invasive species are a threat to endemic ecosystems. However, when done based on traditional knowledge (Berkes 2008), novel biogeographical communities may arise that support human well-being.

Stone and Marsha are dedicated to the cultural renaissance of the Wabanaki peoples in the U.S. state of Maine and the Canadian province of New Brunswick. They teach language and culture and observe traditional ceremonies for healing and marking sacred times. Wild plants are part of all these practices. Plants are used for healing body and soul. They are essential to many ceremonies. Being in the right relationship to plants, calling them by name, asking permission to use them, and expressing gratitude for their gifts are all important parts of Stone and Marsha's harvesting practices and the basis for respectful and sustainable harvesting. Stone and Marsha's econo-ecological ethical engagement is one based in *necessity* and a *commons* which they are a part of, rather than outside of. Their traditional knowledge supports an econo-ecological type of access that is tied to cultural livelihood practices, rather than mediated by property boundaries.

In the experiences of the individuals and relationships with wild products described here, I recognize that, like the economy writ large, the econo-ecological landscape is always already diverse (Gibson-Graham 2008:624). As in the community economies revealed by Gibson-Graham (2006) and others, capitalist economic forms are the tip of the iceberg. Econo-ecological transactions occur in formal markets, informal markets, and no markets at all. The alternative paid and unpaid labor of gathering wild products complements and sometimes supplants formal wage labor. Organizational forms range from the capitalist and alternative capitalist to the non-capitalist. In the process, complex communities come in and out of being. Caring and ethical

decision making are exercised (and sometimes not) in relationships amongst people and between people and the biotic world.

The stories show how gathering wild products for their use and exchange value can help buffer individuals against the vagaries of wage employment or to (largely) forego it. Barter provides opportunities for enacting community and sustaining well-being. Physical and mental health is served by the skillful use of flora and fungi and the act of harvesting them. Wild plants and mushrooms are essential to the material and cultural survival of indigenous peoples but also make important contributions to individuals and groups with diverse ethnic backgrounds. Dianne and Jerry, Stone and Marsha, Craig, and Linda's stories are especially noteworthy but they are not unique. I have heard variations on them in location after location. They are illustrative of the diversity of existing econo-ecological practices and their ability to provide for the wellbeing of humans. How, though can these practices also attend to the well-being of the more-than-human?

Ethical decision-making regarding when, what, and where to harvest are regularly revisited as access is negotiated and re-negotiated through changing environments, land tenure structures and social norms. Bio-physical and social surplus is readily observed through on-going personal and social decision-making processes to assess abundance or scarcity of wild products in the environment, the effort put into harvesting them, and choices made about their subsequent distribution as products. These stories show how our economic lives can include ethical negotiations around *necessity* (how much do I need to harvest to make or supplement our living?), *surplus* (how much of the harvest is more than needed and can be sold or given away?), *consumption* (what rate of harvesting is sustainable?) and the *commons* (how do our practices of harvesting sustain and replenish the ecological communities I share?) (Gibson-Graham 2006).

Conclusion: From Natural Resource Management to Econo-ecologies

Contemporary natural resource management suffers from a history grounded in “the scientific management of physical commodities” (Nash 1990:148), and a present day emphasis on ecosystem integrity and managing rights of access amongst diverse publics. No balance can be found between these past and present requirements when the formal market is the only way to assess necessity, surplus, consumption, and the commons as they relate to wild products. In other words, natural resource management cannot simultaneously sustain social, natural, and economic

systems as they are currently configured under capitalism. Economy and ecology are pitted against each other, and ethical engagement is not considered.

Forest-based economies can and do transcend capitalocentric discourses of nature centered around industrial resource use and landscape consumption in favor of those centered on community, care of the environment, and ethical decision making. The stories here do not require delineating people as recreational or commercial users, which is a common method for managing public access in U.S. federal land management agencies and oversimplifies U.S. forest-based economies and publics (Emery and Pierce 2005, Robbins et al. 2008). Robbins et al. (2008) argue that “attention to the harvesting ‘community’ and its ‘economy’ ...has hidden the common and equally complex practices of gathering by average people” (2008:273). In this chapter, I presented a variety of active relationships between people and the more-than-human, which I see as diverse econo-ecologies. Like Gibson-Graham and Roelvink’s (2010) econo-sociality, these econo-ecologies are co-constituted through interdependence among humans and more than-humans (i.e. the biota) at multiple temporal and spatial scales.

To explicitly (re)envision the relationship between economies and natural resource management for decision making and policy, econo-ecological relationships and practices must be recognized as significant and informative. Emery and Pierce (2005) argue that the insertion of subsistence considerations into U.S. forest policy “will require ...documenting material and cultural practices of contemporary subsistence and ...examining the articulation of subsistence practices with other economic forms,” (2005: 989). Robbins et al. (2008) highlight the significance of power in decision making processes. Bringing social and emotional ties to subsistence and the multiplicity of interactions among humans and the floral and fungal biota back into natural resource management is challenging and radical specifically because it acknowledges complexity and the de-centering of power. It means seeing resource management in terms of ongoing negotiations and processes of social and ecological interaction, rather than fixed states periodically altered by changes in scientific discovery. To maintain this open stance is antagonistic to many current resource management regimes in the United States. I ameliorate this antagonism slightly by focusing on human agency in these ethical negotiations with the environment, where intimate and heterogeneous relationships are based on human choices. These intimacies and relations are cultural, social, economic and political; and equally importantly they incorporate diverse awareness and knowledge of ecology, which is why I see this as a

(re)envisioning of *econo-ecologies*: using and relying on the environment through an ethics of caring and intentionality.

Sustainable use is central to *econo-ecologies*. The care of the environment that is evident in so many wild product gathering practices is not altruistic stewardship. It is necessary for environmental and human sustainability. Harvesters, like Stone and Marsha, are concerned with the long-term availability of resources for their sustained use and their inherent value. As our data show, the concepts of sustainability and economically productive care of the environment operate at a personal level and do not have to be in conflict. Sustainable use is an active process of ethical decision making for the environment and for self, in-common and for community. Often positioned separately in the literature, in fact sustainable use is an ethical position that is at the core of care of the environment due to the recognition that through carefully using natural resources, we are caring for ourselves, our needs, and providing environmental stewardship in ways that have been practiced for thousands of years. The gathering and use of wild products, as outlined here, is exemplary of how caring for the environment, sustainability and diverse economic practices are connected.

Biogeography is affected by *econo-ecologies*. One could argue that to consider biogeography as unrelated to human *econo-ecologies* is in fact to misrepresent the last 10,000 years of organismic movement across space. Humans move and are moved for many reasons, including economic ones. As they move, they bring plants and mushrooms with them, locating new populations in their new locations. The long-term relationships among people, flowers, and honeybees are archetypical examples of these processes of inter-being and shared biogeographies. Human ethical choices drive biogeography as much as wind, drift or isolation; sometimes on purpose, sometimes not on purpose. For example, when Linda and her husband dig up and transplant plants to save them from destruction, they unintentionally transport thousands of additional species of bacteria and fungi. Historically, many species relocations performed for capitalist enterprises have had disastrous results. I suggest that attentiveness to novel biogeographies arising from different *econo-ecological* relationships might be an area of productive interrogation for geographers interested in thinking differently about human-environments affected by economy.

Finally, ethical decision making vis-à-vis economic diversity is a core concept of a more broadly defined understanding of access issues related to land tenure. Typically, community

rights and responsibilities are based in both *de facto* and *de jure* governance regimes. *De facto* refers to the rules and authorities that are observed in actual practice; often these are based in traditional social structures and beliefs. *De jure* governance regimes are the official laws, regulations, and administrative structures (Larson et al. 2010). In the U.S.A. and in Scotland, *de jure* access to wild products often is based on property ownership and demarcated boundaries. Our research has shown us that *de facto* terms of access are more diverse: ethical decisions are commonly an integral part of how people interact with the environment and make choices about this key issue in natural resource management. Often reduced to questions of public and private ownership, wild product harvesters recognize property ownership as only one component of access. In our field sites for example, harvesters regularly told us that they judge appropriate access based on previous ownership of private property and long standing family and community relationships, not just current ownership. In an econo-ecological context, gaining access to a wild product also requires specialized knowledge that particular plants or fungi are of economic value. The complexity of these econo-ecological negotiations around sharing space and knowledge are all decisions that individuals and communities are regularly negotiating through social norms, cultural and economic pressures and processes.

In comparison to regulatory concepts of access solely based on property boundaries and ownership, a more nuanced understanding of access incorporates ethical choices and econo-ecological knowledge. Decisions relating to access are not solely a question of legality, but also one of ethics, in which the environment and the economy are continuously (re)shaped. For example, Dianne and Jerry's decisions about how to run and operate Superior Wild Mushrooms were related to public and private land management entities, but not wholly determined by them. They make ethical decisions in relation to, but not subsumed by, these other entities. A more sustainable econo-ecological complex is maintained as a result. When Craig barter away wild mushrooms in exchange for a beer at the local pub, he is negotiating access to sustenance and a social setting. When Stone and Marsha ask a plant's permission to use it in a ceremony, they are negotiating emotional access necessary for their wellbeing.

Our research has shown us that ethical decisions are in fact often an integral part of how people interact with the environment. It is the diverse economies framing of economic practice and process that makes observing econo-ecologies of nontimber forest products possible. Seeing natural resource management through the lived experiences of the gathering and use of wild

products re-scales ethical decisions about the environment and the economy to daily, personal choices. Recognizing the diversity of economic activities of which they are a part makes us more aware of the ways they are significant in human experience. It alters their overall value, which contributes to and affects our decisions and choices regarding the environment.

ⁱ This paper is based on thoughtful conversations with Marla R. Emery from the USDA Forest Service. Marla has been kind enough to provide data and insights which have greatly informed the ideas and sentiments expressed in this chapter. Both of us have worked with gatherers, indigenous people and harvester communities and have learnt from their different ways of living with nature that, like diverse economies, are often marginalized in mainstream discourse.

ⁱⁱ I use the word “wild” to refer to species and individual plants and mushrooms that are not deliberately cultivated in agricultural settings while recognizing that this does not preclude human care, tending or active intervention in biological and ecological cycles.

ⁱⁱⁱ Nontimber forest products are commonly understood as not inclusive of animals. Therefore, although this definition of subsistence practices is inclusive of hunting and fishing, I do not include animals further in this discussion.

^{iv} While strongly emphasizing webs of relation and inter-being in this chapter, I have resisted the move to read econo-ecologies in terms of Latourian actor network theory for strategic reasons. While I am aware of the growing use of actor network theory (Latour 2005) to explore the complexity of relationships between the human and more-than-human worlds (e.g. Haraway 1991, Mitchell 2002, Whatmore 2002, Staddon 2009), my focus here on human agency reflects my experience working with biologists and land managers and my desire for this material to be accessible to those who may not be familiar with critical social theory and its alternative constructions of biotic relationships.

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