

Review

Greater Attention to Wild Foods and Cultural Knowledge Supports Increased Nutrition Outcomes Associated with Agroecology

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Abstract: Agroecology frameworks do not explicitly include nutrition, but nutrition is an outcome of many principles of agroecology, with growing evidence that agroecological interventions improve diet quality and nutrition. In this paper, we argue that more explicit attention to the importance of wild foods from diverse agroecological landscapes will further enhance the nutrition outcomes associated with agroecology. In rural landscapes around the world, wild foods provide nutrient-dense and culturally important foods that make significant contributions to the diet in some contexts and are culturally important and highly valued delicacies in others. Agroecological principles, science, and practice already support the maintenance of wild foods in food systems by highlighting ecological principles. These include low or no use of pesticides, landscape diversity, and maintenance of biodiversity, alongside social principles such as traditional knowledge and cultural practices. The focus in agroecology on working with traditional knowledge and cultural practices supports the preservation of traditional knowledge required to responsibly harvest and prepare wild foods. Centering landscape diversity and nutrition as outcomes of agroecology supports the continued use of wild foods and cultural knowledge, especially in rural communities around the globe. More explicit attention to wild foods in agroecological systems will further contribute to associated nutrition outcomes, while simultaneously promoting the maintenance of landscape diversity, biodiversity, preservation of cultural knowledge, and other ecological sound and socially just agricultural practices.

Keywords: agroecology; wild foods; nutrition; landscape diversity; cultural knowledge



Citation: Zhu, S.J.; Mfuni, T.I.; Powell, B. Greater Attention to Wild Foods and Cultural Knowledge Supports Increased Nutrition Outcomes Associated with Agroecology. *Sustainability* **2024**, *16*, 3890. <https://doi.org/10.3390/su16103890>

Academic Editors: Michael A. Long, Michael S. Carolan and Manuel González de Molina

Received: 1 March 2024

Revised: 19 April 2024

Accepted: 29 April 2024

Published: 7 May 2024



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1. Introduction

There is a global imperative to shift towards more nutrition-sensitive and sustainable food systems, away from those that prioritize and subsidize caloric yield over nutrients [1]. Agroecology has been introduced as an approach that incorporates ecological integrity and social justice as key priorities for transforming food systems and has been gaining traction globally [2]. Agroecology frameworks are now used by the Food and Agriculture Organization (FAO) of the United Nations, which developed and defined 10 elements to improve international understanding and consensus on agroecology and created an agroecology knowledge hub to foster inter-sectoral partnerships [2,3]. The 10 elements proposed in the FAO work were expanded by the High Level Panel of Experts (HLPE) on Agroecology to 13 principles of agroecology [4]. The HLPE report links the 13 proposed principles with Gliessman's five levels of agroecological transformation for a well-defined framework [5]. These principles showcase the range of benefits that agroecology can offer, from increased biodiversity to economic diversification to fairness [4]. Agroecology is also centered in the Intergovernmental Panel on Climate Change (IPCC)'s Sixth Assessment Report (AR6), which notes with high confidence that agroecological solutions for climate change adaptation support food security, nutrition, health, and well-being, along with livelihoods, biodiversity, sustainability, and ecosystem services [6].

Many of these leading agroecology frameworks do not explicitly include nutrition as a principle (Table 1); yet nutrition is sometimes an intended and actual outcome. Agroecosystems have several features that have been shown to support diet quality and nutrition, including high biodiversity, crop diversity [7,8], and landscape diversity [9,10]; ingenuity in the use of land and water; and resilient and adaptive management built on local knowledge systems, socio-cultural institutions, and cultural values [11–14]. At the core of agroecology is a commitment to collective forms of social organization that determine just and equitable access to resources and benefits, which help to address inequality in general as a core driver of food insecurity and malnutrition [15]. There is now strong evidence that agroecological interventions produce positive nutrition outcomes [12]. Increasing explicit attention to nutrition and diet quality in agroecology frameworks and practice would help center the importance of micronutrient-rich foods such as fruits, vegetables, and lean animal source foods and, in places where a significant portion of these come from the wild, the diverse landscapes that produce them in agroecological systems.

Table 1. Major agroecology frameworks and inclusion or not of nutrition.

Author, Year	Framework	Inclusion of Nutrition as Element?
(Altieri, 1989)	Model of a sustainable agroecosystem	No [16]
(Francis et al., 2003)	Agroecology: The Ecology of Food Systems	No [17]
(Clements and Shrestha, 2004)	New dimensions in agroecology	No [18]
(Wezel et al., 2009)	Agroecology as a Science, Practice, and Movement	No [19]
(Gliessman, 2016)	5 Levels of Transformation	No [5]
(Gliessman, 2018)	Defining Agroecology	No [20]
(FAO, 2018)	10 Elements of Agroecology	No; outcomes of diversity, culture, and food traditions [3]
(HLPE, 2019)	13 Principles of Agroecology	No; but framework, as a whole, intended to address food security and nutrition [4]

Wild foods are plant and animal species that are not domesticated or cultivated but rather are gathered, hunted, foraged, fished, or procured outside formal cultivation [21,22]. Wild food species are also sometimes escaped domesticated species identified by their location within a landscape, such in forests, along the perimeters of cultivated spaces, or in fallowed areas [23]. In some contexts, wild foods are a critical source of food and calories (e.g., in Sago-centered food systems in Asia), but in most contexts, wild foods contribute little to food energy intake. Despite this, their contribution to nutrition and health can be significant because most wild foods, predominantly vegetables, fruits, mushrooms, insects, fish and meat, are rich in micronutrients [8]. The contribution of wild foods to diets varies greatly [8,24,25]. Some countries have reported regular use of wild foods by the majority of (15 countries) or some of (26 countries) their populations [25]. Even in the US States of Maine and Vermont, almost 17% of households forage, 16% hunt, and almost 15% fish for wild foods, and these activities have been linked to improved food security outcomes [26]. For traditional swidden farming communities in the Philippines, wild food provided 42% of calcium, 13% of iron, and 17% of vitamin A in the diet [27]. In forest-adjacent communities in Benin, wild plant foods provided 5% of iron in the diet [28]. In forest-adjacent communities in Gabon, wild foods contributed 21% of iron and 55% of vitamin A in the diet [29]. In forest-adjacent communities in Tanzania, wild food contributed 31% of the vitamin A, 16% of calcium, and 19% of iron in the diet [30]. In rural communities in Alaska, wild foods contributed 37% of the iron, 35% of the zinc, 26% of the vitamin A, and 83% of the vitamin D in diets [31]. Wild foods may also provide a richer and more diverse set of phytochemicals important to human health [32]. A recent study from India found that women who consumed wild foods had higher dietary diversity scores and consumed more dark green leafy vegetables [33].

For many traditional or Indigenous communities, wild foods are an integral source of not just calories and micronutrients but also identity and cultural well-being [34,35]. For many communities, managing, harvesting, and consuming wild foods are acts that help maintain and restore connections to land, place, and culture [36–38]. Ultimately, many of these communities are employing agroecological principles in their cultivation and consumption of wild foods, and agroecology can even offer a framework that can align and support their existing practices and values [39]. We build on this idea to explore the potential greater attention to wild foods in agroecology holds to improve nutrition and other outcomes.

In this paper, we argue that more explicit attention to the importance of wild foods from across diverse agroecological landscapes will further enhance the nutrition outcomes associated with agroecology. We examine the role of both edible wild plants and wild animal source foods [34,35,40,41]. Efforts to ensure that agroecology supports nutritious, diverse, and culturally appropriate diets should not overlook the importance of wild foods.

2. Agroecology, Diverse Landscapes, Wild foods, and Nutrition

2.1. Agroecology and Nutrition

Although nutrition is not a central focus of agroecology, some argue that it is a hidden principle [42]. The HLPE's report clearly links their 13 Principles of Agroecology to nutritional outcomes [4]. Out of these 13 principles, van Zutphen et al. (2022) proposed that 7 of them can make contributions to nutrition outcomes. For instance, agroecological practices that reduce the need for inputs (Principle 2—Input Reduction) have been shown to improve outcomes for food security, improve household dietary quality, and reduce market dependency because of self-provisioning practices that increase farmer identity and agency [43]. Similarly, the associations between production diversity (Principle 5—Biodiversity) and nutritional outcomes are well established because of increased dietary diversity [7,44]. Inequality (which can be addressed by Principle 10—Fairness) is well established as a key driver of food insecurity [15,45]. Fairness is particularly apparent in terms of supporting women who are largely responsible for household nutrition outcomes in developing countries but suffer from time poverty and disempowerment in household dynamics [46–48]. Even principles that van Zutphen et al. (2022) identified as less directly related to nutrition have emerging evidence of their role in nutrition. For example, a study in Ethiopia found that grains grown on farms in diverse landscapes that include forests and healthier soils had higher nutrient compositions of key micronutrients when compared to grain grown in less diverse landscapes [49]. Because of this, van Zutphen et al. (2022) argued that nutrition is a hidden principle of agroecology, both contributing to and emerging as an outcome.

Besides the principles correlating to increased dietary quality and nutrition, on-the-ground agroecological interventions have also been demonstrated to improve nutrition. In the case of a five-year agroecological intervention in rural Malawi, the follow-up showed a positive effect on household production diversity and dietary diversity [13]. A cluster-randomized trial in rural Tanzania showed that a nutrition-sensitive agroecological intervention improved children's dietary diversity and increased the percentage of children achieving minimum recommended dietary diversity [50]. The latter study also showcased that nutrition-sensitive interventions that were agroecologically focused had a similar or higher magnitude of the intervention's impact compared to nutrition-sensitive interventions that were not agroecological [50]. A recent review found that 78% of studies showed positive outcomes on food security and nutrition from agroecological practices in low- and middle-income countries (LMIC) [12]. The review showed that approaches that compounded multiple agroecology principles were more likely to have positive food security and nutrition outcomes [12]. To reiterate, one of the clearest ways agroecology practice leads to positive nutrition outcomes is through increased production diversity, which supports dietary diversity. This is the case for agroecological farmers in Ecuador, who have more nutritious and balanced diets due to the higher production diversity, while saving more by eating non-market based foods [51]. Ultimately, Bezner Kerr et al. [52]

argue that an agroecological approach to nutrition can both challenge social inequalities such as gender and class and offer ecological systems that can improve access to nutritious foods and to support sustainable diets.

While many of the existing studies that explicitly link agroecology and diet quality focus on cultivated foods, agroecology seeks to emulate ecological processes which can offer more inclusion of wild edibles in heterogeneous landscapes. As a science, practice, and movement, agroecology envisions a new style of sustainable agriculture that redefines relationship to land [19]. Conventional, industrialized agriculture often simplifies the natural biodiversity of a system, but as a method that applies ecology in agriculture, agroecology advocates for a system that emulates or is itself a natural ecosystem [19]. Both planned and associated biodiversity emerge as outcomes of agroecological systems through increased biodiversity-based and conservation techniques [53]. As a result, wild foods can emerge as parts of agroecological systems.

Therefore, agroecological wild food landscapes have great potential to support nutrition, health, and well-being for peoples globally. A greater emphasis on wild food provisioning may help to better establish the interconnection between agroecology and nutrition. Agroecological principles and practice strive to support food production that can additionally benefit from uncultivated parts of agricultural ecosystems, thus engendering more landscape and vegetation diversity [54]. Wild foods are not currently given enough attention in the conversation around the importance of agroecology: they have the potential to increase nutrition outcomes, while aligning with many agroecological principles, and may already be practiced inherently by many communities relying on wild foods around the world [39].

2.2. Wild Foods, Landscape Diversity, and Nutrition

While there is enough grain produced globally to meet the caloric needs of humans (if it were equally distributed), there is not enough vegetable and fruit production to meet nutritious diet requirements for all [55]. The global supply of fruit and vegetable production falls 22% short of population needs according to recommendations [56]. Few people globally meet dietary recommendations for fruit and vegetable intake [57]. Many communities around the world get a significant amount of their fruits, vegetables, and animal foods from forests, seasonal fallows, and other “wild” parts of landscapes [8,24]. In forest-adjacent communities around the tropics, wild foods contributed between 0% and 96% of fruits and vegetables (average of 14%) consumed [24].

While wild foods are sometimes thought of as only important for hunting-and-gathering subsistence communities, they have been historically used widely as a complement farming to create diverse and resilient foodways [58–60] (Figure 1). For many rural communities, agriculture is an efficient way to produce staple crops but is inefficient in the face of abundant wild sources of fruit, vegetables, and animal source foods, particularly in low population densities [61–63]. In fact, some of the most widely consumed wild vegetable species are weeds that grow among crops: communities weed their crops and then consume the weeds as a central part of their diet [21,22]. Several studies have shown that wild foods are procured from across a wide range of land uses, with forests rarely being the most important source of wild foods in mixed forest–agriculture landscapes [8,30,64].

Communities across the globe manage diverse landscapes and ecosystems through burning, pruning, weeding, and transplanting to enhance the production of wild food plants [65,66]. In some cases, management practices have been so intensive that some scholars feel it should qualify as horticulture even if plants never underwent the genetic modification associated with domestication [67,68]. Many communities also manage landscapes to enhance availability and proximity of wild animal food species [69,70].

Thanks to human modification, most rural agricultural landscapes are a matrix of land uses that includes agriculture of various intensities, land for grazing livestock, fallow, various uncultivated “natural” areas, water bodies, and built environments [10]. Landscape ecologists have long studied the ways in which landscape composition and structure,

spatial configurations of land use/land cover, and the spatial and temporal heterogeneity in landscapes impact the diversity, composition, and functioning of ecosystems. More recently, these same principles have been proposed to support the dietary diversity and quality of rural communities [10,71,72].



Figure 1. Wild foods from around the world. From top left to bottom right: (A) dried and powdered baobab leaves for sale in the Dissine market; (B) *Lannea macrocarpa* fruit for sale in the Dissine market Burkina Faso; (C) an Oromo girl holding *Syzygium* sp. fruits in Ethiopia; (D) locust roasting on coals (Ethiopia); (E) wild bamboo shoots freshly cut in Kamashi Ethiopia; (F) a young boy has collected assorted crayfish and crabs for dinner, Tanzania; (G) a basket full of freshly collected “mchicha” (*Amaranthus* spp.) in East Usambara Mountains, Tanzania; (H) a boy holding fruit of *Passiflora foetida* (wild relative of the passion fruit); (I) “Daum pakis” (wild ferns cooked at a vegetable) in Kalimantan, Indonesia (Photo by Icaro Cooke Vieira/CIFOR); (J) a mix of lowbush cranberry (*Vaccinium oxycoccos*), crowberry (*Empetrum nigrum*), and (*Vaccinium uliginosum*) tundra blueberry picked in Alaska; (K) wild persimmon, *Diospyros virginiana*, in Maryland, USA; and (L) Chanterelle mushrooms harvested in oak and pine forest in Pennsylvania, USA (photos by Bronwen Powell except where noted otherwise).

The presence of tree cover in rural landscapes and diverse landscape structures have now been proven to be a driver of dietary diversity. The amount of forest, number of forest patches, distance to forest patch, amount of forest edge, and amount of non-forest natural habitat have all been associated with diet [73–77]. To date, studies have had limited ability to determine the pathways that drive relationships between landscape diversity and diet quality: there is not yet a consensus as to whether these relationships are due to production of nutritionally important foods on trees (agroforestry), ecosystem services from forests to agricultural production, or from direct consumption of wild foods from diverse landscapes. However, there are emerging trends that suggest that wild foods are at least partially correlated with the relationship between landscape diversity and diet quality. A number of studies have shown that wild food use is associated with heterogenous landscapes partly consisting of both forest cover and natural grassland cover [73,78]. In Laos, wild food use was twice as high in communities with less land use pressure from commercial agriculture than those without the same pressures [79]. In Malawi, Rasmussen et al. [76] showed that the relationship between forest cover and fruit consumption was more likely related to wild fruit consumption than mangos, the most common cultivated fruit. More recently, Hall et al. [74] used panel data from Tanzania to show a causal relationship between deforestation and reduced fruit and vegetable consumption. While it is not proof that wild foods are responsible for diet quality, the latter case further points out the relationship between landscape diversity and nutrition, or lack thereof. In South Africa, a study showed that rural households in more heterogenous landscapes accessed more provisioning ecosystem services, including wild foods, than households in less heterogeneous sites [80]. There is also growing evidence that having wild foods from any source in diets supports dietary diversity and diet quality [33,81]. The presence of tree cover in rural landscapes and diverse landscape structures have now been proven to be a driver of dietary diversity. The amount of forest, number of forest patches, distance to forest patch, amount of forest edge, and amount of non-forest natural habitat have all been associated with diet quality and diversity [74–78]. To date, studies have had limited ability to determine the pathways that drive relationships between landscape diversity and diet quality: there is not yet a consensus as to whether these relationships are due to production of nutritionally important foods on trees (agroforestry), ecosystem services from forests to agricultural production, or from direct consumption of wild foods from diverse landscapes. However, there are emerging trends that suggest that wild foods are at least partially responsible for the relationship between landscape diversity and diet quality. A number of studies have shown that wild food use is associated with heterogenous landscapes partly consisting of both forest cover and natural grassland cover [74,79]. In Laos, wild food use was twice as high in communities with less land use pressure from commercial agriculture than those without the same pressures [80]. In Malawi, Rasmussen et al. [77] showed that the relationship between forest cover and fruit consumption was more likely related to wild fruit consumption than mangos, the most common cultivated fruit. More recently, Hall et al. [75] used panel data from Tanzania to show a causal relationship between deforestation and reduced fruit and vegetable consumption. While it is not proof that wild foods are responsible for diet quality, the latter case further points out the relationship between landscape diversity and nutrition, or lack thereof. In South Africa, a study showed that rural households in more heterogenous landscapes accessed more provisioning ecosystem services, including wild foods, than households in less heterogeneous sites [81]. There is also growing evidence that having wild foods from any source in diets supports dietary diversity and diet quality [33,82].

2.3. Wild Meat and Nutrition in Agroecological Landscapes

Animal-source foods (ASFs), including livestock and wild meat, are highly nutrient-dense. They contain high densities of micronutrients, particularly iron, zinc, and vitamins B6 and B12, which can be difficult to consume in sufficient quantities on a mostly vegetarian diet [82–84]. Molecules in animal tissue facilitate the absorption of micronutrients such as

iron and zinc from both plant and animal foods in a meal, increasing the bioavailability of these nutrients [85,86]. The over-consumption of animal foods is associated with negative health outcomes and contributes to climate and environmental change [87,88]. However, in settings where micronutrient deficiencies are common, a small amount of animal-source food in the diet can be the difference between deficiency and health [82]. One study suggested that the loss of wild meat from diets in Madagascar would result in a 29% increase in the rates of anemia for children [89].

Wildmeat remains important for dietary diversity, nutrition, and food security in many rural low- and middle-income (LMIC) communities [90–93]. In certain contexts, wild meat may be more sustainable than livestock, such as in the case of the Congo, where most species hunted are not threatened or endangered but provide food security and nourishment [94]. For some Indigenous and local communities, wild meat represents a vital part of diets for reasons dictated by a lack of alternatives, financial limitations, preferences, and cultural values [95]. The impacts of meat consumption on our planet must be considered in a place-specific, justice-oriented manner [96,97].

Animals play an integral role in agroecology, with the HLPE's Principle 4 dedicated to animal health [4]. In truly circular and sustainable agricultural systems, animals can aid in regulating nutrients and the metabolization of a system, converting what might otherwise be food waste into fertilizer. Wild meat has not historically been included in agroecological frameworks, but given the environmental impacts of livestock and the fact that the agroecological principles that support diverse landscapes could be compatible with landscapes that produce wild meat, wild meat could be incorporated into an agroecological design. Communities around the world intentionally manage their agricultural landscapes to enhance availability and proximity of wild animal food species [69,70]. As with wild plant foods, fallows, gardens adjacent to forests, and agroforestry areas are key sites from which wild meat is obtained. For example, Naughton-Traves [69] describes an "anthropogenic fauna" (wild games species that are adaptable, fast-reproducing species, including rodents, peccaries, brocket deer, and armadillos) present in swidden gardens in the Peruvian Amazon. She examines if individual land use practices impact species abundance and composition: in effect, do people "garden" wild meat? Other works suggest that garden hunting is favored because it complements other productive activities and protects crops from animal predation [70,98].

Even in wealthy countries, rural landscapes are a source of a significant amount of wild animal-source foods: in the USA, wild meat provides the majority of animal-source foods consumed in rural communities in Alaska [31] and up to 5.4 lb per capita per year in the state of West Virginia [99]. Recent studies found that gardening and wild food use protected against food insecurity during the COVID-19 pandemic [26,95]. Ultimately, wild animal source foods provide integral nutrition to rural communities globally.

3. Agroecology, Wild Foods, and Culture as Part of Socio-Ecological System

Much is lost under the pressures of agricultural "modernization", commercialization, and industrialization, with wild foods being key resources that are often squeezed out as agricultural systems intensify. Agroecology offers a vision for future agriculture that is efficient, just, and ecologically sound. However, the benefits that wild foods have in supporting human nutrition and ecosystem services have not been adequately captured, nor have their contribution to cultural values and social identity [100].

Agricultural transitions associated with increased market participation and land use change that reduced landscape diversity are associated with the reduced consumption of wild foods [27,79,101–103]. As noted above, landscape diversity and land use intensity are associated with wild-food use [73]. Transitions to large-scale agricultural production are placing diverse landscapes under increasing pressure [74]. Simultaneously, policies aimed at reducing agricultural expansion, deforestation, and hunting often restrict the Indigenous use of landscapes [104]. Policies that limit Indigenous and local communities' access to land compound pre-existing colonial legacies [105,106] to further alter food systems by

encouraging increased agriculture productivity of market-oriented staple crops when space is limited and landscape alterations like forest clearing are prohibited [74,107]. These interactions make a case not only for agroecology approaches to food production but also for greater attention to the role of wild food in agroecological food systems.

Yet, even in wealthy countries and urban areas, wild foods remain important. Wilkie et al. [93] note a shift from wild meat as a necessity in rural landscapes to wild meat as a “seldom consumed treat” in urban areas [93]. Foraging, hunting, and fishing remain important cultural activities across Europe and North America [26,100,108].

Agroecology has been greatly influenced by Indigenous food sovereignty movements: both intertwine ecological transformations with justice [109,110]. Because of this, agroecological systems are largely linked to traditional foods, practices, and knowledge pathways that center on the consumption and production of traditional Indigenous foods, many of which are, in fact, wild foods. While there is a dearth of literature that currently connects wild food systems to agroecology, it is ultimately the types of natural interactions that optimize synergies found in nature that agroecology strives to replicate.

The Indigenous food systems and food-sovereignty literature highlight the many cultural practices based on traditional and Indigenous knowledge that support the ethical and sustainable management of wild foods [36]. For many Indigenous communities, wild food species are also kin-species, and harvesting is part of a caring relationship that people must maintain as part of their relational responsibility to their kin [110,111]. While agroecological systems might focus on cultivated foods, the knowledge to work with, cultivate, and manage wild foods might be part of underlying environmental knowledge associated with knowledge of local ecosystems [21]. Wild foods are entangled with traditional knowledge and cultural practices, which are at the center agroecology frameworks [3,4]. There has been a decline in the knowledge on working with wild food plants as generations become further detached from their culture and more integrated with the global and technologically connected world [112]. Along with the evidence of wild foods improving nutrition, it should be noted that they are also integral to the identity of many communities [113,114]. There has been a decline of knowledge on wild foods and their stewardship, as generations become further detached from their land and culture and more integrated with the global and technologically connected world [113]. Along with the evidence of wild foods improving nutrition, it should be noted that they are also integral to the identity of many communities [114,115].

In North America, many communities are now using the revitalization of traditional food practices to start to heal the damage of colonialism and build healthy habits and community well-being [37,115]. Connecting nutrition and cultural foods and their practices can serve as a resistance strategy to dietary acculturation, where traditional foodways are replaced by global food products based on un-nutritious commodity crops, leading to detrimental health outcomes [116]. Wild-food hunting and harvesting offer pathways for people to connect with and maintain traditional knowledge, maintain connections to culture, and maintain connections to land and place [36,117,118]. In West Papua, Indonesia, forest communities talk about their preference for traditional wild foods because they taste like their forests and like their lands [119]. In North America, many communities are now using the revitalization of traditional food practices to start to heal the damage of colonialism and nurture healthy habits and community well-being [37,116]. Connecting nutrition and cultural foods and their practices can serve as a resistance strategy to dietary acculturation, where traditional foodways are replaced by global food products based on un-nutritious commodity crops, leading to detrimental health outcomes [117]. Wild-food hunting and harvesting offer pathways for people to connect with and maintain traditional knowledge, maintain connections to culture, land and place [36,118,119]. In Papua, Indonesia, forest communities talk about their preference for traditional wild foods because they taste like their forests and like their lands [120].

As discussed previously, agroecology is grounded through frameworks including the HLPE’s 13 Principles which build upon the FAO’s 10 Elements of Agroecology and other

literature, but there is a lack of focus on nutrition and diet quality as a core principle [3,4]. The closest principle is “Culture in Food Traditions” in FAO’s definition, which correlates to Principle 9, “social values and diets” in the HLPE’s framework. Price et al. [39] suggest that Indigenous communities in Northern Canada who rely heavily on wild foods are already inherently incorporating aspects of agroecology into their food system practice. They highlight that the agroecology components of environmental stewardship, economies, knowledge, social dimensions, and governance can easily extend to non-cultivated foods. This underscores some connections between nutrition, diets, and culture and how these can come together under the framework of agroecology when applied to wild foods in particular.

Morgan and Trubek argue that the literature surrounding agroecology does not discuss food culture and tradition clearly enough [120]. They base this analysis on FAO’s 10th agroecology element, “Culture and Food Traditions”. Despite the assertion that supporting “healthy, diversified, and culturally appropriate diets” will lead to good nutrition and health of ecosystems, the definition of a “healthy, diversified, and culturally appropriate diet” is lacking. Furthermore, they note the disconnect between agroecology’s more technical farming principles, including low-input and biodiversity-related farm practices, and healthy diets because diets are entangled in globally commoditized food systems.

Other principles of the agroecology framework, such as Principle 8 of Co-Creation of Knowledge, can also support the ways cultural identity, food, and ecosystems are intertwined to create a truly transdisciplinary and participatory science that values traditional knowledge of both cultivated and wild food production. This, in turn, can create a pathway for the traditional knowledge to be preserved and practiced, supporting wild food aspects of agroecological systems, which currently get less focus in the literature than cultivated aspects of agroecological systems. Creating legitimacy for wild foods and their associated knowledge will ultimately strengthen the case for the social and ecological benefits of agroecology in multiple social and material realms [121].

4. Conclusions

As part of diverse food-producing landscapes, wild foods can play an important role in food security and nutrition in agroecological food systems [21]. Agroecology has many benefits, such as increased landscape diversity, efficient use of land and water, facilitation of participatory and inclusive knowledge pathways, and advocacy for socio-ecological justice. However, despite being a holistically transformational ideology, prevailing agroecology frameworks do not currently pay enough attention to the importance of wild foods. More attention to these would enhance the nutrition outcomes in agroecological systems.

Many agroecological interventions occur in cultivated systems, with less focus on undomestic, wild spaces. Explicit attention to wild foods in agroecological systems will support the agroecological goals of improved biodiversity, greater landscape diversity, and increased nutrition for communities. Preserving traditional knowledge is of utmost importance to ensure the longevity of wild-food practices, such as honorable, safe harvesting and preparation. Agroecology can offer a pathway to preserving this knowledge in formal institutions through its social values, priority given to diets, and participatory approach to science and research. Future directions of research can build upon the intersection of agroecology and nutrition in the form of wild foods, continuing to shed light on how this can contribute to sustainable and healthy diets for communities around the world.

Agroecology offers pathways to combat rural injustice, promote food sovereignty, and regenerate deteriorated resources caused by the Green Revolution, which includes celebrating and supporting the creative subsistence strategies of rural populations [122]. It can offer pathways to improved livelihoods by increasing nutrition, as well as offering increased capital in many forms that include environmental, economic, and social forms. Ultimately, there is hope for agroecology to support the nutrition of people and environmental health of the planet. Maintaining diverse landscapes that support access to wild food can help achieve these goals.

Author Contributions: Conceptualization, S.J.Z. and B.P.; writing—original draft preparation, S.J.Z., T.I.M. and B.P.; writing—review and editing, S.J.Z., T.I.M. and B.P. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

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