

The Skarù·rę? (Tuscarora) Food Forest Project – Breaking Ground on Reconciliation in Sustainable Agriculture Research and Education Through a Community-based Haudenosaunee Agroforestry Demonstration

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Abstract

Temperate nut trees have long existed in Northeastern North America, providing high quality food, durable materials, and contributing to multispecies relationships across geographic and cultural landscapes. While not widely consumed today, renewed interest in temperate nuts as a staple food source is attendant with related efforts to realize nature-based solutions to climate change, which include multifunctional agroforestry systems. Indigenous contributions to agroforestry and climate resilience are substantial, however sustainable agricultural research often overlooks critical social justice implications underlying the history of dispossessed land and appropriated Indigenous crops. As one of the most nutritionally dense plant-based foods, nuts were important components of Haudenosaunee foodways. Archaeological, ethnographic and historical-ecological evidence indicate that the Haudenosaunee subsistence and settlement dynamics transformed cultural landscapes favoring such nut trees. The Skarù·rę? (Tuscarora) Food Forest is a community-based project part of a doctoral research program studying how nut trees contribute to Indigenous food sovereignty and climate smart agriculture, in what is today New York State. While Indigenous domesticated crops are culturally foundational, nuts can additionally contribute to food and language revitalization efforts within contemporary Haudenosaunee territories. Here we discuss theories and praxes informing community engaged approaches at the Skarù·rę? Nation. By addressing social justice concerns within agricultural science, we demonstrate how the Skarù·rę? Food Forest Project can provide a methodological testing ground for reconciliation-based and decolonial participatory action research that expands ongoing food sovereignty, community health, and education initiatives.

Introduction

Agroforestry is the intentional combination of woody perennials with crops and/or livestock emulating natural forest ecosystems to meet livelihood and ecological needs (Lovell and Johnston 2009) and has long existed globally in landscapes stewarded by Indigenous traditional ecological knowledges (Fajardo Cavalcanti de Albuquerque 2020). Included by the United Nations and the Intergovernmental Panel on Climate Change (IPCC) amongst “Nature-based Solutions” (NbS) to climate change, agroforestry can help mitigate 30-40% of global greenhouse gas emissions by 2030 (Griscom et al. 2017; Arneth et al. 2019; Seddon, Sengupta, et al. 2019). Agroforestry also enhances ecosystem services (Jose 2009; Torralba et al. 2016), biodiversity (Haggar et al. 2019), on-farm diversification (Zamora and Udawatta 2016), sustainable food production (Wilson and Lovell 2016), carbon sequestration (Shi et al. 2018) and climate adaptation (Hernández-Morcillo et al. 2018; van Noordwijk et al. 2021).

Indigenous peoples currently steward 40% of critical protected areas globally and 22% of tropical and subtropical carbon resources (Rights and Resources Initiative 2018; Garnett et al. 2018). Recognition of Indigenous contributions to NbS and climate resilience resound in the Paris Climate Agreement (United Nations 2015), the IPCC special report on Climate Change and Land (Arneth et al. 2019), and elsewhere (Townsend, Moola, and Craig 2020). However, claims that agroforestry (and NbS) contribute to transformational change and social justice are less substantiated (Cousins 2021). Therefore, scaling agroforestry adoption to help global agroecosystems align with sustainable development goals (Arneth et al. 2019; Seddon et al. 2019) needs to critically support resurgent Indigenous governance (Artelle et al. 2019; Secretariat Convention on Biological Diversity 2004; Townsend, Moola, and Craig 2020; Townsend et al. 2020;), transdisciplinary action-research for multifunctional forestry (Ojha et al. 2019; Seddon et

al. 2019), inclusive knowledge co-production discursive to settler colonial human-nature divides (Vincent et al. 2020; Welden et al. 2021; Woroniecki et al. 2020), and account for limitations in the NbS approach (Nelson et al. 2020; Seddon et al. 2020).

Anti-colonial & Community Engaged Research in the Haudenosaunee Context

The Skarù·rę? Food Forest is a collaboration between a non-Indigenous Cornell University PhD Candidate in Horticulture and Skarù·rę? (Tuscarora Nation) members that emerged as part of a dissertation examining the contributions of temperate nut trees to Indigenous food sovereignty and NbS (Bosco and Thomas 2019). Cornell is situated on the traditional homelands of the Gayogohó·nq' (Cayuga Nation) whom are members of the Haudenosaunee Confederacy — an alliance of six sovereign Nations, including Skarù·rę?, with preceding and contemporary presence to the establishment of Cornell, New York State, and the US (Jordan 2022). Cornell's founding and success were enabled by the sale of nearly one million acres of stolen Indigenous land empowered by the Morrill Act of 1862 (Lee and Ahtone 2020). Cornell's Horticulture department has been central to the Land Grant Charter since establishment (Oyer et al. 2009) and in sustainable agriculture research and education today. However, social justice outcomes inherent to sustainability (Balaceanu et al. 2012; Furman and Gruenewald 2004; Klinsky et al. 2016) are greatly attenuated without institutional redress of the material complicity in dispossession.

Most New Yorkers (and US citizens) assume the Haudenosaunee are relics of the past, no longer present in the region. In fact, the Haudenosaunee are vigorously rebuilding and expanding their communities across New York and Canada. Along with language revitalization, self-governance, and economic development, many communities are focusing on food. Indigenous food sovereignty (IFS) is the expansion of political rights discourse around food production and

consumption to include Indigenous cultural, social, and governance resurgence (Grey and Patel 2014).

Haudenosaunee communities maintained their traditional food ways well into the 20th century, despite centuries of occupation by colonists and settlers who systematically dispossessed them of 95% of their traditional lands; facilitated almost complete loss of languages and cultural traditions; and denied the sovereignty of their political institutions (Hauptman 1999). Haudenosaunee communities are actively seeking to restore traditional foods to their diets and multiple food-focused initiatives are active across Haudenosaunee territories including: Iroquois White Corn Project (Friends of Ganondagan 2015); Oneida Community Integrated Food Systems (Oneida Nation of Wisconsin 2022); Kanien'kehá:ka (Mohawk Nation) Akwesasne Community Food Assessment (Saint Regis Mohawk Tribe 2016) and efforts in Kahnawà:ke (Delormier et al. 2017); Six Nations Healthy Roots (de Souza et al. 2021); Seneca Nation of Indians Gakwi:yo:h Farm (Pietrorazio 2021); Gayogohó:nq' (Cayuga Nation) SHARE Farm; and seed saving and rematriation at the Onondaga Nation Farm (Hoover 2021; Lisjak 2018).

While traditional corn is often the focus, agroforestry—particularly nut trees—can play an important role in contemporary food systems within Haudenosaunee communities. Many Haudenosaunee currently gather nuts or remember their parents and grandparents collecting nuts for home consumption. Community members have identified nuts as a significant source of healthy fats, important for people with diabetes, which are limited due to local freshwater fish contaminated by industrial pollution in their territories (personal communication Jolene Rickard).

The Skarù·rę? Food Forest sought to harmonize the above critiques and considerations in designing a collaborative, community-based, and action science project demonstrating agroforestry contributions to Indigenous food sovereignty and NbS in a Two-Eyed approach

(Martin 2012; Peltier 2018). Decolonial discourse regarding western science historiography (Smith 2012), traditional ecological knowledges (Kimmerer 2013), critical place-based studies (Tuck, McKenzie, and McCoy 2014), participatory action research (Tuck 2009; Tuck and Guishard 2013), reconciliation science (Wong et al. 2020), and Haudenosaunee-specific perspectives (Brown 1998; Lickers, n.d.; Longboat 2009; Ransom and Ettenger 2001) were centered and drawn on.

The next sections first provide a synopsis overview of Haudenosaunee food sovereignty focusing on intersections with agroforestry, followed by a description of the origins and outcomes of the Skarù·rę? Food Forest project.

Haudenosaunee Food Sovereignty in a Nutshell

The intercropped maize (*Zea mize*), beans (*Phaseolus vulgaris*), squash (*Curcubita pepo*) — collectively referred to as the “Three Sisters” (Mt. Pleasant 2016) — as well as sunflower (*Helianthus annuus*) are foundational to Haudenosaunee food sovereignty and their Northern Iroquoian neighbors (Birch 2018). This cropping system was decisively important to the regional size and political strength of the Haudenosaunee leading up to the Contact era (Mt. Pleasant and Burt 2010). These plants’ role in Haudenosaunee cosmology further underscore their importance (Adams, 2020; Lewandowski, 1987). The Haudenosaunee established and subsequently relocated village sites in cycles lasting up to 40 years (Birch et al. 2021) forming landscape relationships beyond the cleared fields and into the “Woods Edge” (Venables and Levitan 2010).

Trees are important for Haudenosaunee material technologies such as black ash baskets, Dehoñtjihgwa’és (lacrosse) sticks, hunting bows, canoes and longhouse construction. Trees also contribute important teachings in Haudenosaunee ontology, axiology, and relationality: they are

addressed in *The Words that Come Before All Else*; the white pine (*Pinus strobus*) represents the Tree of Peace – symbolizing the 1,000-year-old teachings of the Peacemaker that formed the Haudenosaunee confederacy; sugar maple (*Acer saccharum*) sap flow marks the beginning of the yearly cycle of ceremonies.

Forest clearing for domestic centers and agricultural fields, wood harvesting for infrastructure and firewood, and forest management for the maintenance of vital plant and animal communities resulted in long lasting changes to individual species and forest communities, still detectable today (Gerard-Little 2017). For example, the presence of black walnut (*Juglans nigra*) discontinuous with the species' conterminous natural range (Coladonato 1991; Williams n.d.) in spatial association with Haudenosaunee settlement sites may result from inter-Indigenous trade and intentional introduction (Wykoff, 1991). Recent spatial models of late pre-Contact Seneca, Cayuga, and Onondaga homelands (western and central NY) demonstrates that hyper-dominance of fire-adapted mast taxa (nut trees) in 18th century land surveys is attributable to recursive practices of Haudenosaunee subsistence and settlement (Fulton and Yansa 2019; 2020; Tulowiecki and Larsen 2015; Tulowiecki et al. 2020). Disturbance radii of 5—15 km from Haudenosaunee agricultural villages combined with similar distances between village relocations provide additional context and evidence that Haudenosaunee cultural landscapes — though driven by Three Sisters polyculture and social dynamics in pre-Contact periods — were importantly cradled and deeply nourished by dynamic relationships with ethnoforests rich in nuts and other wild foods. Ethnohistoric accounts of nuts in Haudenosaunee food and medicine are well documented (Herrick 1995; Parker 1910; Waugh 1916).

By the 18th Century, in addition to orchards of native plums (*Prunus americana*), the Haudenosaunee were also tending orchards of non-native domesticated apples (*Malus*

domestica [Suckow] Borkh) and peaches (*Prunus persica* var. *persica*), which were brought to the Western hemisphere by Europeans and acquired through inter-indigenous trade (Kerrigan 2008). During the Revolutionary War, American forces targeted British-allied Haudenosaunee nations, burning thousands of acres of maize and orchards during the scorched earth Sullivan Campaign of 1779. Today, fruit and nut trees are adding to Haudenosaunee food sovereignty projects at the Gayogohó:nq' SHARE Fam, Seneca Nation of Indians' Gakwi:yo:h Farm, and at Skarù·rę? – discussed further below.

Skarù·rę? Food Forest Project

Skarù·rę? Nation History

“We were burned down three times and are still here today!” – Wendy Bissell

Before colonization, Tuscarora people or Skarù·rę? lived in what is now called North Carolina in the areas ranging from the Roanoke, Neuse, Taw and Pamlico rivers. Much of our historical diet came from living within these systems which had rich agriculture soils, prime fishing water, and forests to hunt and a variety of areas to collect medicine. Archaeological evidence found tree crops such as oak acorns and hickory nuts in middens that prove agroforestry has been a Tuscarora custom for centuries. (Taylor) In our entire history we relied on the forest as a source of food and tended to settle in places with a high number of nut producing trees. In 1713, We were burned down for the first time in the events that followed the Tuscarora War and the battle of Neyuherú·kę. The survivors were welcomed by the Haudenosaunee and stayed in Oneida territory along the Susquehanna River near modern day Brisbane NY. The area was flush with everything that was familiar to us and we were able to provide for ourselves but unfortunately only a couple generations enjoyed this area until the Sullivan Campaign in 1789.

We were gifted land from the Seneca for the current territory in Niagara County, NY within the Niagara river watershed, with good soil to plant and “great quantities of butternuts and walnuts and a nice stream (Johnson 2006:34)”. Despite continual encroachment from New York State, there are many of 1,100 Tuscaroras who still carry on the agricultural traditions on the remaining 24 km² territory. Tuscarora at one point was home to successful fruit orchards and Tuscarora White Corn is still planted and harvested every year. In recent history, there has been a resurgence of Tuscaroras returning to our original way of life and a need to regain food sovereignty through our traditional diet. Skarù·rę? Food Forest is one initiative that has helped Tuscarora people of all ages begin to realize the importance and relevance of forest food crops.

Skarù·rę? Food Forest Project Origins and Arc

In December 2016, Bosco visited Skarù·rę? with then-graduate advisor Jane Mt Pleasant to meet with several Nation leaders to discuss the possibility of developing a collaborative project highlighting the contributions of nut trees to Skarù·rę? food sovereignty, community health, and youth education. The project idea was accepted and Bosco was invited to return to Skarù·rę? for future activities. Funding for this work came from Engaged Cornell, National Institute of Food and Agriculture, U.S. Department of Agriculture, McIntire Stennis & Smith-Lever under accession # 1014031, and the Phipps Conservatory Botany in Action fellowship, which supported travel to and from Skarù·rę?, the creation of educational materials, and to compensate a Skarù·rę? community partner hired on a part-time basis. Institutional Review Board (IRB) approval was also sought for possible interviews and other qualitative data collection.

During 2017 and 2018 Bosco focused on relationship building and familiarity at the reservation. She achieved this primarily through interactive and educational tabling displays at the

annual Tuscarora History Day and the Tuscarora Community Fair. In early 2018, Mia McKie (Turtle Clan) took the role of community partner and they co-designed a three part workshop series spanning from August 2018–June 2019. Midway through this process, Mia began her doctoral studies and stepped away from the project. However, Vince Schiffert, educator at the Nation school, became a significant volunteer and collaborator. Bradley Thomas was hired in early 2019 as the community partner through the duration of the project.

Part I —Tree walk and talk. On August 3, 2018 Bosco and McKie facilitated an introductory workshop. The first half included a walking tour of a nearby and commonly used grove of trees where participants engaged in dialogue about tree identification, botanical uses, and personal stories—focusing primarily on nut tree species. The second half of the event included a provided lunch over a presentation given by Bosco about the scope and interest of the Skarù·rę? food forest project, highlighting the intersections of food sovereignty, community health and youth education. Attendees of this event were given the opportunity to sign up to receive native fruit and nut tree seedlings in the following spring at Part III of the series. This first event had over 20 participants whose ages ranged from 5–95.

Part II—Nut processing workshop. On December 16th, 2018 participants gathered in the Skarù·rę? Nation House’s Community Room for an interactive and communal nut processing and cooking workshop. Bosco, Schiffert, and other Nation members brought nuts collected from that season including black walnuts (*Juglans nigra*), various hickories (*Carya spp.*), and chinese chestnuts (*Castanea mollissima*). Participants worked together cracking and sorting nuts, one Nation member even brought a drill powered nut cracker he had welded, which proficiently assisted black walnut processing. We made a variety of traditional and modern Skarù·rę? recipes, including *nu:yah* cookies, hickory nut ‘milk’, and chesnut-corn mush. Schiffert and Bosco

contributed and compiled printed resources with recipes, journal articles, fact sheets, and stories about nuts, which were bound and given to participants.

Part III—Seedling giveaway and planting. Delayed by an unusually wet spring, over 300 fruit, nut, and medicine plants were brought from the greater Ithaca area to the Skarù·rę? Nation on May 25, 2019. Nation members who had signed up for trees during Part I collected their orders, additional other Nation members were also invited to make selections. What was not taken was then planted on Nation school grounds and included chestnuts, pecans, elderberries, raspberries, and a variety of medicinal and culinary herbs. Outreach, communication, and planting help was greatly facilitated by community partners Brad Thomas and Vince Schiffert.

Additional Events—Based on the success of the previous three workshops, a second nut processing workshop was held December 15th, 2019, which expanded the repertoire of nut processed to also include acorns. Owners of the Tuscarora Woodworks business custom made shirts for the event with the Skarù·rę? language word, *Nwehrarühčręh*, meaning “we gather nuts”. Black walnut husks were used to tie-dye the shirts. A second plant giveaway and school planting on April 1, 2021 transferred nearly 200 plants to Nation members. The COVID-19 pandemic interrupted plans to conduct semi-structured interviews.

Project Outcomes and Conclusions

The Skarù·rę? Food Forest project is an example of cross-cultural, interdisciplinary, and community-based research intentionally designed to center Indigenous ingenuities and futures. Based on principles of reconciliatory science, the project prioritized reciprocal relationships over data extraction. The project successfully redistributed financial resources that were critical for supporting community partners. The collection of activities expanded food sovereignty

conversations amongst a wide audience, accommodated various levels of participation, and enriched the territory with nut, fruit, and medicine plants. By the end of the project, nearly 500 plants had found new homes at Skarù·rę?, a living compendium of culturally relevant nut resources was compiled and distributed, and lasting relationships were built on shared interest in how nuts contribute to food sovereignty, community health, and youth education.

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