

## Birch and Birch Bark

*by John Zasada, USDA Forest Service*

All species of trees that we most commonly think of as "timber species" have potential commodity values, often referred to as non-timber forest products (NTFP) or special forest products, that are not necessarily related to wood and fiber products. Some of these NTFP values are recognized and commercially important and others are secreted in the history of Native Americans and other people who at one time in their past depended on natural products for their physical and spiritual well-being. Paper birch is one example of a species that was an important part of Native American culture and has considerable potential for NTFP.

Before discussing NTFP from birch, we need to consider the potential for multiple products from this tree and from birch forests. The diagram below illustrates the potential product available from a birch stand as it develops through time.

Admittedly, this is an idealized view of the potential. However, there are examples of uses of birch for each of the products indicated in the diagram. There has never been a plan to attempt to harvest all of these products from birch trees and stands in the same geographic area. Northern Minnesota, Wisconsin, and Michigan would provide a good area to test these ideas.

The two main products harvested from birch without killing the tree are sap and bark and, to a very minor extent, the roots. The method of collecting birch sap is generally similar to that of maple. Birch sap differs significantly, however, from maple in that it has simple sugars (glucose and fructose) rather than the more complex sugars of maple (sucrose). There are also other differences in chemical composition.

Roughly 100 gallons of sap are required to make a gallon of birch syrup. Maple syrup, on the other hand, requires about 40 to 50 gallons of sap per gallon of syrup.

The most serious efforts to commercialize the use of birch sap in North America is occurring in Alaska where a number of individuals are using sap and syrup to make various types of candies, salad dressings, marinades, and any other products that can be "enhanced" with some birch syrup (for example, ice cream).

Although tapping a tree for sap does not kill it, there is little information in North America on the effects of the tap holes on wood quality and decay, and more generally tree vigor.

The value of NTFP from birch bark is diverse; value-added products are the key. Harvesting of birch bark for use in making canoes, baskets, and other containers is well known across the northern forest.

Traditionally, birch bark was an essential part of the lives of Native American groups in Canada and the northern United States where it was used as a covering for wigwams, food preparation and storage, canoes, and other things.

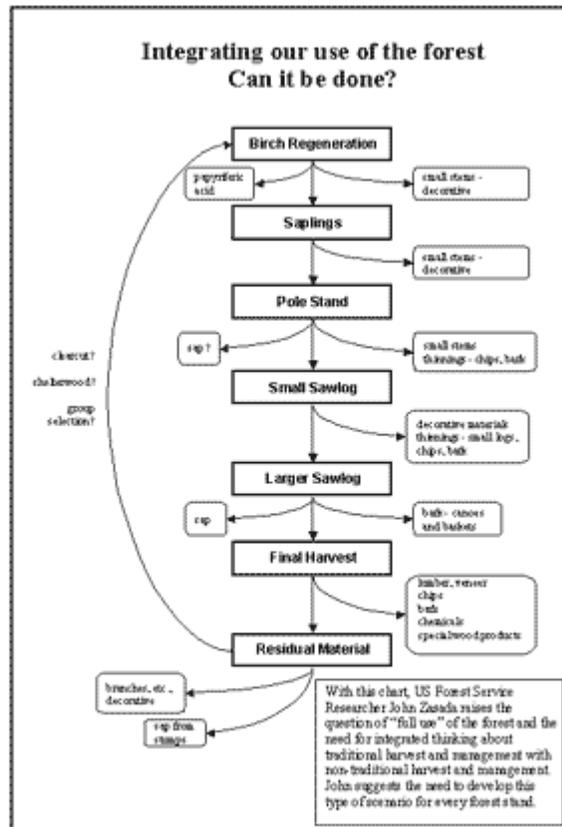
Literature suggests that the only way food could be stored for long periods of time was in birch bark containers. Although not proven, it is easy to make the connection between the fungicidal properties attributed to betulin, a major chemical in the bark, and storage of food for long periods. One might suggest that birch bark was a forerunner of plastic food containers (and, much more effective!).

Today, bark is used mostly in the production of baskets and other objects sold as decorative items; some of these are truly works of art.

Although bark is usually harvested without cutting the tree down, the removal of large pieces of high quality bark, as used in canoes, is done more easily after the tree is felled. Bark will regrow after it has been removed, but there does not seem to be any quantitative information on rates of regrowth. There are reports of people making a second harvest of bark from the same tree 10-20 years after an initial harvest. Bark quality (e.g., bark thickness and flexibility, tendency to separate into layers, and lenticel density and size) can vary greatly among trees on the same site, with tree age, and among differing sites.

Bark Removal: Effects on the Tree

I encourage a sensitivity to the effects of bark removal. Although removal, when done correctly, does



Birch bark baskets.  
(photos by Don Breneman)

not kill the tree, there may be more subtle effects. For example, a change in resistance to infection by disease may occur, although I have no scientific data to show this. To minimize the effects of bark removal on the wood and more generally on tree health and vigor, the following guides seem to be important.

1. The distinction has to be made between the inner and outer bark. The outer bark is removed and the inner bark should not be damaged. The inner bark is that portion of the tree (phloem) where sugars and other materials made in the leaves are transported to other parts of the tree for use in growth and respiration. Removal of the inner bark (girdling) interrupts this flow and kills the tree by "starving" the roots.
2. It is common to make a small test cut in the bark to determine if the bark is suitable for a particular use. One way of doing this is to make a right angle incision into the outer bark at a place on the tree that will not affect the larger piece of bark. Each side of the test flap should be long enough that the flap can be peeled back far enough to check for the qualities of the outer bark (flexibility, thickness, and tendency to separate into layers.)
3. Remove the outer bark only when it comes off easily; this is usually in the first part of the growing season. At this time of the year, the bark literally "jumps off" the tree when the vertical incision is made.
4. When the outer bark peels readily, all that is required is a vertical incision through the outer bark, which is usually less than .25 inch thick. Bark incisions horizontal to the stem of the tree are not necessary if the bark is removed at the correct time of the year. It is sometimes recommended that the incision be made at an angle less than 90 degrees to the tree.



Harvested birch bark.  
(photo courtesy of Cloquet Forestry Center)

### The Silviculture of Birch

There is no question that birch in pure or mixed species stands can be managed for multiple products. To my knowledge, the integrated management of birch for wood, bark, and sap has received little or no attention from foresters. In the short-term, wood production will drive silviculture and management of forests in which birch is a component. Under this scenario, it is possible to try to utilize the high value bark resource by identifying the stands to be harvested a year or more in advance and allowing birch bark to be gathered prior to felling of the stands.

In the long term, it is possible to conceive silvicultural systems that would actively manage for multiple values through the life of the stand. One important issue that needs to be addressed is the value of the bark and sap products. At present, there is no return to the landowner or management agency for the bark and sap collected from a stand. These are valuable products and people who use these raw materials for value-added forest products should expect to pay for them. In turn, these users should expect that these raw materials would receive proper consideration when silvicultural prescriptions and management plans are developed.

In the accompanying [diagram](#), it is obvious there will likely be effects on the quality of wood products when removing bark or harvesting sap from living trees. These effects need to be understood and

silvicultural and management systems designed to take them into account.

Birch has been referred to by some as the "giving tree." To me, it is quite obvious that birch has more values than those generally recognized. Land managers need to be more aware of these values and make sure they are considered in developing silvicultural prescriptions and management plans for birch in the northern forests.

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## Tips & Tricks for the Special Forest Product Enthusiast

Do you have a good tip or trick that you'd like to see added to this list? [Contact us](#), and we'll add it to the site!

Tip #1. Removing the outer bark from a birch tree won't kill the tree if the removal is properly done. (Birch bark is best collected in mid-June.)

Tip #2. Get your birch bark from trees that are going to be harvested in the near future, for instance, from an industry timber sale, or perhaps at a development site.

Tip #3. Bees and basswood flowers make good honey.

Tip #4. Maple sap is good stuff but so is birch sap.

Tip #5. The inner bark of basswood is used for lashing and tying.

Tip #6. Leatherwood bark is tough and pliable.

Tip #7. Spruce root and tamarack roots can be used for lashing, tying and binding.

Tip #8. Black ash splints are made by pounding a black ash log. However, only a small percentage of black ash trees are suitable for making black ash splints.

Tip #9. When harvesting balsam boughs leave side branches to grow into boughs that can be harvested in later years.

Tip #10. Only the oldest ground pine shoots should be harvested.

Tip #11. Cut ground pine shoots instead of pulling them out of the ground.

Tip #12. Looking for good basket material? Willow shoots and red osier dogwood shoots are proven winners. The fact is, even aspen bark can be made into various sized and shaped containers.

Tip #13. Never trespass on private land when collecting or gathering materials.

Tip #14. Birch bark can be cut into strips and woven into many shapes.

Tip #15. We always think of "balsam" when we think of holiday greenery. But tamarack branches are used to make wreaths.

*"What is Canoe Quality Birch bark?"*

*" Canoe bark is not the common birchbark you see growing in your neighbor's backyard or your stroll through the park. Canoe bark is harvested from the tree known as Betula papyrifera. The subspecies which provides the best bark is native only to Northeastern Canada and the United States and is Betula papyrifera colifolia.*

*When in prime harvesting regions I look for trees of an average age of 120 years old, with a diameter of 18-24 inches at breast height (DBH).*

*In regions of where high quality canoe trees are dense it is still common to test over 100 trees before selecting one tree which is suitable for a fine canoe. Such high grading of birch bark takes a great deal of time and labor. The estimated value of a 20' prime bark roll is \$1000USD. This is one of the factors that increases the value of the finest canoes.*

*The birch bark I select for my canoes passes the following tests:*

*Low eye or lenticil density*

*thickness of 1/8-1/4" consistently*

*Low branch scar count*

*Low wart density (birds and lumps)*

*Non delamination of the layers*

*Straight center line, where seam placement is along the rough side of the bark and allows for gores to overlap*

*Straight trunk*

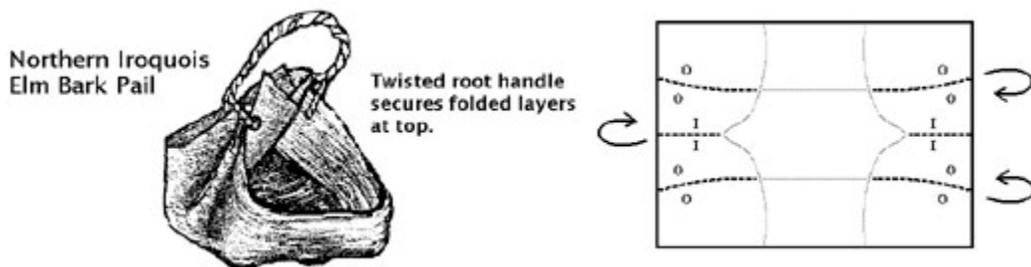
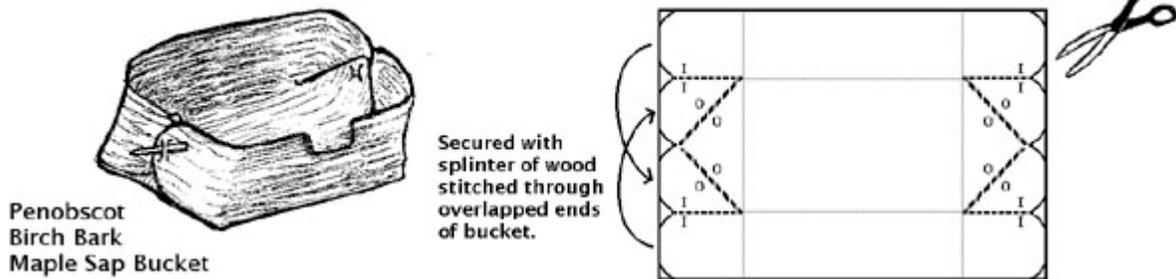
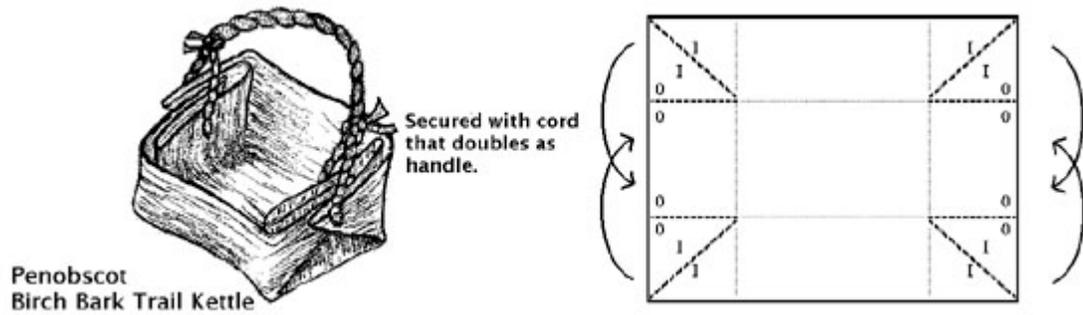
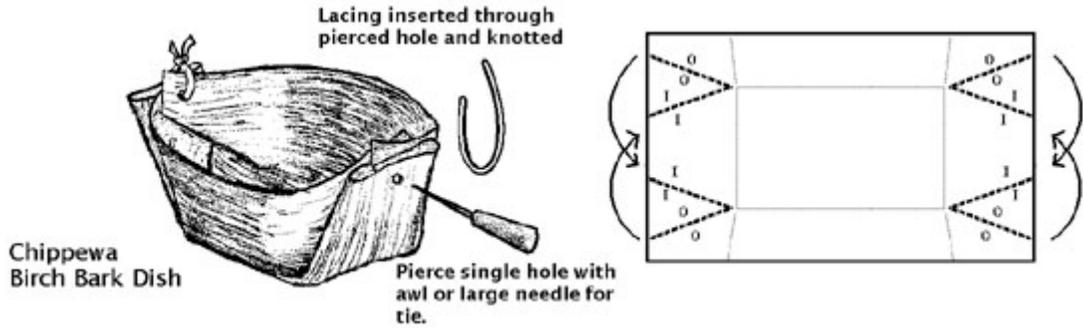
*Bilateral flexibility*

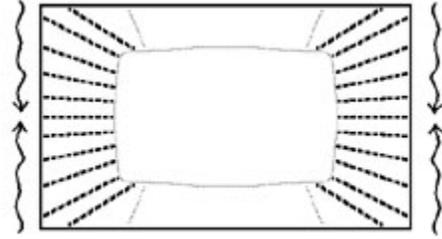
*Lengths of 17-35 feet without a break in the sheet!!*

*Average widths of at least 48 inches at the center of the sheet*

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BIRCHBARK SEAMLESS CONTAINERS

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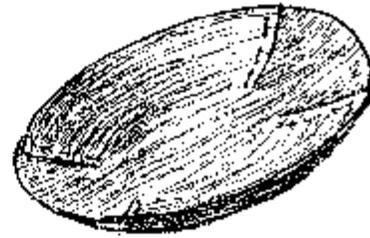
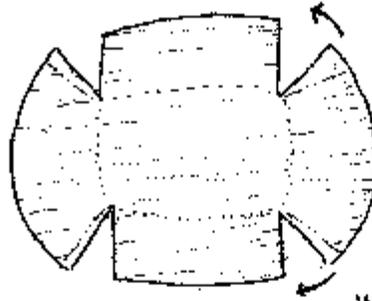




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BIRCHBARK SEWN CONTAINERS

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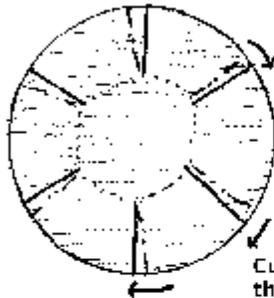
Trays and dishes often had wrapped rims reinforced with sweet grass, white cedar, basket splint, or other carved wood.



Penobscot Winoing Tray

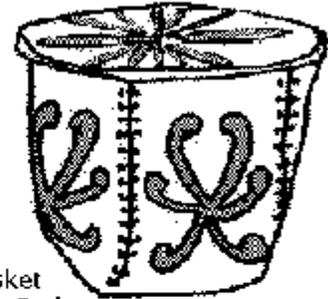
Cut out small triangle at corner, overlap and stitch

**CORNER SEAM**



Penobscot Serving Dish

Cut in even distances from the edge, overlap and stitch



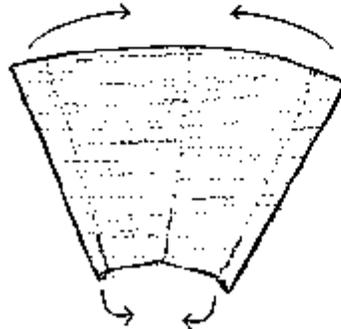
Cree Corner Sewn Basket Etched Design in Bark.

**CONICAL**



Wrap into tight cone and stitch single seam, leaving loop of string out bottom of cone.

Chippewa Maple Sugar Cone String for Hanging.



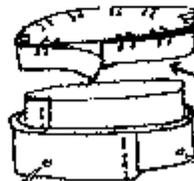
New England Algonquian Berry Picking Basket Single Stitched Seam.

Fold around and overlap edges of cone. Stitch bottom and side seam. Stitch on handle up sides.

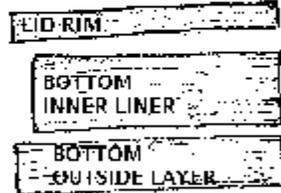


Penobscot Porcupine Quill Decorated Box

Sweet grass rims.



Lid liner (hides quill ends)

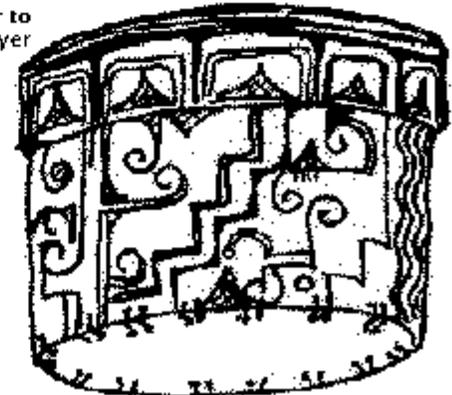


CUT 3 PIECES

2 FOR LID AND 1 FOR BOTTOM

**CYLINDRICAL**

Tiny pegs hold inner liner to outside layer



Penobscot Storage Basket with Painted Design

note: Dark inner bark is always turned to the outside of the container.

<http://www.nativetech.org/brchbark/barksewn.html>

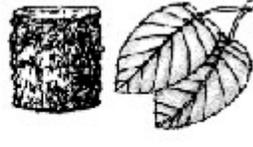
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USES FOR BIRCHBARK



**Paper Birch  
(Betula papyrifera)**



**Gray or Wire Birch  
(Betula populifolia)**



**Sweet or Black Birch  
(Betula Lenta)**

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[Click here to read the  
Ojibway Legend: Winabojo and the Birch Tree.](#)

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For as long as there have been birch trees in New England, Native Americans have recognized the special uses to which the bark of this tree could be put. Native Americans of the Northeastern Forests made wide use of the outer bark of white (or paper) birch for canoe construction and wigwam coverings. Long before the arrival of Europeans and even before the development of ceramic vessels 3000 years ago, bark containers were used to collect, store, cook and consume food or other products. Birch bark was also used to make hunting and fishing gear; musical instruments, decorative fans, and even children's sleds and other toys. Birch bark designs were also used in beadwork. Although few Native Americans in southern New England still make these items from birch bark, more recent decorative arts, such as splint basket decoration, draw upon many patterns developed in birch bark.

Removing the bark from a live birch threatens the health of that tree. If the dark inner bark of the birch tree is damaged this can kill the tree. Harming a tree only for pieces of its bark is not advised. Fortunately because of the remarkable preservative properties of birch bark, it is possible to use the bark from dead or fallen trees to make containers and other items.

There are several types of birch trees and the best type of bark for items from canoes to containers is the paper birch, sometimes called white birch. Do not confuse this bark with that of the gray or wire birch which is often referred to as white birch but is not as suitable for craft work. The bark from the sweet or black birch is rough and completely unsuitable for craft work but is the source of wintergreen, and from which Native Americans brewed a tea high in vitamin C.

Although the bark from fallen trees may be gathered at any time, the best time for gathering live birch bark was spring up until the month of June. This bark is the thickest, retaining the dark brown inner bark which formed from flowing sap in winter. In this season the bark will recoil easily from the tree and almost peels itself. To peel bark sheets from the tree, a vertical slit is made down the trunk. For smaller projects, sections about two feet long can be peeled from around the trunk by prying up using your hands between the dark bark on the interior of the birch sheets and the hard inner wood of the tree.

To store bark for later use, lay out the sheets and gently press them flat. Put weights on top of the bark sheets to prevent them from curling up, as birch has a tendency to do on its own. Fresh bark can be worked without special preparation. If stored bark or bark from fallen trees is used, the bark should be heated by soaking in warm water, or by steaming over a fire. Heat warm the sap retained in birch bark even after several months in storage and will render even old bark pliable and flexible to be cut and bent. If the bark is very thick, several layers of white paper may be peeled away to make the remaining sheet easier to cut or fold.

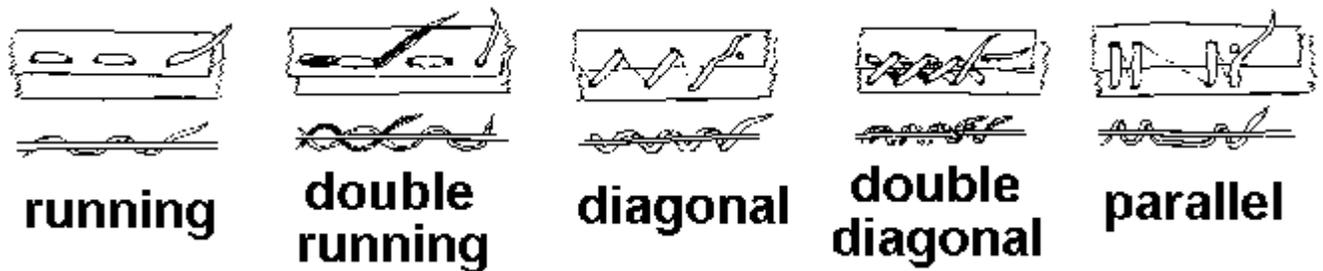
Paper patterns are ideal to practice with. To assure a symmetrical pattern and to practice the folding methods, cut a pattern from heavy paper and "stitch" the item with a modern stapler. Paper patterns can be made larger or smaller, scaled to fit the available piece of bark.

To ensure straight, even folds, it may be necessary to score along the fold with a dulled point that creases but does not cut the bark on the inside of the container.

Holes for stitching or lacing may be made by piercing the layers of bark with an awl or large needle with a triangular point. Holes made along seams where bark overlaps may be temporarily held in place using small wooden pegs or splinters of wood. Clothes pins and large paper clips are also useful in holding rims in place as they are stitched.

Seam stitching and rim wrapping are accomplished using lacing. Modern lacing may be heavy waxed nylon thread strung through a needle. Using natural material available to Native Americans, lacing would be made of basswood or dogbane cord, of thin strips of inner cedar bark, or from stripped pieces of black spruce roots. Natural lacing should be soaked in warm water before use to make it more flexible.

Stitching together seams:



Rims for containers are not only decorative, but also add reinforcement to an otherwise brittle area on birch bark vessels. Rims may be solid wood like white cedar, split spruce root, or basketry splints. Rims may also be made using a skinny bundle of plant material like sweetgrass. Rims are attached to a vessel by wrapping lacing around the rim material through evenly spaced holes pierced in the bark at the mouth of a vessel. Holes can be patched with a warmed mixture of white pine pitch and charcoal.

Wrapping the reinforced rim:



## whip stitch variations





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Follow these links to see varieties and patterns of Birchbark containers:

[Birchbark Seamless Containers](#)

[Birchbark Sewn Containers](#)

[Birchbark Sewn Makak Containers](#)

[Birchbark Utensils](#)

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The durability and preservative properties of birchbark endowed this material with legendary properties of protection, and earned the bark a place in oral tradition at the center of many Native American myths from the Great Lakes and northern New England regions. These weatherproof properties made birchbark, as well as bark of elm and spruce, the perfect material for Native Americans to use not only for panels to cover houses and to build canoes to travel water, but also to contain and store food and drink.

Makak's were specialized containers made by several northern tribes to store maple sugar. Traditionally, containers and spoons were stitched or laced together with split spruce roots or with strips of inner bark of the basswood tree. Rims were often reinforced with wood splints or sweet grass, and handles were constructed with willow or other branches.

More simple utensils included trail-side dippers or ladles to be left hanging near a spring for the thirsty traveler

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BIRCHBARK CANOES

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[See a cut-away view of a Traditional Full-Size Birchbark Canoe](#)

[See how to make a miniature birchbark canoe model.](#)

[See how to make a birchpaper canoe edged with sweetgrass.](#)

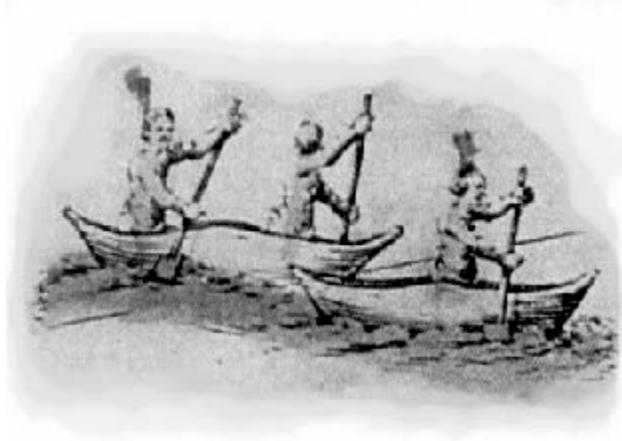
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Birchbark canoes are most commonly associated with Native Americans of northern New England regions, but were probably produced where ever the birch tree grew to sufficient diameter. Early European written records indicate that birchbark canoes were built in all sizes, made small for a single person or fashioned in an incredible size to carry an amazing 50 paddlers. These canoes ranged in length between 10 and 24 feet.

Larger canoes required an amazing amount of work, although all the materials were readily available from the surroundings. The task involves: gathering the bark and root lashings, carving the manboards and laminating the prowpieces, bending and lashing the gunwales and inserting the hand-carved thwarts, stitching up the seams and gores, ripping and laying the cedar planking, bending and inserting the 30 or

more ribs, and caulking the seams and holes with pine gum, and finally decorating by etching or painting the bark. *Much more* than a casual day's work!

Smaller birchbark or spruce bark canoes for hunting or warring parties could be made more expediently, being built for only one or two men. There was no planking or elaborate prowpiece in small canoes. The small canoes were not as durable nor as intricate as larger bark canoes, but with proper storage the little canoes could last five years or longer. Bark canoes could be stored in two ways: either kept from excessive light and moisture (elevated upside-down in the shade under a cover), or completely submerged in a lake or pond with rocks used as weights.



Canoes off Block Island, RI in 1635.  
Detail from *Nova Belgica et Anglina Nova* by Willem J. Blaeu, Amsterdam.

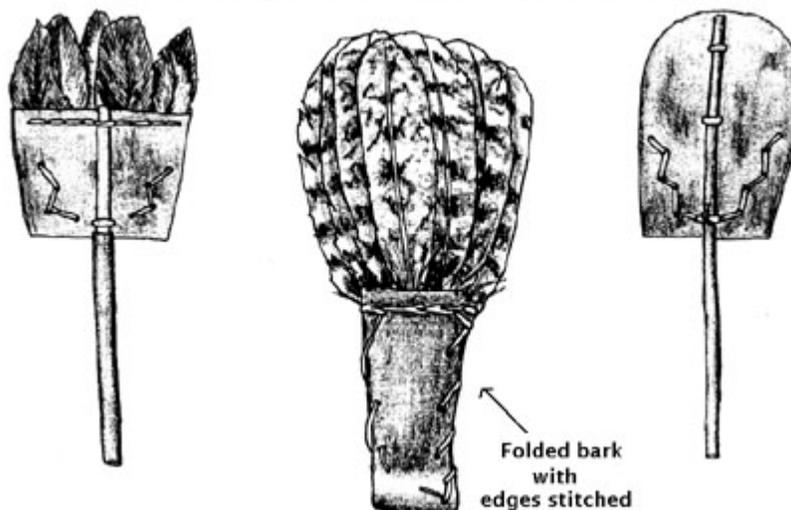
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BIRCHBARK FANS

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[See Instructions for Full-size Birchbark Fans](#)  
[See Instructions for Miniature Birchbark Fans](#)

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### CHIPPEWA MEN'S DECORATIVE FANS



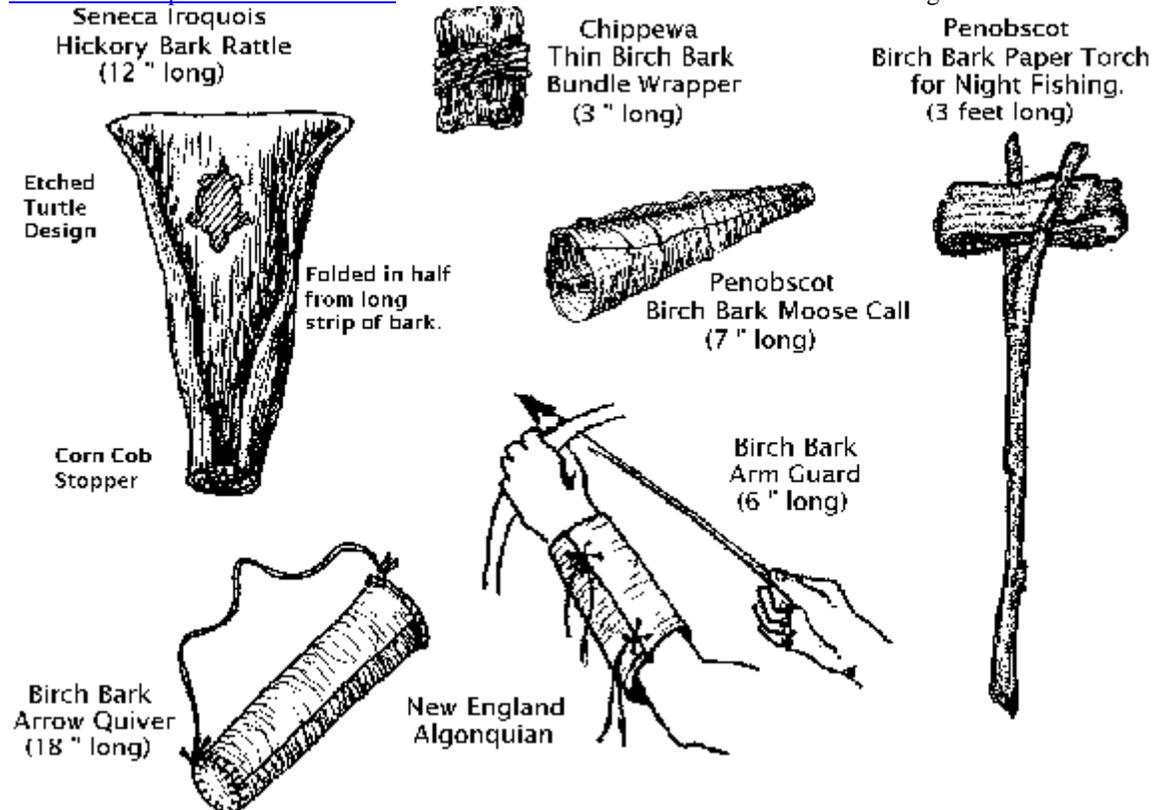
Native Americans use fans for many purposes. Some uses for fans are merely practical: fans provide a deserving cool breeze; fans can motivate the flames of a diminishing fire; as well as protect eyes from the

harsh glare and heat of the flames. Some old fans were even used in house cleaning. However, many fans had social and spiritual uses as well. Both men and women of most Native American tribes use fans for dancing. Some fans are passed down from one dance leader to the next. Feathers or markings used to decorate the fans can also display a man's leadership status or indicate the family to which he belongs. Fans are also used in medicine ceremonies and purifying rituals.

When desired, Native Americans in the Northeast and Great Lakes regions could quickly make birchbark fans from materials easily found in the woods. Several styles of fans are made from birchbark. Birchbark sheets could be folded in half or separate flat pieces could be slipped into a split stick handle. Stitched together with split spruce roots or with strips of inner bark of the basswood tree, these fans often incorporated the feathers of turkeys, owls, or other large birds. The fans are made to show the sturdy dark inner bark of the birch tree. This tough, dark surface can be ornamented with designs etched through to expose the lighter, more papery layers of bark. Ornamented fans among the Great Lakes Chippewa were usually reserved for men to carry, while women used more simple forms.

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OTHER ITEMS MADE FROM BIRCHBARK

In the northern reaches of the Eastern Forests, birchbark was an essential resource for Native American survival. Besides canoes, containers, utensils and fans, there are many less commonly known items made from birchbark. For a rattle, the bark is folded over, filled with pebbles or seeds, wrapped with a string and plugged with a corn cob stopper. A rigid sheet of bark can be peeled to the desired thickness, torch tinder and especially for wrapping and preserving food or medicine in packets. In addition to animal calls, weapons accessories such as quivers and archers arm guards are also made from birchbark. Penobscot made a [birchbark ball and triangle game](#) for their children. Ojibway (Chippewa) women made beautiful [birchbark transparencies and cutouts](#) both for amusement and for use in beadwork design.



*References cited in NativeTech's [Birchbark articles](#):*

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[Order a used copy of this Out of Print book](#)

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Stackpole Books 1-800-READ-NOW for ordering information.

... Written and experienced by a friend of mine who lives in South Windsor, CT. you can call the publisher: has photographs and line drawings depicting 'A Stone Age quest in a birch bark canoe built with tools of stone and bone' with which he 'completed an arduous canoe trip up the Connecticut River, against both wind and current'. I know that everything Jim does is not only perfect and perfectly functional - but is also done \*completely\* using traditional tools and techniques. He built this canoe over 15 years ago and it still floats as well as it did he day it was made!

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[Order this book through barnesandnoble.com](http://www.barnesandnoble.com)

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Pequot Press: Chester, CT.  
... has simple instructions for making an eastern Woodlands birchbark canoe  
[Order this book through barnesandnoble.com](http://www.barnesandnoble.com)

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*Other Books relating to Birchbark you can buy on-line through [barnesandnoble.com](http://www.barnesandnoble.com):*

Massie, Larry B.  
[Birchbark Belles: Women on the Michigan Frontier](http://www.barnesandnoble.com)

Gidmark, David  
[Birchbark Canoe: The story of an apprenticeship with the Indians](http://www.barnesandnoble.com)

Kent, Timothy J.  
[Birchbark Canoes of the Fur Trade](http://www.barnesandnoble.com)

Erdrich, Louise  
[The Birchbark House](http://www.barnesandnoble.com)

### **BIRCH** *Betula papyrifera*

#### **Description:** Plant

Deciduous, from low shrub to tree size; white bark which peels laterally, paper thin; leaves oval to heart-shaped, with fine-toothed edges, sharp tips; catkins, sometimes long and drooping.

#### **Habitat:**

From dry slopes to tundra to peat bogs.

#### **Uses:**

Athabascans traditionally have used birch in numerous ways. The wood is used to make snowshoes, sleds and their runners, spoons and dishes. The bark was wrapped around fractures, rolled up into a tube for calling moose, and used to make containers (baskets) for storage, gathering, drinking cups, baby cradles and canoes. Birch sap is food as well as a medicine for people in Interior Alaska. Birch sap is suitable for drinking directly from the tree, as a beverage and spring tonic. It is used on boils and sores as a medicine. Sap can also be rendered into syrup, or fermented into wine. A decoction of the leaves is used as a diuretic, is said to break kidney stones, and is gargled for sore mouths and canker sores. May be used externally in antiseptic ointments for skin diseases, and for stiff muscles and joints. Birch leaf is a gentle sedative. It is a "blood purifier". Birch bark makes brown dye for skins. It is used for tannin. Leaves of *B. nana* are said to dye a better yellow than common birch. To obtain a strongly flavored wintergreen tea, pour boiling water over a large quantity of twigs and/or shredded bark and allow to stand in a covered container for several days, then strain and reheat. Since the tea is derived from bark and twigs, it is available throughout the year.

The bark and twigs of sweet and yellow birches contain aromatic oil, methyl salicylate, which is almost identical, to the oil from wintergreen (*Gaultheria procumbens*). Wintergreen flavoring, used in candies, gums, toothpastes and medicines, when not synthetic, is usually derived from birch (Historical note: methyl salicylate was used in the preparation of aspirin. Until 1874, aspirin was prepared by hydrolysis of the oils from sweet birch bark or wintergreen leaves.). Birch bark baskets are premium gift items in Alaska.

### **Special Harvest or Processing Comments:**

Leaves should be gathered in spring. Care must be taken when harvesting sap, not to over tap the tree, and when gathering bark, it is important to take only the outer, white-paper bark. If the under layer of bark is stripped, or girdled, the tree will die. Also, harvesting bark disfigures the tree, and so should be done in more remote locations. For commercial purposes, a stand of birch should be identified and designated for sustained yield. The actual concentrations of methyl salicylate in Alaskan birch trees needs to be investigated. Birch bark and twigs must not be dried by heat above 80°F, as heat will drive off the wintergreen essence.

<http://www.alaskaherbtea.com/Foraging/birch.htm>

# **NATIVE AMERICANS**

## **Native Housing**



Native American homes were designed so that they could be moved easily. The most common home was called a wigwam. It was a covered wooden frame shaped like a cone. The coverings were carried from location to location. Wigwams usually housed ten to twelve people.

When a new wigwam was needed, women often worked together to build it. This was an important task and one that took skill and knowledge. Some women looked for suitable poles to build the frame.



## **Building A Wigwam**



The women cut five to ten long spruce poles. They found fir branches for the floor. Usually one woman oversaw everything. They took the spruce poles and tied them together at the top with lengths of spruce root. Then they stood the poles up and spread them apart at the bottom until they formed a cone shape. They bent a sapling into a hoop and tied it to the inside frame near the top. The hoop kept the poles from slipping.



They covered the framework of the wigwam with large sheets of birch bark. The sheets were sewn to the frame using spruce root. Holes were punched through the bark using a bone awl. They kept the birch bark warm and wet so it did not tear, while it is being sewn.





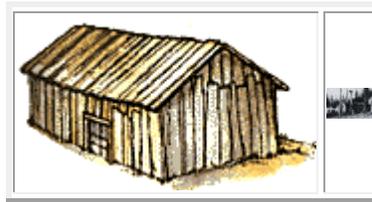
Starting at the bottom, they overlapped the sheets of bark to keep out the wind and rain. They anchored the bark by laying poles against the outside of the wigwam. The Native Americans hung a thick hide over the entrance. A rock fireplace stood in the center of the wigwam. It provided heat, light and a place to cook. The wigwam is left open at the peak so smoke can escape.



Wigwams are used as shelter for visitors during visits to the reserve, especially during special ceremonies such as pow wow time and the international traditional healing conferences.

## INDIAN HOMES

Each culture area had their own type of home. Indians used the natural resources around them to make their homes. Natural resources are the things found in nature that people use. For instance, if they lived in or near the forests, they would use wood for their homes. This is why different cultures of Indians had different types of homes. Below are different types of Indian homes and descriptions of each.



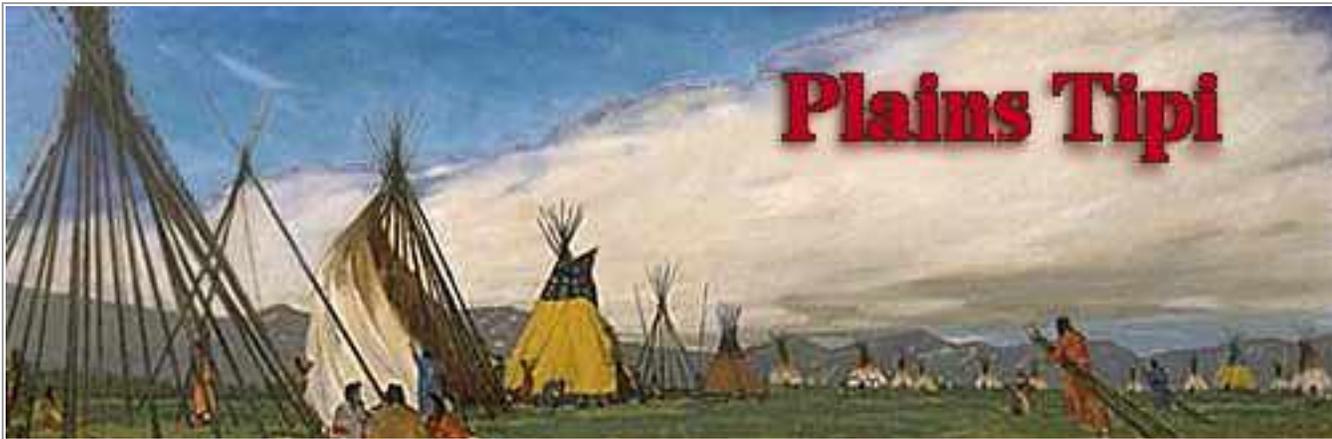
The Indians in the Northwest Culture lived in wooden lodges. These buildings were rectangular buildings that each held several families. These buildings were built using a wooden frame. The frame was then covered with pieces of bark sewn together or wooden planks, or boards. The inside of the building had a pit in the middle which had a fire in it to be used for cooking. The families would share the fireplace in the middle. Outside of each wooden lodge was a totem pole. The totem pole was considered a very important part of the lodge. Some lodges even had totem poles decorated on the inside beams of their homes. Each lodge had a different totem pole.



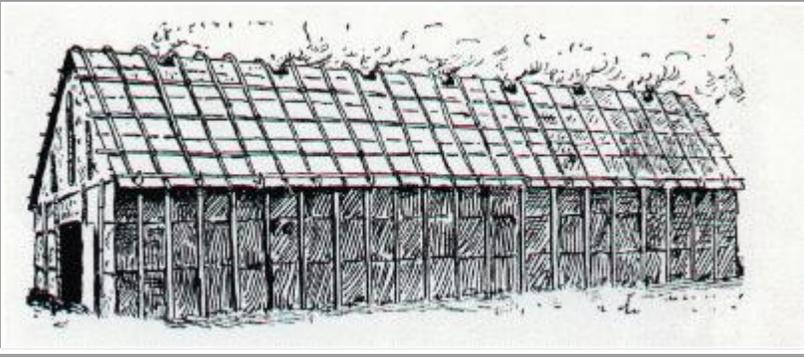
The Indians of the California-Intermountain Culture lived in circular homes of arched poles covered with brush and mat. This type of home was used for a short time when the Indians were hunting. This type of home was called a wickiup or thatch home.



The Indians of the Southwest Culture lived in apartment-style buildings. These buildings were made of adobe, clay and vegetables dried in the sun. This type of home was especially good for areas that had very little rainfall and a hot desert climate. Many families lived in each apartment. As families grew, rooms were added on top of the rooms that were already there.



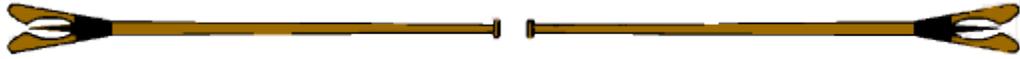
The teepee was the home of the Plains Indians. The frame of the teepee was made of long wooden poles pointed together and fastened at the top. The bottoms were spread out to form a circle. This was covered with a tent of animal skins which fastened to the ground. These Indians would often paint decorations on the outside of the teepee. The Plains Indians would have a fireplace inside the teepee. This form of home could quickly be taken down when the Plains Indians moved to follow the buffalo.



The homes of the Eastern Woodland Indians were called longhouses. Like the homes of the Northwest Culture, these were rectangular homes with barrel shaped roofs. As their name states, these homes were very long. The outsides of these homes were made of wooden frames with bark sewn together to cover them. Families shared these homes also. The insides had a long hallway with rooms for each family on each side. There were low platforms for the families to sleep on, and higher platforms for storing goods, baskets, and pelts.



Birch bark Canoe



Birch bark canoes were used for carrying the Native Americans and their loads in the summer months. Its high ends and sides which curved upward toward the center, kept it from taking on water in rough seas.

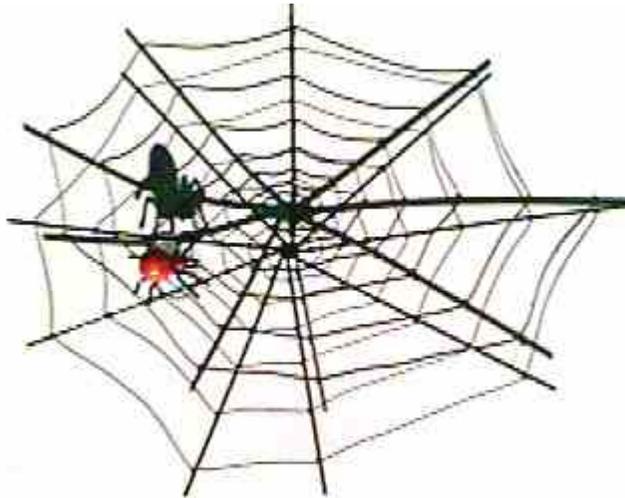


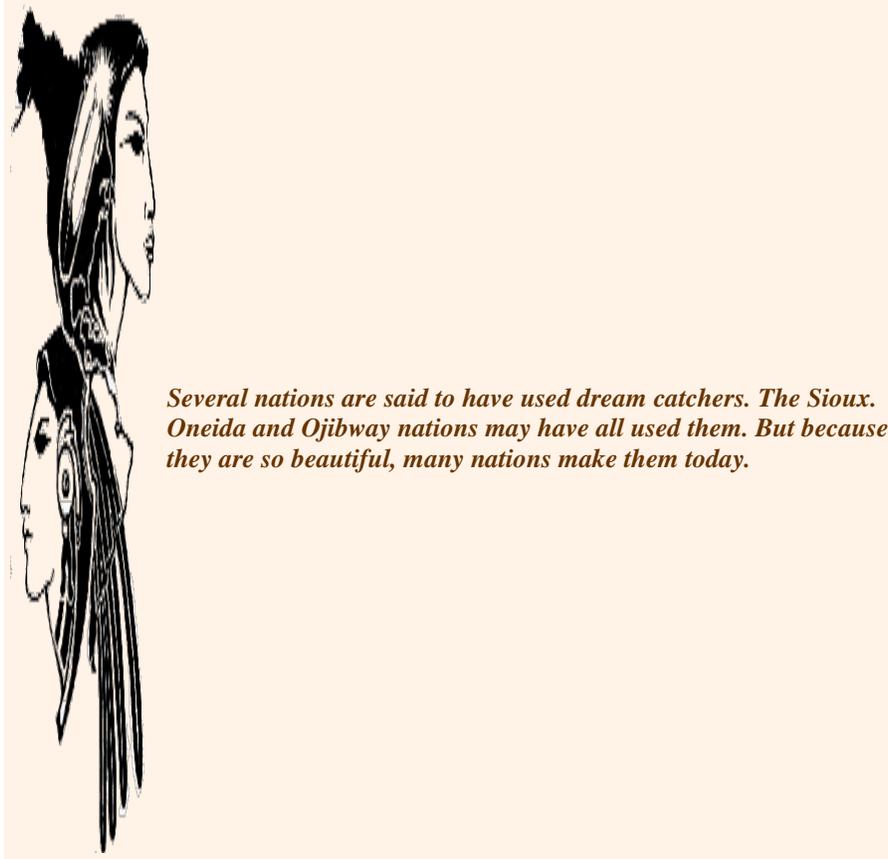
The birch bark canoe was graceful and practical. They were light enough to carry easily but strong enough to transport a family with its possessions.



A sacred pipe is often referred to as the "peace pipe". It is sacred and often used in the sweat lodge ceremonies. The pipe is broken into two pieces, symbolizing a man and a woman. When these pieces are joined, to symbolize unity, it becomes a sacred part of the ceremony.

According to legend, dream catchers were given to Natives by the spirit of spider.





*Several nations are said to have used dream catchers. The Sioux. Oneida and Ojibway nations may have all used them. But because they are so beautiful, many nations make them today.*

Materials needed to make a dream catcher - a 6" wire hoop - roll of brown tape - artificial sinew - assorted feathers - beads

Indian cultures



Many different Indian groups lived in North America. Each group had its own language and customs. A custom is the special way a group of people does something. Several groups of Indians often shared the same culture. A culture is the way of life of a group of people. Every group of people, including yours, has a culture. The language you speak, the clothes you wear, the food you eat, and the religion you believe in are all part of your culture. Indian groups that shared the same culture had the same way of finding food and building houses. They depended on the same natural resources and used them in the same way. For example, the Plains Indians shared the same land, dressed the same way, spoke the same language, hunted for food, and practiced religion in the same way. That is why they are considered to be their own culture group.

Culture	Homes	Food	Clothing	Interesting Facts
<a href="#">Northwest</a>	<a href="#">wooden lodges</a>	<a href="#">salmon and other fish</a>	made of tree bark	<a href="#">totem poles; potlatch ceremony</a>
<a href="#">California-Intermountain</a>	<a href="#">wickiups</a>	<a href="#">acorns; fish and shellfish</a>	made of animal skins	basket-making

<a href="#">Culture</a>				
<a href="#">Southwest</a>	<a href="#">adobe apartment buildings</a>	<a href="#">corn; beans, squash</a>	made of cotton fibers	pottery and basket-making; <a href="#">Kachina dolls</a>
<a href="#">Plains</a>	<a href="#">tepees</a>	<a href="#">buffalo</a>	made of <a href="#">buffalo hides</a>	<a href="#">war bonnets</a>
<a href="#">Eastern Woodland</a>	<a href="#">longhouses; wigwams</a>	<a href="#">deer; rabbit; squirrel; berries</a>	made from hides of small animals	la crosse; <a href="#">wampum</a> ; weaving



Fishing was very important to this culture of Indians. The most important time of the year was the spring. This is when the "salmon run" began. As the salmon left the ocean and began their swim up stream to lay eggs, men and women from all over the area gathered along the riverbanks to trap the salmon.



The first salmon caught was a special salmon. It was taken to the person in charge of the ceremony. It was pointed with its head a certain way to tell the other salmon which way to travel. They believed if they did not do this, the salmon would not return the next year. The Indians would put a wooden trap with small holes across the stream or river. This would allow the water to flow through, but would trap the salmon. Then they would spear the salmon. The women had the job of cutting it up and drying it. The women would then remove the head, tails, and fins, and slit the belly open. They would then gut the fish with a bone knife and hang the fish on a drying frame.

The oil from the salmon was very important. The salmon would be left to rot for several days. Then it was thrown into a canoe half buried in the sand. The canoe was filled half full with water and heated rocks were thrown into the water in the canoe. When the water was boiling, the oil from the salmon would float on top of the water. The women would then skim it off and let it cool. This oil was used for cooking, seasoning, and medicine.



#### Indian-based styles

Housing styles of aboriginal peoples, everywhere, reflect local traditions, local climatic conditions, and local building materials. The building styles of the Aboriginal Americans are no exception. They are reflections of several cultures that have dealt with savannah, plains, forested areas, wet and arid environments. These different styles developed over 12-20 thousand years, and have excelled at providing simple and efficient housing. Many would call these styles "organic architecture" in that they spring from

the Earth and are a part of it. This may be true in some cases, but most reflect the need of Humankind to lessen the perceived restrictions imposed by the Earth and the local environment.

Aboriginal Americans, otherwise known as Indians, developed seven main styles of the house: the **Wickiup**; the **Wigwam**; the **Longhouse**; the **Tipi**; the **Hogan**; the **Dugout**; and the **Pueblo**. Several of these are enhanced or extended versions of another style, but the degree of development has led them to be considered as separate styles.

The main form, a light weight, portable version is called a "**wickiup**" and the permanent, much more solidly built, version is called a "**wigwam**". Following are a few graphics depicting these two styles from different Indian groups around the country. You can see the differences easily.



Here we see the framework for a wickiup. Simple, easy to put up and take down, this was mostly used by the Indian groups as seasonal shelters, as they hunted away from the central village. Over the frame work, they placed skins, or thatching, and they often were used as a religious retreat.



Tule Tribe wickiup- 1914 central California



Sac-Fox tribe wickiup- 1916 Minnes

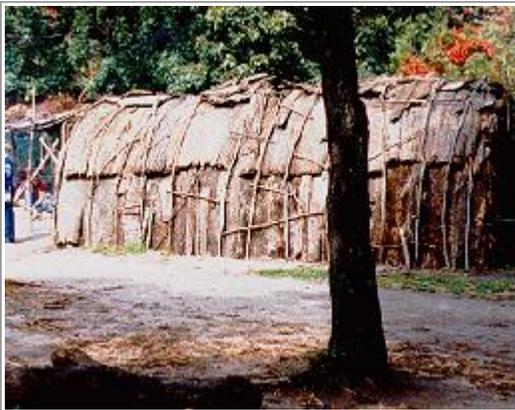


This picture is the type of wigwam the Pilgrims would have seen at the Hobbamock Indian village

This Ioway Wigwam is larger and is typical for family living.

Please note that the shape is round-ish while European styles are almost always rectilinear

Indians come closest to the rectilinear form in the design of the **Longhouse**, really just an elongation of the Wigwam. This one belongs to the Hobbamock tribe, and you can see the differences. The Pilgrims built several in the early years of colonization, but as wood, boards and planks, became more available, the colonists reverted to the styles they were used to in Europe.



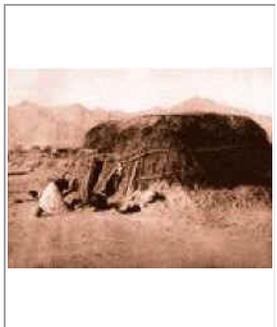
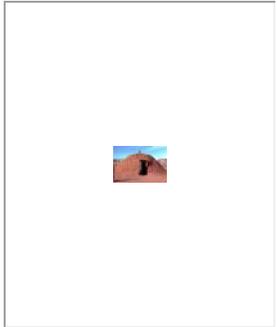
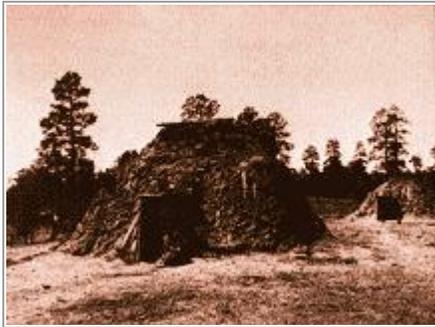
Exterior view



Interior view of Longhouse

We have seen the wickiup, the wigwam, and the Longhouse styles. The photographs below are the "wigwam" style of the western Indian, and some of the Plains Indians. These styles are known by the general term of the **Hogan** and almost always are embedded into the earth to an extent. Almost all tribes west of the Mississippi River used these forms.

Following are graphics that depict the **Hogan**-style Indian housing.

		
<p>An Apache "Pi" Hogan</p>	<p>A Pima "Ki" Hogan</p>	<p>An Arikara Medicine lodge</p>
		
<p>A Cheyenne "sod" Hogan</p>	<p>A Navaho spirit "Ki"</p>	<p>A Navaho village Hogan</p>

Most of us recognize the "**Tipi**" from TV, the movies, or from children's literature. They are dramatically different from the other styles, yet they evolved from the wickiup form. This evolution stems from the difference of available materials. Whereas bushes and small trees lend themselves to the wickiup and wigwam designs, the Plains Indians had taller, and heavier trees to work with, and almost no bushes.

It is important to remember that the Plains Indians life style was driven by the migrating Buffalo, not the daily hunting regime of the other, Eastern tribes. It was a simple jump from a cooking tripod to a Tipi. I'd like to say that the Tipi was solely an American invention, but it's not. It has been found on just about every continent. Take a look at the pictures !



A modern children's Tipi



A summer Tipi from Maine



A Swedish Tipi from the tribal leg

Now remember, these buildings are all built of Adobe blocks. Just mix up the dirt and the water, plop the mud into a wooden form, and let it dry. It is that simple!

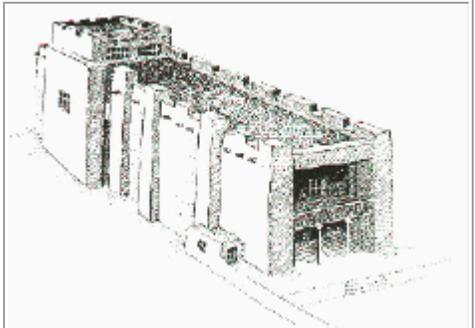
Note that in the below photographs, the El Paso house is made of blocks. The Pueblo is made of poured Adobe on the ground floor-almost 4 feet thick- and blocks on the next two floors. The Zia estancia addition was/is almost all poured Adobe. Note those thick walls on the drawing !



An Adobe house in El Paso, Texas. circa 1890.



A Pueblo in New Mexico



Line drawing of an 1767, Zia Pueblo estancia addition.

The next flavor is "**Rammed Earth**". This system works by putting slightly moistened, loose dirt, into a form, and then tamping, or pounding, it to form an extremely strong earthen wall. There are rammed earth structures in Arizona that are over a thousand years old.

**Rammed Earth**, some times called "tamped earth," doesn't need as much water as Adobe blocks. Just barely wet the dirt and pour it into the form. Then take a tamping, or pounding, device and pound it together. Materials are CHEAP, but the labor very heavy unless you use a pneumatic hammer.

Below are some rammed earth buildings



Rammed Earth house in Napa, California

The Casa Grande Ruins: An Arizona example of **Rammed Earth** construction about a thousand years old.

Here the 18" walls are complete, waiting for the roof and windows.

<http://www.nativeamericans.com/Wigwams.htm>



## WHITE BIRCH

*Betula papyrifera*

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For inquiries contact [Joan Conway Hare](#), Instructor, Division of Continuing Education, University of Massachusetts Amherst

The graceful white birch, often planted in yards as an ornamental tree, is native to the Connecticut River Valley. This species grows wild throughout northern North America, and can be found in woods, most easily identified by its pure white bark that peels off the trunk in thin, paper-like layers. Another of this plant's common names, paper birch, and its scientific name, *Betula papyrifera*, which means paper-bearing birch, reflect the paper-like nature of the tree's outer bark. Native Americans of the Eastern Woodlands made extensive use of the white birch. All parts of the plant had practical uses, but the bark was by far the most important raw material. Birch bark played a key role in the manufacture of canoes for transportation, wigwams for shelter, and a host of useful implements made by the many tribes and nations of the Northeast.



THIS STURDY ABENAKI BIRCH BARK WIGWAM, OF RECENT CONSTRUCTION, HAS SURVIVED A NUMBER OF NEW ENGLAND WINTERS. THE WIGWAM STANDS ON A PARCEL OF LAND IN INTERVALE, NEW HAMPSHIRE, THAT WAS ONCE USED AS A SUMMER HOME BY ABENAKI AND SOKOKI INDIANS. THE SITE IS NOW LISTED IN THE NATIONAL REGISTER OF HISTORIC PLACES.

Canoe birch is yet another common name for *Betula papyrifera*. The birch bark canoe was a marvel!



THIS CANOE IS ON DISPLAY AT THE OLD TOWN CANOE COMPANY, OLD TOWN, MAINE. IT IS BELIEVED TO BE AT LEAST 100 YEARS OLD.

Lightweight and easily portable, a canoe made of birch bark could still carry heavy loads. The canoes were made in many sizes, depending on how they were to be used. A small hunting canoe might be only nine or ten feet long, and carry one or two men. A canoe meant for use in the open ocean would be as long as twenty feet or more, and would carry a number of paddlers. An average-sized canoe was light enough to be carried by one person, and could be used in small rivers and streams as well as in the larger rivers.

Bark for canoe construction was best gathered during a winter thaw or just when the sap started to flow in the spring. A tree of the desired size, with bark up to nine layers thick, was felled and trimmed, and the bark was cut and stripped off in one piece. The wooden frame of the canoe was of northern white cedar. The birch bark, with the brown, inner layer of the bark turned to the outside, formed the skin. Seams were sewn with split roots of spruce or tamarack, then waterproofed with spruce resin. Birch bark canoes made by northern tribes were traded to tribes from more southern regions, where white birch was scarce, and later to European colonists. Our modern canvas and fiberglass canoes are patterned after the Native American birch bark canoe.

Smaller pieces of birch bark were used in making dwellings called wigwams. Wigwams were of two types. The dome-shaped wigwam had a framework of bent saplings that was covered with overlapping layers of birch bark.



**OVERLAPPING LAYERS OF WHITE BIRCH BARK KEEP THE WIGWAM SNUG AND WATERTIGHT. THE BARK IS PLACED ON THE FRAME IN THE SAME ORIENTATION IT HAD ON THE TREE, i.e., WITH THE WHITE SIDE OF THE BARK ON THE OUTSIDE AND THE DARK, INNER BARK FACING TOWARD THE CENTER OF THE WIGWAM.**

The conical wigwam, similar in shape to the tipi (or teepee) of western tribes, had a framework of slender upright poles placed to form the conical shape,



and covered by rolls of birch bark that had been sewn in overlapping layers to form a transportable, but watertight covering.



Woodlands Indians used birch bark to make rattles, torches, moose calls and many types of containers. Lightweight and flexible, the bark could be cut and bent to make containers of any desired shape. Trays, dishes, storage boxes, buckets and cooking pots were made of birch bark. The edges of the container were sewn together with plant fibers. If the edges were sealed with pine pitch or spruce resin, the container could be used to carry water or hung over a fire to cook a soup or stew. Birch bark cutouts or stencils often were used to decorate containers, and also provided patterns for Native American beadwork. The white outer bark layer made a good substitute for the paper that it resembles, and drawings could be made on it with a piece of charcoal. Birch bark burns easily. It was shredded and used for tinder to start campfires, folded and stuck in the cleft of a long pole to

illuminate the water depths for night spear fishing, and rolled into cylinders used as long-burning torches to light a path through the woods.

Live white birch trees served the Woodlands tribes in other ways. The tree could be tapped in the same manner as a maple. The sap thus obtained was drunk as a beverage and, when boiled down, was used as the basis for teas, vinegar, and sugar to sweeten medicines. In times of famine, the inner bark could be eaten as food. The wood provided building material and fuel. In previous centuries, the white birch was certainly of major importance to the way of life of many Native Americans, particularly that of the Algonquian peoples of northern New England.

If you are interested in learning more about plants used by Native Americans in New England, a 3-credit course, **Ethnobotany of Northeast American Indians**, is being offered this summer at the University of Massachusetts Amherst. For more information about the course or to register for the course, contact Joan Conway Hare, Biology Department, University of Massachusetts, Amherst, MA 01003, or call her at (413) 253-2621 or e-mail her at vanhare@aol.com

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