

WOODLOT MANAGEMENT HOME STUDY MODULE

MODULE 13:

Non Timber Forest Products: GROWING OPPORTUNITIES




NOVA SCOTIA

Natural Resources

MANUAL HSC 2008-1

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Front Cover Images clockwise beginning at top right: Ash basket; Birch sap; Moose; Chanterelle mushrooms; Cranberries. Main image: Sugar maple stand

TABLE OF CONTENTS

LESSON 1: 1
Introduction: What are NTFPs?

LESSON 2: 5
NTFPs: A Natural History

QUIZ 1 8

LESSON 3: 9
The Excitement of the Hunt: Wildcrafting

LESSON 4: 11
Nova Scotia’s Wild Edibles: A Tasty Choice

QUIZ 2 18

LESSON 5: 19
Natural Health from Woodlots

QUIZ 3 24

LESSON 6: 25
A Green Christmas, Naturally

QUIZ 4 28

LESSON 7: 29
Other NTFPs

LESSON 8: 33
Know Your Markets - Before You Harvest!

QUIZ 5 35

GLOSSARY 36

REFERENCES 37

LESSON 1 Introduction

The forests of Nova Scotia have been managed for resources for many years. Historically, most of the products harvested from our forests were logs and pulpwood, which have been extensively inventoried and researched. Wildlife, too, has been a harvested forest resource.



(Artists conk; ash basket)



Increasingly however, forests are being considered useful for more than timber products. Clean air and water, crucial for our planet's health, originate in forests. Forests are also important sources of **biodiversity** and support populations of plants, birds, mammals, reptiles, amphibians, fungi, lichens, bacteria and other forms of life.

Forests have **aesthetic** and spiritual values, too. Many people use forests for recreation and for “getting away from it all.”



(Getting away from it all)

Approximately 50 percent of the forested land area in Nova Scotia is owned by small private woodlot owners. Together, they contribute nearly 65 percent of the provincial wood supply to the forest industry each year. Clearly, private woodlots are important for the timber they produce. But what about the other values? Is there any potential for adding value to your woodlot with non timber forest products?



(Striped maple suet birdfeeder)

WHAT ARE NON TIMBER FOREST PRODUCTS (NTFPS) ?

The next time you stroll through your woodlot, keep your eyes open for the small details that many people miss. A few mushrooms here, a clump of red-berried shrubs there. Perhaps a red maple stump sprouting a dozen thumb-size stems, or cones littering the base of a majestic white pine tree. A ruffed grouse drumming in the distance. Wildflowers sprinkled at your feet.

What do you think of when non timber forest products (**NTFPs**) are mentioned? Berries? Mushrooms? Medicinal plants? Walking sticks? The peace and tranquillity of the forest?

If you said that all these things are non timber forest products, you'd be right! They are all around you as you stroll through your woodlot. They are found in trees, shrubs, small plants, on the ground and in the soil. And for enterprising woodlot owners, they can be worth money.

A commonly accepted definition of non timber forest products is *any goods derived from forest plants or animals, other than timber or firewood*. This definition encompasses a great number of possible products!



(Tri-spray on brick)

The list of NTFPs that are present in Nova Scotia's woodlands is a long one. However, NTFPs are often overlooked by woodlot owners, sometimes because they do not know what they have or what to look for. For the most part, woodlot owners usually think only of traditional wood products such as sawlogs, studwood, pulpwood and fuelwood.



StockPhoto

(Pinecone wreath)

Commercial forest products are worth an estimated \$1.2 billion each year to the economy of Nova Scotia. Our forest industry is built around sawmills, pulp mills, fuelwood sales and forest management activities such as *silviculture*. Many people are surprised to learn the revenue generated by Nova Scotia's forest industry is very close to that of the tourism industry.



(Wood duck)

Attend any one of dozens of community markets across the province however, and you'll find that the forest has much more to offer than

traditional timber products. You may see folks selling wreaths made from twigs and vines, vendors featuring containers of maple or birch syrup, and gourmet food dealers offering golden chanterelle mushrooms. Other booths may display elaborately carved walking sticks, polished birdseye maple bowls, or blueberry products. You'll soon realize that the nature of forest products is limited only by the imagination!

In the big picture of the forest industry, however, NTFPs are nearly invisible. There is very little data available on the value of the NTFP industry in Nova Scotia. Even though they do not generate nearly the revenue of the commercial forest industry, the value of NTFPs can be significant on a local scale. At a time when the forest industry in Canada is changing due to unpredictable global markets, fluctuating dollar values and imported timber products, NTFPs are becoming increasingly important.



(Collecting bunchberries)

Besides their economic importance, NTFPs hold important cultural and social values. For example, First Nations peoples in Nova Scotia have been living in harmony with the land for thousands of years. With knowledge accumulated over many generations, the Mik'maq have been using forest materials for food, medicine, shelter and ceremony. Traditionally, everything that the Mik'maq required for living came from the land and water.



(Baskets)

In communities across the province, maple and blueberry festivals provide important social occasions. They bring local people together to work and interact with one another, while attracting folks “from away” to experience the flavour of the local culture. In some areas, such as the St. Mary’s River where the heritage of the river is cherished, fishing for Atlantic salmon attracts a large number of anglers each year. This activity is very important to the local economy of towns such as Sherbrooke, and further highlights the diversity of non timber products.



(Wooden crafts & products)

For many people, a stroll in the woods can be a spiritual experience. Picture this: you walk over moss-carpeted forest floor, occasionally stepping on crunching leaves and twigs, the cool fresh air filling your lungs. The sun is gently filtered by the rich green canopy above, muting colours and shadows, painting small openings with golden light. An insect buzzes your ear and you swat it, only to realize that a barred owl is watching you from a nearby maple tree. The owl spreads its wings and glides silently away into the forest. It is a relaxing, revitalizing experience.

Can you put a price on this kind of encounter with nature? Is it considered a product? For many eco-tourism and adventure outfitters, it is. Their businesses are built around the unique, wild and unspoiled images that Nova Scotia offers.

Are there some special areas of your woodlot to which you can retreat, where the cares of the world slip from your shoulders? Does there seem to be a design in the elements around you? Do you see more than wood products when you look at your woodlot?



(Canada holly)

LESSON 2 NTFPs: A Natural History

For thousands of years, Native peoples of Nova Scotia have been coexisting with the natural world around them. Traditionally, everything that First Nations peoples used came from the land and water. Shelters were constructed of readily available materials such as wooden poles, rushes, conifer boughs and bark from a number of tree species. Foods were gathered and stored. Ceremonial items were fashioned from natural products. Medicinal plants were sought out when required, or stored until needed. Every facet of the landscape featured useful materials that required a deep knowledge of the environment.



(Beaked hazel)

The pattern of human migration across the North American continent ensured that plant species were

moved, often over vast distances. Those species that First Nations peoples valued were spread across the landscape by transporting seeds or growing stock. Local populations of plants were dispersed to other regions where, if conditions were suitable, the plants grew and were used by people in that area.

As important as the plants, however, was the knowledge that accompanied them. As the plants were spread to other cultures, traditional knowledge of their ecology and use became ingrained in local groups of people. This cultivation of knowledge became as important as the plants themselves.

The diets of early First Nations peoples of Nova Scotia are often assumed to have been mainly composed of fish and meat. While fish were very important (and shellfish in coastal areas and river estuaries), nuts and fruits were staples to most First Nations peoples. They were harvested across the landscape according to time of year and abundance.

Here is a short list of plant foods traditionally important to First Nations communities in Nova Scotia:

- Acorns (*Quercus rubra*)
- Beaked hazelnuts (*Corylus cornuta*)
- Beech nuts (*Fagus grandifolia*)
- Blueberries (*Vaccinium angustifolium*)
- Bunchberry (*Cornus canadensis*)
- Cranberries (*Vaccinium macrocarpon*)
- Fiddleheads (*Matteuccia struthiopteris*)
- Foxberries (*Vaccinium vitis-idaea*)
- Gooseberries (*Ribes hirtellum*)
- Hawthorn (*Crataegus sp.*)
- Labrador tea (*Ledum groenlandicum*)
- Partridgeberry (*Mitchella repens*)
- Raspberry (*Rubus strigosus*)
- Strawberries (*Fragaria virginiana*)
- Wild rose (*Rosa virginiana*)



(Blueberry)

Most nuts and berries could be dried and stored for consumption during the winter, when plant foods were scarce.

Depending on seasonal conditions, gathering plant foods could be easier and less energy-consuming than hunting. Meat, however, contains much more protein and fat, which are essential for survival during cold winter periods. Animals also provided other products, including bones and fur, that were used for tools and clothing.

Plants provided the means for harvesting fish, and plant fibres were used to weave fishing lines and nets. Hawthorns were made into fish hooks.

Early documentation by European explorers and settlers indicate that on many occasions First Nations peoples came to their aid. Many settlers did not have the knowledge essential to live off the land. During winter, when food was hard to come by, many people perished or required the help of First Nations people. The disease scurvy was especially common, and simple remedies provided by First

Nations communities helped stave off this often fatal condition. We now know consuming any source of Vitamin C prevents scurvy, and that many sources of this essential vitamin are found in nature. For example, the fruit of wild roses, called hips, contain more Vitamin C than oranges. Even spruce needles and bark contain enough Vitamin C to prevent scurvy. Clearly, traditional knowledge of the forest and how to use its bounty was the key to surviving winter in Nova Scotia and other parts of North America.



(Rose hips)

Perhaps the most famous written records of an early explorer in this region are those of Samuel de Champlain, who wintered in the Maritime Provinces during the early 1600s. Champlain's writings indicate he and his expedition members made use of serviceberries, hazelnuts, currants and "certain small roots". Champlain produced a map of New France in 1632, noting locations he felt were culturally or economically significant. Included was a "place where natives dry raspberries and blueberries each year."

In attempting to transplant European agricultural practices to their New World, early settlers found that reliance on non-timber forest products remained important. Crops failed, contemporary medicines were in short supply, and the climate was extremely harsh. Gathering berries, nuts and maple sugar remained a vital activity until reliable agricultural methods were found. Even after agriculture was well established, however, collecting foods, medicines, fodder for livestock, and construction materials from the forest was common.

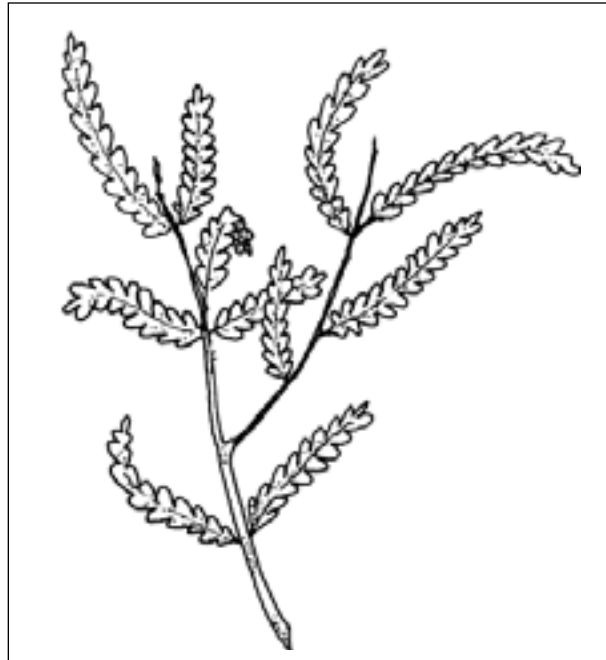


(Mountain ash berries)

Migration of European peoples brought change to the landscape of Nova Scotia. Forests were cleared for agriculture, trees harvested for wood products and roads constructed for access to most areas of the province. Immigrants brought new plants with them, purposely or not. It is now often difficult to ascertain whether some plant species are indigenous to Nova Scotia. One thing, however, has not changed: the human desire to utilize and benefit from forest products.

Now, perhaps more than ever, natural products have an appeal to most people as they pursue healthier lifestyles. An endless array of products claiming to be “all natural” are common on store shelves. Often the manufacturer’s name implies a bond with the wild, untamed world: “frontier”, “backwoods”, “wilderness”, and “forest hearth” all appeal to the consumer. The seller of non-timber forest products can add market value by using the right words!

Hemlock bark (*Tsuga canadensis*) was a commodity formerly collected from certain areas of the Nova Scotia forest in large quantities. The bark of this tree contains tannin, a substance that is used in tanning animal hides. The trees were cut and a spade-like tool used to peel the bark from the trunk. Usually no other part of the tree was used. Reports exist of being able to walk and jump for miles on the stripped trunks of hemlocks without ever touching the ground.



(Sweet fern)

Bark from the trunks of white birch trees (*Betula papyrifera*) was one of the First Nations peoples’ most widely used materials. From it can be made construction materials, canoes, eating utensils, bedding, insulation for clothing, and various household items. It is also a very flammable substance for use in fire-starting.



(Birch bark)

Quiz 1

1. Non Timber Forest Products are:

- (a) Medicinal forest plants
- (b) Guided walking tours in the forest
- (c) Forest mushrooms
- (d) All of the above

2. NTFPs include both consumable and non-consumable products.

- (a) True
- (b) False

3. What human values do NTFPs hold?

- (a) Cultural
- (b) Social
- (c) Spiritual
- (d) Economic
- (e) All of the above

4. What essential vitamin does rose hips contain?

- (a) Vitamin A
- (b) Vitamin B
- (c) Vitamin C
- (d) Vitamin D

5. Hemlock bark was used in what industry?

- (a) Tanning hides
- (b) Tea-making
- (c) Soap-making
- (d) Honey production

LESSON 3 The Excitement of the Hunt:

Wildcrafting

The gathering of products from the land requires a unique set of skills that is known as **wildcrafting**. A wildcrafter hand-collects non-timber products from the wild, in a way that demands knowledge of both the ecology of the area and of the timing that affects the quality of the products. Certain products may be seasonal, or reach harvest condition only every few years.



(Red osier dogwood)

Wildcrafters know that plants do not grow uniformly throughout the forest. Plant growth and abundance is dictated by the length of the growing season, climate, soil conditions, surrounding vegetation and age of the plants. A wildcrafter must be intimate with the land and with the passage of time.

There are many examples of wildcrafting in Nova Scotia. Wildcrafting is usually done on a small scale that keeps one or two people busy for only part of the year. A few wildcrafters cultivate their products year-round, and supplement them with products gathered from the wild. For example, red

osier dogwood (*Cornus sericea*) can be grown quite well in areas of abandoned field, and makes an attractive product on its own. When mixed with Canada holly and decorated with wild rose hips, dogwood can be used to create unique bundles, limited only by the imagination. A unique scent can be added to these decorative products by incorporating sweet fern (*Comptonia peregrina*) or hay-scented fern (*Dennstaedtia punctilobula*).



(Red osier dogwood products)

Wildcrafting for Fun and Profit

“Imagination has everything to do with wildcrafting,” indicates Lloyd Mapplebeck, who has enjoyed his hobby enough to turn it into a small business. As with most artistic endeavours, however, wildcrafting has never been a get-rich-quick enterprise. “It will never make you wealthy,” states Lloyd. “If it pays you for your time, you’ve done well.”

Lloyd and his daughter have been gathering plants and plant parts from their property for a number of years. They have also gotten permission from other landowners to collect from their woodlands, which allows them the freedom to gather a diverse array of plant materials during different times of the year. Fall is the busiest time of the year, as many shrubs begin to produce berries and lose their leaves, revealing colourful twigs.



(Christmas wreath)

“The crafts we produce are very much in demand before Christmas,” Lloyd says. The green tips of balsam fir, eastern white cedar and white pine contrast well with the twigs of red maple and red osier dogwood.

He has experimented making stars of red osier dogwood shoots tied with grass, and finds they sell well during the Christmas season. The stars are fairly easy to make (no bending of twigs involved) and can fetch \$10 to \$15 each, depending on size. Making wreaths of red osier dogwood is more time-consuming, although a wreath can sell for \$20-\$40.

Lloyd has also painted some of his products, and finds that gold is particularly effective around Christmas. He has applied gold paint to cattail heads, fronds of sensitive fern (which look like clusters of berries), pine cones and oak leaves. The gold effectively adds highlights to wreaths, for only the cost of a can of spray paint.



(Sensitive fern)

LESSON 4 Nova Scotia's Wild Edibles: A Tasty Choice

Most of the edible products that can be found in Nova Scotia's woodlands are either forest plants or mushrooms. Others, such as maple syrup, are derivatives of trees. Some, like honey and blueberries, were originally a forest product, but are now linked to agriculture.

Forest-based foods in Canada have an annual value of over \$725 million. If the value of foods that were originally forest-based but are now cultivated is added, the value rises to over \$7 billion.

The popularity of forest-based foods has its roots in the "wellness revolution" that began over a decade ago. People are increasingly concerned about the quality of food they eat, and it is to this market the organic foods industry owes its success.

Many wildcrafters gather foods both for self-consumption and for sale. In some cases, competition can be stiff for gathering wild edibles when they are ready to be picked. For this reason, some wildcrafters have "secret" areas where a consistent supply of edibles can be picked year after year.

If the plants you seek are on someone else's property, it is very important to ask permission from the land owner. In many cases the owner may consider a sampling of your harvest to be adequate payment and much appreciated!

If you are planning on harvesting NTFPs from Crown land, be sure to contact your local NSDNR office first.

Fiddleheads: Green gold

One of the most eagerly sought forest plants in Nova Scotia is the fiddlehead fern. Also called the Ostrich fern (*Matteuccia struthiopteris*), these plants are usually found near rivers and streams. They have a short season when they are at their best, which usually occurs during May. Good gathering sites are well-kept secrets!

Fiddleheads are best picked when the head of the fern is still tightly coiled and no larger than three centimetres in diameter. Once they begin to uncoil, the heads become tough and fibrous, and begin to lose their flavour. The best quality fiddleheads are deep green in colour. The brown scales should be removed from the fiddleheads the same day they are picked. For storage, fiddleheads are often frozen or marinated.

When picking, it is important to leave two or three heads per clump unpicked. This will help sustain the health of the clump from year to year.

Blueberries: Tasty provincial icons

Canada's blueberry industry is valued at over \$100 million, and Nova Scotia's lowbush blueberries are the most sought-after berries in the country. Many people consider blueberries to be one of the provinces's most important natural foods.



(Blueberries)

While quantities of blueberries can be found growing wild, this product has been cultivated for many years, and specialty fields now supply almost all the commercial market. However, there is a growing demand for organically grown blueberries, and it is here that a woodlot owner gathering wild blueberries may be able to find a market "niche". Organic certification demands, among other things, that a three-year history of the site be retained, and that the integrity of the environment not be harmed by harvesting any product.

Blueberry seeds are naturally spread across the landscape by animals and birds that have eaten the berries. It is sometimes puzzling to come across a patch of blueberries deep in the woods, but it is likely there because of bird activity.

Recent innovations in storage technology have helped boost the blueberry market. Quick freezing of individual berries is common, which allows them to be stored for up to two years. Drying by a process called “sugar infusion” has made blueberries a popular ingredient of breakfast cereals and snack foods, and has substantially widened the market.

The lowbush blueberry (*Vaccinium angustifolium*) has been found to have a number of health benefits, which has dramatically increased its potential market value. This will be discussed further in the Natural Health Products section of this module.

Maple products: How sweet they are!

Most people are familiar with the sweetest product to come from the forests of Nova Scotia. The culture and tradition of maple syrup production guarantees this product will always be in demand around the world. As people turn towards natural and more healthful products, many consider sugar derived from Canadian maple trees represents the very essence of vigour.

The leaf of the sugar maple (*Acer saccharum*) has been a symbol of Canada even before it first appeared on our national flag in 1965. For example, it has been a symbol of sports teams and the Royal Canadian Air Force. The maple leaf has been an important marketing image of Canadian products, and there are few products more essentially Canadian than maple products. Maple syrup, maple butter and maple candy are all linked to Canada’s maple leaf. With this powerful marketing tool, the potential for maple products seems limitless.



(Collecting birch sap)

Although Nova Scotia is not one of the largest maple producers in Canada (over 90% of the market share belongs to Quebec), the industry is a healthy one. Maple producers who have found creative ways to market their products continue to be on the cutting edge of the industry.

The maple sap season in Nova Scotia lasts for up to six weeks during March and April. During this time, sugar-laden sap begins to flow from the roots of the tree upwards toward the buds, in preparation for leaf emergence later in the spring. It is recognized that the earliest flows of sap contain the most sugars and nutrients, and it is these runs that are critical to a sap-collector’s success.

A successful commercial sugarbush must contain at least two qualities: sugar maple trees and gravity. Stands of hardwood trees that are being considered for commercial production of sap must contain a very high percentage of sugar maple trees over 50 years old. They must also be situated on a slope so that the sap may run through lines to a collection point.

The *spile*-and-bucket method of collecting sap is still used by small producers, and by people tapping only a few trees each spring. The sap must be collected daily or the sugars will ferment in the warm sun and ruin the product. Although labour-intensive, this method is cheap and family-friendly.

A sugar maple tree can produce 3 or 4 litres of sap on

an ideal warm spring day. Over the course of several weeks it can produce 35 to 45 litres of sap which, when boiled, will yield about a litre of syrup. It is generally recognized that 40 litres of sap produces, on average, one litre of syrup. If a tree is well managed, and not over-tapped, it can live and produce sap for well over a century. Few other natural resources are so sustainable!



(Maple products)

A 1993 study by the Nova Scotia Soils Institute indicated that only about 10 percent of tappable stands were being used for sap production. There is room to grow!

Other tree species are sap producers, but on a much smaller scale. Red maple (*Acer rubrum*) and white birch (*Betula papyrifera*) sap can also be used to produce syrup, although it takes much more sap to make a sweet syrup. In the case of birch, the ratio is 100 litres of sap to one litre of syrup. Product prices also reflect this ratio, with birch syrup costing five times more than maple syrup. Niche markets exist for other birch sap products and “birch beer” (actually a type of wine) is one example.

Forest Mushrooms: Fresh is best!

In Nova Scotia, edible mushrooms command a fraction of the market share of other provinces. British Columbia, for example, exports over three

times more mushrooms than all other Canadian provinces and territories combined. Given small but lucrative markets, however, local mushroom gatherers can make modest incomes.

The most widely gathered edible mushroom in Nova Scotia is the field mushroom (*Agaricus campestris*). Found in pastures and on lawns, it is gathered mostly for immediate consumption. Field mushrooms are easy to identify and pick.

Gathering mushrooms from a woodlot requires a good deal of knowledge. A good identification guide and a dash of common sense is usually needed to successfully gather fungi from the forest.

Some mushrooms and other fungi are toxic to humans. If in doubt, play it safe and take the time to seek advice.

The most commonly harvested forest mushroom is the chanterelle (*Cantharellus sp.*). Chanterelles are easy to identify and popular among enthusiasts. Gatherers will find retailers easy to locate, and will generally buy all you can offer for sale. Most retailers have guidelines regarding freshness and cleaning of the product, so it is best to check these details before gathering large quantities.



(Chanterelle mushrooms)

Chanterelles can be found under almost any mature forest stand. The presence of white spruce seems to be an indicator of a good collection site. Old fields that have become mature white spruce stands are often good bets, particularly where the old field joins other forest cover.

Many good chanterelle sites are destroyed by over-enthusiastic harvesters. While activities such as raking allows the rapid collection of mushrooms, it often breaks up the important mat of fungi just below the ground's surface. It is from this mat, called the **mycelium**, that mushrooms emerge above the ground. Cutting the mushroom off at its base is the best harvesting method. Pulling the mushroom out of the ground will damage the mycelium mat.

The visible part of a mushroom may be only a fraction of its actual size. The mycelium may extend below the ground for a number of metres in all directions. It is important to leave this part intact, as the mushroom forms important beneficial **symbiotic** relationships with trees, by tapping into roots for nutrients and providing other nutrients to the tree in return.

Other mushrooms that are collected in Nova Scotia's forests include boletes (*Boletus spp.*) and shiitake mushrooms. Shiitake mushrooms are produced by inoculating decaying wood with spores. These spores eventually give rise to the fungal mycelium, which then produces the fruiting bodies, or mushrooms, on the surface of the wood. Shiitake mushrooms can be a valuable product, but can be difficult to cultivate.

Getting mushrooms quickly to market is an important factor in receiving a good price. It is important to remember that "fresh is best". If the mushrooms are clean and dry, they will often store in a refrigerator for up to 10 days. The cost of storing a quantity of mushrooms in a cooler can escalate rapidly and take away from any profit. For this reason, reliable and flexible markets are needed.



(Bolete)

Although good data is difficult to obtain, over \$25,000 in forest mushrooms were exported from Nova Scotia in 2002, compared to \$800,000 exported from British Columbia.

Other forest-based foods

Other woodland edibles include wild strawberries (*Fragaria virginiana*), which are popular with many wildcrafters during the summer months. The white flowers are often used for decorative items, and the berries can be eaten fresh or dried. The leaves can be used to make an herbal tea.



iStockPhoto

(Strawberry)

Berries from the wild rose (*Rosa virginiana*) can be made into jams, syrup and jellies. These bright red berries, called hips, are 25 times richer in Vitamin C than oranges. For maximum flavour, the hips should be picked right after the first frost. The petals of the flowers can also be used to make herbal teas, or can be soaked in cold water to make a “julep”. Wild rose bushes are fairly common on old farm sites and in open woodland.



iStockPhoto

(Wild rose)

Chokecherries (*Prunus virginiana*) are considered by many people to be unpalatable, although the ripe berries make good jellies and jams. They are easy to find and pick, and the bush that some people

consider a nuisance, can be put to good use yielding a product that could be popular at farm markets.



iStockPhoto

(High Bush cranberries)

Highbush cranberries (*Viburnum sp.*) are actually members of the honeysuckle family and are not true cranberries. Rich in Vitamin C, highbush cranberries make flavourful jellies and in many cases can be substituted for real cranberries.

All of the above berries can be processed into added-value products such as jams and jellies. These are popular items at bake sales and farm markets.

Many of the wild edibles found in Nova Scotia's woodlands have little potential as bulk commodities – they are simply too susceptible to over-harvesting. When in doubt, go slow, and do not pick more than you need.

Sweet Gold

Doug and his wife Frances live in Halifax, where Doug works as a pharmacist and Frances works out of their home as a fitness and nutrition consultant. They own a 121-hectare (300-acre) woodlot in Pictou County that had been in Frances' family for a number of generations. Their two teenage sons are very interested in the out-of-doors and relish the chance to visit the woodlot whenever they can. They especially love the rolling hills of sugar maple and how these contrast with the site of the old farm,

which is now overgrown with dense stands of mature white spruce.

For a few years, Doug and Frances had tapped 25 or 30 maple trees using the spiles and buckets that Frances' father had owned. When Frances was still very young spring was a celebration of sorts, and in late March the whole family would snowshoe into the hills and tap the best-looking trees. Usually they would get enough sap to make a small amount of syrup and candy, and Frances loved the daily ritual of tramping up the hill behind the farm to where the shiny buckets hung from the spiles. They would put the buckets on a sled and take them to the house where big pans of boiling sap filled the air with a sticky sweetness. This "sugar-time", as she loved to call it, became one of her fondest memories.

During the 1960s the family, like so many others, left the farm and moved to a comfortable house close to town. With the passing of time, the house and barn fell into ruin and the fields became covered with trees. Doug and Frances began visiting the old place soon after they were married, and Doug built a camp near a brook at the foot of the hardwood hill.

Six years ago, Doug had the chance to purchase a used evaporator tank that he had seen advertised in the pages of Rural Delivery magazine. He had always been interested in trying to produce maple syrup on a larger scale, and he felt it was worth a try. By the time he had bought new sap collection lines, connectors and taps, he had invested several thousand dollars.

That first winter was hard work. Together with the boys, Doug identified the trees he was going to tap, laid out the collection lines on the snow, and made sure that they all fed into one large pipe that ended at the shed housing his evaporator. They then drilled tap holes in the trees, the diameter of each tree determining the number of taps. No tree that was less than 30 cm in diameter at breast height was tapped. A second tap could be placed in trees that were 45 cm in diameter. Only one tree on the hill could handle three taps, and that tree was enormous!

They chose trees that appeared healthy, with little sign of ice-damaged crowns or presence of maple borers, which are insects that tunnel beneath the bark and partly girdle maple trees. Their maple bush lay on a southwest slope, which gave excellent exposure to the winter sun during the day, and a good chance for cold nights and early mornings. During the afternoons, the sap should run well.

Doug had heard many theories about what should make his sugarbush successful: the southwest slope, cold nights and warm days, and good snow cover to keep the sap stored in the roots until it began to flow in late spring. He had also heard that rocky slopes make the sweetest sap, and he hoped that the small rocky outcrops on the hill would help.

Because the stand of maple contained trees of all ages, Doug and the boys had to clear some of the younger trees to allow the lines to pass among the larger maples. They were careful not to create openings in the tree canopy that were too large, since the increased light and warmth would cause other trees to grow quickly into these openings. A particularly challenging tree to control was beech, which seemed to grow everywhere on the hardwood hills, but never amounted to much more than a large shrub due to beech bark disease. It made excellent firewood, however, and Doug always made sure that he had plenty of it to use with his evaporator.

Doug knew a maple sap producer who had thinned the trees in his sugarbush to help increase their growth. Most of the maples were only 50 or 60 years old, and were still growing vigorously. They had spaced the trees so that there were three or four metres between the crowns, allowing room for the crowns to expand. The trees had responded well and the sugarbush was producing good runs of sap. An annoyance, however, was the amount of beech, yellow birch and other trees that had started to grow densely in the understory. Every few years, these trees had to be cleared away to prevent damage to the collection lines and to maintain access to the tap trees. Doug had kept his own thinning

to a minimum because his sugarbush contained a range of tree ages. His best trees had large crowns that were unlikely to expand further.

Doug, Frances and the boys had made their trips to the sugar camp a spring ritual. With over a thousand taps to tend, there was always something to be done: flushing out the lines first thing in the spring, making sure that deer had not unsprung the lines, and finally drilling the trees and connecting the taps. This work was often done on snowshoes or by snowmobile, and the air was filled with expectancy as the taps were hammered into the fresh holes.

The first runs were always the best. The sap came gurgling out of the main line into the holding tank with surprising energy. These runs were also the sweetest: when the sap was boiled down, the syrup it yielded was a gleaming light gold. It took 35 litres of sap to make a litre of syrup early in the season. A week or so later, 40 litres were required, and the syrup was darker in colour and a bit heavier to the taste. As the days got warmer it was important to make sure that sap did not stay in the lines where the sun and heat would ruin it.

As a business enterprise, Doug and Frances are pleased with their investment. By bottling and selling their own products in the form of maple syrup and candy, they make a profit of \$5000 each year. Of far greater importance to them, however, is the enjoyment they get from this activity. “Even though it’s hard work, sugar season is like a vacation for us,” says Frances. “We get out of the city, into the fresh air, and see the spring opening up. The money is not great considering the time we put into it, but the boys really enjoy the lifestyle and getting into the woods. It’s a perfect excuse for a family getaway.”

Gold on the Ground

Besides the sugaring, Doug and Frances have another cash crop on their woodlot. Among the spruce trees not far from the stream, gold gleams in the shade

of the trees during August. These are chanterelle mushrooms, a delicacy among those who like them.

The trumpet-shaped fungi are found in patches here and there, growing among the roots of the trees that are their shelter. The visible chanterelle is the fruiting body of the mushroom which releases spores, like seeds, for reproduction. The living bulk of the fungi is found within the soil, where roots called the mycelium make the mushrooms an important part of the forest floor. Weaving among other roots of trees and ground plants, the mycelium is a vital connection between many subterranean forms of life.

While spending time at their camp during late summer, Doug and Frances hunt for chanterelles. Sometimes they find a newly established patch, but it is the older patches that are most reliable. Even during very dry years they can expect to collect up to \$300 of chanterelles. Of course, summer would not be the same without a couple of “fry-ups” of chanterelles. Frances has experimented with ways of cooking the mushrooms, and finds that they are excellent in a stir-fry, mixed among vegetables and fruit. Doug likes them lightly pan-fried alone, with a bit of pepper.

When they are gathering chanterelles, the family is careful not to over-harvest the mushrooms. They have heard of some people that gather chanterelles commercially by raking them, but this destroys the below-ground mycelium that is crucial to keeping a patch healthy. It is also important to leave a few of the mushrooms themselves intact, as their spores will help establish new patches in the vicinity.

Doug and Frances sell the bulk of their chanterelles to a retailer. Frances finds that chanterelles freeze well, and she usually puts away a few pounds for eating during the winter. “It reminds us of summer,” she says. “You know, we have the best of both worlds - golden syrup in the spring and golden mushrooms in the fall!”

Quiz 2

1. Wildcrafting is:

- (a) Making crafts from wild products
- (b) Taking products from your neighbours' lands
- (c) Boating down a dangerous river
- (d) Gathering wild products from the land

2. Fiddleheads are best picked when:

- (a) They are still tightly coiled
- (b) After the first frost
- (c) Their leaves have expanded
- (d) They are still below ground

3. Blueberries contain the largest amounts of antioxidants in their:

- (a) leaves
- (b) pulp
- (c) seeds
- (d) skin

4. The ratio of sugar maple sap to maple syrup averages about:

- (a) 100:1
- (b) 60:1
- (c) 40:1
- (d) 20:1

5. Chanterelle mushrooms are usually found:

- (a) in cow pastures
- (b) on trunks of dead trees
- (c) on the forest floor
- (d) in roadside ditches

6. The largest exporter of wild mushrooms in Canada is:

- (a) Newfoundland and Labrador
- (b) Nova Scotia
- (c) Nunavut
- (d) British Columbia

7. Highbush cranberries (*Viburnum* sp.) are members of:

- (a) Blueberry Family
- (b) Cranberry Family
- (c) Liverwort Family
- (d) Honeysuckle Family

LESSON 5: **Natural Health from Woodlots**

Health and personal care products have become an important segment of the Canadian **bioproducts** industry. The “wellness revolution” of people seeking foods, nutritional supplements and medicines from natural, forest-based sources has created a booming industry for product suppliers.



(Teaberry)

Natural health products can be classified into two categories: **nutraceuticals** and **pharmaceuticals**. Nutraceuticals are foods and other products noted to have beneficial effects on the human body, bring a sense of well-being, and may also reduce the risk of chronic disease. Pharmaceuticals are medicines that have a demonstrated history of combatting illness. Together they are worth billions of dollars to the Canadian economy.

How do some of these products come to be on a woodlot?

Many species of forest plants, fungi and other organisms tend to concentrate chemicals in their tissues, or synthesize new ones. Over time, in their close association with the land, First Nations peoples learned to utilize these substances for treating illness, disease and other maladies. This traditional knowledge has been the keystone on which many treatments for human health conditions have been built.

Nutraceuticals

Canadian forests have been a source of beneficial natural health products for many generations. During the last few years, this concept of “natural health” has become particularly significant. With the people of industrial countries demanding natural products to boost their health and slow the aging process, the market for nutraceuticals and “functional foods” has been robust.



(Hawthorn supplements)

One element of the nutraceutical market that has been growing particularly well is the demand for **essential oils**. These are plant extracts that have an effect on the sense of well-being of an individual. Their name - essential - comes from their fragrance, or “essence”, and does not indicate any critical function.

Essential oils can be found in the leaves, twigs, roots, bark and seeds of plants. They are usually removed from the plant by a process called **distillation**, which uses steam to remove the oil. A huge amount of raw material is required to produce even a small quantity of product.



(Fiddleheads)

An example of a common plant species that has been used to make essential oils is balsam fir. The needles and twigs of fir contain a resin that can be recovered by distillation. The needles and twigs must be fresh for this reason, and the distillation is sometimes done at the forest site. It takes over 100 kilograms of raw balsam fir material to produce 1 kilogram of oil product. Although fir is processed in other areas of Canada, the market for this product still needs to be developed in Nova Scotia.



(Balsam fir)

The largest competitor in the nutraceutical market has been conventional foods. However, some people are willing to pay more for foods from natural sources, and these higher prices have been incentives for new producers to enter the marketplace. With 70% of American adults using dietary supplements, and with comparable use in other developed countries, demand for nutraceuticals is immense.

Can wild products meet this market?

Wildcrafters are constantly faced with the scattered nature of wild plants, which take increased time and energy to gather. Added to this are the risks of over-harvesting wild products. How then is this enormous market for natural products to be met?

To meet this demand, many forest plants beneficial to human health have been cultivated. Raised in controlled conditions, however, some of these plants lose a portion of their potency. As a result, there is still a significant demand for products grown in a forest environment.

Following are examples of nutraceuticals that are found on many woodlots in Nova Scotia.

Fireweed

Common on recently logged sites and on burned areas (hence the name), fireweed (*Epilobium* sp.) is a favoured source of nectar for honey production. Beekeepers often position their hives close to sites with fireweed, since the honey produced is considered superior to that from agricultural sources.

Fireweed extract is used in producing a salve that soothes sunburn, and has been documented as an anti-inflammatory.



(Fireweed)

Blueberries

Wild blueberries are valued for their antioxidant properties that can help protect the circulatory system, guard against arthritis and prevent some of the complications of diabetes. With this many benefits, it is no surprise that blueberry sales are healthy.

A related fruit, bilberry, was used by British pilots in World War II to improve their night vision. While blueberries are not as rich in beneficial **anthocyanins** as bilberries, they are still considered to be very beneficial.

Cranberries

A good source of health-beneficial antioxidants are cranberries, which grow in wet forest areas such as bogs. Despite extensive cultivation, there is still a demand for wild cranberries, which are claimed to boost good cholesterol and maintain a healthy vascular system.



(Cranberries)

Other Nutraceutical NTFPs

An ingredient of some natural drinks is Labrador tea (*Ledum groenlandicum*). The leaves of this plant can be dried and made into teas which are claimed to have a mildly relaxing effect. This shrub grows in poorly drained forested areas. The leaves of wintergreen (*Gaultheria procumbens*) and other plants can also be made into teas.



(Labrador tea)

The weight-loss industry is worth billions of dollars to the Canadian economy, and has noticeably moved in the direction of natural products. One of these products is a form of sugar, **xylitol**, which is less complex than sugars derived from beets or cane. Xylitol is found in the bark of white birch, and was used in Scandinavia after World War II when beet sugar was scarce. This sugar is claimed to have health-boosting properties in addition to its light, sweet taste.

Some derivatives of the wood pulp-making process have been used in health food products. A Finnish company has manufactured a margarine from pulp extracts, claiming it lowers blood cholesterol levels by 10 percent.

Pharmaceuticals

Canada is a primary producer of raw materials for the world pharmaceutical market. These materials are manufactured into drugs and imported back to Canada as finished products. World demand for medicinal plants is escalating, and about one-quarter of all prescription drugs sold in the US contain plant materials or extracts.



(Ground hemlock)

Most medicinal plants found in the woodlands of Nova Scotia can be cultivated as agricultural crops. This kind of setting ensures quantity of plant material and quality control for large drug manufacturers. However, it also requires pest control and other increased costs associated with agricultural crops.

For small scale enterprises, gathering of wild medicinals can remain an option. Browse any number of old books on home remedies or living off the land, and you'll find many references to medicinal forest plants and herbal medicines.

What are herbal medicines? The World Health Organization defines them as "herbs, herbal materials, herbal preparations and finished herbal products that contain as active ingredients parts of plants, or other plant material, or combinations."

This broad definition includes all of the medicinal plants of Nova Scotia's forests.

Once a product is advertised as treating illness, there may be a requirement to register it under the Canadian Food and Drugs Act. It can take 10 to 12 years for a new drug to reach the marketing stage.

Some of the more common Nova Scotia forest plant species and their pharmaceutical uses are:

PLANT SPECIES	MEDICINAL USES
<i>Ground hemlock</i>	<i>Cancer treatment</i>
<i>Fireweed</i>	<i>Acne treatment</i>
<i>Dandelion</i>	<i>Digestive aid</i>
<i>Witch hazel</i>	<i>Skin lotions, reduce varicose veins</i>
<i>Hawthorn</i>	<i>Strengthen vascular system</i>

While many people have heard of ground hemlock and its cancer-fighting qualities, few realize that it takes about 30,000 kilograms of raw material to make 1 kilogram of the medicinal product

paclitaxel. There is ongoing research into ways to more effectively cultivate this plant and maximize its active ingredient potential. In the meantime, it is a favoured food of whitetail deer and wild stocks of ground hemlock will continue to be limited because of browsing by deer.



(Ground hemlock processing)

Because of the commercial success of plant-derived drugs, harvesting pressure on wild stocks is increasing. Some plant species of medicinal importance, such as wild American ginseng, may have already been **extirpated** from the province.

Caution must be exercised in harvesting any plant material from the wild, especially medicinal plants.

Quiz 3

1. Essential oils are made from:

- (a) powdered roots
- (b) distilled plant extracts
- (c) dried mushrooms
- (d) wood pulp

2. To market a new pharmaceutical drug in Canada takes, on average:

- (a) 10 to 12 days
- (b) 6 to 8 hours
- (c) 10 to 12 years
- (d) 4 to 8 weeks

3. Xylitol is:

- (a) a sugar found in birch bark
- (b) a resin found in pine trees
- (c) a forest mushroom
- (d) a cold remedy

4. Blueberries and bilberries are good sources of:

- (a) xylitol
- (b) paclitaxel
- (c) anthocyanins
- (d) Vitamin B

5. Forest plants used for medicinal purposes include:

- (a) fireweed
- (b) hawthorn
- (c) ground hemlock
- (d) all of the above

LESSON 6 A Green Christmas, Naturally

Green Christmas products are big business in Nova Scotia. The industry is worth \$30,000,000.00 annually, and the province is a world-wide exporter of Christmas trees. Markets in the US account for 80% of exports, making it the single largest consumer of the province's trees and wreaths. This market is critical for the future health of Nova Scotia's Christmas tree industry.



(Christmas trees)

Balsam fir (*Abies balsamea*) is king of Nova Scotia's natural Christmas commodities. The tree grows well in nearly all areas of the province and has been cultivated as Christmas trees and exported for over 75 years. The sharp fragrance, soft blue-green foliage and ease of handling has given the balsam fir an edge over other species such as Douglas fir, Fraser fir, Noble fir, Scots pine, red pine and white pine.

Most woodlots in Nova Scotia already have balsam fir growing on them. If not, good quality seedlings are easy to purchase. Abandoned fields are often good places to plant or transplant fir seedlings, although grass and mouse control may be required on these sites.

Where healthy balsam fir is already found, many cutovers will regenerate to balsam fir. Here the trees can be left to grow until they are at least a metre in height. Where the balsam woolly adelgid (*Adelges balsamea*) is present, seed crops

will likely be affected and good quality natural regeneration may be difficult to establish. In such sites, planting or stump tending will almost certainly be required.

Consumer demands for balsam fir vary in characteristics. A decade ago, thick foliage with a well-sheared conical shape was almost universally desired. Recent trends have been toward sparser foliage with a narrower profile. If a retailer will be purchasing your trees, it is very important to determine these characteristics early on, while there is still time to shear the tree. Some growers opt for a mixture of shapes and density, to guarantee a cross-section of the market.

Once fir trees have reached a metre in height some light shearing may be in order. The two most common kinds of shearing tools are pruning shears and shearing knives. The former are easier to control and safer to use, while shearing knives get the job done quickly. Keep in mind that good quality is always warranted.

When shearing trees to a desired shape, it is important to prune branches just in front of healthy, viable buds. These buds should be at least of average size, since they will be responsible for producing the next year's growth.

Shearing may be needed for a number of years, depending on the market requirements. During this time the grower has almost complete control over the final shapes of the trees. Again, many domestic growers who wish to retail their trees locally or operate a "U-Pick" may choose to vary shapes and sizes to appeal to consumer demand. Butt-pruning is an important treatment that helps the grower regulate the height and quality of the final product.

The optimal colour of Christmas trees is a deep blue-green. There are opportunities to improve the growth and colour of trees by applying fertilizer.

Where a deeper colour is required, or if there is yellowing (*chlorosis*) of the needles, fertilizer containing plenty of nitrogen can help.

There can be many setbacks during the growth of an average Christmas tree. During its 8 to 10 years of life, a tree can be infested with a number of insects and diseases, including spruce budworm (*Choristoneura fumiferana*), balsam gall midge (*Paradiplosis tumifex*), balsam wooly adelgid (*Adelges piceae*), whitemarked tussock moth (*Orgyia leucostigma*) and yellow witches broom of fir (*Melampsorella caryophyllacearum*). Over the lifetime of the tree, the costs of controlling these pests can be significant.



(Balsam fir wreath)

Some of the brush that is generated during the tending of fir trees can be used in other products. For example, an entire industry has been established around fir tips, which can be utilized to create wreaths and Christmas ornaments. A number of First Nations communities have become proficient at wreath-making, directly adding value to a primary forest product. The raw brush is exported to other provinces and countries for use in products such as grave mats.

From beginning to end, the growing and tending of Christmas trees can be a substantial investment. A number of excellent sources of information are available, through the references listed at the back of this module.

There is an increasing momentum towards natural Christmas trees. Currently about 40% of Nova Scotians use natural Christmas products.

Other Floral Products

The floral and wreath-making industry is growing in Nova Scotia. Many Christmas tree growers already have a small business in which they make wreaths and sprays from fir tips.

Mary van den Heuval of St. Andrew's, Antigonish County, has a vigorous business based out of her home. Each year prior to Christmas she makes dozens of wreaths and sprays which she sells to local markets.



(Business sprays)

“Wreaths and sprays are not difficult to make, but you must know what you’re doing,” indicates Mary. “I often add ribbons, cones and other natural materials to make the wreaths and sprays more colourful.”

Mary’s tri-sprays are popular with businesses and homeowners. Tri-sprays are three layers of fir tips, oriented in different directions to give a three-dimensional appearance. They can be suspended

to sway in the breeze or fixed to a wall or door. Tri-sprays take less time and material to make than wreaths and are quickly gaining in popularity.



(Tabletop greenery)

Quiz 4

1. Shearing of balsam fir Christmas trees should begin when the tree is:

- (a) about 1 metre in height
- (b) over 2 metres in height
- (c) bursting its buds in the spring
- (d) overtopped by vegetation

2. Insect pests of balsam fir include:

- (a) spruce budworm
- (b) balsam woolly adelgid
- (c) balsam gall midge
- (d) all of the above

3. Wreaths and sprays can be made from:

- (a) balsam fir tips
- (b) red-twig dogwood
- (c) birch twigs
- (d) all of the above

4. Balsam fir twigs and needles can be distilled to make:

- (a) paclitaxel
- (b) essential oils
- (c) xylitol
- (d) none of the above

LESSON 7 Other NTFPs

Woodland owners in Nova Scotia hold the wealth of nature at their fingertips. The number of potential NTFPs in the province is vast. Nearly every plant and animal, every view and recreational activity has a value to someone, although these values may not always be economic.

Specialty wood products

According to some woodworkers, a large amount of very desirable material is left in the forest after logging. Defects in hardwood trees, created by tree growth characteristics, insects, fungi and storm damage, result in unique patterns in the grain of the trees. One of the most sought-after patterns in sugar maple is called birds-eye, which has a reputation for beauty when made into wood products.

Other attractive patterns in wood are the result of **spalting**, which is an interaction between wood and fungi. “Tiger” and “curly” grained woods are also highly sought out.

With the increase in activity by the “baby-boomer” generation, walking sticks have become popular. There are many different shapes and sizes, and some walking sticks are custom-made to the buyers’ specifications. Elaborate carvings, wood laminates and exquisite finishes all add value to walking sticks. Some have become collectors items and demand high prices.

Woodworkers and turners are always on the lookout for wood burls. These are defects in the growth of hardwood trees, and can occur on the trunk or branches. Burls exhibit interesting shapes and patterns of wood grain. These parts of a tree are often discarded during harvesting operations, but can be valuable if the right buyer is found.

A conscious movement away from plastic products in developed countries has created a demand for wood furnishings, personal items and even toys. Wood is seen to be stable, non-toxic and pleasing to

the eye. It also has the appearance of being custom-made, whether it is or not. Innovative craftspeople have taken advantage of this market and are constantly on the lookout for unique woods.

Landscaping materials

The housing market has created a need for affordable landscaping that will increase property value and be appealing to the eye. Contrasting shapes and colours of plants are often recommended by landscape architects. Some owners are choosing to create “garden forests”, and wish to replicate the wildness of the woods in their backyards, complete with edible and medicinal plants.



(Storing seed)

The diversity of Nova Scotia’s forests contains many of the elements that landscapers are seeking. Small businesses that cater to the landscaping needs of homeowners have been created. These enterprises purchase and sell native forest plants, including trees, and are always on the lookout for seeds and

landscaping materials. They will purchase seeds of nearly every tree species, and cuttings or growing stock of many other plants. Nurseries, too, will sometimes buy native plants and seeds for growing their own stock. There is even a market for mosses and lichens.

Bonsai

Popular in Oriental cultures and with hobbyists around the world, bonsai is the art and craft of growing carefully trained potted trees. In most cases these trees are tiny, but may be many years old.

The process of dwarfing trees by root and stem pruning is a slow one, and bonsai can be sold to buyers who collect them.



(Bonsai larch)

Trees that may be suitable for bonsai and which are native to Nova Scotia include white spruce, black spruce, larch and others.

Credit for carbon

A word should be said about the potential values of carbon on your woodlot. It is common to hear of climate change in the news, and it is believed that one of the causes of climate change is the increase of carbon in the atmosphere due to deforestation and the burning of fossil fuels. Much of this carbon is in the form of carbon dioxide (CO₂).

Everything that is living in the forest contains carbon, including trees. Vigorously growing trees absorb CO₂ from the air during photosynthesis and can store the carbon for long periods in their wood, bark, leaves, needles and roots. This removal of CO₂ from the atmosphere is important because 80 % of greenhouse gas (GHG) emissions from developed countries is in the form of CO₂.



(Lichen)

What does this have to do with your woodlot? In February 2005 the very first legally binding international treaty on the environment - the Kyoto Protocol - came into effect. The treaty was an agreement among several dozen countries to significantly reduce GHG emissions. The agreement

indicated that reducing emissions can be done by cutting back on the release of GHGs, and by removing carbon from the atmosphere faster than it is being released. It was agreed that one of the ways of removing carbon from the atmosphere and “tying it up” is by storing carbon in forests.

Companies (or countries) that emit less than their legal limit of GHGs can sell or barter “credits” to those companies that do exceed the limit. For example, if a company emits less GHGs than its limit and also plants several thousand trees, it will receive credits for its actions. It may then sell these credits to a company that needs them to reduce its own GHG (carbon) “footprint”.



(Cranberry)

Companies may be looking to invest in these carbon credits to offset their emissions. A woodlot, as stored carbon, may be worth money to a company that needs credits. An agreement between the company and the woodlot owner can usually be reached, in which the owner agrees not to liquidate (harvest) the stored carbon in the trees for a certain length of time. This credit is of value to both the woodlot owner and the company, and can be regarded as an NTFP.

Wildlife as an NTFP

Nova Scotia has a long history as a province that is rich in wildlife. Forests that are high in diversity are able to support a wide range of birds, mammals and fish. Traditionally, wildlife has played an important role in the survival, culture and recreation of Nova Scotians. The use of wildlife as a “product” can be broken down into two categories: consumptive uses and non-consumptive uses.

Consumptive uses include trapping, hunting and fishing, all of which have occurred in Nova Scotia for thousands of years. They continue today, and have an economic value to the people of the province.

These activities can be important on a local scale, with some communities relying on them for sustainability. As with any NTFP, good stewardship of these resources is vital to their future health.



(Moose)

Non-consumptive uses of wildlife are harder to define. Many people enjoy viewing wildlife, and may travel to Nova Scotia for this purpose. Birdwatching is a popular hobby. Catch-and-release fishing is another example of a non-consumptive use of wildlife. Eco-tourism and outfitting companies are found throughout the province, hosting adventure travellers and sporting enthusiasts for a price. These businesses can bring a welcome injection of money to the local economy.

For some, getting away from it all is essential for their well-being. Lodges and camps provide accommodation for those people who wish to stay longer in the outdoor environment. Retreats and nature camps are popular venues for those who seek a more intimate setting.

LESSON 8 Know Your Markets – Before You Harvest!

Gathering NTFPs for one's own use is common practice among wildcrafters. Edible plants and mushrooms are harvested for consumption, greenery is collected for holiday decorations, and other forest materials are used for hobbies and crafts. Many people find satisfaction in these pursuits of self-sufficiency.



(NTFPs for market)

Others, however, may be interested in the financial returns that can be generated by NTFPs. Some small businesses are found within the NTFP marketplace, and nearly all are intended to supplement incomes from other sources. It is extremely rare to find someone who makes a living solely from wild NTFPs.

Effective marketing is critical to selling quantities of NTFPs. While some kinds of wild products such as seeds, berries, mushrooms and plant extracts may be available in large quantities, marketing these materials for reasonable returns may be difficult. It is therefore advised to research potential markets thoroughly before harvesting NTFPs.



(Bunchberry flowers)

Local farm markets can be a successful venue for NTFP sales, where sellers can market their products directly to consumers. In some cases the harvesters are also the sellers, which eliminates middle-marketers and maximizes returns to the harvesters. More often, however, the harvesters sell in bulk to vendors, each of whom may have several suppliers.

When a number of suppliers decide to market their products through one or more buyers, cooperatives can be successful. These individuals and companies can operate collectively as a group, which offers a more stable marketing environment. A number of NTFP cooperatives are present in British Columbia, where the advantages of working together have been well documented.

There are few examples of formal NTFP marketing organizations in Atlantic Canada. These are dominated by the Christmas tree, maple products and blueberry industries, which have well-coordinated marketing structures.



(Walking sticks)

Most small NTFP producers must usually undertake their own marketing efforts. Unless the products are destined for exclusive markets - such as pharmaceuticals - inclinations for creativity and entrepreneurship are real advantages to producers of NTFPs.

While NTFPs are seldom the get-rich-quick commodities that some people envision, hard work and innovation have provided a reasonable income for those who are determined to succeed. For woodlot owners, NTFPs can yield another source of income when managed sustainably.



(Moss for landscaping)

Conclusion

It can be difficult to calculate the commercial value of an NTFP. Often, no dollar value can be assigned to a particular product or service.

NTFPs have been important wherever humans have settled. As sources of foods, medicines, shelter and cultural significance, NTFPs will continue to provide important opportunities for woodlot owners.

Quiz 5

1. Highly prized wood grains of maple include:

- (a) tiger stripe
- (b) curly
- (c) birds-eye
- (d) all of the above

2. Bunchberries are forest ground plants used in:

- (a) tanning hides
- (b) soap-making
- (c) landscaping
- (d) basket-weaving

3. The most common greenhouse gas (GHG) is:

- (a) carbon monoxide
- (b) hydrogen sulphide
- (c) hydrogen chloride
- (d) carbon dioxide

4. NTFPs can be managed alongside timber products.

- True False

5. The best way to gather NTFPs is to proceed carefully, never over-harvesting.

- True False

Glossary

aesthetic: pleasing to the eye; attractive.

antioxidants: a family of chemicals that help boost the immune system, strengthen the vascular system and delay aging of some tissues.

anthocyanins: chemicals that help improve eyesight and other functions.

biodiversity: a term that represents the degree of diversity of forest communities, species and genetics. Conserving biodiversity is a common and worthwhile goal.

bioproduct: a commodity that is derived from living material, and which is available on a renewable basis.

conifers: cone-bearing trees, usually with needles as foliage. Cedars are the exception, with scale-like leaves.

distillation: a process by which steam is used to render a product, such as an oil, from plant material.

essential oils: fragrant and aromatic products derived from plant material.

extirpate: cause to be extinct from a specific geographical area.

mycelium: a mat of fungal material, usually found below ground level, from which reproductive structures, such as mushrooms, can grow.

niche: a special place or habitat.

NTFP: Non Timber Forest Product: goods derived from forest plants or animals, other than timber or firewood.

nutraceutical: a food or food component that is scientifically proven to provide physiological, medical or health benefits, and/or reduce the risk of chronic disease.

pharmaceutical: in the context of NTFPs, a medical drug derived or synthesized from plant extracts.

silviculture: the art and science of growing and tending forest crops, based on a knowledge of silvics.

spalting: a chemical reaction caused by the interaction of a fungus on wood, usually resulting in a well-defined black line.

spile: a small spigot, usually metal, that is tapped into a tree for sap production. A sap collection bucket is often hung on the spile.

symbiotic: a mutually beneficial relationship from which both organisms benefit.

wildcrafting: the art and skill of gathering wild products for human use or consumption.

xylitol: a simple sugar that can be extracted from the bark of birch trees.

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Answers to Quiz Questions

QUIZ 1.

- (1) d
- (2) a
- (3) e
- (4) c
- (5) a

QUIZ 2.

- (1) d
- (2) a
- (3) d
- (4) c
- (5) c
- (6) d
- (7) d

QUIZ 3.

- (1) b
- (2) c
- (3) a
- (4) c
- (5) d

QUIZ 4.

- (1) a
- (2) d
- (3) d
- (4) b

QUIZ 5.

- (1) d
- (2) c
- (3) d
- (4) True
- (5) True



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