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Culturally and Economically Important Nontimber Forest Products of Northern Maine

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Abstract

Nontimber forest products (NTFPs) gathered for food, medicine, craft, spiritual, aesthetic, and utilitarian purposes make substantial contributions to the economic viability and cultural vitality of communities. In the St. John River watershed of northern Maine, people identifying with cultural groups including Acadian, Maliseet, Mi'kmaq, Scotch-Irish, and Swedish use more than 120 wild plant and fungus species. We interviewed both gatherers and land managers about NTFP uses that are significant in this region and about factors that facilitate or limit gathering, including access to gathering sites. This handbook and its accompanying Web site (http://nrs.fs.fed.us/sustaining_forests/conserv_ehance/special_products/maine_ntfp/) present our overall study findings as well as in-depth species profiles of 30 nontimber forest products including brown ash, paper birch, blueberries, highbush cranberry, and fiddleheads.

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Cover photos

Front, clockwise from upper left:

Highbush cranberry: Michelle Baumflek

Balsam fir wreath: Michelle Baumflek

Wild strawberry: Michelle Baumflek

St. Johnswort flowers: Michelle Baumflek

Blanket woven from wool dyed with mushrooms: Marla Emery

Highbush cranberry bark drying: Michelle Baumflek

Ostrich fern fiddleheads: Sharron Emrich, used with permission

Back, top to bottom:

Goldenrod flowers: Michelle Baumflek

Traditional folded birch bark container, or makuk: Michelle Baumflek

Goldthread leaf and exposed roots: Michelle Baumflek

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² We use Mi'kmaq, an alternative spelling for Micmac, throughout this handbook.

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INTRODUCTION

What are Nontimber Forest Products?

Nontimber forest products (NTFPs) are wild plants and fungi that people gather and use for food, medicine, crafts, and spiritual, aesthetic, and utilitarian purposes. Our definition of NTFPs includes plants that can be found in a variety of habitats across the forested landscape. Therefore, in this guide, you will find plants that make their home in old fields and wetlands as well as the woods.

In addition to native species, we have chosen to include non-native NTFP species that have naturalized throughout northern Maine. Species such as coltsfoot and plantain are found in many locations across the St. John River watershed. In fact, many naturalized species commonly used today were first introduced to the area by settlers because of their medicinal or edible properties.

Nontimber Forest Products in the Northern Forest

NTFPs make substantial contributions to the economic viability and cultural vitality of northern forest communities. Established NTFP commodities including maple syrup and conifer wreaths contribute more than \$50 million to the northern forest economy annually [1, 2]. Seasonal harvesting of NTFP species, such as fiddlehead ferns, often provide needed supplemental income for rural populations [3]. Many gatherers harvest strictly for personal and family consumption [4]. In some cases, plants and fungi gathered provide vital subsistence resources [5]. While NTFPs have special cultural value for many Native Americans [6], northern forest residents from various ethnic heritages collect wild foods, medicines, and materials [7]. In addition to economic and cultural resources, gathering provides numerous human health and well-being benefits by promoting outdoor exercise, providing foods that are dense with micronutrients, and reinforcing familial relationships [8].

Study Purpose and Description

The purpose of this study is to identify the culturally and economically important nontimber forest products of northern Maine. To date, virtually no systematic information has been available about the NTFPs gathered in the northern forest (forests of northern Maine, New Hampshire, Vermont, and New York). Furthermore, current socioeconomic pressures have the potential to influence the long-term sustainability of NTFP gathering in the northern forest [7]. For example, changing forest land ownership [9] and an increase in land posting [10] in the State of Maine raise concerns about continued access to NTFPs. Similarly, shifts in land use and management may diminish NTFP habitat and affect NTFP availability. To ensure the sustainability of NTFP gathering into the future, baseline data are needed on the widely collected wild plants and fungi, their habitats, their uses, and sustainable harvesting practices. Our research, presented in part in this handbook, begins to fill that need.

Study Area: The St. John River Watershed

The St. John River watershed drains about 21,230 square miles in northernmost Maine and the Canadian provinces of New Brunswick and Quebec. The river travels 418 miles from its headwaters at the St. John Ponds (right) to the Bay of Fundy [11]. In comparison, the Connecticut River, often considered the largest river in New England, drains 11,000 square miles and is 410 miles long.

The headwaters of the St. John drain the eastern flanks of the Boundary Mountains and a large portion of eastern New Brunswick. Some of the major tributaries include the Big Black, Allagash, Madawaska, Fish, Aroostook, Tobique, Meduxnekeag, Eel, Oromocto, Salmon, and Canaan Rivers.

About 36 percent, or 7,642.8 square miles (4,891,392 acres), of the St. John River watershed lies in the State of Maine (left) [12]. Most of that land is located in Aroostook County, Maine's northernmost county.

Generally, this area can be thought of as divided into two

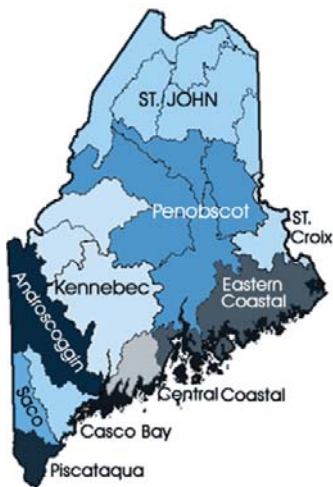
broad types of land use: the western two-thirds are a vast working forest land; the eastern third is predominantly agricultural. In ecological terms, the State of Maine recognizes four distinct biophysical regions within the watershed: (from west to east) the Boundary Plateau, the St. John Uplands, the Aroostook Hills, and the Aroostook Lowlands (below) [13].

The Boundary Plateau, St. John Uplands, and Aroostook Hills are underlain by a complex of northeast-southwest trending metamorphic rocks with occasional igneous intrusions that are often covered by dense basal till. The poorly drained soils predominantly support large populations of red spruce (*Picea rubens*), black spruce (*Picea mariana*), and balsam fir (*Abies balsamea*) with areas of poplar and northern hardwoods on drier ridges. In the east, the Aroostook Lowlands are underlain

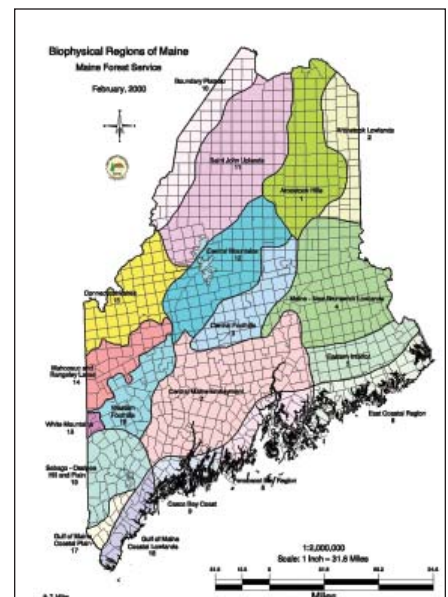
by calcium-rich sedimentary rocks, resulting in a rich northern hardwood forest with scattered stands of conifers. The glacial till soils are much more suited to agriculture than those found to the west and support large-scale potato, grain (barley, oats, and rye), hay, rapeseed, and broccoli farming. Bedrock aquifer-fed brooks are biologically productive and support lush herbaceous vegetation along their banks.



St. John Ponds. Photo courtesy of Maine Natural Areas Program.



Watersheds of Maine. Map used with permission from Maine Rivers.



Biophysical regions of the St. John River watershed from west to east: Boundary Plateau, St. John Uplands, Aroostook Hills, and Aroostook Lowlands. Map courtesy of Maine Department of Conservation.

The forests of the St. John River watershed are considered part of the Acadian Forest, a transitional zone between boreal forests to the north and temperate hardwood forests to the south [14]. Indeed, many temperate plant species such as red oak (*Quercus rubra*) reach their northern range limits in this area.

Further variations in climate, elevation, and geology within the watershed affect plant species diversity from west to east. For example, the Boundary Plateau is home to the harshest winters in Maine, with only 80 frost-free days a year. It also has the lowest diversity of woody plant species in the State with an average of 94 species. In comparison, the Aroostook Lowlands, with 95 to 110 frost-free days per year, supports an average of 125 species. In addition, a topographic boundary, the 1,000-foot contour line that delineates the eastern border of the St. John Uplands and the western border of the Aroostook Hills, marks a range limit for many boreal and temperate species. Temperate species such as silver maple (*Acer saccharinum*), American basswood (*Tilia americana*), staghorn sumac (*Rhus typhina*), witch hazel (*Hamamelis virginiana*), hophornbeam (*Ostrya virginiana*), and black elderberry (*Sambucus canadensis*) are virtually nonexistent west of this boundary [2].

The Laurentide ice sheet retreated from the watershed some 13,000 years ago, about 4,000 years later than from southern New England. A residual ice cap persisted over northern Maine and adjacent Quebec, isolated from the Laurentide continental ice sheet by calving ice in the St. Lawrence estuary [15]. The northern Maine ice cap briefly flowed outward from a series of ice divides before collapsing altogether. Within the watershed, the area occupied by the northern Maine ice cap remains distinctive due to its climate, similar to that of central Labrador, and a suite of relic populations of boreal plants and animals that took refuge in an ecological island of boreal environment. Ice still plays a major role in the watershed landscape today. Each year, huge chunks of thawing ice travel down the St. John and its tributaries, scouring riverbanks and islands as they go [16].

The St. John River and Human History

With development of the birchbark canoe, the St. John was a crucial link in the travel and trade corridors of aboriginal North America [11]. The carry trails to and from the St. Lawrence, Restigouche, Miramichi, Penobscot, and St. Croix Rivers were arduous, but eliminated the long sea voyage around the Nova Scotia Peninsula. The St. John River and its tributaries continued to play critical roles in transportation and industry in northern Maine until railroads and other infrastructure were built [17]. Logs were routinely floated down rivers from lumber camps to mills far downstream.

The St. John River watershed is home to a variety of distinct cultural groups, including people who identify themselves as Acadian, Maliseet, Mi'kmaq, Scotch-Irish, and Swedish.

Today, stretches of the St. John River form the international border between the United States and Canada. Mills, although not as plentiful as they once were, are still located on the river. Tributaries of the St. John, most notably the Allagash River, are premier destinations for outdoor recreation enthusiasts.

Cultural Groups of the St. John River Watershed

The St. John watershed is currently home to several distinct cultural groups. Two of Maine's four Native American tribes, the Maliseet and the Mi'kmaq, are located in the watershed. Historically, the Maliseet people—who call themselves Wolastuqwiyyik, people of the Wolastuq or “beautiful river”—played a key role in indigenous travel and trade. Their territory was strategically located along the carry trails that linked the St. John River with Labrador, the Great Lakes, Chaleur Bay, the Gulf of Maine, and Massachusetts Bay [11]. Today, Maliseets live in both Canada and the United States. In Maine, the Houlton Band of Maliseet Indians received Federal recognition in 1980 [18]. Members of the Maliseet community include master basketmakers, as well as people who retain traditional medicinal and linguistic knowledge.

Mi'kmaq people also have a long history of inhabiting parts of the St. John River watershed [19]. Traditional Mi'kmaq territory encompasses much of maritime Canada, including Nova Scotia, Prince Edward Island, parts of New Brunswick and Quebec's Gaspé Peninsula, as well as parts of northern Maine. Part of the larger Mi'kmaq Nation, the 1,000-member Aroostook Band of Micmacs was federally recognized in 1991 and is located in Presque Isle, Maine [20]. Band members are known for their brown ash basketry as well as birch bark boxes decorated with porcupine quillwork [20].

In the 1780s, almost 30 years after forced deportation from their homes in Nova Scotia, French Acadians began to settle in the area now known as the St. John River Valley [7]. Traces of the French land use system, in which parcels of land were given out in long strips, ensuring that each landowner had river frontage as well as access to fields and upland forests, are still visible along the river today [21]. Residents of towns along the St. John River including Fort Kent, Saint Agathe, and Madawaska still retain a strong Acadian identity. Despite efforts in the second half of the 20th century to prevent French from being taught or spoken in school, more than 16,000 people in the St. John Valley report speaking the language at home today [22].

Swedish immigrants settled the town of New Sweden in 1870, followed by the town of Stockholm in 1879 [23]. Settlers were given 160 acres of land per family, including 5 cleared acres for farming. Today, members of the Swedish community retain a strong identity evident in such festivities as New Sweden's Midsommar Celebration. Around the same time, but further north, the town of Allagash was settled by Scotch-Irish immigrants, newly arrived from New Brunswick. They came to cut white pine, and throughout their history, the people of Allagash have depended on forests and lumber to make a living [24]. Allagash was a distinctly different, English-speaking outpost in the otherwise French-speaking upper St. John Valley. Even today, a trip west from Fort Kent to Allagash makes the distinction obvious, as names on mailboxes change from Pelletier and Daigle to Hafford and McBreirarty.

Historical Use of NTFPs in the St. John River Watershed

For as long as people have lived in the St. John River watershed, NTFPs have contributed greatly to their livelihoods and well-being. In times when obtaining food was not as easy as a trip to the store, wild plants including raspberries and fiddleheads were important sources of nutrition [25]. Similarly, access to doctors was not common in many areas of the watershed. People depended on wild plants for everyday medicines, including pain killers and antibiotics. Maliseet and Mi'kmaq

people developed sophisticated medicines using local wild plants [26] that they shared with European settlers, particularly the Acadians. Books describing Acadian medicinal traditions include Native American-influenced formulas, such as the Tonique aux Sept Herbages (Tonic with Seven Herbs) that incorporates the bark and twigs of various plants including mountain ash, elderberry, willow, chokecherry, and tamarack [27]. Utilitarian items such as canoes made from cedar and birch bark made early trade and travel possible in the region. More recently, sale of brown ash baskets contributed to people's livelihoods, enhancing cultural identity and providing much needed income [28].

Methods: How Did We Do It?

Learning about current uses of wild plants and fungi in northern Maine depended entirely on the willingness of gatherers and land managers to share their time and great knowledge. We collected the bulk of our information through interviews and participant observations. However, before we could start gathering this information, we needed to do some background work. We conducted archival research to identify NTFP species that had previously been used by northern Maine residents. This involved time at the Maine Folklife Center and University of Maine system libraries, reviewing old interview transcripts, books, and magazines. We also became acquainted with State regulations surrounding plant and mushroom harvesting. This background information provided a context for current NTFP gathering activities, which helped us design meaningful interview questions. Before we could begin interviewing people, we needed to have our interview questions approved by the University of Vermont's Institutional Review Board (IRB). The IRB ensures that research conducted with people is ethical and protects the rights of participants. As part of the IRB requirements, an informed consent form was created and given to participants before the start of interviews.

We spoke with a total of 42 people, including 28 NTFP gatherers and 14 land managers and landowners. To find people to interview, we used a method called "snowball sampling [29]." We began with a group of key informants who provided us with names of people who would be appropriate to talk with about nontimber forest products and land management. These people then gave us the names of other individuals we should contact. After conducting some initial interviews, we developed a pool of potential people to speak with. Using census data and maps of land ownership, we chose additional interviewees to make sure that key cultural groups and land managers were adequately represented within our sample. When interviewees consented, we audio recorded conversations to facilitate later data analysis.

In addition to interviews, we spent time with NTFP gatherers as they collected, processed, and used wild plants and fungi. Information not mentioned in an interview often comes to light during informal conversation and interaction. This research technique, known as participant observation,

We asked gatherers questions about:

NTFPs harvested and their uses

Location of harvesting

Rules for sustainable harvesting

Changes in their ability to access and harvest NTFPs

We asked land managers questions about:

Rules, regulations, and fees for NTFP gathering

Land management goals and techniques

gave us firsthand knowledge of how NTFPs were being used in the St. John River watershed. Participant observation for our study included opportunities to collect and process plants, take part in workshops related to basketmaking and classes about medicinal plants, and spend time with artisans such as Sandi MacDonald, who uses wild plants to dye wool from her flock of sheep, and Judy Sherman, who makes wreaths out of balsam fir and red-osier dogwood.

After conducting interviews and participant observations, we transcribed all of our recordings and field notes and imported them into a qualitative data analysis program. We then read through all of our transcripts several times and developed a series of codes to capture information we were interested in. Code topics included NTFP use; NTFP management; traditional ecological knowledge about wild plant and fungi species; concerns about NTFP gathering; and details about spatial and social patterns in NTFP collection such as distances traveled, land use, land cover, land ownership, terms of access, and rules and regulations surrounding such gathering. All of our raw data were coded and analyzed to extract details about culturally and economically important NTFPs.

Overall Findings

More than 120 species of wild plants and fungi are currently being harvested and used by residents of northern Maine. These species are found in a variety of habitats that make up a forested landscape, including hardwood, coniferous, and mixed woodlands, wetlands, and old fields. Many popular NTFPs grow in forest edges. Edge habitat provides the necessary conditions, especially abundant light, for species such as chokecherries to thrive and bear fruit. In our study, the most common uses of NTFPs are food (55 species) and medicine (58 species) followed by crafts (32 species) (Table 1). A particular NTFP can have many different functions, depending on the part used. For example, the bark of paper birch (*Betula papyrifera*) is used for crafts and utilitarian purposes, the sap can be boiled down for food, and the leaves and twigs are used for medicine. A single plant part may also have multiple uses. For example, the fruit of the highbush cranberry (*Viburnum opulus* var. *americanum*) is made into jam by many people, but the plant's juice is also used as a medicine for high blood pressure by some Native American gatherers. It is also important to note that several species of NTFPs are of special spiritual and cultural significance to Mi'kmaq and Maliseet gatherers, and there is often no differentiation between a plant's nutritional, medicinal, and spiritual aspects. For example, blueberries are considered a food, but they are also an important medicine that is often incorporated into ceremonies.



Sandi MacDonald and Michelle Baumflek display yarn they dyed using goldenrod flowers collected earlier that morning. Photo courtesy of Sandi MacDonald.

Table 1.—Material uses of NTFPs in the St. John River watershed

| | Aesthetic | Craft | Food | Medicinal | Spiritual | Utilitarian |
|---|--|--|--|--|--------------------------------------|---|
| Number of species used | 5 | 32 | 55 | 58 | 7 | 11 |
| Parts used | Flowers, cones | Whole plant, branches, fiber, roots | Fruit, seeds, leaves, sap | Roots, bark, fine branches, resin, flowers, fruit, stems, leaves | Whole plant, fiber, bark, leaves | Whole plant, branches, fiber, roots, resin |
| Typical modes of preparation and products | Used as decorations Placed in vases, fresh or dried | Woven into baskets, wreaths, bouquets | Eaten fresh, boiled, frozen, preserved/pickled | Tea, tonic, poultice | Bunched, braided, shredded, smoked | Baskets, containers, canoes, bedding material |
| Representative species | Queen Anne's lace, lupine, mullein | Black ash, balsam fir, spruce, white birch | Ostrich fern (fiddleheads), highbush cranberry, various berries, hazelnuts | Goldthread, white pine, chokecherry, St. Johnswort | Sweetgrass, cedar, red-osier dogwood | Black ash, white birch, balsam fir |

Table 2.—Livelihood uses of NTFPs, number of species used

| Gift | Personal use | Sale processed | Sale raw | Trade |
|------|--------------|-----------------|----------|-------|
| 14 | 100 | 45 ^a | 4 | 33 |

^aOut of these 45 species, 23 were mentioned by a single person who makes and sells medicinal remedies.

Most people report collecting NTFPs for the personal use of their families, but many species are also sold (Table 2). Some species, such as fiddleheads and sweetgrass, are sold in their natural, raw state, but most plants for sale have been processed in some way to increase their value. For example, berries are often used in jams, splints from ash trees are made into baskets, and medicinal plants are put into tinctures and salves. While most interviewees who sell NTFPs do so to supplement other earnings, some people we spoke with rely on NTFPs as their sole source of income. In addition, many people give away NTFPs or products made with NTFPs, such as jams. Some gatherers, particularly the Native American people we spoke with, also trade NTFPs for items including salmon.

How Do People Learn about NTFPs?

People in northern Maine use a variety of sources to access information related to NTFPs. Many people we talked to learned about plant uses from their families, which is especially true for plants that were commonly harvested during childhood—berries, fiddleheads, fir, and hazelnuts. Several interviewees remember being sent out with their brothers and sisters to pick pails full of wild strawberries and raspberries; they were not allowed to come home until all of their buckets were full. Edible mushrooms are not a traditional food in northern Maine; most people who mentioned gathering them learned about easily identifiable species from friends. Other people learn about plants through members of their community. This method of knowledge transfer was particularly

significant for Native American NTFP gatherers who learn and teach about medicinal plants by speaking with elders and by participating in hands-on group gathering activities and ceremonies. Books, including field guides, are another popular way to learn about wild plants and fungi and were mentioned the most by people who use NTFPs primarily for medicines. For the computer savvy, the Internet provided additional information about the use of wild plants, such as alternative recipes for jams and homemade wine, and lore about the origins of plant names.



Participants in a medicinal plant class taught by Natalia Bragg.
Photo by Michelle Baumflek.

Gatherers we interviewed shared their knowledge of plants in several ways as well. Several people we spoke with taught workshops and classes related to topics such as harvesting and processing medicinal plants, working with natural plant dyes, and making black ash baskets. Some gatherers with families reported teaching their children about uses for wild plants, although in some cases children were reluctant or not interested in learning.

Where Do People Harvest?

Most of the people we spoke with harvest primarily on their own land or on land belonging to friends and family. People who harvest NTFPs in larger quantities, such as balsam fir boughs for commercial wreath operations, collected on industrial forest land, paying a per pound fee. Because many plants collected by Native Americans are habitat specific, the Mi'kmaq and Maliseet gatherers we spoke with often travel long distances to harvest and reported collecting NTFPs on private, public, and tribal lands.

Nontimber Forest Products and Cultural Celebrations

Many NTFPs are important for cultural celebrations. For example, fiddleheads are often served at tribal feasts in Mi'kmaq and Maliseet communities, while sweetgrass and cedar may be used as smudges for purification during powwows.

Even if an NTFP is used only once a year, it may be essential for a cultural event. For example, northern Maine's Swedish community holds a Midsommar celebration every year on the summer solstice. This joyous event is one of the most anticipated of the year and gives people of Swedish descent an opportunity to celebrate their heritage and community history. Festivities include traditional Swedish costumes, music, and dances around a maypole. The day before Midsommar, a group of dedicated community members meets to harvest buckets full of wild lupines, which are used to decorate the maypole as well as garlands that women wear in their hair. Because they are quite flexible, tamarack branches are also harvested and used as the base for garlands.



Midsommar preparations and festivities in New Sweden. After lupines are gathered, they are woven into garlands to make the maypole. Photos by Michelle Baumflek.

What's Changing?

Access. While formal rules and regulations around gathering have not changed much in northern Maine, some NTFP gatherers report having a harder time finding and gaining access to the resources they need. The issue is not owners of large acreages of forest land in northern Maine; for the most part, they are open to NTFP harvesting and charge fees or issue permits or leases only for commercially collected products such as balsam fir boughs and sugar maple sap. Bigger changes in access seem to be coming from smaller landowners-- people who own woodlots and farms. As in many parts of New England, posting land against trespass is becoming increasingly common in Maine [11]. Several lifelong residents we spoke with felt that people from “away” were moving into the area and posting land. Landowners we spoke with who post their land said they did so because of concerns about safety as well as property damage. Others keep access open because they feel it is the way it has always been and should continue to be in Maine.

Among NTFP gatherers we spoke with, Native Americans reported the greatest decline in access to resources, especially people who collect brown ash. Because trees regenerate slowly and are found in specific habitats, many ash collectors need to seek access to other people's property. One basketmaker recalled that farmers typically had good working relationships with basketmakers when ash baskets were used for potato harvests. He felt that access had suffered as those ties weakened due to the mechanization of potato harvests, the sale of land, and the passing of land down to the next generation, who did not remember previously strong relationships.



Posted signs can decrease gatherer access. Photo by Michelle Baumflek.

Native American gatherers also routinely traveled the greatest distances (30 to 150 miles) to collect NTFP species. In part this is because medicinal and culturally important plants such as flag root and sweetgrass grow in very limited areas. However, it also raises some socioeconomic issues-- people who own their own land tend to gather on that land. Some Native American gatherers do not own a big enough piece of land to find the species they need. More often, they do not own any land at all.

Environmental conditions. Change is a natural part of any ecosystem. Gatherers and land managers we spoke with mentioned several kinds of change that may affect the availability of NTFPs. Natural succession of forests and old fields, erosion of riverbanks, and development of land all contributed to NTFP habitat loss within the watershed. In addition, at least one land manager mentioned closing logging roads, which may limit access to some NTFP collecting sites. On the other hand, environmental changes also may increase NTFP availability. For example, several interviewees noted that the creation of new logging roads and fresh timber harvests provide excellent habitat for berries.

“We did have a problem that changed things a lot. They [an industrial forestry operation] sprayed. Once they sprayed, we wouldn’t dare to pick anything.”
Faye Hafford

Concerns about toxicity. A major theme that emerged among gatherers we spoke with was concern over harvesting plants that may have been exposed to chemicals including herbicides and pesticides. In addition, many people avoided collecting plants along roadsides.

“I would never pick anything on the sides of the roads, because I mean, all of the pollution that you get from there...the cars and, just even the dogs and the cats, you know, so you have to make sure that, you’ve got to travel a ways to get something that hasn’t been touched.” Colleen Gauvin

This theme emerged most strongly among people who gather NTFPs for food and medicine and was less of a concern for craftspeople. Many people preferred to harvest on their own land because they knew the land had not been treated with any potentially toxic substances.



Pesticide usage limits access to some lands. Photo by Michelle Baumflek.

Loss of knowledge. Gatherers we spoke with expressed concern about a loss of knowledge about wild plant uses, and they fear that skills and knowledge are not being passed down to the next generation. This fear is exacerbated by a loss of traditionally spoken languages in Native American and French Acadian communities.

Respect for Indigenous Knowledge

As previously stated, the success of our research study was completely dependent on NTFP gatherers who were gracious enough to share their time and knowledge. Within this group, we feel it is particularly important to acknowledge and respect the contributions of Mi'kmaq and Maliseet gatherers. In many places around the world, indigenous people have developed systems of plant use and management based on hundreds or thousands of years of interaction with a specific landscape [30]. However, such knowledge has not always been appreciated and valued by western science. In other instances, indigenous knowledge about medicinal plants has been appropriated for profit by external forces without any benefit (and sometimes much detriment) to the knowledge holders [31]. To us, respect for indigenous knowledge involves an adherence to intellectual property rights. Beyond that, it also involves respect for and acknowledgement of the validity of worldviews and ideas about spirituality that might not be familiar to us. Last of all, respect for indigenous knowledge requires reciprocity, or giving back. Information we collected for this study will be returned to Mi'kmaq and Maliseet communities in a form that is useful to them.

Sustainable Harvesting Techniques

NTFPs have specific harvesting requirements that depend on their life histories, population sizes, and habitats. Before collecting anything, it is important to understand the specific needs of the plant or fungi you are interested in. Every NTFP has an optimal stage of development and corresponding time of year when harvest optimizes beneficial plant properties while minimizing negative effects on plant populations. Often, sustainable harvesting methods for an NTFP species are recognized only after decades of observation and experimentation. However, there are some general rules for harvesting that many gatherers we spoke with mentioned:

Harvest in moderation. Take only what you need; never take all of anything. Is the species that you are harvesting abundant? If not, take that into serious consideration when deciding how much you really need. The plant part being harvested makes a big difference as well.

Harvesting a large quantity of roots can be more detrimental to a plant than harvesting its fruit. Also think about wildlife and others that may depend on the same resources.



Every plant has an optimal harvest time. Goldenrod flowers produce the most vibrant dyes if they are harvested just before buds open up. Photo by Michelle Baumflek.

Be careful where you step. It is easy to damage a sensitive environment in a short amount of time. Plant populations can be destroyed by trampling. Certain soils are easily compacted, which affects root growth and plant health. Think about your plan of entry into a specific area, and try to minimize the number of trips you make to avoid unnecessary damage.

Pay attention to your plants. Observe plants as you interact with them. Does their population size change from year to year? Do your harvesting activities appear to have an impact?

Make sure you know what you are picking. Sometimes desirable plants and fungi have look-alikes and are difficult to identify. Proper identification can mean the difference between sinking your teeth into a delicious edible morel (*Morchella* species) and becoming sick from ingesting a false one (*Gyromitra* species). To help make positive identifications, carry a guidebook that describes plants and fungi found in your area, such as Newcomb's Wildflower Guide in the northeast or the Audubon Society's Guide to North American Mushrooms.

Give thanks. This guideline was mentioned by every Native American gatherer we spoke with. They suggest that to show respect before harvesting a plant, make an offering of tobacco, say a prayer of thanks, and ask the plant for permission to harvest it.

A Note of Caution!

This guidebook is not intended to provide comprehensive information about NTFP uses, harvesting, and safety.

As much as possible, we report important information about sustainable harvesting techniques and plant uses as described to us by NTFP gatherers. However, if you plan on trying some harvesting, we recommend consulting with several other sources of credible information to ensure your safety and the safety of the plants or fungi you are interested in. Whenever possible, go out for the first time with someone who knows what they are doing.

Information about medicinal plant uses is provided for educational purposes only. It should not be used for self-diagnosis or treatment and is not a substitute for consultation with a licensed physician.

SPECIES DESCRIPTIONS

In the following pages, we will give you detailed information on some of northern Maine's culturally and economically important nontimber forest products. The information in these pages has been synthesized from data collected through interviews and participant observations as well as from botanical and ecological literature.

We chose 30 of the most popular species from the more than 120 different plants and fungi that people mentioned in interviews (for a complete list of NTFPs, see Appendix 1). We selected these species based on the following criteria:

- How many people mentioned the NTFP
- Whether the NTFP is of special cultural significance to a specific group of people, as expressed through use in day-to-day life, celebrations, and ceremonies
- How the NTFP contributes to income in the watershed, from household to regional levels
- Whether the NTFP has a long history of use in the area

A Note about Quotes

Whenever possible, each species description includes direct quotations from interviews with NTFP gatherers. Some of these interviewees wanted their names associated with the information they provided us, while others preferred to remain anonymous.

Each species description contains the following information:

- ◆ English common name
- ◆ Scientific name (genus, species, and family)
- ◆ Other names, including French, Mi'kmaq, and Maliseet [52-54]
- ◆ Physical description
- ◆ Habitat description
- ◆ Preparation and use
- ◆ Time of year when harvest is optimal
- ◆ Tips for sustainable harvesting



Bloodroot (*Sanguinaria canadensis*). Photo courtesy of Elaine Haug, USDA-NRCS PLANTS Database.

Ash, Brown

Fraxinus nigra

Oleaceae

Other Names: Black ash, basket ash, frene noir (French), wikip (Maliseet), wiskoq (Mi'kmaq)

“My grandfather always said you could tell [the quality of a tree] by how the leaves are. Not so much in the wintertime, but if it’s nice and green at the top, that’s good, but if it’s got a lot of dead at the top, then it’s not good. You look at how straight the tree is, you look to see if there’s a lot of knots in it. You also look at the bark. The cleaner the bark is, the better the tree.”

Often considered a “trash tree” in timber terms, **brown ash** is central to the cultural identity and economic livelihoods of Native Americans in northern Maine. According to the Wabanaki creation myth, people came forth from the bark of an ash after

Gluskap, the Creator, shot an arrow into the tree. Baskets made out of ash splints have been used



Brown ash log during pounding, with partially separated rings. Photo courtesy of Suzanne Greenlaw.



Brown ash leaf. Photo courtesy of USDA-NRCS PLANTS Database/Herman, D.E. et al. 1996. North Dakota tree handbook. USDA-NRCS ND State Soil Conservation Committee; NDSU Extension and Western Area Power Administration, Bismarck.

for thousands of years. Ash work baskets were built and used by Native American workers to collect potato crops in Aroostook County until harvests became mechanized around 1960. Today, brown ash basketry has been elevated to an art form. Many basketmakers favor lighter colored sapwood, which holds vibrant dye colors better than darker heartwood. Master basketmakers may command hundreds or thousands of dollars for intricate, exquisitely woven fancy baskets.

Physical Description: Brown ash is a small to medium tree with thick, opposite branches. Leaves are made up of 7 to 11 oval leaflets. Bark is gray, flaky, and irregularly furrowed. Brown ash fruit is a broad, single-winged samara.

Habitat: Brown ash is typically found in swamps, along streambanks, and other moist sites.

Uses: Brown ash is used as a basketmaking material by Mi'kmaq and Maliseet artisans. Ash wood is also used to create traditional wooden snowshoes.

Preparation: After being cut down, ash is pounded, either in whole logs or in long, narrow sections, to separate growth rings.

“You’ve got to pound the top side, turn it over, pound it over the bottom side, then you have to put it on an angle and pound that for the third time, and then bend that over, and when you bend that, it breaks the fibers from the wood.”

Depending on the thickness, individual annual layers may be further split into several layers. Splints are then scraped smooth and stored until ready for use. Wood must be kept moist or else it becomes brittle. Some basketmakers will sink whole logs into ponds until they are needed.



Brown ash basket by Fred Tomah. Photo by Michelle Baumflek.

Best Time to Harvest: Ash may be harvested any time of year. Some people prefer to wait until winter because frozen ground and snow cover make harvesting less messy and less damaging to soils, particularly in wet areas.



Brown ash splints ready for weaving. Photo by Michelle Baumflek.

Threats to Brown Ash Basketry

Changes in Quality: Several basketmakers we spoke with expressed concern about the quality of ash trees in northern Maine, explaining that finding suitable trees has become harder and harder. Brown ash is good for basketmaking because it is supple and bends easily without breaking, but recently, basketmakers have been encountering brittle wood.

“I got a permit to harvest some wood, but it was gutchid, it was brittle. But we were still able to use it, like some of it was good. And that’s the way it is now. It’s almost impossible to get a stick that’s actually perfect now, where we used to get some that were just, my grandmother would just be so happy when she’d see those logs. But now, all she sees is mostly brittle wood.”

“I remember a lot of brown ash that had a lot of sapwood, the white wood. You can walk in and cut wood today, and you get no white wood.”

Access to Land: Native American basketmakers we spoke with felt that gaining access to land and permission to harvest trees is becoming increasingly difficult. Several people attributed this change to shifts in landowner attitudes about privacy and the management of their land:

“People are a little more into their land and how it’s going to be treated, and not wanting anything to be cut on it, and wanting to preserve that, which is understandable... But it’s hard because we’re trying to preserve a way of life, too. It makes it really hard... it gets kind of discouraging.”

Emerald Ash Borer: Basketmakers are becoming increasingly concerned about the threat of emerald ash borer (photo below), even though it has not yet been found in Maine. This small beetle has decimated ash populations in the Midwest and has been steadily making its way east. Along with Maine’s four Native American tribes (Maliseet, Mi’kmaq, Passamaquoddy, and Penobscot), the Maine Indian Basketmakers Alliance has been taking preemptive measures, including creating a seed bank to preserve ash resources for future generations.



Emerald ash borer. Photo courtesy of David Cappaert, Michigan State University, invasive.org

Balm-of-Gilead

Populus species

Salicaceae

Other Names: Balsam poplar,³ peuplier (French), ewepipoq (Maliseet), stoqon (Mi'kmaq)



Balm-of-Gilead leaves. Photo by Michelle Baumflek.

“The balm-of-Gilead salve, there are so many different ways in which it can be made, and all the old families had some form of it. It could be boiled in water, where the resin came to the top and skimmed off, almost like a tar. Or, it could be done in alcohol, and then it would be used in a lotion form or liniment. And, technically, you can actually put that in a salve as well. Or, you can do it in various different kinds of oils, but everybody had their own favorite way of doing it.” Natalia Bragg

The **balm-of-Gilead** tree has a pretty spotty reputation in northern Maine. Considered a “trash” tree by many, it has an all but forgotten use—the resin from its buds is highly medicinal. At one time, farm families, loggers, and trappers used balm-of-Gilead to create a long-lasting first aid salve. Today, Natalia Bragg and others carry on the tradition.

Physical Description: Balm-of-Gilead is a medium tree that can grow up to 70 feet tall. It has dark green leaves that are 3 to 5 inches long and 2 to 5 inches wide, egg-shaped, and pointed at the tip. Seeds ripen in early June, attached to a cotton-like substance that aids wind dispersal. The buds of balm-of-Gilead are large, brown, resinous, and strong-smelling. The bark of young trees ranges from cinnamon brown to green, turning gray and deeply ridged as it ages.

Habitat: Roadsides, ditches, wet areas bordering swamps.

Uses: Resin from the buds is antibacterial, antifungal, and mildly analgesic. Balm-of-Gilead resin is an ingredient in cough syrups and first aid salves, used to heal small wounds, cuts, and scrapes.

Preparation: Buds can be placed into warm olive oil, animal fat, or alcohol to extract the resin. Herbalist Natalia Bragg remembers a time when all of the large farm families in her town had their own recipes for a first aid salve made with balm-of-Gilead.

No matter which form of preparation, it is important to note that balm-of-Gilead buds are sticky, and resin does not come off easily. Consider using tin cans or coffee cans when extracting resin.



Resinous bud of the balm-of-Gilead tree. Photo by Michelle Baumflek.

³Much confusion exists over the scientific identity of balm-of-Gilead. Some say it is balsam poplar (*P. balsamifera*), but many believe it is a hybrid between balsam poplar and black cottonwood.

Best Time to Harvest: Buds must be harvested in early spring before leaves come out. Look for buds that have large drops of resin on them. A really cold spring may extend the harvesting season. Morning is the best time to harvest. To avoid getting stubborn resin on your fingers, wear gloves while collecting buds.

Tips for Sustainable Harvesting/Management: Natalia Bragg offered several tips for harvesting balm-of-Gilead buds. First, never harvest all of your buds from one tree. Second, never harvest the terminal bud from a branch, which allows the tree to put on additional growth in coming years. Third, if you harvest from a certain tree one year, do not return to that same tree the following year.

➤ Some species information derived from **Forest Trees of Maine**, Centennial Edition 1908-2008 [32].

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Beech, American

Fagus grandifolia

Fagaceae

Other Names: Hêtre (French), mihihqimus (Maliseet), suwo'musi (Mi'kmaq)

The **American beech** is a vital food source for a variety of wildlife in northern Maine. It has the distinction of being the area's only nut-producing tree. Much of the beech population in northern Maine has been affected by beech bark disease, which infects and kills larger trees of nut-producing age.

Physical Description: American beech is a medium to large tree with a rounded crown; it may reach heights of 70 feet in Maine. Healthy trees of any age have smooth gray bark. Beeches have slender branches and thin, pointy buds up to $\frac{3}{4}$ inches long. Leathery leaves are arranged alternately on branches, are 3 to 5 inches long, and have an acutely pointed tip and sharply toothed margins. Many dead beech leaves will remain on tree branches throughout the winter. Pairs of beechnuts are contained within a spiny husk called an involucre. The nuts themselves are brown, shiny, and triangular. Beech can sprout from the roots, and clonal stands are common.



American beech leaves. Photo by Michelle Baumflek.

Habitat: Although beech trees exist in various soil and forest types, they do best in rich, upland soil. Interviewees mentioned finding beech on upland ridges. In northern Maine, beech can be found in pure stands or in mixed hardwood stands.

Uses: Beechnuts are collected and enjoyed by many in the fall.

Preparation: Depending on the time of harvest, the spiny husks of beechnuts will be open and relatively easy to remove. But be forewarned: the spines are prickly. Some interviewees eat beechnuts raw, while others prefer to roast and salt them.

Best Time to Harvest: Beechnuts begin to ripen in late August and can be harvested into October. One gatherer offered this tip for harvesting beechnuts:

“If you find trees that are putting out nuts in a certain year, spread a sheet underneath it, and let them fall on that rather than trying to pick them up out of the duff.”



Beechnut. Photo by Bill Cook, Michigan State University, bugwood.org.

Beechnut harvest often coincides with other fall activities. For instance, some interviewees who cut beech for firewood simply harvest nuts from easy-to-reach felled trees. A land manager we interviewed noted that many hunters will seek out beech ridges because they know that deer will be there, but that they also end up collecting nuts.

Several interviewees commented on the cyclical nature of beechnut production, which results in varying harvest size from one year to the next. One interviewee noted that beech trees infected with beech bark disease seemed to produce mast more often than healthy trees:

“[2008] was a wonderful year for beechnuts. It wasn’t as good as two years ago, so last year was poor to none, although I found that the unhealthy beechnuts produce a prodigious amount of mast compared to [a] healthy stand. A healthy stand may only bear once in eight years here, where an unhealthy stand is going to bear whenever the maple trees bear. They’re cyclical, it’s really interesting, and they will bring themselves into sync.”

Tips for Sustainable Harvesting/Management: Do not cut healthy beech trees that appear to be resistant to or unaffected by beech bark disease. When harvesting beechnuts, take only what you need, considering the many types of wildlife that depend on this food source.

➤ Some species information derived from Virginia Polytechnic Institute’s **American Beech Tree Fact Sheet** [33].

Birch, Paper

Betula papyrifera

Betulaceae

Other Names: White birch, bouleau blanc (French), masqemus (Maliseet), maskwi (Mi'kmaq)



Collecting sap from paper birch trees. Photo by Michelle Baumflek.

is easily distinguished by its characteristic white, exfoliating bark that peels off in horizontal strips. Oval leaves have doubly serrate margins and pointed tips. Twigs are slender, reddish-brown, and dotted with lighter colored enlarged pores called lenticels. Individual trees have both male and female flowers in separate, cylindrical clusters known as catkins.

Habitat: Paper birch is commonly found in mixed hardwood-conifer forests and along riverbanks. It will sometimes form pure stands following disturbances such as logging or fire. Drought and shade intolerant, paper birch needs abundant light to become established. Although it grows in a variety of soil types, paper birch does best in well-drained soils such as sandy loams.



Traditional folded birch bark container, or makuk. Photo by Michelle Baumflek.

Immediately recognizable due to its striking white bark, **paper birch** is an exceptionally versatile tree. Paper birch is extremely cold tolerant and has the widest range of any of our native birch trees, spanning from Maine to Alaska. Walking through the woods, you might come across white cylinders of rot-resistant bark left empty as the inner wood rots away. Rot resistance made paper birch bark a favorite material for canoe building, but this is only one of its many attributes. In addition to being aesthetically beautiful, paper birch is sometimes referred to as “the medicine tree” because the leaves, bark, twigs, and sap have a long history of use for curative purposes.

Physical Description: A fast-growing, small to medium tree, paper birch can reach up to 90 feet tall, but is usually shorter. It



Paper birch leaves. Photo by Michelle Baumflek.

Uses: Winter bark of birch trees is used to make baskets, containers, decorative hair clips, and other utilitarian items. Bark is actually made up of several thin layers, held together by a powdery white substance called betulin, which can be used as a painkiller. In addition, paper birch bark is highly rot resistant and makes an excellent fire starter, even when wet. The leaves, twigs, and sap of paper birch are used to treat skin conditions. Although not commonly done in Maine, the sap of paper birch (as well as yellow birch) may be used to make syrup.

Preparation: Winter bark must be warmed before shaping it into containers and other items. Betulin from bark may be extracted in alcohol to make a tincture that is taken internally or infused into warm oil to make a topical salve.

Best Time to Harvest: Harvest birch sap in the spring and harvest leaves and twigs in the spring and summer. Bark can be harvested in the spring for certain applications, but one interviewee noted that to obtain a stiff, non-exfoliating bark, harvesting should take place in the winter:

“You have to collect it [bark] in the winter, when the sap is down. If you collect it when the sap is up in the spring of the year, it’s very limber. You can make pouches out of it, or something like that, but it exfoliates. It’ll just come apart layer by layer by layer. You know, you have to lash the edges of it and everything else, and it’s a pain in the neck to try to deal with. You collect them when the sap is down, and they’re stiff.”

Tips for Sustainable Harvesting/Management: Do not peel too much exfoliating bark off of any one birch—this can seriously harm or even kill the tree. Instead, first look for bark that has fallen off the tree on its own—it is just as potent. When done correctly (taking care not to peel off the inner bark, called the cambium, where the sap runs), harvesting large pieces of winter bark will not harm birch trees. It will simply cause the bark to grow back much darker for several years, like the tree in this photograph. But there is a trick to this, so it is best to learn from someone experienced.



Paper birch trunk after bark harvest.
Photo by Michelle Baumflek.

➤ Some species information derived from the Paper Birch chapter of **Silvics of North America** [34].

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Blueberries

Vaccinium species

Ericaceae

Other Names: Low bush (*Vaccinium angustifolium*), high bush (*Vaccinium corymbosum*), bleuets (French), sahtiyil (Maliseet), pkuman (Mi'kmaq)

“There was a big place across the river where we lived that had been burned, there had been a big fire, and the blueberries were just tremendous. That’s where they come, it’s after a fire...like I say, if there’s a big burn, well you’re going to get blueberries, and everybody goes and picks it. They come from other towns to pick.” Faye Hafford



Blueberries. Photo courtesy of the Green Mountain National Forest.

Many people equate Maine with wild **blueberries**. In fact, low bush blueberry is the State fruit, and each summer, large quantities of the berries are commercially harvested near the coasts of Downeast Maine. Many Native American residents of the St. John River watershed used to travel to other parts of the State to earn seasonal income as blueberry pickers. Low bush blueberries, along with high bush blueberries, remain a favorite wild food of area residents.

Physical Description: Both low and high bush blueberries have nodding, white to pinkish bell-shaped flowers that appear in small clusters. Flowers are followed by familiar blue to blue-black berries with many seeds. Low bush blueberry is a short, spreading shrub growing up to 2 feet tall. Plants often form dense colonies. Leaves are glossy, narrowly elliptical with a small, sharply toothed margin. High bush blueberry is a shrub that grows up to 15 feet tall. Leaves are simple, egg-shaped, smooth or waxy above, with hairs on undersides. Twigs are yellowish-green.

Habitat: Low bush blueberry tolerates a variety of soil moisture levels and can be found growing in forests, clearings, bog margins, old fields, and areas that have been recently burned. Many plants are found in sandy or rocky soil. Although low bush blueberries can persist in the forest understory, they need ample light to produce fruit. High bush blueberry is most common in moist to wet soil, but can also be found on drier, upland sites. Shade intolerant, high bush blueberries often grow around forest edges, swamps, bogs, and marshes. Blueberries prefer moderate to strongly acidic soil. Several interviewees noted that blueberries are more abundant in other parts of Maine:

“Of course, the blueberry is also harvested where you find it available in northern Maine, but it is far less common to find the blueberry in northern Maine than when you get a little further south into eastern Maine, and also somewhat down around the Kathadin area where you get to the tree line, and the areas, the interim area between the non-tree line and tree line, I know a lot of people that will go all the way down to the Kathadin area from here to gather blueberries, during blueberry season.” Tim Scott

Uses: Blueberries are primarily enjoyed as a delicious summer fruit. Blueberries are also considered a medicine by Native Americans and are incorporated into certain ceremonies. Although not colorfast, a blue dye can be created from the berries, and it is sometimes used to dye brown ash splints used in baskets.

Preparation: Many people enjoy eating blueberries fresh, but also in pies and jams.

Best Time to Harvest: In northern Maine, blueberries become ripe in mid-summer, from late July into August. The flavor of wild berries can vary in intensity from year to year, depending on environmental conditions. For example, in 2008, a wet, rainy summer produced large, but somewhat bland berries.

Tips for Sustainable Harvesting/Management: In areas with a limited supply of berries, harvest in moderation. Consider birds and other wildlife that also depend on this vital food source.

➤ Some species information derived from Gleason and Cronquist's **Manual of Vascular Plants of the Northeastern United States and Adjacent Canada** [35], the Burke Museum of Natural History and Culture/University of Washington Herbarium [36], and the Freckmann Herbarium at the University of Wisconsin, Stevens Point [37].

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Burdock, Common

Arctium minus

Asteraceae

Other Names: Rhubarb sauvage (French), kawisimus (Maliseet), kawiksaw (Mi'kmaq)

At the mention of the word “burdock,” many people recall childhood memories of Velcro-like burs that tenaciously clung to anything from clothing, to shoelaces, to pets and sometimes necessitated haircuts. Because of its ability to spread vigorously, **burdock** is also considered a noxious weed in some states. But, that’s only part of the story: burdock is valued as a medicine and wild food among gatherers in northern Maine.

Physical Description: Burdock can grow to be 4 ½ feet tall. Leaves are large, up to 18 inches long and 14 inches wide, deep green, and oval, but they can be heart-shaped lower on the stem. Lower leaf stems are often hollow. Purple, thistle-like flowers are produced in bristly heads, from mid-summer to early fall, later turning into familiar brown burs with hooked bracts that persist through the winter.



Photo used by permission of Dan Tenaglia, MissouriPlants.com

Habitat: Introduced from Eurasia, burdock is common in areas of nutrient-poor soil, along roadsides, and field edges.

Uses: The root and seeds are used medicinally as an overall tonic and cleanser. People we interviewed felt burdock was a good blood purifier. The root is also a nutritious edible known as “gobo” in Japanese. Both the root and the seeds have the same properties, although the root is stronger. Natalia Bragg relays this advice:

“When there’s a need for speed, use the seed. When you have time, use the root.”

Preparation: Burdock root may be used fresh or dried in tea form. One interviewee recommended drinking three cups of burdock tea a day to provide energy. The roots can also be dried and then steeped in strong alcohol to create a concentrated tincture. Fresh burdock root may be eaten raw or cooked. Sautéing is a popular preparation method.

Best Time to Harvest: Burdock root is harvested in the fall. Seeds may be harvested any time after they form, generally in the fall. A biennial, burdock root is best used at the end of its first year or at the beginning of its second year, before the plant flowers.

Tips for Sustainable Harvesting/Management: Burdock is common. However, harvest roots only in areas where there are numerous plants; collecting the taproot will kill an individual plant. Use caution when harvesting plant materials near roadsides or places where herbicides or other chemicals may have been applied.

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Cedar, Eastern White-

Thuja occidentalis

Cupressaceae

Other Names: Arborvitae, cèdre (French), kakskus (Maliseet), qaskusi (Mi'kmaq)

Eastern white-cedar is a ubiquitous tree of wet areas across the St. John River watershed. Cedar wood is known for its rot-resistant properties, making it a popular material for shingles, fenceposts, and canoe frames. In addition to being prized for its versatile wood, cedar has a variety of other uses,



Boughs of eastern white cedar. Photo by Michelle Baumflek.

ranging from the spiritual to the utilitarian. Cedar swamps also provide important ecosystem services, such as critical winter habitat for deer.

Physical Description: Eastern white-cedar grows up to 45 feet tall and has a conical to pyramidal form. Branches are divided into flattened, fan-shaped branchlets. Evergreen leaves are comprised of overlapping scales that are bright green above and whitish-green below. Cedar bark forms fibrous, shreddy ridges and ranges from reddish-brown to gray. Cones are brown, egg-shaped, and up to half an inch long.

Habitat: Eastern white-cedar is commonly found in nutrient-rich sites with a neutral pH. Although it grows best on well-drained sites, cedar is often a dominant species of swamps.

Uses: Cedar boughs and cones are used to create wreaths, potpourri, sachets, and other craft items. Green leaves are high in vitamin C and can also be used to create a salve that is nourishing for the skin. Cedar boughs are harvested and distilled to create essential oil, which is used as a moth repellent and an ingredient in household cleansers and cosmetics. Traditionally, the inner bark of cedar was used as a fiber for making rope and fabric. Shredded cedar bark makes an excellent fire starter. Cedar is considered purifying and is very important to the Mi'kmaq and Maliseet, who often use it in ceremonies and sweat lodges.

Preparation: Boughs are cut into smaller pieces to remove thick, woody stems before use in crafts and ceremonies. Fresh green leaves may be made into a vitamin-rich tea. Leaves can also be steeped in warm oil or animal fat to create topical salves.

Best Time to Harvest: Harvest when new growth is evident.

One interviewee noted that he does not harvest cedar in the winter, when the leaves are a dull yellow-green. Instead, he harvests cedar boughs only when leaves are a vibrant, bright green.



Eastern white-cedar bark. Photo by Michelle Baumflek.

Tips for Sustainable Harvesting/Management: Try to harvest only new growth, because it will regenerate the following year. Don't harvest too many boughs from any one tree. It is a good idea to follow this simple rule:

"You don't take too much from any one tree. The only time we would take a whole tree when picking cedar is if the tree is broken in some way, if the tree is in danger of being run over or something like that, but for the most part, we'll only take maybe four or five cuttings off of a tree."

Sue Young

➤ Some species information derived from Gleason and Cronquist's **Manual of Vascular Plants of the Northeastern United States and Adjacent Canada** [35] and the USDA-NRCS PLANTS Database [38].

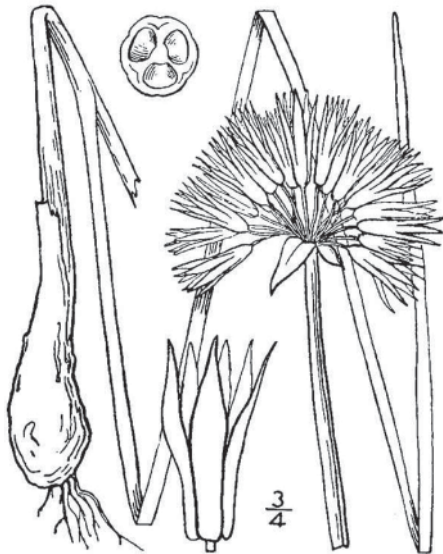
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Chives, Wild

Allium schoenoprasum var. *sibiricum*

Liliaceae

Other Names: Shore onions, ciboulette (French)



Drawing courtesy of USDA-NRCS PLANTS Database/Britton, N.L., and A. Brown. 1913. An illustrated flora of the northern United States, Canada and the British Possessions. Vol. 1: 497.

“Along the banks of the rivers... chives! Chives are all over the place, and on canoe trips, we harvest those. I can remember doing that many, many times.” Tim Scott

Closely related to cultivated chives, **wild chives** are native to Maine and many other parts of the United States and Canada. Considered threatened in several states including New Hampshire, wild chives grow abundantly along the rivers and streams of northern Maine.

Physical Description: Wild chives resemble cultivated chives, but tend to be stouter. They have narrow, tubular, often hollow leaves, and they can reach heights of 20 inches. When the leaves are cut or crushed, wild chives exude a strong onion scent. Six-petaled, star-shaped flowers form in dense clusters at the tops of stems and are generally pink or purple. The bulbs of wild chives are small, usually not much thicker than the stem.

Habitat: Look for chives near the banks of rivers and streams.

Uses: The green tops of wild chives are eaten.

Preparation: Wild chives can be eaten raw as a garnish or tangy addition to sandwiches, but they can also be eaten cooked.

Best Time to Harvest: Wild chives are generally harvested in the spring. At times when cooking onions were unavailable, wild chives made a handy substitute:

“In the early spring, I remember doing that a lot. I used them a lot before the regular onions were ready.” Faye Hafford

Tips for Sustainable Harvesting/Management: Snip wild chives instead of pulling out the whole plant. Harvesting in this manner will allow the bulb to persist and put out new leaves the following year.

Chokecherry

Prunus virginiana

Rosaceae

Other Names: Cerisier (French), oluwiminol (Maliseet), lluwiman (Mi'kmaq)

"I know one thing that makes good wine. The chokecherry... We've made wine with chokecherries before. That's pretty common around here. My family's done that for a long time." Frances Plourde

The **chokecherry** is a familiar sight along the edges of fields and woods in northern Maine. The fruit of the chokecherry is incredibly tart and astringent, and few people enjoy its flavor raw.

Physical Description: Chokecherry is a small tree, reaching heights up to 30 feet. It can reproduce through seeds or underground rhizomes and tends to form a thicket.

Its leaves are egg-shaped and finely toothed. Five-petaled white flowers form in 3- to 6-inch-long cylindrical clusters (racemes) at the ends of current-season growth. The smooth bark of young chokecherry can range in color from reddish-brown to gray. As the tree ages, bark becomes darker brown and more furrowed. Like other cherry species, chokecherry bark is covered by long horizontal pores called lenticels.

Habitat: Chokecherries tolerate a variety of soil types, and interviewees often found them growing in field margins or along rivers and streams.

Uses: Chokecherries are a popular ingredient in homemade wines. They are also used in jellies. Medicinally, the juice of the chokecherry is used to treat gout, and the bark is an ingredient in cough syrup.

Preparation: Although the flesh of chokecherry fruit is edible, the pits contain hydrocyanic acid and should not be ingested. One interviewee likes to use a tomato seeder to remove pits while extracting juice for wine. To avoid musty flavors caused by the breakdown of the outer skin and pits, another experienced winemaker pours hot sugar syrup over the fruit, instead of cooking the fruit itself.

Best Time to Harvest: Harvest ripe fruit (known as drupes) in September, when they turn from red to deep purple-black. Harvest bark in the fall after leaves have fallen off the trees.

Tips for Sustainable Harvesting/Management: Leave some fruit for birds and other wildlife. Harvest only twigs or branches for bark; do not disturb the main stems.

➤ Some species information derived from the Web site **Flora, Fauna, Earth, and Sky: The Natural History of the Northwoods** [39].



Chokecherries. Photo by Michelle Baumflek.

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Coltsfoot

Tussilago farfara

Asteraceae

Other Names: Tussilage (French)



Coltsfoot flowers. Photo by Michelle Baumflek.

Sometimes, the scientific name of a plant gives us clues about its uses. **Coltsfoot** is one such species. “Tussis” is Latin for cough (like Robitussin[®]), and coltsfoot has been a widely used folk remedy in Europe for thousands of years. Pliny the Elder prescribed inhaling the smoke from dried leaves to treat respiratory problems in the first century A.D. An alternative name for coltsfoot in parts of Europe is “son before the father,” referring to the fact that the bright yellow flowers come out early in the spring and disappear before the leaves emerge.

Physical Description: Coltsfoot is a spreading, rhizomatous perennial with large basal leaves and scaly, purplish stems. Yellow flowers around 1 inch in diameter appear in early spring, and leaves emerge later in the season. Leaves have long stems, are broadly heart shaped, with shallow lobes and a coarsely toothed margin. Leaf undersides are hairy and white.

Habitat: Coltsfoot is a native of Europe but has become naturalized in much of North America. It spreads aggressively and is considered highly invasive in several New England states. Coltsfoot is often found in wet areas, such as ditches along roadsides and trails.

Uses: The leaves and flowers of coltsfoot are used medicinally to treat respiratory ailments. A small amount of tincture made from dried coltsfoot leaves and flowers is used in cough syrup recipes. Some people inhale the smoke of flowers, which is reputed to be helpful in treating asthma, bronchitis, and persistent coughs. One interviewee teaches camp children a very practical use for coltsfoot: the large, wooly leaves make excellent emergency toilet paper.

Preparation: Dry leaves and flowers of coltsfoot before burning or use in tinctures. Fresh or dried flowers may be combined with boiling water to create a medicinal tea.



Coltsfoot leaves. Photo by Michelle Baumflek.

Best Time to Harvest: Harvest flowers and stems at the peak of blooming in early spring. Harvest leaves later in the spring. Glenda Wysote Labillois offers this harvesting tip:

“[Some people] will pick the nice green ones, because they look so nice and healthy, but the best ones to pick are the ones that have all the black spots on them, because that’s the oil that’s surfacing on top, and telling you that it’s ready to be picked.”

Tips for Sustainable Harvesting/Management: Coltsfoot spreads aggressively through seed and rhizomes. Take care not to introduce plants to sensitive areas where they might establish themselves. One interviewee's experience can serve as a caution:

"I've moved some [plants], but I can tell you, the worst plant I did it with was coltsfoot. Because, my neighbor had some, and he was going to re-do his whole yard, and I said 'well, could I have a few plants, I'll take all you want', never realizing how that thing spreads. So, it's in our lawn, and it gets caught in everything, but it just doesn't go away."

➤ Some species information derived from **Newcomb's Wildflower Guide** [40] and the Burke Museum of Natural History and Culture [36].

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Comfrey

Symphytum officinale

Boraginaceae

Other Names: Knitbone, consoude (French)

Physical Description: Comfrey is a hardy taprooted perennial that grows up to 4 feet tall. Leaves are lance-shaped and hairy: lower leaves have stalks while upper leaves are stalkless. Flowers are tubular and nodding, purple or white.

Habitat: Introduced from Europe, comfrey is commonly found around old homesteads and disturbed areas.

Uses: Comfrey leaves are used medicinally to help heal bruises, sore muscles, and broken bones. Natalia Bragg uses comfrey to treat such ailments as sprained ankles, carpal tunnel syndrome, torn ligaments, torn meniscus in the knee, whiplash, and tennis elbow.



Comfrey leaves and blossoms. Photo courtesy of <http://www.digitalnaturalhistory.com>

Preparation: Pots full of fresh leaves are boiled into a tea and added to bathwater. Comfrey-infused olive oil is used to create healing salves. Before leaves are infused in oil, they must be fully dried. Wet leaves will cause oils to become rancid, and capped jars may burst under pressure. Fresh or dried leaves may also be crushed and boiled to make a poultice. Hang leaves to dry in a shaded spot with good air circulation.



Natalia Bragg with dried comfrey. Photo by Michelle Baumflek.

Best Time to Harvest: Natalia Bragg says that it is possible to get two or three harvests of comfrey leaves in a summer and recommends harvesting leaves just before flowers open. She explained that the plants will become about 4 feet tall, flop over, and then begin to regrow. Harvest plants after 10 a.m. to give time for dew to dry off plants.

Tips for Sustainable Harvesting/Management: Comfrey is a plant that responds well to cutting. Natalia Bragg makes her last comfrey leaf harvest in September, before the frost, and then cuts stems down to the ground to promote hearty growth the following season.

➤ Some species information derived from **Newcomb's Wildflower Guide** [40], Gleason and Cronquist's **Manual of Vascular Plants of the Northeastern United States and Adjacent Canada** [35], and the Burke Museum of Natural History and Culture [36].

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Cranberry, Highbush

Viburnum opulus var. *americanum*

Caprifoliaceae

Other Names: Crampbark, pimбина, or quatre-saison des bois (French), ipiminaks (Maliseet)

“Everybody had their own cranberry bush years ago. Every farm had them.” Faye Hafford

“They smell terrible, but they taste delicious. I remember my boss coming in, walking in here one day when I was cooking some, he said ‘oh my goodness, what’s going on here, it smells like heck.’” Faye Hafford

The **highbush cranberry** is a common shrub with a long history of use as a food and medicine in northern Maine. While traveling in Maine, Thoreau and his companions enjoyed sauces made from highbush cranberry and proclaimed “notwithstanding their seeds, we all three pronounced them equal to the common cranberry.” Cooks in logging camps as well as Maine guides would administer the bark of the highbush cranberry sweetened with sugar to relieve muscle cramps after long days outside. Although the vitamin C-rich fruit superficially resembles a true cranberry in appearance and taste, highbush cranberry is actually a species of *Viburnum* from the Honeysuckle family.



Highbush cranberry fruits and leaves in autumn. Photo by Michelle Baumflek.

Physical Description: Highbush cranberry is a deciduous shrub that is 8 to 15 feet tall by 8 to 10 feet wide. The leaves are formed opposite each other on the stem and have three deep lobes, bearing a strong resemblance to a maple. Flat-topped clusters of small white flowers with an outer ring of larger, showier blossoms are followed by shiny red fruits that contain a large, flat white seed.

Habitat: Field margins, moist open woods.

Uses: Berries are a popular wild food. Juice from the berries is also used medicinally to treat high blood pressure and urinary tract infections. The bark is a powerful antispasmodic used to treat muscle cramps.

Preparation: Many people prefer the taste of cooked highbush cranberries, and the fruit is often used in jams, jellies, wines, and sauces to accompany meat. Although the berries taste good, they smell like dirty socks when cooking. Juice from simmered berries can be used for jelly or canned for later use. The outer bark peels readily and can be used fresh in a tea or dried for later use in tinctures.

Best Time to Harvest: Look for ripe highbush cranberry fruit from late August to September. Some people prefer to harvest the fruit after one frost, but do not wait too long because the fruit will begin to ferment. Harvest highbush cranberry bark only when there are no leaves on the shrub—either after a fall frost or before leaf out in spring.



Highbush cranberry bark drying. Photo by Michelle Baumflek.

Tips for Sustainable Harvesting/Management: When harvesting the fruit, leave some for the animals. Many types of wildlife including bears, partridge, and other bird species depend on highbush cranberries as a source of fall sustenance. People we spoke with recommend leaving at least half of the fruit on any given bush for wildlife. One interviewee likes to leave the lowest hanging fruit, making it more accessible for wildlife. If you are collecting bark, choose to cut twigs that do not support a berry bracket instead of harvesting bark off the main stem.

➤ Some species information derived from the University of Maine Cooperative Extension's **Highbush Cranberry Fact Sheet** [41], and Henry David Thoreau's **The Maine Woods** [42].

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Dandelion

Taraxacum officinale

Asteraceae

Other Names: Pissenlit (French), pomuhse-imiyamkewey (Maliseet)



Dandelion blossom. Photo by Michelle Baumflek.

“Dandelion greens, you have to pick those before the flower comes out, or they’ll be bitter.” Faye Hafford

Dandelions are a plant that people love to hate. Each year, many hours are spent trying to eradicate the ubiquitous flower from lawns and gardens across the United States, often to no avail. Dandelions are tough. Dandelion greens are also a nutritious spring green in northern Maine. In the early 20th century, when obtaining fresh produce involved much more than a trip to the grocery store, dandelion greens were a vital part of people’s diets.

Physical Description: Familiar yellow flowers, 1 to 2 inches in diameter, supported by a smooth, hollow stalk. Leaves are deeply cleft and pointed at the tip.

Habitat: Dandelions are common inhabitants of lawns and old fields.

Uses: Young dandelion leaves are eaten as a spring green. Dandelion flowers are also used to make homemade wine. Dandelion leaves are a diuretic, giving them their French name, which can be translated into English as bed wet.

Preparation: Wash greens thoroughly. Several interviewees mentioned that dandelion greens get full of dirt and can be hard to clean. Greens can be eaten raw or cooked.

Best Time to Harvest: Harvest greens in the early spring while the leaves are still small and tender, preferably before the flower comes out.

Tips for Sustainable Harvesting/

Management: Avoid harvesting dandelions from areas that have been frequented by dogs or have been treated with herbicides or other chemicals.



Dandelion leaves. Photo by Catherine Herms, The Ohio State University. forestryimages.org

Dogwood, Red-Osier

Cornus sericea

Cornaceae

Other Names: Red willow, Osier rouge (French), nepskihkamq (Maliseet)



Red-osier dogwood in spring. Photo by Michelle Baumflek.

Red-osier dogwood is another species that often gets a bad rap. Because it is thought of as weedy, many people spend hours trying to eradicate dogwood shrubs from their fields. However, these shrubs have important spiritual, medicinal, and craft values for residents of northern Maine. Easily recognizable in the winter due to its bright red twigs, dogwood grows in abundance in the St. John River watershed.

Physical Description: Red-osier dogwood is a woody, thicket-forming shrub that grows 3 to 9 feet tall. Mowing of old fields often keeps dogwood much shorter. Stems are smooth and bright red from fall through mid-spring, turning green in the summer. Simple leaves have smooth margins,

false parallel venation, and hairy, light-colored undersides. Like most other members of the Dogwood family, leaves are arranged oppositely on stems. Clusters of small, cream-colored flowers appear in late spring and are followed by white berries.

Habitat: Old fields, roadsides, wet areas.

Uses: Red-osier dogwood twigs are used to make wreaths and baskets. Dogwood is also of particular significance to Native American gatherers, who use the bark in ceremonial tobacco.

Preparation: Pliable, freshly cut twigs are used for wreaths. Bark readily peels off of dried stems and must be further dried before use.



A weathered wreath made from red-osier dogwood twigs. Photo by Michelle Baumflek.

Best Time to Harvest: In the spring before leaves come out and in the fall after leaves have been shed.

Tips for Sustainable Harvesting/Management: Do not harvest too many stems from one plant. Red-osier dogwood grows back readily and heavy pruning stimulates the growth of new, vibrantly colored, straight twigs. As with other plants, Maliseet and Mi'kmaq gatherers offer thanks before harvesting dogwood:

"When you go out to cut it [dogwood], there's a ceremony to do that, so you always have to make an offering and say a prayer before you harvest it."



Red-osier dogwood's bright twigs add color to early spring landscapes. Photo by Michelle Baumflek.

➤ Some species information derived from the USDA-NRCS PLANTS Database [38].

Fiddleheads

Matteuccia struthiopteris

Dryopteridaceae

Other Names: Ostrich fern, fougere (French), mahsusiyl (Maliseet), ma'susi, (Mi'kmaq)

If we had to choose a single NTFP species that defined northern Maine, **fiddleheads** would be it. Fiddleheads are the emerging fronds of the ostrich fern and are gathered and eaten by the bucketful. In our study, fiddleheads were collected by the greatest number of gatherers. Evidence of their widespread popularity becomes obvious each spring, as supermarket and roadside signs pop up, advertising fiddleheads for sale. Fiddleheads are gathered for personal use throughout the year and make an important contribution to the diets and food security of northern Maine families (a family is food secure when its members do not suffer from hunger or nutritionally related diseases because of an inability to obtain sufficient calories and nutrients). The sale of fiddleheads also provides a vital source of seasonal income for local residents.



Fiddleheads. Photo used with permission by Sharron Emrich.



Unfurled ostrich ferns. Photo by Michelle Baumflek.

eat fiddleheads and often preserve them by freezing or canning for use throughout the year. Popular cooking methods include boiling, sautéing, and pickling. Fiddleheads are a culturally significant food for the Mi'kmaq and Maliseets of northern Maine, and they are often included in ceremonial feasts. In addition, fiddleheads are a popular design motif for regalia such as moccasins and dresses, as well as regional crafts.

Physical Description: Fiddleheads emerge in tight clumps. The coiled fiddleheads are smooth green, not hairy, and sometimes surrounded by a brown husk. One way to identify ostrich ferns is to cut the stem and look at a cross section. It should be shaped like a horseshoe or U. Fiddleheads eventually unfurl into feathery-looking fronds, hence the name “ostrich fern.” These fronds can be up to 5 feet long, are doubly segmented, and form a distinctive vase shape. A distinguishing characteristic of the ostrich fern is the shorter, reproductive frond that emerges from the center of the clump and turns dark brown when mature.

Habitat: Fiddleheads are commonly found in moist soils along the banks of rivers and streams.

Uses: People in northern Maine



Fiddleheads for sale in a Presque Isle supermarket. Photo by Michelle Baumflek.

Preparation: Fiddleheads should be blanched before freezing. One enthusiastic gatherer offers this tip for removing the brown husks from fiddleheads:

“You want to get them as dry as possible, and shake them out in a screen basket... Wait till you get them when they’re dried out good, put them in that and shake them, and the husks just fly off. Shake them all out. Don’t try to soak them and wash them off, you’ll be forever trying to wash them off in water.”

Best Time to Harvest: Mid-May to mid-June. Harvest tight fiddleheads that have not yet unfurled. The arrival time of fiddleheads changes from year to year and is dependent on several factors. Drier, upland areas may see the emergence of fiddleheads significantly earlier than cooler lowland spots. In addition, fiddleheads will not emerge until rivers and streams recede, so a late snow melt may delay their appearance. Edford Plourde of Eagle Lake shares this advice:

“It all depends on where you go. Sometimes the river, the water’s way high. The water’s got to recede before they come out, and it all depends on the year.”



Many people sell clean fiddleheads on the side of the road. Photo by Michelle Baumflek.

Tips for Sustainable Harvesting/Management: Fiddleheads are abundant in northern Maine, and nobody that we spoke with was concerned about their continued availability. However, people who collect fiddleheads have practices that ensure a sustainable harvest. People do not take all of the emerging fiddleheads from an individual plant (known as a “crown”), cutting just a few from each crown and leaving the rest. If at all possible, when fiddleheads are on a hillside or sloped bank, start low and work your way up to reduce wear on delicate soils. Many people, especially those who collect fiddleheads for sale, are quite secretive about the exact locations they visit. One interviewee who gathers fiddleheads strictly for personal use described transplanting ferns and managing their habitat to increase their availability:



A second wave of fiddleheads emerges next to fiddleheads that have already been cut. Photo by Michelle Baumflek.

“I’ve also transplanted some fiddleheads around my pond that I have here, so I have extra as well. I find that I’m able to disperse them sometimes better than they’re able to disperse themselves. I also use some brush-cutting of alders to encourage the fiddleheads. I find that if the alders become too dense, and come with the balm-of-Gilead trees, or the balsam poplars then you lose the fiddleheads. So I have about a two acre area, and I probably harvest 60 gallons of fiddleheads a year.”

➤ Some species information derived from the Missouri Botanical Garden’s online Plant Finder [43] and the Web site **Flora, Fauna, Earth, and Sky: The Natural History of the Northwoods** [39].

Fir, Balsam

Abies balsamea

Pinaceae

Other Names: Sapin (French), puhpukawihqimus (Maliseet)



Balsam fir boughs. Photo by Michelle Baumflek.

“We always made the Christmas wreaths, with the balsam fir. And we harvest an awful lot of them. We’ve been doing it since we were children. My mother did it when she was young. Her brother did that, helped with Christmas time. So, we just carried on the tradition. It’s a three generation tradition.”

The smell of **balsam fir** needles is enough to evoke images of the northern Maine woods. Many of the forests of the St. John River watershed are comprised of naturally occurring spruce-fir forests. Large landowners

sometimes suppress the growth of broad-leaf trees in favor of softwood stands, increasing the amount of fir available for sawtimber and pulpwood. Besides being an important source of wood products, the balsam fir is a versatile tree that has many craft, utilitarian, and medicinal uses. Historically, fir resin was valued for its medicinal properties among Acadian residents of the St. John River watershed and was ingested to treat kidney ailments. Resin blisters would be carefully harvested and placed on sheets of wax paper that could be refrigerated until they were needed. Loggers would also use fir resin topically to treat gonorrhea. Although not as big a business as in Washington County (Downeast Maine), wreathmaking is an important small-scale industry in the St. John River watershed. For the 2 months leading up to Christmas, business owners hire seasonal employees to harvest and process fir boughs into wreaths that will be shipped all across the country.

Physical Description: Balsam fir is a small to medium tree with a spire-like form that can reach up to 80 feet in height. Needles are $\frac{3}{4}$ to 1 inch long, flat to curved, with a shiny dark green top and silvery underside. Balsam fir bark is smooth and gray, characterized by the presence of numerous blisters that contain a strongly scented, sticky resin. Purplish-green cones range from 2 to 4 inches long and stand upright on branches. Because of its thin bark and shallow root system, balsam fir is particularly susceptible to being killed by fires.

Habitat: Balsam fir can be found on a variety of soil types and textures. It does best in cool, moist areas with a pH of 4 to 6. However, very wet summers may negatively affect the color of needles and make trees more susceptible to fungal diseases in the fall. Many people we spoke with thought that the quality of balsam boughs from the St. John River watershed differed from boughs harvested in Downeast Maine. Some thought it was because Downeast fir grows in a more favorable soil with a slightly different pH.



Balsam fir stand. Photo by Michelle Baumflek.



Balsam fir wreath. Photo by Michelle Baumflek.

Uses: Fir boughs are often collected and processed into wreaths and decorative swags at Christmas time. Boughs of lesser aesthetic quality are sometimes collected after precommercial thinning and sold to companies that extract essential oils for cosmetics. The resin of balsam fir, which is often found in blisters on tree trunks, has antiseptic and analgesic qualities and can keep small wounds from festering. Fir resin is also collected by individuals for sale to Canadian companies for use as turpentine and optical slide mounts. Fir needles are delightfully aromatic and are often used in potpourri or as a filling for small scented pillows. One interviewee we spoke with likes to place fresh fir needles into a pot of water on his woodstove to release

the pleasant woodland scent while humidifying his house. Another interviewee uses small balsam fir limbs to create sturdy hooks around his barn and at campsites.

Preparation: Once boughs are harvested, they are cut into smaller pieces and stacked into small bundles that are attached to wreath forms. Resin can be applied directly onto skin or can be refrigerated for future use.

Best Time to Harvest: Balsam boughs are harvested for wreath-making in November and December. Don't keep boughs inside for too long, otherwise they will dry out. Balsam fir gatherers keep an eye out for bough and needle deformities caused by gall midge, balsam twig aphids, and needlecast. Resin can be harvested any time of the year, but is easier to obtain from blisters when they are not frozen.

Tips for Sustainable Harvesting/Management: Gather balsam fir boughs only after the tree goes dormant and needles have frozen or "set" to branches. In northern Maine, this usually occurs by early to mid-November. Never harvest more than one-third of the live limbs on fir trees—needles are needed in photosynthesis and provide energy that keeps the trees alive.

Balsam fir boughs are one of the few NTFPs that many large landowners require a permit and fee to harvest. In fact, some industrial landowners do not allow any "tipping," or gathering of fir boughs on their lands, because they feel it compromises their management. One resin harvester we spoke with mentioned that some landowners are concerned that popping blisters hurts the trees, but she has been collecting from the same areas for almost 30 years and has not seen any tree damage as a result of her activities.

➤ Some species information derived from the Virginia Polytechnic Institute's Non-Timber Forest Products Web site [44], the USDA-NRCS PLANTS Database [38], and the University of Maine Cooperative Extension's **Balsam Fir Tip Gathering** pamphlet [45].



Judy Sherman making wreaths in Oxbow, Maine. Photo by Michelle Baumflek.

Flag Root

Acorus calamus

Acoraceae

Other Names: Sweet flag, calamus, muskrat root, rat musque (French), kiwshoswasq (Maliseet), kighaswes (Mi'kmaq), ki'kasuwasw (Mi'kmaq)

Flag root is a medicinal plant with a history of use that spans several continents and millennia. A culturally important species in northern Maine, flag root is commonly harvested each fall by Maliseet and Mi'kmaq gatherers, as well as some French Acadians.

Physical Description: Flag root is a perennial, rhizomatous herb. Long, sword-shaped leaves resemble an iris, usually have an off-center midvein, and can grow up to 5 feet long. Small yellow-green flowers appear from May to July, densely clustered on a spadix (a spike covered in tiny flowers). Flag root plants are supported by thick rhizomes, found just under the soil. One Mi'kmaq gatherer shares his experience harvesting flag root:

“It grows, the roots, just under the ground. And just a little soil on top of them to make them difficult to pull out. Now, when you’re pulling out one root, it’s got probably six roots on top of it from different angles.”



Flag root. Photograph by Tony Bush, Rose Lake Plants Materials Center, East Lansing, Michigan.

Habitat: Flag root is found in wet soils, marshes, and around ponds and riverbanks. A Mi'kmaq woman describes flag root's surroundings, as well as signs of wildlife she has noticed while harvesting:

“Yeah, where there’s mud, and that’s where you’ve got to go and get it. But it’s amazing to pick and smell the freshness of it, and then you wash it, and there’s footprints of the moose around, because it’s what they eat.”

Uses: The rhizome of flag root is used medicinally to treat colds, sore throats, and other ailments. The rhizome is quite potent, so a small amount (~ 6 inches) is enough for an entire season.

Preparation: Small pieces of the fresh or dried rhizome can be chewed on or made into a tea. **Note:** Because they are strong, fresh rhizomes should be dried for several days before use.

Best Time to Harvest: In the fall, after the first frost.

Tips for Sustainable Harvesting/Management: Flag root is a very important and sacred medicine to Native American gatherers and should be treated with respect. Special care must be taken when harvesting, because wet areas are particularly vulnerable to disturbance and compaction. Harvest in extreme moderation – harvesting rhizomes can kill a plant, and only very small amounts are needed. Replant small rootlets to promote plant regeneration. In the words of another experienced gatherer:

“You try to put the root back to let it, so that it will grow again next year.”

➤ Some species information derived from the USDA-NRCS PLANTS Database [38].

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Morel. Photo by Michelle Baumflek.



Chanterelle mushrooms. Photo by Marla Emery.



Blanket woven from wool dyed with mushrooms. Photo by Marla Emery.

Fungi: Spotlight on Mushrooms

Mushrooms are not traditionally collected and eaten in northern Maine. Most people we spoke with demonstrated a healthy fear of collecting edible mushrooms, because they were skeptical of their knowledge and ability to make a safe, positive identification. This is not surprising: in many cultures, fungi are shrouded in mystery, and for people who did not grow up eating wild mushrooms, collecting them can be a daunting idea.

Despite a general fear of mushrooms, we did meet several people who collect them for food, medicine, and crafts. People we spoke with favored easily identifiable, choice edible species such as chanterelles, morels, and bear’s head fungus. The creamy white underside of *Ganoderma applanatum*, the artists conk, provides a canvas for rustic drawings and carvings. One woman we spoke with also used boletes, chanterelles, and chicken of the woods to produce brilliant yellow and orange dyes for coloring wool.

Fungi vs. Mushrooms: What’s the difference?

The terms “fungi” and “mushrooms” are often used interchangeably. This is partially correct. Mushrooms are actually the spore-producing fruiting bodies of certain fungus species. Mushrooms are found growing on dead or decaying trees, as well as emerging from the forest floor. What we see above ground is only part of the story. The fungal structures that produce mushrooms, known as mycelia, are often concealed under the forest floor or in decaying wood. Fungi play vital roles in forest ecosystems by breaking down organic matter and cycling nutrients.

Look for mushrooms in the spring and fall, especially after periods of rain.

Goldthread

Coptis trifolia

Ranunculaceae

Other Names: Goldenthread, yellow root, savoyanne (French), wisawkeskil (Maliseet), mali'japa'qawey (Mi'kmaq)

“Ok, you’ve got a lot of trouble, let’s say it’s in your mouth, and you’ve got the blisters or stuff inside your mouth. You’ve got the yellowroot. You take the roots out, you wash ‘em, you chew that.” Edford Plourde

Goldthread is a medicinal plant that has long been important to Native American and Acadian gatherers. The plant’s common name refers to its bright yellow rhizomes that are found just beneath the surface of the forest floor.



Goldthread leaf and exposed roots. Photo by Michelle Baumflek.

Physical Description: Goldthread is a low-growing perennial herb. Three-part leaves resemble wild strawberry, but are evergreen and glossy. Solitary, white flowers are ½ inch wide with five to seven petals, appearing in the spring. Shallow rhizomes are slender and bright yellow.

Habitat: Goldthread is found in cool, moist, mossy forests, swamps, and bogs, usually under conifer trees. Interviewees we spoke with associated goldthread with cedar, spruce, and pine.

“They’re usually by cedar trees, you find them, you got to dig down a little deep sometimes, not that much, they’re usually pretty well within the surface.” Colleen Gauvin

Uses: Goldthread rhizome (commonly referred to as the root) is used medicinally to treat a variety of ailments. Several people we interviewed found goldthread to be particularly effective in treating sores and ulcers of the mouth.

Preparation: Some people chew the root of goldthread raw, while others drink it in a tea form. The root may be dried for later use. Goldthread is very potent, so only a very small amount is needed.

“You just need a little piece of it, maybe just an inch or two. It’s strong, so you don’t need much, and you steep it in boiling water for maybe five, ten minutes, and then you drink it slowly, you rinse it in the mouth, and then you can swallow it, because if you have ulcers somewhere in your mouth, that means you must have some in the throat and maybe some in the esophagus also. So, you drink it up and it heals really fast. Yeah, it’s really good.”
Gene Nadeau

Best Time to Harvest: Some gatherers prefer to harvest in the spring, when the flowering plant is easily identified, while others wait until fall.

Tips for Sustainable Harvesting/Management: Goldthread is sensitive to changes in canopy cover, and its shallow rhizomes may be affected by soil compaction. Choose harvesting locations that have a healthy population of goldthread; do not harvest rhizomes if only one plant is present. Harvest small amounts: rhizomes are very potent, so only a small amount is needed to be effective. After harvesting rhizomes, make sure to lightly cover the area with the original soil and moss.

➤ Some species information derived from Gleason and Cronquist's **Manual of Vascular Plants of the Northeastern United States and Adjacent Canada** [35] and **Newcomb's Wildflower Guide** [40].

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Hazelnut, Beaked

Corylus cornuta

Betulaceae

Other Names: Noisetier (French), malipokansimus (Maliseet), malipqwanj (Mi'kmaq)

“Hazelnuts are a very unique little cottage industry throughout all the St John Valley. Many of the people would go, and they would gather hazelnuts, and then they would put them beside the road in jars, which were of course leftover jelly jars, or whatever, and they would sell hazelnuts through the late summer, early fall. And that still occurs.”

Tim Scott

“With hazelnuts, you’re fighting the squirrels, and there are so many squirrels now, it’s a hard fight.”

Vern Labbe



Beaked hazelnut leaves. Photo by Michelle Baumflek.

Beaked hazelnut is an important source of nutrition for wildlife and humans alike. Many northern Mainers like the taste of them so much that they go to great lengths to collect some nuts before animals lay claim to the entire crop. While many people gather hazelnuts for their personal use, hazelnuts also provide supplemental income to residents who sell cleaned nuts on roadsides.

Physical Description: Beaked hazelnut is a thicket-forming shrub reaching heights of 12 to 15 feet. The twigs are light brown, and current-year growth is covered in long hairs. Rounded leaves have a heart-shaped base and doubly serrate margin, and they terminate in a pointed tip. Both male flowers (catkins) and female flowers appear on the same plant. Female flowers are located at branch tips and are pollinated in early spring. Nuts follow later in the season, in clusters of two and three. The common name “beaked hazelnut” comes from the two long, green, tubular bracts that cover maturing nuts. One interviewee described the appearance of bract-covered nuts as “Hershey Kiss-like.”

Habitat: Open woodlands, roadsides, forest edges, around railroad tracks. While they can tolerate shade, hazelnuts need light to flourish and produce nuts. In the words of one interviewee:

“Hazelnuts need an open canopy. Essentially they need some light, more than is normal. So, they would be very few and far between in a climax forest. My forest works great for them because I keep it [open], you know, it’s a working forest.”

Uses: Beaked hazelnut is collected and eaten by many northern Maine residents in the fall.

Preparation: Extracting hazelnuts from their casings can be a challenge. Nuts are covered in green, prickly bracts that exude a sticky liquid when crushed. Several interviewees recommend waiting

until the outside begins to turn brown, because nuts will peel more easily. Faye Hafford recalls the way that many people get hazelnuts out of their shells:

“Ordinarily, what they do is they put them in a sack and pound them against a rock or something ‘til they get, a lot of that stuff comes off of it That casing on the outside that’s green? It has a juice in it, and also, it’s kind of got little thistles, I don’t know what it is, but it goes in your hand, it’s hard on your fingers, and when you get done, your fingers are black. You better use gloves. But that’s what they do, they pound them, hit it and that stuff loosens up and comes off easier.”



Beaked hazelnut fruits. Photo by Michelle Baumflek.

Another interviewee offered an alternative method to extract hazelnuts:

“The proper way to open [hazelnuts] is on the pointed end, with a pocket knife, you cut off that little pointed end until you just expose the nut meat inside, and put your knife point into that and twist it, and it will pop open in half, and you’ll get the nut meat out whole.”

Once the nuts are out, many people we spoke with like to salt and roast them before eating.

Best Time to Harvest: Hazelnuts produce mast cyclically, and interviewees felt that they produced more dependably than beech trees. Hazelnuts become ripe in late August through September. The main challenge in harvesting hazelnuts is getting to them before squirrels and other animals do. To avoid this losing battle, some gatherers choose to harvest hazelnuts a week early, because they will ripen off the bush. Others prefer to wait to harvest until after a frost because they think the hazelnuts taste sweeter.

Tips for Sustainable Harvesting/Management: Harvest in moderation: beaked hazelnuts are high in fat and protein, making them an important source of food for squirrels, chipmunks, and various bird species.

Maple, Sugar

Acer saccharum

Aceraceae

Other Names: Érable à sucre (French), malsonaw (Maliseet), snawey (Mi'kmaq)

Maple syrup is a Maine institution. It is also one of the most commonly used NTFPs in New England. During the 2009 season, Maine sugarmakers produced a record 395,000 gallons of syrup, making the State the second largest syrup producer in the United States. In the St. John River watershed, producing maple syrup is a sweet tradition that contributes to the economy from household to regional levels. Many residents have small sugarbushes of fewer than 100 trees and make syrup to use and to give away as gifts. Forest landowners in the western part of the watershed lease sugarbushes to commercial syrup manufacturers. These industrial operations can be quite large—up to 80,000 taps.



Sugar maple leaf. Photo by Michelle Baumflek.

Physical Description: Sugar maple trees can reach a height of 100 feet. Young trees typically have dark gray bark, which develops long, vertical plates as the tree matures. As with all maples, branches and buds are arranged oppositely. Deep green leaves have smooth margins and are usually five-lobed. Connections between the lobes have a characteristic “U” shape, which helps to distinguish them from the “V” shaped connections of red maple (*Acer rubrum*). Long, drooping, yellow-green flowers are followed by the appearance of fruit: familiar double-winged samaras that turn papery and brown when they mature in the fall.

Habitat: In northern Maine, sugar maple is a common co-dominant species in mixed stands that include beech and red spruce. It may also be the predominant species within a stand. Although sugar maples can grow in a variety of soil types and tolerate a range of acidity, a deep, rich, well-drained soil is best for sap production.

Uses: The sap of sugar maple is used to make syrup. Sugar maple timber is highly valued as well, but as one northern Maine Parks and Lands manager describes, the two uses do not complement each other:

“You’ve got to make a choice. Either you’re going to do syrup, or you’re going to do timber. The two don’t go well together, because you degrade the logs so bad with the tapping.”

Preparation: Sap is collected and boiled down to create maple syrup, sugar, and cream. The traditional method of collecting sap in buckets is still used by home enthusiasts, but larger scale operations attach taps directly to plastic tubes, which run into a central collection tank. This method minimizes contamination of sap through bacterial growth. Although the sugar content of sap varies, it generally takes 40 to 45 gallons of sap to produce 1 gallon of syrup.



Sugar maple tree. Photo by Michelle Baumflek.



Maple syrup bucket. Photo by Oven Fresh. commons.wikimedia.org

Best Time to Harvest: Late winter to early spring. Maple sap flow is optimal during periods of cold nights and warm days. The timing, duration, and yield of a harvesting season vary from year to year.

Tips for Sustainable Harvesting/

Management: Maple sap transports sugar and nutrients, allowing the tree to produce leaves and grow. Overtapping will stress individual trees. The University of Maine Cooperative Extension offers the following suggestions for sustainable sap gathering: tap only trees that are larger than 10 inches in diameter at breast

height (4.5 feet above the ground). The number of taps per tree should never exceed three. Trees with a diameter of 10 to 20 inches should have only one tap, trees 20 to 25 inches in diameter may have two, and trees greater than 25 inches may have three.

Some species information derived from the Sugar Maple chapter of **Silvics of North America** [34], the Sugar Maple chapter of **Forest Trees of the Northeast** [46], maple syrup reports from the USDA National Agricultural Statistics Service [47], and tapping information from the University of Maine Cooperative Extension [48].

Pearly Everlasting

Anaphalis margaritacea

Asteraceae

Other Names: Wild mountain sage, immortelle (French), tomawey (Maliseet, meaning “tobacco”)

The common name “pearly everlasting” refers to the plant’s dry, papery flowers that remain fresh-looking indefinitely. Although not a true sagebrush of the genus *Artemisia*, pearly everlasting is often used as a local substitute for sage varieties that are found only in the western United States.



Pearly everlasting. Photo by Michelle Baumflek.

Physical Description: Pearly everlasting grows up to 3 feet high. Leaves are narrow and lance-shaped, with a white, wooly underside. Stems are also wooly.

In the summer, small flowers consisting of dry, pearly white bracts with yellow centers appear in slightly flattened clusters.

Habitat: Roadsides, gravel pits, and other dry, sandy areas.

Uses: Maliseet and Mi’kmaq gatherers use pearly everlasting as a substitute for sage and for other ceremonial purposes.

Preparation: Leaves are dried before use.

Best Time to Harvest: Collect plants in the fall, before leaves wither.

Pine species

Pinus spp.

Pinaceae

Representative species: White pine (*Pinus strobus*), red pine (*Pinus resinosa*)

Other Names: Pin (French), kuwes (white pine in Maliseet), kuwow (Mi'kmaq)



Red pine needles. Photo by Michelle Baumflek.

“If you can’t find resin, wait for the pine candles to come out... When the leaves come out, around the first of June, the base of every needle will have a resin dot. It is a fluid and sticky dot, which you can find only on the new growth.” Natalia Bragg

“Any of the pines that produce the round cones, people search those out... When [people] used to [work in] hand crews, they’d hear from their husband or their dad about ‘oh, you should see these trees we’re cutting, they’re full of cones.’ Well, they’re on the ground. People would go in and bring burlap bags and collect cones.” Vern Labbe

Maine’s nickname is the Pine Tree State. Although white and red pines are more abundant in the southern part of the State, they grow in the forests of the St. John River watershed, too. White pine is the largest conifer native to the northeastern United States, attaining heights of 150 feet or more. The white pines’ great size and straight growth habit made them a desirable timber for ship masts. In fact, in 1691, a policy decreed that white pines greater than 24 inches in diameter and within 3 miles of a river were the property of the King of England. Trees fitting this description were blazed with the mark of the “Broad Arrow” and reserved for use as masts in the British Royal Navy.

Physical Description: Pines are coniferous trees that grow in distinctive whorls. Pine needles vary in length and are clustered together in sheaths called fascicles. White pine grows up to 150 feet tall and has five long, flexible needles per fascicle that grow on limber branches. Bark is thick, dark, and deeply ridged. Cones are unarmed, long, and smooth. Red pine trees attain heights of 90 feet and have two rigid needles per fascicle that snap when bent; reddish, scaly bark; and short, unarmed, rounded cones.

Habitat: Pines are emergent species that do not tolerate heavy shade (although white pine can handle shadier habitat than red pine). White pines grow best on well-drained soils and can tolerate a variety of soil types, from sandy areas to rocky substrate such as eskers. Red pines are a popular plantation species. They are extremely cold tolerant and prefer well- drained soils. Red pines thrive in sandy areas of poor soil fertility. A variety of other pine species, including Mugo pine, are also planted around cemeteries, malls, and golf courses, which provide easily accessible places to collect cones.



White pine cone. Photo by Keith Kanoti, Maine Forest Service, Bugwood.org

Uses: Pine resin is antibacterial, antifungal, and used medicinally as an ingredient in first aid salves. The cones of many pine species are collected and used in crafts such as Christmas wreaths. Pine cones are also collected for seed, which is sold to nurseries.

Preparation: Resin or pine candles can be melted into warm oil and then strained to create the base for topical salves.

Best Time to Harvest: Both pine resin and pine cones may be harvested year-round. Resin is easier to collect in the winter, when frozen clumps can be found in the snow

near the base of pine trees or may be knocked off tree trunks. Resin may also be harvested from pine candles, the emerging year's growth, around the beginning of June. Although pine species share medicinal qualities, Natalia Bragg has found that red pine has more resin than other species such as white pine. Perhaps the abundance of resin is why the scientific name of red pine is *Pinus resinosa*.

Tips for Sustainable Harvesting/Management: If collecting resin, do not harvest too many pine candles off any one tree. The candles are shoots of new growth.

➤ Some species information derived from Gleason and Cronquist's **Manual of Vascular Plants of the Northeastern United States and Adjacent Canada** [35], **Silvics of North America** [34], the USDA-NRCS PLANTS Database [38], and **Forest Trees of Maine**, Centennial edition 1908-2008 [32].



Rose Tomah displays a Christmas tree she created out of pine cones. Photo by Michelle Baumflek.

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Plantain, Common

Plantago major

Plantaginaceae

Other Names: Plantain (French), sekotepokahtek (Maliseet)



Plantain leaves. Photo by Michelle Baumflek.

Many people consider **plantain** an annoying weed—with good reason. It grows prolifically in lawns and other residential areas and is hard to remove once it becomes established. However, plantain has another side that most people are less familiar with: it has been valued as a medicinal plant for centuries. In fact, plantain was introduced to the United States by European settlers specifically because of its healing properties.

Physical Description: A low-growing plant, plantain leaves form basal rosettes. Leaves are

broadly oval-shaped, deeply ribbed, and grow up to 8 inches long and 4 inches wide. Leaf stems are green at the base. In the summer, a slender flowering stalk emerges from the center of the rosette of leaves. Whitish-green flowers appear at the tip of the stalk in a dense spike, which later mature into seedpods.

Habitat: Plantain is commonly found in lawns, driveways, and along roads, sidewalks, and railroad tracks.

Uses: Plantain leaves are used to treat cuts and scrapes. Known for their drawing ability, the leaves are also helpful on insect stings and bites. The coatings of plantain seeds, known as psyllium husks, are high in fiber and make an effective and popular laxative.

Preparation: Fresh leaves may be crushed and applied directly to affected areas. Dried leaves are infused in olive oil, which can then be incorporated into salves. One interviewee told us about a creative solution that allows her to have access to plantain leaves year- round:



Plantain fruits. Photo by Ken Chamberlain, The Ohio State University, Bugwood.org

“Plantain, I [use] for swelling and things like that. I freeze them in my freezer. Put plastic between them and freeze them for the winter. You never know when you are going to need them, if somebody gets a sprain or something like that.” Colleen Labillois

Best Time to Harvest: Leaves may be harvested from spring to fall, although some people believe the leaves are at their most potent after the flowering stalks appear. Psyllium husks are harvested after seeds mature and turn somewhat brown. One interviewee describes her two-season harvest of plantain:

“I’ll pick in the summertime to get the leaves and later in the fall to pick the psyllium husks.”

Tips for Sustainable Harvesting/Management: Plantain is abundant in most areas. When harvesting, avoid areas that have been treated with chemicals or that get runoff from roads.

➤ Some species information derived from Gleason and Cronquist’s **Manual of Vascular Plants of the Northeastern United States and Adjacent Canada** [35] and **Newcomb’s Wildflower Guide** [40].

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Raspberry, Red

Rubus idaeus

Rosaceae

Other Names: Framboisier (French), minsossok (Maliseet), klitqa (Mi'kmaq)



Raspberries. Photo by Michelle Baumflek.

“All the places where they cut lumber, about two years afterwards, and all those roads, those are great for raspberrying, really great.” Faye Hafford

Second in popularity only to fiddleheads in our study, **raspberries** are one of the most commonly gathered nontimber forest products in northern Maine. Often one of the first species to regenerate after a disturbance, raspberries are plentiful across the working landscape of the St. John River watershed.

Physical Description: Red raspberry is a familiar shrub with arching, prickle-covered stems that grow up to 6 feet high. Young stems are covered in bristles rather than thorns. The leaves are made up of three to five oval leaflets with serrated margins and light gray, hairy undersides. Flowers are ½ inch wide, white or greenish white, and appear individually or in small clusters. The easily recognizable fruit is ¾ inch long, red, and rounded.

Habitat: Raspberries are often found in forest clearings and edges, disturbed areas, riverbanks, roadsides, and old fields. They can tolerate a variety of soil moisture and pH levels, but need ample light to thrive. While many forest management strategies result in raspberry regeneration, the selective harvesting practices of certain large forest landowners do not provide enough light to create good raspberry habitat. In the words of one land manager:

“To get raspberries, you’ve got to do pretty heavy cuts, and we don’t do many heavy cuts. So we’re not getting raspberries in our cuts, but not like, ‘wow, what a good place to go pick berries.’”

Uses: An extremely popular wild food, raspberries are also a prized ingredient in homemade wines. The leaf of raspberry is used medicinally to treat colds and women’s health concerns. Raspberries are also used to create a pinkish-red dye that is used to color brown ash splints for baskets.

Preparation: Raspberries are often eaten fresh or made into jams and jellies. Raspberry leaf can be used fresh or dried in teas and is dried for use in tinctures.

Best Time to Harvest: Look for raspberries starting in July. A drier year will produce fruit with more concentrated flavor than a very wet year.

Tips for Sustainable Harvesting/Management: Although raspberries are often plentiful, it is important to consider the wildlife that depends on this wild food source. Many people we interviewed, such as Sue Young, share these sentiments:

“I always make sure that I leave more than enough...I’ve always been really tied to the animal world, so I make sure that they have enough. And if I come upon a bush, and say there’s only ten raspberries or something like that on it, I won’t pick any. I’ll just leave it for those that need it.”

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Rose species

Rosa spp.

Rosaceae

Other Names: kikcokalokiqeminsimus (Maliseet)



Rose blossom. Photo by Michelle Baumflek.

Several species of **wild and naturalized rose** species grow in northern Maine. All produce fruit known as hips. Rosehips contain much more vitamin C than oranges, providing an excellent local source of this important nutrient. Interviewees collect rose hips from both wild and cultivated sources.

Physical Description: Although there is much variation among species, the genus *Rosa* shares many physical traits. Roses are perennial shrubs or vines, whose stems are covered by sharp

prickles. Flowers generally have five petals and are usually pink or white. Some flowers are more strongly scented than others. Leaves are arranged alternately on stems and are made up of a series of toothed, oval leaflets. Rosehips often resemble a small apple in color and shape, and they have a fleshy outer layer that surrounds a center of fine hairs and seeds.

Habitat: Forest edges, open woodlands, riverbanks, gardens, residential areas.

Uses: Rosehips are used medicinally and nutritionally as a source of vitamin C. Several people we spoke with also use red rosehips to add colorful decoration to Christmas wreaths. Rose petals are the key ingredient in a rosewater toner created by Natalia Bragg.

Preparation: Rosehips can be used fresh or dried for later use. They are steeped in boiling water to create a nutritious, vitamin-rich, red tea. Use fresh rose petals to create rosewater.

Best Time to Harvest: Rose hips become ripe in the fall and can be harvested throughout the winter. Harvest rose petals at the height of flowering in the summer.

Tips for Sustainable Harvesting/Management: Never harvest all of the rosehips off a particular plant. Many people have rose bushes growing around their homes that produce wonderful hips. Request permission if a rose you would like to harvest from is located on private land.

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Spruce species

Picea spp.

Pinaceae

Representative Species: Red spruce (*Picea rubens*), Black spruce (*Picea mariana*)

Other Names: Epinette (French), olonatoq (Maliseet, red spruce), kawatoq (Maliseet, black spruce), kawatkw (Mi'kmaq)



Red spruce branch tips. Photo by Michelle Baumflek.

“Now, the first thing you want to understand if you put spruce gum into your mouth, don’t bite it immediately. Just take and put it in, leave it in your mouth, and just barely, I’ll say take it between your teeth, and just start rolling it. And eventually, it will become the nicest piece of gum that you’ve ever chewed on.” Tim Scott

Spruce trees grow in abundance in the St. John River watershed. In addition to being a valuable timber species, spruce species have been used for a variety of purposes, including gum, a nostalgic favorite of many Mainers.

Originally chewed by Penobscots and other Native American groups, spruce gum is hardened pitch from the resin of black, white, and red spruce trees. Spruce gum became the first commercially sold chewing gum in the world when John Curtis, a Mainer, began to market it in 1848. It became so popular that by the end of the 1800s, more than 300,000 pounds of gum were harvested annually. Woodsmen who spent the winters in logging camps would often make small, intricately carved boxes for their sweethearts, which they would fill with pieces of hard, amber-colored spruce gum.

Physical Description: Red spruce grows up to 80 feet tall. Mature bark forms irregular, reddish scales. Half-inch-long needles are dark green, shiny, and sharp. Twigs are hairy. Red spruce cones are ½ to 2 inches long, and cone scales usually have smooth margins. Black spruce can reach heights of 90 feet, but are much smaller if grown in boggy conditions. Gray-brown bark forms thin scales. Needles are blue-green and are ¼ to 1 ½ inches long. Black spruce twigs are hairy, and upon close inspection, some hairs have bulbous glands on their tip. Black spruce cones can persist on trees for many years and are stiff, with toothed or notched scale margins.

Habitat: Red spruce can be found on well-drained, sometimes shallow, acidic soils. In northern Maine, it is often co-dominant with balsam fir. Black spruce can also grow on well-drained soils, but is usually associated with wet areas such as sphagnum bogs and swamps.



Black spruce bark. Photo by Keith Kanoti, Maine Forest Service, Bugwood.org

Uses: Hardened spruce resin is chewed as a long-lasting gum that has antiseptic properties. Spruce gum was widely used in commercial preparations as a cough cure in the 19th and early 20th centuries. The melted resin mixed with fat may also be used to seal seams on canoes, making them watertight. Spruce roots are used in basketmaking and to “sew” together sides of containers.

Preparation: Raw pieces of resin are heated until they become liquid, allowing impurities such as pieces of twigs, needles, and bark to be strained out. After it has hardened, pure resin or gum can be rolled in cornstarch to prevent pieces from sticking together. Gum manufacturers sometimes mixed in chicle gum to make for a softer chew. Spruce roots are usually peeled and split before use.

Best Time to Harvest: Resin can be harvested any time after it has hardened, although experts say that it takes 4 to 5 years of aging to reach the perfect consistency. Commercial harvesting operations traditionally took place in the winter and early spring, when harvesters could take advantage of a deep snowpack to reach resin deposits located higher on the tree. Often, harvesters would use a specialized tool to pry off and catch the resin: a pole with a chisel-like head that had a can fastened to it. Spruce roots are harvested in the spring or fall when the ground is not frozen.

Tips for Sustainable Harvesting/Management: Spruce resin is exuded when a tree is injured, acting as a natural bandage to help the tree heal. Harvest only hardened resin, and do not injure a tree to make it produce resin. Because of the disturbance to the surrounding soil, spruce roots should be harvested in moderation.

➤ Some species information derived from the Red Spruce chapter of **Silvics of North America** [34], personal communication from David Fuller [49], and Morton’s article in *Gastronomica* [50].



Spruce gum picking tool. Photo courtesy of David Fuller, University of Maine Presque Isle.

St. Johnswort

Hypericum perforatum

Clusiaceae

Other Names: Pertuisane (French)

Another example of a naturalized plant that was introduced from Europe, **St. Johnswort** is currently used medicinally by people from a variety of cultures in northern Maine.

Physical Description: St. Johnswort is an herb with multi-branched stems that grows up to 3 feet tall. Narrow leaves measure up to 1½ inches long and are covered in small, black dots. Bright yellow, five-petaled flowers are ¾ to 1 inch wide. Individual petals also have small black dots around the margin.

Habitat: St. Johnswort can be found in old fields and along roadsides.

Uses: People believe St. Johnswort can be ingested internally in tea or tincture form to help relieve stress and symptoms of depression. It is also applied externally as a salve or pure oil to treat sore muscles, temporomandibular joint (TMJ) disorder, and bruises.



St. Johnswort flowers. Photo by Michelle Baumflek.

Preparation: Fresh plants may be combined with boiling water to create medicinal teas, or they may be crushed and steeped in alcohol for several weeks to make a long-lasting tincture. Fresh plants may also be crushed and then infused in olive oil to create a base for salves.

Best Time to Harvest: Harvest St. Johnswort throughout the summer, when flowers are in full bloom. Flowers and tops of stems, including leaves, may be used.

Tips for Sustainable Harvesting/Management: Harvest only the top third of a plant, leaving the rest to continue to grow.

Information about medicinal plant uses is provided for educational purposes only. It should not be used for self-diagnosis or treatment and is not a substitute for consultation with a licensed physician.

Strawberries, Wild

Fragaria virginiana

Rosaceae

Other Names: Fraisier (French), psikhqiminsok (Maliseet), atuwomkemin (Mi'kmaq)



Strawberry blossoms. Photo by Michelle Baumflek.

“Wild strawberries are the most delicious. Just tiny little intense packages of flavor.” Sharri Venno

“The strawberries, for the Fourth of July you can go get a meal.” Frances Plourde

Wild strawberries were mentioned and collected by more than half of our interviewees. Strawberries are the first wild fruits to appear in northern Maine, signaling the beginning of summer. Although wild strawberries are small and labor intensive to gather, many people prefer their flavor to store-bought varieties.

Physical Description: Wild strawberries are small, low-growing plants. Leaves are made up of three egg-shaped leaflets with toothed margins. The ½- to 1-inch-wide white flowers have five petals and are usually found in clusters. The red fruit is easily recognizable and has seeds deeply set into its surface.

Habitat: Wild strawberries are often found in fields, lawns, along roadsides, and in grassy margins.

Uses: The fruit of the strawberry is a favorite wild food of people from northern Maine. Several interviewees recalled vivid childhood memories of being sent out with their siblings to collect large quantities of strawberries for their mothers. Frances Plourde of Eagle Lake remembers one year that she helped gather and process 80 gallons of wild strawberries:

“My mother used to have berries by the gallons. Eighty gallons of it she’d can, but she had a bunch of kids. ‘You, you, you and you, go and get your five pound pail of berries this morning.’ Come noontime, it was the same thing.”

Preparation: Strawberries are often eaten fresh or used as a seasonal ingredient in pies and cakes. They are also frozen or made into jellies and jams for later use.

Best Time to Harvest: Strawberries start to become ripe in late June or early July. Although the fruit can become relatively large, interviewees mentioned that smaller fruits have a sweeter flavor.



Botanical illustration of strawberry. Illustration courtesy of USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. An illustrated flora of the northern United States, Canada and the British Possessions. Vol. 2: 260.

Tips for Sustainable Harvesting/Management: Although wild strawberries can be abundant in open areas, some interviewees felt that fields of berries were becoming harder to come by. Many people mention harvesting strawberries from their lawns, but caution against picking from areas treated with pesticides. One interviewee found that mowing her field to reduce competition from other grasses produced great amounts of strawberries:

“There are a few places that we found that, if you mow them regularly, and if you keep the other grasses down, they go crazy. So we’ve been really, really lucky, and there’s nothing like a wild strawberry.” Sue Young

➤ Some species information derived from **Newcomb’s Wildflower Guide** [40], Gleason and Cronquist’s **Manual of Vascular Plants of the Northeastern United States and Adjacent Canada** [35], and the USDA-NRCS PLANTS Database [38].

Sweetgrass

Hierochloa odorata

Poaceae

Other Names: Herbe sainte (French), welimahaskil (Maliseet), kjimskiku (Mi'kmaq)

Sweetgrass is considered sacred by Native Americans from Maine and other parts of the United States and Canada. Several Mi'kmaq and Maliseet gatherers we spoke with expressed concern about the loss of sweetgrass due to poor harvesting techniques, soil erosion, and destruction of habitat caused by development.



Photo by SriMesh, used under terms of GNU Free Documentation License.

Physical Description: Sweetgrass is a perennial grass that forms thick rhizomatous mats. Stems grow up to 3 feet high and are usually purple at the base. The grass has a sweet, pleasant smell. Flowers are formed in a branched, tapering cluster called a panicle.



Historical botanical drawing of sweetgrass. Illustration from Clark & James, "Farm Weeds," 1906.

Habitat: Sweetgrass is a wetland plant and is found in moist meadows, along riverbanks, and near the ocean. Some people prefer the quality of sweetgrass that grows near the ocean:

"There are areas here where you can harvest the sweetgrass, but the best places to get them are near the ocean, because they grow longer and they have a sweeter smell."

Uses: Sweetgrass is used ceremonially and is smoked or burned as a purifying smudge. Sweetgrass is also used for basketry, either by itself or combined with brown ash splints.

Preparation: Sweetgrass is often braided and dried before use.

Best Time to Harvest: Late July through September, after the plant has gone to seed. One interviewee recommends harvesting in the morning, when it is easier to tell the difference between sweetgrass and other grasses:

"And the best time to pick it is in the morning, like when the sun is coming up, because you can see the difference, because it doesn't grow all by itself, it grows with other weeds and other grasses that look similar to the sweetgrass, but if you go when the sun is coming up in the Eastern direction, and you just kind of brush the grass back with your hand, you can see that it glows. The sweetgrass glows. It almost looks like a neon green."

Tips for Sustainable Harvesting/Management: We learned several important considerations from interviewees for sustainably harvesting sweetgrass. First, treat the plants with respect. People we spoke with all offer tobacco before harvesting sweetgrass, as a way to honor the plant's life and give back something to the earth. Second, harvest sweetgrass only after it has gone to seed to promote the growth of new plants. Third, do not pull up sweetgrass. Although this technique is sometimes used to make room for more sweetgrass to grow, if done improperly it will quickly deplete a population. Instead of uprooting an entire plant, simply snip sweetgrass stems close to the ground. This will allow plants to grow again the following year.

➤ Some species information derived from the USDA-NRCS PLANTS Database [38] and Gleason and Cronquist's **Manual of Vascular Plants of the Northeastern United States and Adjacent Canada** [35].

GLOSSARY

Alternate: Description of the arrangement of leaves, buds, or leaf scars on branches or twigs. In an alternate arrangement, leaves, buds, or leaf scars appear singly, at different points [51].

Berry: A simple, pulpy fruit of a few or many seeds (but no stones), developed from a single ovary [34].

Boreal Forest: A coniferous forest of higher latitudes and elevations in the Northern Hemisphere characterized by evergreen conifers such as spruce, fir, and pine [34].

Breast Height: 1.37 m or 4.5 feet above groundline on standing trees, a standard height in the USA for recording diameter [34].

Catkin: A drooping, elongated cluster of bracted, unisexual flowers, found only in woody plants [34].

Drupe: A simple, fleshy fruit surrounding one to several stony pits. Example: Chokecherry [51].

Entire: Referring to a leaf whose margin does not have teeth or lobes [51].

Leaflet: A component of a compound leaf [35]. Some plants have leaves that are made up of two or more leaflets. Leaflets usually resemble small leaves, and compound leaves are common in certain plant families. For example, ash trees in the genus *Fraxinus* have leaves that are made up of seven to nine leaflets.

Margin: The edge of a leaf.

Opposite: Referring to leaves, bud, leaf scars, or branches that appear directly across from each other on a twig, branch, or stem [51].

Raceme: A long, cylindrical cluster of flowers.

Samara: A dry, winged fruit, one seeded in ash and elm species, two-seeded in maple species [34].

Serrate: Sharp, forward-pointing teeth [51].

Spadix: A fleshy spike covered in small, crowded flowers [35].

Tincture: An extract prepared by soaking plant material in alcohol. The solid material is removed before use.

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APPENDIX 1.—Comprehensive List of Nontimber Forest Products and Uses Mentioned by Interviewees.

| Common name (English) | Latin name | Frequency of mention | Uses ^a |
|-----------------------|---|----------------------|---|
| Alder | <i>Alnus incana ssp. rugosa</i> | 3 |   |
| Angelica | <i>Angelica atropurpurea</i> | 1 |  |
| Apples, Wild | <i>Malus sylvestris</i> | 4 |  |
| Artichoke, Jerusalem | <i>Helianthus tuberosus</i> | 2 |  |
| Ash, Brown | <i>Fraxinus nigra</i> | 7 |    |
| Aspen, Bigtooth | <i>Populus grandidentata</i> | 2 |  |
| Balm-of-Gilead | <i>Populus X P. gileadensis</i> | 2 |  |
| Beech, American | <i>Fagus grandifolia</i> | 4 |  |
| Bergamot, Wild | <i>Monarda fistulosa</i> | 1 |  |
| Betony, Wood | <i>Pedicularis canadensis</i> | 2 |  |
| Birch, Paper | <i>Betula papyrifera</i> | 5 |   |
| Birch, Yellow | <i>Betula allegheniensis</i> | 2 |   |
| Bloodroot | <i>Sanguinaria canadensis</i> | 2 |  |
| Blueberry | <i>Vaccinium corymbosum</i> , <i>Vaccinium angustifolium</i> | 11 |    |
| Brake (Bracken Fern) | <i>Pteridium aquilinum</i> | 1 |  |
| Bugaloos | | 4 |  |
| Bunchberries | <i>Cornus canadensis</i> | 1 |  |
| Burdock | <i>Arctium minus</i> | 5 |   |
| Butter and Eggs | <i>Linaria vulgaris</i> | 1 |  |
| Butternut | <i>Juglans cinerea</i> | 2 |  |







continued

^a  = Aesthetic;  = Craft;  = Food;  = Medicine;  = Spiritual (this symbol depicts a Native American medicine wheel);  = Utilitarian



























APPENDIX 1.—continued

| Common name (English) | Latin name | Frequency of mention | Uses ^a |
|-----------------------|--|----------------------|---|
| Calamus/Muskrat Root | <i>Acorus calamus</i> | 8 |  |
| Caraway | <i>Carum carvi</i> | 3 |   |
| Catnip | <i>Nepeta cataria</i> | 1 |  |
| Cattail | <i>Typha latifolia</i> | 3 |    |
| Cedar | <i>Thuja occidentalis</i> | 5 |   |
| Chaga mushroom | <i>Innonotus obliquus</i> | 1 |  |
| Chanterelle | <i>Cantharellus cibarius</i> | 2 |   |
| Cherry, Black | <i>Prunus serotina</i> | 1 |  |
| Chicken of the Woods | <i>Laetiporus sulphureus</i> | 1 |  |
| Chickweed | <i>Stellaria media</i> | 3 |   |
| Chives, Wild | <i>Allium schoenoprasum</i> | 5 |  |
| Chokecherry | <i>Prunus virginiana</i> | 11 |   |
| Cicely, Sweet | <i>Osmorhiza claytonii</i> | 1 |  |
| Coltsfoot | <i>Tussilago farfara</i> | 5 |  |
| Comfrey | <i>Symphytum officinale</i> | 5 |  |
| Crabapples | <i>Pyrus coronaria</i> | 1 |  |
| Cranberry, Highbush | <i>Viburnum opulus var. americanum</i> | 10 |   |
| Currant, Black | <i>Ribes americanum</i> | 4 |  |
| Dandelion | <i>Taraxacum officinale</i> | 7 |  |
| Dock, Yellow | <i>Rumex crispus</i> | 1 |  |







continued

^a  = Aesthetic;  = Craft;  = Food;  = Medicine;  = Spiritual (this symbol depicts a Native American medicine wheel);  = Utilitarian


























APPENDIX 1.—continued

| Common name (English) | Latin name | Frequency of mention | Uses ^a |
|-----------------------|----------------------------------|----------------------|---|
| Dogwood, Red-Osier | <i>Cornus sericea</i> | 7 |    |
| Elderberry, Black | <i>Sambucus canadensis</i> | 2 |   |
| Eyebright | <i>Euphrasia officinalis</i> | 2 |  |
| Fennel | <i>Foeniculum vulgare</i> | 1 |  |
| Ferns, Other | Various species | 4 |   |
| Fiddleheads | <i>Matteuccia struthiopteris</i> | 15 |  |
| Fir species | <i>Abies</i> spp. | | |
| Fir, Balsam | <i>Abies balsamea</i> | 10 |   |
| Fungus, Bear's Head | <i>Hericum americanum</i> | 1 |  |
| Goldenrod species | <i>Solidago</i> spp. | 2 |   |
| Goldthread | <i>Coptis trifolia</i> | 7 |  |
| Gooseberry species | <i>Ribes</i> spp. | 2 |  |
| Goosefoot | <i>Chenopodium album</i> | 1 |  |
| Grapes, Wild | <i>Vitis labrusca</i> | 3 |   |
| Hawthorn | <i>Crataegus</i> spp. | 1 |  |
| Hazelnut, American | <i>Corylus americana</i> | 1 |  |
| Hazelnut, Beaked | <i>Corylus cornuta</i> | 7 |  |
| Hemlock | <i>Tsuga canadensis</i> | 1 |  |
| Hop Vine | <i>Humulus lupulus</i> | 1 |  |
| Horseradish | <i>Armoracia rusticana</i> | 2 |  |







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^a  = Aesthetic;  = Craft;  = Food;  = Medicine;  = Spiritual (this symbol depicts a Native American medicine wheel);  = Utilitarian































APPENDIX 1.—continued

| Common name (English) | Latin name | Frequency of mention | Uses ^a |
|-----------------------|-------------------------------|----------------------|---|
| Horsetail | <i>Equisetum</i> sp. | 3 |  |
| Hydrangea, Wild | <i>Hydrangea</i> sp. | 1 |  |
| Indian Cucumber | <i>Medeola virginiana</i> | 2 |  |
| Ivy, Ground | <i>Glechoma hederacea</i> | 1 |  |
| Jewelweed | <i>Impatiens capensis</i> | 4 |  |
| Labrador Tea | <i>Ledum groenlandicum</i> | 3 |   |
| Lady's Mantle | <i>Alchemilla vulgaris</i> | 1 |  |
| Lamb's Quarters | <i>Chenopodium album</i> | 2 |  |
| Lily, Water | <i>Nymphaea odorata</i> | 1 |  |
| Lingonberries | <i>Vaccinium vitis-idaea</i> | 1 |  |
| Lungwort | <i>Pulmonaria officinalis</i> | 1 |  |
| Lupine | <i>Lupinus polyphyllus</i> | 1 |   |
| Mallow | <i>Malva moschata</i> | 1 |  |
| Maple, Sugar | <i>Acer saccharum</i> | 4 |  |
| Mayflower | ID uncertain | 1 |  |
| Meadowsweet | <i>Spiraea alba</i> | 1 |  |
| Mint, Wild | <i>Mentha arvensis</i> | 3 |   |
| Morel, Common | <i>Morchella esculenta</i> | 2 |  |
| Motherwort | <i>Leonurus cardiaca</i> | 1 |  |
| Mullein, Common | <i>Verbascum thapsus</i> | 4 |    |







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^a  = Aesthetic;  = Craft;  = Food;  = Medicine;  = Spiritual (this symbol depicts a Native American medicine wheel);  = Utilitarian































APPENDIX 1.—continued







| Common name (English) | Latin name | Frequency of mention | Uses ^a |
|-----------------------------|--------------------------------|----------------------|---|
| Mushroom, Bracket | <i>Ganoderma applanatum</i> | 1 |  |
| Partridgeberry | <i>Mitchella repens</i> | 1 |  |
| Pearly Everlasting | <i>Anaphalis margaritacea</i> | 5 |   |
| Pine species | <i>Pinus</i> spp. | 6 |   |
| Plantain | <i>Plantago major</i> | 7 |  |
| Plum, Beach | <i>Prunus maritima</i> | 1 |  |
| Plum, Canada | <i>Prunus nigra</i> | 2 |  |
| Primrose, Evening | <i>Oenothera biennis</i> | 2 |  |
| Princess Pine (Club Mosses) | <i>Lycopodium</i> spp. | 1 |  |
| Queen Anne's Lace | <i>Daucus carota</i> | 3 |     |
| Raspberry | <i>Rubus idaeus</i> | 13 |    |
| Red Clover | <i>Trifolium pratense</i> | 5 |   |
| Rose, Wild | <i>Rosa</i> sp. | 6 |   |
| Sarsaparilla | <i>Aralia nudicaulis</i> | 2 |   |
| Sedge, Yellow Nut | <i>Cyperus esculentus</i> | 1 |  |
| Self-heal | <i>Prunella vulgaris</i> | 2 |  |
| Serviceberry | <i>Amelanchier</i> sp. | 2 |  |
| Sheep Laurel | <i>Kalmia angustifolia</i> | 1 |  |
| Shepherd's Purse | <i>Capsella bursa-pastoris</i> | 1 |  |
| Skunk Cabbage | <i>Symplocarpus foetidus</i> | 1 |  |

continued

^a  = Aesthetic;  = Craft;  = Food;  = Medicine;  = Spiritual (this symbol depicts a Native American medicine wheel);  = Utilitarian

APPENDIX 1.—continued

| Common name (English) | Latin name | Frequency of mention | Uses ^a |
|-----------------------|---|----------------------|---|
| Snowberry, Creeping | <i>Gaultheria hispidula</i> | 1 |  |
| Soapwort | <i>Saponaria officinalis</i> | 1 |  |
| Sorrel, Wood | <i>Oxalis montana</i> | 2 |  |
| Spruce species | <i>Picea</i> spp. | 6 |    |
| Spruce, Black | <i>Picea mariana</i> | 2 |   |
| St. Johnswort | <i>Hypericum perforatum</i> | 6+ |  |
| Strawberry | <i>Fragaria virginiana</i> | 12 |  |
| Sumac, Staghorn | <i>Rhus typhina</i> | 2 |   |
| Sweetfern | <i>Comptonia peregrina</i> | 2 |  |
| Sweetgrass | <i>Hierochloe odorata</i> | 6 |    |
| Tamarack | <i>Larix laricina</i> | 4 |    |
| Trillium, Pink | <i>Trillium grandiflorum</i> | 1 |  |
| Trillium, Red | <i>Trillium erectum</i> | 1 |  |
| Vervain | <i>Verbena hastata</i> | 1 |  |
| Violet, Wild | <i>Viola</i> sp. | 2 |   |
| Willow species | <i>Salix</i> spp. | 2 |   |
| Wintercress | <i>Barbarea verna</i> , <i>Barbarea vulgaris</i> | 1 |  |
| Yarrow | <i>Achillea millefolium</i> | 4 |    |

^a  = Aesthetic;  = Craft;  = Food;  = Medicine;  = Spiritual (this symbol depicts a Native American medicine wheel);  = Utilitarian

Baumflek, Michelle J.; Emery, Marla R.; Ginger, Clare. 2010. **Culturally and economically important nontimber forest products of northern Maine**. Gen. Tech. Rep. NRS-68. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 74 p.

Nontimber forest products (NTFPs) gathered for food, medicine, craft, spiritual, aesthetic, and utilitarian purposes make substantial contributions to the economic viability and cultural vitality of communities. In the St. John River watershed of northern Maine, people identifying with cultural groups including Acadian, Maliseet, Mi'kmaq, Scotch-Irish, and Swedish use more than 120 wild plant and fungus species. We interviewed both gatherers and land managers about NTFP uses that are significant in this region and about factors that facilitate or limit gathering, including access to gathering sites. This handbook and its accompanying Web site (http://nrs.fs.fed.us/sustaining_forests/conserv_ehance/special_products/main_e_ntfp/) present our overall study findings as well as in-depth species profiles of 30 nontimber forest products including brown ash, paper birch, blueberries, highbush cranberry, and fiddleheads.

KEY WORDS: Nontimber forest products, special forest products, ethnobotany, traditional ecological knowledge, wild edibles, medicinal plants, foraging, basketmaking, access, Mi'kmaq, Maliseet, Acadian, St. John River watershed, Maine

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