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Northeast

MICHELLE J. BAUMFLEK

Nontimber forest products (NTFPs) are gathered throughout the Northeast region, for use as food, medicine, craft materials, and serve myriad cultural and spiritual purposes. No complete inventory of NTFPs exists for the Northeast, and the amount and types of NTFPs harvested vary across the region. Recent studies have documented the contemporary use of at least 173 vascular plants and 39 fungi in the Green Mountain and Finger Lakes National Forests of Vermont and New York (Emery and Ginger 2014), and 125 plants and fungi in northern Maine (Baumfleek et al. 2010). Many of these species are gathered for multiple plant parts and multiple uses.

Forest Types and Land Ownership Characteristics

Three main forest types and their associated natural communities cover most of the region: spruce-fir forests thrive in the northern part of the region, as well as in higher altitudes further south; northern hardwood forests including sugar maple, American beech, and yellow birch, are prevalent in the central portion of the region; and oak-hickory forests are more common in the southern part of the region (figure A1.5). This diversity of forested landscapes provides varied habitat for different NTFPs.

Forest land ownership in the Northeast is predominantly private, which can impact access for NTFP gathering (Ginger et al. 2012). Most private forest land is owned by individuals and families, although Maine and West Virginia also support large industrial forestry operations (Nelson et al. 2010). Between 1993 and 2006, the region's nonindustrial private forests have become increasingly parcelized, as evidenced by a significant increase in forest landowners who own 1 to 9 acres of land, and a 20-percent decrease in family-forest landholding size from 25 to 20 acres (Butler and Ma 2011).

Diverse Nontimber Forest Product Users of the Northeast

The Northeast region is located on the homelands of many different native communities, including 18 federally recognized tribes that have distinct nation-to-nation relationships with the United States Government (Bureau of Indian Affairs 2014), 15 state-recognized tribes (National Conference of State Legislatures 2014),

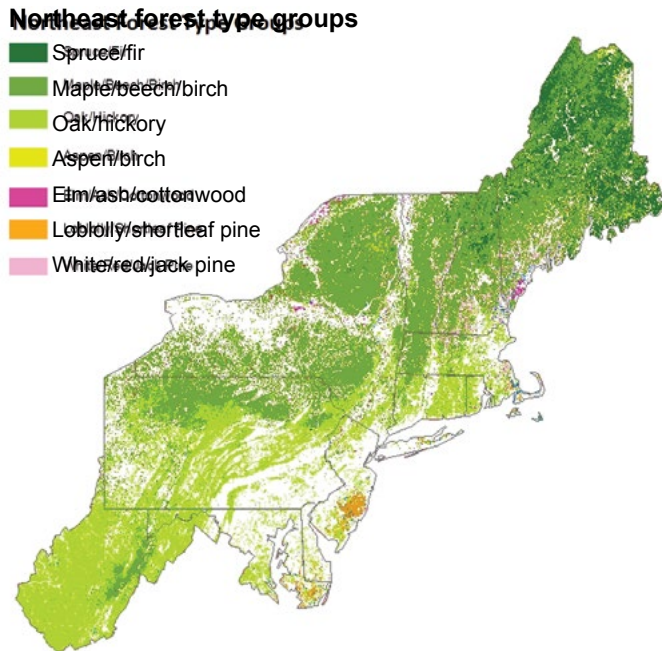


Figure A1.5—Forest type groups of the Northeast. The three dominant forest types of the region from north to south are the spruce-fir group, the maple-beech-birch group, and the oak-hickory group. (Map rendered by Michelle J. Baumflek, U.S. Department of Agriculture, Forest Service.)

and other communities that maintain a native identity despite lack of governmentally acknowledged status. NTFPs play important cultural and livelihood roles within these diverse communities. The traditional significance of hundreds of NTFPs as sources of medicine, food, spiritual importance, and livelihoods has been documented for many tribes in the region, including the Haudenosaunee, comprised of the Cayuga, Mohawk, Oneida, Onondaga, Seneca, and Tuscarora Nations (Herrick 1995, Parker 1910); the Mohegans (Tantaquidgeon 1928), the Wabanaki, the Maliseet, Mi'kmaq, Passamaquoddy, and Penobscot Nations (Prins and McBride 2007, Speck 1915), and the Shinnecock Indian Nation (Carr and Westey 1945). Furthermore, NTFPs contribute to tribal food and health sovereignty in the region (Baumflek 2015).

NTFP collection and use in the Northeast also is a widespread and popular activity that cuts across sociodemographic categories and rural to urban gradients (Robbins et al. 2008). A general population survey in New England states found that 25 percent of respondents had harvested some type of NTFP in the last 5 years. Most harvesters collect for personal use and are motivated by noncommercial reasons including home-

consumption, recreation, spiritual, and familial traditions (Robbins et al. 2008). Qualitative research with plant gatherers in Maine, New York, and Vermont demonstrate similar findings (Baumflek et al. 2010, Emery and Ginger 2014). Furthermore, Bailey (1999) found that 25 percent of West Virginians surveyed reported gathering edible NTFPs, and 4 percent had gathered medicinal NTFPs.

An emerging body of research has begun to demonstrate the importance of NTFPs gathered in urban and suburban areas of the Northeast (Hurley et al. 2015, Jahnige 2002, McLain et al. 2014). These plants and fungi are mainly used for edible purposes, and are harvested in a variety of spaces including greenways, parks, vacant lots, and cemeteries. Ururban NTFPs play key roles for culturally-distinct user groups, including Chinese immigrants.⁵

Major Nontimber Forest Product Markets of the Northeast

While many NTFPs are gathered in small quantities for personal use, some enter formal and informal markets as raw materials or as value-added products, such as jams, tinctures, and wreaths. These products contribute to regional, household, and individual economies. NTFPs diversify household earnings by providing sources of income that supplement full-time jobs, deliver seasonal funds to fill gaps between other types of employment, and offer flexibility to people who have constraints on their time, including child and elder care (Baumflek et al. 2010, Emery et al. 2003).

Edible NTFPs in the region include maple syrup, fiddleheads from ostrich ferns (*Matteuccia struthiopteris* (L.) Todaro), wild leeks (*Allium tricoccum* Aiton), black walnuts (*Juglans nigra* L), berries and chanterelle mushrooms (*Cantherellus sp.*) (Alexander et al. 2011, Baumflek et al. 2010; Emery and Ginger 2014). These edible NTFPs enter local, regional, and national markets, and are commonly gathered for personal use. Freshly picked mushrooms such as chanterelles, oyster mushrooms, and morels appear seasonally in farmers' markets and restaurants (Emery and Ginger 2014). Fiddleheads are a welcome spring vegetable, and an important source of income in New England (Fuller 2012). As many as 100,000 pounds of fiddleheads may be harvested annually and appear for sale at roadside stands, grocery stores, and may be shipped across the

⁵ Hurley, P.T.; Emery M.R. 2014. (Unpublished data). Forageable species and uses of New York City's urban forest.

country. The Northeast also leads the Nation in maple syrup production (Farrell and Chabot 2012). Vermont currently produces the greatest volume of syrup, while New York and Pennsylvania have the highest production potential (Farrell and Chabot 2012).

Medicinal plants such as American ginseng (*Panax quinquefolius* L.), goldenseal (*Hydrastis canadensis* L.), and black cohosh (*Actaea racemosa* L.) support significant national and international markets (AHPA 2006). Ginseng is one of the best understood NTFPs of northeastern forests due to its long history of harvest for export and considerable market value: between 2000 and 2007, primary buyers paid gatherers an average of \$462 for a pound of dried roots. Harvest data for ginseng are available for the five northeastern states that are allowed to export the roots: Maryland, New York, Pennsylvania, Vermont, and West Virginia (Chamberlain et al. 2013). While ginseng has the potential for economic gains under a variety of forest farming scenarios (Davis and Persons 2014), Burkart and Jacobson (2009) found that it is only cost effective to harvest other popular medicinals from naturally occurring populations.

Craft plants include those used for basketry and wreaths. Black ash (*Fraxinus nigra* L.), alpine sweetgrass (*Hierochloa odorata* (L.) P. Beauv), and paper birch (*Betula papyrifera* Marshall) have special significance to American Indian gatherers as well as other artisans in the region who use these plants to construct baskets and other items that support their cultures and livelihoods (McBride 1990, Mundell et al. 2008), variety of conifers, clubmoss species, red osier dogwood (*Cornus sericea*), and grape vines (*Vitis* spp.) are commonly harvested for wreaths. Balsam fir (*Abies balsamea*) harvests support local cottage industries as well as regional demand for boughs (Baumflek et al. 2010).

Ecological and Stewardship Considerations

As in many other regions, systematic data on the ecology and harvest volumes for most NTFPs are scarce in the Northeast (Alexander et al. 2011, McLain and Jones 2005). The most detailed information likely exists for American ginseng, wild blueberries, and maple syrup. With the exception of several wild-simulated medicinal plants such as American ginseng, and a burgeoning shiitake mushroom market, most NTFPs in the region are gathered from populations of wild plants. Systematic studies on plant range and ecological sustainability of harvest are lacking for some of the most widely

collected species, including wild leeks and fiddleheads. Paucity of information, combined with harvests that include plant parts known to reduce population fitness if not done appropriately (including bulbs and fronds), have caused Emery and Ginger (2014) to identify wild leeks, fiddleheads, alpine sweetgrass, and black ash as northeastern NTFPs in specific need of future research to determine if active management is appropriate.

Gathering NTFPs often involves respectful stewardship practices, developed over time, involving acknowledgment of reciprocal relations with plants and fungi, and based on traditional knowledge (Kimmerer 2011). American Indian NTFP gatherers in the Northeast currently implement a wide variety of stewardship practices that often are grounded in cultural norms (Baumflek 2015). Similar stewardship practices are also evident among other cultural and ethnic groups within the region (Baumflek et al. 2010, Emery and Ginger 2014). Systematically collected data on stewardship of ginseng (Burkhart et al. 2012), and wild mushrooms (Barron and Emery 2012) have also been obtained for the region. Because local NTFP gatherers have detailed knowledge about NTFP phenologies, ecologies, and habitat characteristics, their knowledge can and should contribute to participatory management planning for NTFPs.

Several major forest health threats with implications for NTFPs exist in the Northeast. Of primary concern to American Indian and other basketmakers in the region is the spread of the emerald ash borer (EAB; *Agrilus planipennis* Fairmaire), an introduced beetle that causes mortality in all ash species (Herms and McCullough 2014). Insect and disease outbreaks, such as hemlock woolly adelgid (*Adelges tsugae* Annand), and beech bark disease (fungi of the genus *Neonectria* in combination with the beech scale insect, [*Cryptococcus fagisuga* Lindinger]) threaten major tree species of northeastern forests. In these examples the eastern hemlock and American beech not only generate important NTFPs including beechnuts, but their loss may result in dramatically altered canopies and increases in forest light availability, which could be detrimental to certain NTFP species that thrive in low-light understories (Roberts and Gilliam 2003). Forest stressors including invasive earthworm species, and white-tailed deer (*Odocoileus virginianus* Zimmermann) overbrowsing may also impact the ability of certain NTFP species to establish or regenerate in many Northeastern forests (Dobson and Blossey 2015, Frelich et al. 2006).

Effects of Climate Change on Northeastern Nontimber Forest Products

Existing social and ecological stressors to NTFP availability in the Northeast may be exacerbated by climate change. Average annual temperatures in the region have risen by 2 °F since 1970; average winter temperatures have risen by 4 °F. Warming has already led to changes including a reduced snowpack, earlier breakup of winter ice, and earlier spring snowmelt resulting in earlier peak river flows (Rustad et al. 2009). These shifts may affect the phenology and availability of NTFP species such as fiddleheads that respond to water conditions. Furthermore, spread of forest pests, including EAB, may be accelerated due to warmer winter temperatures that are predicted in the region (Crosthwaite et al. 2011). Warming temperatures also may be detrimental to locally adapted NTFPs with limited seed-dispersal ranges, such as ginseng (Souther and McGraw 2011, 2014). Climate change impacts are also predicted to reduce suitable habitat for spruce-fir forests, as well as some northern hardwood species, including sugar maple (Iverson et al. 2008, Skinner et al. 2010, Vose et al. 2012). By limiting access to NTFPs used as traditional foods, climate change is predicted to have significant negative impacts on American Indian communities in the Northeast (Lynn et al. 2013).

Access and Management of Nontimber Forest Products on Public and Private Lands of the Northeast

Opportunities to gather NTFPs on public lands exist in national forests, state forests, and other state-owned lands. Many of these activities, such as gathering berries, are allowed on a limited basis, although monitoring and enforcement are challenges. Permitting is used to regulate the harvest of commercially important or vulnerable species. For example, the Monongahela National Forest in West Virginia is the only Federal land in the Northeast that permits ginseng harvesting (USDA Forest Service 2016). State entities, such as the Pennsylvania Bureau of Forestry, also enforce a moratorium on ginseng harvests, and district foresters issue limited permits for goldenseal, and rare clubmoss (*Lycopodium obscurum* L) (Pennsylvania Bureau of Forestry 2003). Several major cities in the region, including Boston and New York have bans on harvesting NTFPs in urban parks (City of Boston Park 2014, Foderaro 2011, NYC Administrative Code 2014), while other cities like Philadelphia promote fruit picking from trees in public spaces (McLain et al. 2014).

Specific considerations for access to NTFPs on Federal lands exist for American Indians in the region, who have established nation-to-nation relationships with the U.S. Government. This applies to national forests in the region that must honor treaty obligations related to NTFP regulations and permits (Emery and Ginger 2014). In some instances, the American Indian Religious Freedom Act (1978) may also apply to NTFPs used for religious purposes. The National Park Service recently proposed a regulation change to Title 36 of the Code of Federal Regulations (see chapter 7) that would allow American Indians to gather plants in the national parks they are historically associated with (Federal Register 2015). In the Northeast, this means that members of the four Wabanaki tribes of Maine may be allowed to gather plants in Acadia National Park for noncommercial purposes. The state of Maine also issues permits to Wabanaki gatherers to harvest black ash logs (Ginger et al. 2012).

Gathering on private lands are negotiated by formal and informal agreements (Ginger et al. 2012). Industrial forest managers in Maine revealed that NTFPs are not typically included in forest planning, with the exceptions of maple syrup and balsam fir permitting (Ginger et al. 2012). However, certain industrial forest products corporations are interested in allowing American Indians access to harvest culturally significant species as part of Forest Stewardship Certification compliance, which requires establishing relationships with local indigenous communities (Ginger et al. 2012).

Many Northeastern family-forest landowners cite reasons of aesthetics and privacy for owning forest land, although Butler and Ma (2011) found an increase in people choosing to own forests as financial investments. The relatively small size of average forest land holdings in the region, from 6 acres in Massachusetts to 36 acres in Vermont (Butler and Ma 2011), accompanied by the idea that private forest landowners adopt forest farming as a way to generate income without having to rely on timber sales (Chamberlain et al. 2009), suggests that these landowners may be interested in some form of NTFP management on their lands. For example, Strong and Jacobson (2006) found that 36 percent of the respondents in a survey of Pennsylvania landowners reported an interest in forest farming.

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Southeast

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Introduction

The forests of the Southeast (Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia) are biologically diverse and the source of many nontimber forest products (NTFPs) that are embedded in the region's culture and economy. The significant lack of data on most NTFPs does not reflect the tremendous number and diversity of products. There are a few NTFPs that demonstrate the importance of these products to the Southeast. To fully understand the social, ecological, and economic value of NTFPs it is important to examine them through various lenses. An ecoregional perspective portrays a cornucopia of biological diversity that interweaves to support diverse landscapes from coastal plains to high peaks. The forests of the region are vulnerable to changes in climate and other anthropogenic stressors, but the most immediate limitation to realizing the tremendous potential of these resources and products is the lack of recognition that they are natural resources and require relative management actions.

Land Area in Nontimber Forest Product Production

Forests and products—The forest lands of the Southeast United States are expansive and diverse. The Southeast has nine ecoregions (figure A1.6) that encompass five geopolitical subregions (Bailey 1995, Wear et al. 2009). Examining the makeup of the forests provides insights into the diversity of nontimber forest products of the region. The Southeast has five major forest management types (Wear et al. 2009), and about 80 percent of this is in private ownership. About 20 percent of the total forest area is planted pine, while about 15 percent is considered natural pine forests. About 40 percent of the forests are upland hardwoods, which are the predominant forest type in the Southeast. Lowland hardwood forests account for about 16 percent of the total, while the oak-pine group accounts for about 4 percent.

The Appalachian-Cumberland subregion may be the most biologically diverse area, represented by three distinct ecoregions that define the forests. The Central Appalachian Broadleaf Forest—Coniferous Forest—