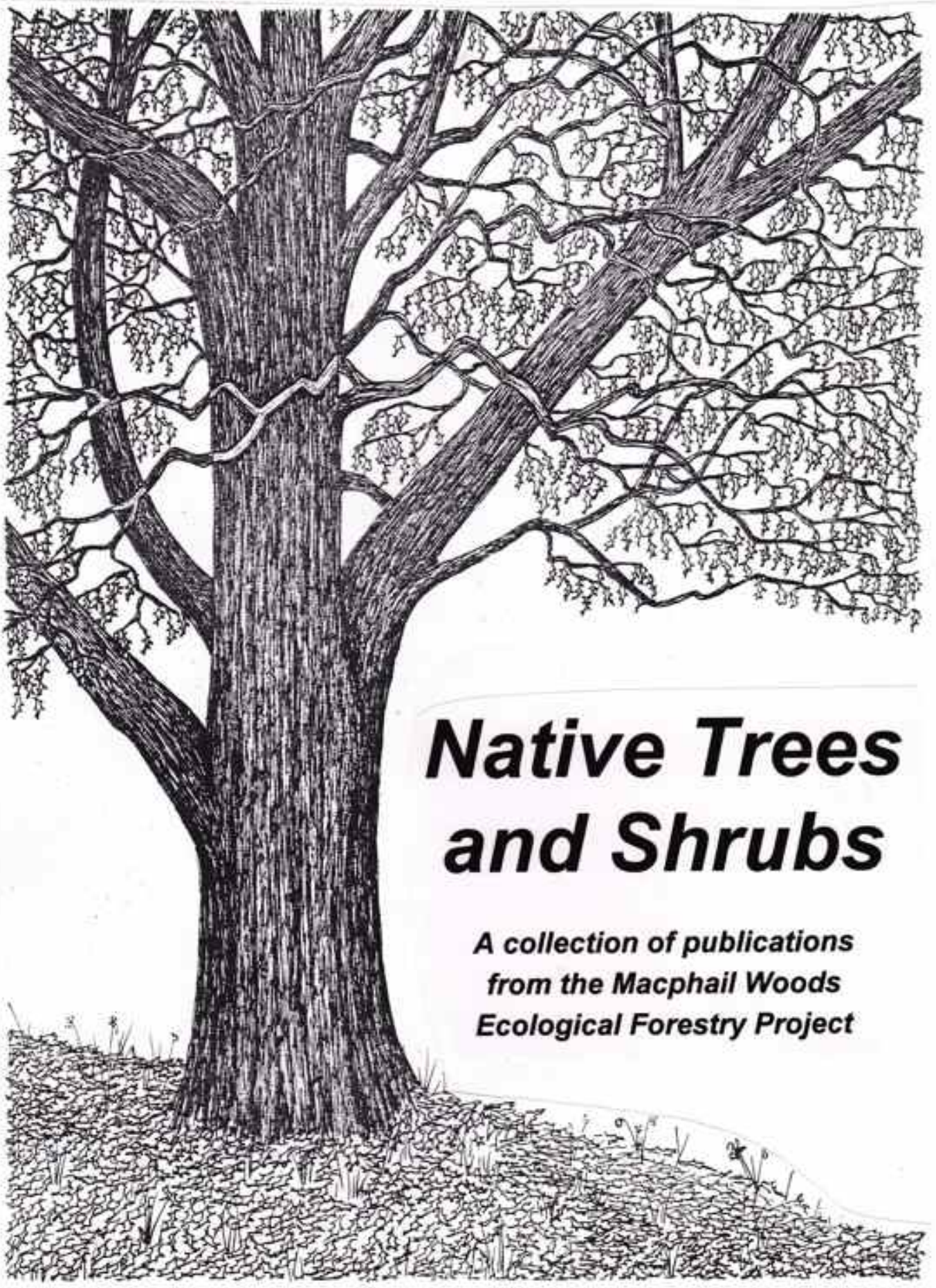

Native Trees and Shrubs

A collection of publications from the Macphail Woods Ecological Forestry Project

An introduction to Native Trees and Shrubs

Even before the first seeds were planted in the Macphail Woods nursery in the fall of 1991, we were thinking of ways to help people restore forests. The Acadian forest, which features such a variety of high-valued and long-lived species, was becoming increasingly rare. It seemed a broad range of people had to become involved if this restoration was to succeed - students planting at schools, landowners reforesting their property and homeowners planting their local areas. In 1994, we printed a small run of "Native Trees and Shrubs". Building on that success, we published "More Native Trees and Shrubs" and "Tree Sheets" - all aimed at making forest restoration easy.

This publication is a compilation of the previous three booklets, with some changes and additions. It is not the complete work on native trees and shrubs that will be done someday, but it should give people the tools to actively participate in making significant environmental improvements.

Many people and funding agencies have been involved in the production of the Macphail Woods publications. This collection was financially supported by the provincial Department of Technology and Environment's Wildlife Habitat Improvement Program, the Environmental Coalition of Prince Edward Island and the Sir Andrew Macphail Foundation. Past funders for the publications have included Environment Canada, the provincial Fish and Wildlife division, Human Resources Canada, the National Fish and Wildlife Foundation, Mountain Equipment Co-op and the Samuel and Saidye Bronfman Family Foundation. As always, this publication owes a debt of thanks to the late Geoff Hogan for his inspiration and support.

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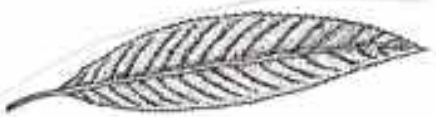

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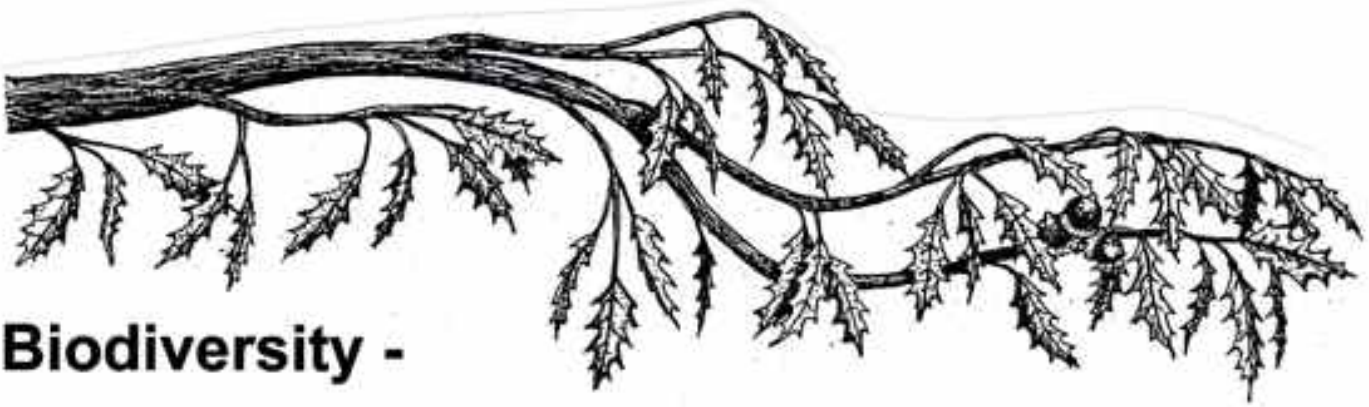


Biodiversity - why worry about it?

"If the land mechanism as a whole is good, then every part is good whether we understand it or not. If the biota, in the course of eons, has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering."

Aldo Leopold, "A Sand County Almanac"

Over the past few years, much has been written on preserving biological diversity (or biodiversity) around the world. Biodiversity is the variety of life and all its processes and includes the living organisms, their genetic differences and the communities in which they occur.

"Management for biodiversity consists of providing recognition of, and appropriate consideration for, all living things because of their contributions to a healthy ecosystem. This principle acknowledges the inherent value of living organisms whether or not their benefits are fully known and understood at the present time. Stewardship that incorporates biodiversity is also likely to help protect the health and welfare of people." **David W. Taber, Department of Natural Resources, New York State College of Agriculture and Life Sciences, Cornell.**

Protection of the world's remaining rainforests, with their incredible variety of plants and animals, is the key to conserving global biodiversity. At the same time, it is also important to protect the diversity of all our natural ecosystems, whether that be wetlands, forests or shorelines. But why bother protecting biodiversity? And can we become "intelligent tinkerers," protecting and restoring biodiversity at home?

The first question is the most complex. Even highly-regarded ecologists and biodiversity experts admit they do not know exactly how ecosystems function. Let's take a small stretch of the Orwell River that runs through the Sir Andrew Macphail homestead. As a forest type, it is primarily large, older hemlock, white pine, yellow birch and balsam fir. Yet the diversity that makes up this ecosystem is very rich and interacts in ways that we do not understand. It includes other trees, soil bacteria, earthworms, flowers, ferns, shrubs, insects, fish, stream invertebrates, resident and migratory birds, rodents and other small mammals, amphibians, moulds and fungi, and of course, humans. There are hundreds, if not thousands of different species interacting along the stream, and we know very little about how they work together.

That they are connected, though, is very clear. A chipmunk stores acorns from a red oak tree underground for the winter. A coyote catches the chipmunk in the open and has it for lunch one day, and the acorns are free to germinate into seedlings, which one day may grow into large trees that produce more acorns. Or take the caterpillar feeding on the leaves of speckled alders along the stream. It soon becomes a snack for a yellow-rumped warbler, which in turn might be eaten by a sharp-shinned hawk. These are all components of the "web" that makes up an ecosystem.

What happens to one species if we remove another? Species have multiple roles to play within a given ecosystem - a tree stores carbon, provides nesting sites and food for a variety of animals, and will provide a source of nutrients for a future forest. A chanterelle mushroom helps the trees around it absorb nutrients from the soil and is a source of food for red squirrels and humans. Scientists do not know what species are most important. Taking away one component of an ecosystem can have disastrous effects on the health of that community. We should protect biodiversity since we do not know what parts of the ecosystem might turn out to be important.

Another reason to protect biodiversity at home is the example it sets for others. It is critical to global environmental health that countries with vast tracts of undisturbed rainforest do not continue or accelerate present harvesting rates. Forests provide humans with a wide variety of products, from foods to medicines to chemicals. At the same time, we know that few forest plants have been tested for what they might someday offer to humans. Western yew growing in British Columbia forests is the source of taxol, one of the most potent anti-

cancer substances ever found and tests for medicinal properties are being done on our local Canada yew. There are undoubtably many more plants that have similar benefits to offer, if only we take the time to look. If wealthy countries can not conserve biodiversity, how can the world's poorer countries ever be expected to? The tree and shrub species in most forests add a small but important part to the diversity of that community. The mixture of species and ages provides homes and food for a variety of wildlife. It also protects the forest from large-scale destruction by insects and diseases, and makes excellent use of available sunlight, soil and water resources. Protecting biodiversity in forests safeguards those ecosystems and helps maintain healthy wildlife populations.

Much concern about the worldwide loss of biodiversity originally focussed on endangered species. Today, it goes beyond that, to include protection of ecosystems and restoration of degraded areas. Edward O. Wilson advises us to "go beyond mere salvage to begin the restoration of natural environments, in order to enlarge wild populations and stanch the hemorrhaging of biological wealth. There can be no purpose more enspiriting than to begin the age of restoration, reweaving the wondrous diversity of life that still surrounds us."

It is important to remember that biodiversity does not mean variety at any cost. Zoos contain an incredible diversity of wildlife, yet they do not represent biodiversity. The goal is to have healthy, fully-populated communities or ecosystems with the wide variety of inhabitants that would naturally occur in that area. Obviously this does not mean that ecosystems will remain static. They change by themselves over time, and human activities and interventions can bring both positive and negative changes. Protecting or restoring biodiversity means looking to work with nature, using native species whenever possible.

The following pages are meant to be a guide, rather than a blueprint, for using native trees and shrubs to restore biodiversity, protect watersheds, enhance habitat for wildlife and add beauty to our homes. For a variety of reasons, it is impossible to be exactly sure what plants are or are not natives. The debate is not critical. Plants migrate, their seeds spread by wind, water and animals (including people). There are plants native to New Brunswick and Nova Scotia that are not considered native in this province. Would they have naturally migrated here, spread by wind or animals? And since 80% of Prince Edward Island was cleared for farming by the late 1800's, many small populations of trees and shrubs could have been wiped out without anyone being aware of the loss.

The Plants of Prince Edward Island (updated in 1985 with new records) is the best source of information and we try to stay within their findings of native and introduced species. No effort is made to list all the native trees and shrubs, especially since some shrubs such as willow hybridize freely, but we have listed the large majority of the species found on Prince Edward Island.

Native plants are usually very reliable - they have adapted to the climatic conditions of the area and serve a variety of functions within the ecosystem. Most are proven performers - hardy, fitting into a wide variety of habitats, valuable to wildlife, useful for stabilizing streambanks and/or controlling soil erosion. A good starting point to restoring biodiversity is to carefully match the plant to the site. It makes little sense to plant a sun-loving tree in the shade or a shrub that will not tolerate salt spray along the shore. Use common sense and caution when planning and planting, and you won't go too far wrong.

Why plant shrubs?

One question often heard is "why plant shrubs instead of trees?" At Macphail Woods, we use a combination of trees and shrubs in all our plantings. In addition to the diversity of plant species, we gain a variety of feeding and resting areas, food sources and nesting habitat.

The line between trees and shrubs is not a clear one. Distinctions are obvious between a large pine tree and a small, bushy alder. But other species fall somewhere in the middle, or have characteristics of both trees and shrubs. As a general definition, shrubs are low, woody plants that at maturity are under 25 feet (7.6 m) in height. They usually have several stems, but this is more common in some species than others. The definition is not important - the key is how interesting and useful shrubs can be. More and more people working in the areas of forest restoration, wildlife enhancement and watershed protection are realizing the values of shrubs. This is part of an increasing recognition that we need to view ecosystems as more than a few species of trees, ducks and mammals.

The following seventeen shrubs selected are native species, but more important they are proven performers - hardy, fitting into a wide variety of habitats, valuable to wildlife, useful for stabilizing streambanks and/or controlling soil erosion. These will give you a great start towards enhancing the environment.

Red-osier dogwood
(Cornus stolonifera)

Description: this low spreading shrub, seldom reaching more than 4 feet (1.2 m) in height, is easily identified by its red bark. It has small flat clusters of white flowers, producing white berries. Leaves are typical of dogwoods, with distinct veins running towards the tip, while buds are small and opposite.

Growing conditions: found on wet sites and tolerant of flooding, it is common in roadside ditches, damp areas of fields and on streambanks, although it can grow well on drier sites. This dogwood spreads by suckering and layering, forming dense thickets. It grows best in full sun, but will grow slowly, and with less fruit production, in shade.

Propagation: one of the easiest shrubs to grow from either summer or winter cuttings. For larger transplants, make cuttings in the summer and plant to a nursery bed when roots are established. Using this technique, our plants averaged 14 inches (35 cm) at the end of the second summer, with the tallest 24 inches (60 cm). Some were even producing seed. Smaller rooted cuttings are useful in stream plantings, enabling you to put in large numbers of plants with little soil disturbance.

Cuttings can also be taken in the spring and stuck right in the ground where you would like the plants to grow, although you need moist, protected conditions and can expect less success. Seeds usually take one year to germinate, depending on the hardness of the seed coat, but they are easily collected in large numbers and worthwhile growing. Keep an eye on a particularly healthy roadside patch during the summer and collect berries when ripe (late July to the end of August). Crush fruit in a strainer and clean seed. Seeds should be dried if you plan to store them for more than a day or two. Soak seed for 12 hours before planting. This dogwood transplants very well, especially from roadside ditches. Tops should be cut back to just above ground level.

Wildlife uses: berries are a preferred food of ruffed grouse, northern flicker, downy woodpecker, eastern kingbird, common crow, American robin, Swainson's thrush, evening grosbeak, cedar waxwing and purple finch. They are well-utilised by dozens of other species of songbirds, particularly during fall migration. The branches and foliage form dense summer cover, offering protection and nesting sites for species such as the American goldfinch. Flowers are an important source of pollen for honey bees. Red squirrel, chipmunk and raccoon include red-osier dogwood in their diets, while snowshoe hare and beaver browse the twigs in winter.

Areas of usage: one of the most useful native shrubs for landscaping purposes, red-osier dogwood is attractive throughout the year. Creamy white flowers, deep green foliage and red twigs (which make a striking contrast against a winter snowfall) make it an excellent choice for border or clump plantings. This shrub is also well-suited for streamside plantings, especially since it is tolerant of flooding. It makes fairly rapid growth on sunny, moist sites and the spreading roots bind soil to control erosion. Thick foliage provides summer shade to maintain cool water temperatures for fish, while the cover and berries offer additional benefits for birds. Red-osier dogwood is a good low shrub that will help fill in the bottom parts of windbreaks if conditions are not too dry. Clumps of these shrubs, so easy to grow or transplant, will add beauty, food and cover to plantings and increase the number of wildlife species that make use of your windbreak.

Alternate-leaf dogwood
(Cornus alternifolia)

Description: our tallest native dogwood can look like a 6 foot (1.8 m) shrub or a 20 foot (6.1 m) small tree. It is one of the most underrated shrubs, whether native or non-native. The bright green bark is streaked with white, except on the newer wood, where it is dark purple. Clusters of creamy white flowers turn into dark purple berries. Its branches tend to be long and horizontal. Leaves are typical of dogwoods, with distinct veins running towards the tip. Buds are small and alternate.

Growing conditions: often found at the edges of woodlands and as an understory plant in a variety of forest types. It tolerates both sun and shade and will grow on almost any fertile, moist, well-drained site.

Propagation: this is one species we grow exclusively from seed. Collection is easiest along the edges of woods where the fruit crops are usually heaviest, from late July through September. Break the fruit by squeezing between your fingers and plant as soon as possible. Most will not germinate until the second spring, but should grow over 1 foot (30 cm) in that season. Collecting fruit before fully ripe (when still pink) and planting soon after may allow germination in the first spring. This shrub can be grown from cuttings, but our success

rate has been very low and not worth the effort. Few wooded areas have an excess of young plants that have grown from seed. Most young plants are suckers growing from the roots of larger specimens and are difficult to dig up successfully without damaging the parent plants. We do not recommend transplanting this species.

Wildlife uses: berries are a preferred food of ruffed grouse, northern flicker, downy woodpecker, eastern kingbird, gray catbird, American robin, wood thrush, hermit thrush, Swainson's thrush, gray-cheeked thrush, red-eyed vireo, cedar waxwing, evening grosbeak, purple finch and pine grosbeak. Chipmunk and other small mammals make use of the fruit, while buds are eaten by ruffed grouse and ring-necked pheasant. Alternate-leaf dogwood provides cover and nesting sites to many species of birds.

Areas of usage: since this is one of our shrubs that is most tolerant of shade, it can be used extensively in woodland plantings. Plant one or two seedlings wherever there is enough light for them to get established, or in small patch cuts with other species of trees and shrubs. This will help diversify a forest, both in species and height, while providing an additional source of food. As a landscape plant, it is extremely versatile, growing in the sun by itself or in the shade of larger trees. Its physical grace adds a Japanese-like touch to any garden (it is often called "pagoda" dogwood). The dark purple fruit maturing on bright red stems adds to its attractiveness in the late summer. Alternate-leaf dogwood will also increase the variety of songbirds and small mammals that visit your area.

Speckled alder
(Alnus rugosa)

Description: one of our largest and most common shrubs, growing to 25 feet (7.6 m), and forming dense clumps. Bark is brown to blackish-gray and speckled with many white spots. Flowers are non-descript. Male and female flowers appear on separate catkins which form the previous fall. The males are slender and cylindrical and hang in clusters of 3-5 from short leafless branches. Females are cone-like, 1/4 inch to 3/8 inch (6-9 mm) long. Leaves are alternate, oval and toothed. They are dark green above, lighter below and have prominent veins. Buds are set away from twigs on 1/4 inch (6 mm) stalks. Another native alder (downy or mountain alder) has pointed buds tight to the stem. It can be substituted in any plantings on drier sites.

Growing conditions: alder is one of the first species to invade abandoned fields, especially those which are poorly drained. It is also quite common along stream banks and roadside ditches. It makes its best growth in full sun, but is often found growing in the shade along streams. Alder does not tolerate salt spray.

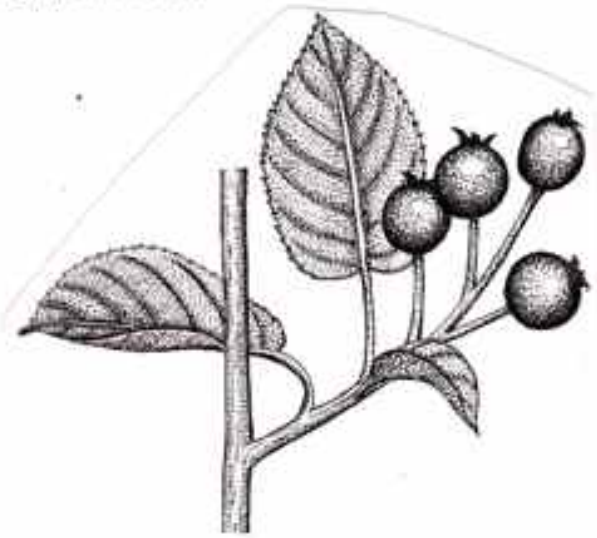
Propagation: this species is most easily propagated by transplants, since they are common along most roadways and even some forest roads. Many farmers will allow you to transplant from their fields. Best results come from newly-invaded fields, where you find transplants between 1-2 feet (30-60 cm) tall. Transplants of any size benefit from being cut off to just above ground level right after transplanting. We are growing some from seed at Macphail Woods - it is easy seed to collect, since the crops are heavy and need little cleaning. Seeds cluster together in strobiles, almost like cones, and can be collected from late September onwards. When dry, the strobiles can just be rubbed together between your hands to release the seeds. Sprinkle over a seed bed and cover with a light layer of soil or sand, then mulch for the winter. They should germinate the next spring.

Wildlife uses: alder seeds are a favourite winter food of common redpoll, pine siskin and American goldfinch and are eaten by dozens of other species. The shrubs are valuable as cover and nesting sites for many birds and their quick growth makes them useful in naturalization plantings. Earthworms, found in abundance in the nitrogen-rich soil under alders, are the preferred food of the American woodcock. Because of this, woodcock feed, nest and rear their young almost exclusively on the ground beneath alders. During late spring evenings, the male performs an impressive court-ship dance in fields next to alder patches. In winter, ruffed grouse eat buds and snowshoe hare browse twigs. Beaver eat alder bark and use the stems for dam and lodge construction.

Areas of usage: alders are generally regarded as a nuisance, though this attitude is beginning to change. They are not one of our more attractive shrubs, but are very useful in windbreaks, preventing erosion along stream banks and building up depleted soils. Alders can annually add up to 140 pounds/acre (160kg/hectare) of nitrogen to the soil by bacteria in nodules on roots and leaf fall. They have great potential in small forest plantations, providing some shade and protection while enriching soil for more valuable trees. Along streams, alders prevent erosion and provide excellent overhanging shade for trout.

Serviceberry
(Amelanchier spp.)

Description: there are many names (Saskatoon, Indian pear, shadbush) and varieties of this species. Hybrids can also form when two varieties interbreed. Height can vary from a 2 foot (60 cm) spreading shrub to a 25 foot (7.6 m) or more tree. Positive identification may be difficult, but the species itself is easy to recognize. Bark is light gray streaked with darker vertical lines. The smooth young bark becomes more flaked with age. Serviceberry is one of our first shrubs to flower, with striking white flowers in May before the leaves have even fully developed. In July and August, edible berries turn dark purple and are sweet and juicy. Leaves are oval to round and usually toothed. Slender twigs bear long, pointed buds.



Growing conditions: serviceberry can be found growing in most conditions, except where extremely wet or the deepest shade. It grows best in full sun and on moist, well-drained soil but can be found along roadsides, invading abandoned fields, in existing windbreaks and in woodlands.

Propagation: while serviceberry can be grown from cuttings, it is seldom worth the effort. Seeds are easily collected and germination is usually quite good. Collect ripe berries during July and August and place in a small pail of dry, clean, sifted sand. Crush berries with your hands while mixing with sand. Sift mixture through a window screen, remove larger pieces of fruit. Plant this mixture of seeds and pulp into rows in the nursery, trying to get about 3 seeds per inch (2.5 cm). If you just planted the berry, which has several seeds, the fruit would probably ferment and heat up enough to damage the seeds. Seeds should be planted as soon as possible and will germinate the next spring. Germination is usually less than 50%, but growth is rapid, averaging about 1 foot (30 cm) per year.

Wildlife uses: one of the most important food sources for birds, especially those fattening up for fall migration. Berries are a preferred food of northern flicker, blue jay, American crow, gray catbird, American robin, hermit thrush, Swainson's thrush, veery, Bohemian waxwing, cedar waxwing, American redstart, northern oriole and evening grosbeak (left) and eaten by over 30 other species. Red squirrel, chipmunk, flying squirrel and red fox are also fond of the fruit, while in winter the twigs and buds are browsed by snowshoe hare and red fox. Ruffed grouse also eat the buds in winter. Serviceberry's early flowering in spring makes it an important initial source of pollen and nectar for bees and other insects.

Areas of usage: since it has very attractive flowers and foliage, serviceberry is well-suited for plantings around the home. This will allow you to get a fair share of the tasty berries before the local wildlife have a feast. They make excellent pies, wine, and preserves, so you might want to plant more than one. These plants fit in well anywhere they can get enough sun to bear fruit, although larger specimens are even found bearing fruit in forests. They do well in windbreaks, roadside plantings and along the banks of streams and ponds. They are resistant to air pollution and suitable for urban plantings.

Willow
(Salix spp.)

Description: the many native species of willow can be quite hard to distinguish from one another, especially since they can hybridize. Some are small shrubs, while others look more like single-stemmed trees, yet they are usually easily identified as a type of willow. Leaves are generally long, fine-toothed ovals, darker green above than below. Twigs are often highly coloured. It is the buds that usually identify willows. The buds are highly

variable - some are fat and pointed while others are narrow and rounded, and colours range from black to brilliant yel lows and oranges. Yet the buds all sit flat to the stem, like a fingernail on a finger. Flowers of both sexes appear as fuzzy catkins (the most notable is the flower of the pussy willow).

Growing conditions: willows thrive wherever there is an abundance of water - along streams and riverbanks, the edges of bogs and ponds, and in areas with a high water table. But these shrubs are some of our most versatile and can be found in roadside ditches, abandoned fields and existing wind breaks. They achieve best growth in deep, rich soil with full sun and adequate moisture. Willows are hardy shrubs that tolerate salt spray, although they grow poorly in shaded conditions.

Propagation: this is a very easy plant to grow from cuttings. Source material is available almost everywhere, especially along ditches where they are continuously cut down. Both winter or summer cuttings work well, with or without using commercial rooting hormone. For larger transplants, make cuttings in the summer and plant in a nursery bed when roots are established. Plants easily grow more than 1 foot (30 cm) per year. Smaller rooted cuttings are useful in stream plantings, enabling you to put in large numbers of plants with little soil disturbance. Cuttings can also be taken in the spring and stuck right in the ground where you would like the plants to grow, although you need moist, protected conditions and can expect less success. Along eroded streambanks, use cuttings up to 3 feet (90 cm) long if the soil is loose enough. Leave only a few buds showing. This allows more roots to form deeper in the soil and helps bind the streambank together. Whenever taking cuttings, it is wise to select material from a variety of plants and areas, so that you are not relying on a narrow base of parent stock.

Wildlife uses: willow buds are second only to the buds of poplars as preferred food of ruffed grouse. Beaver, muskrat, red squirrel, and snowshoe hare all include willow in their diet. The leaves are rich in Vitamin C and zinc. Pussy willows are an important nesting site for American goldfinch, while other songbirds use them to a lesser degree. The cover and protection thickets of willow provide are probably of equal importance to wildlife as its food value.

Areas of usage: one of the best plants for stabilizing lightly-shaded streambanks, or areas with fluctuating water levels such as borrow pits. Willows can attract beaver if the habitat is suitable, which may or may not be desirable. Nevertheless, they are excellent plants for wet sites. They are also useful in wild landscape gardens, since many have particularly attractive twigs and buds. Try to find varieties of particularly pleasing form and colour. Willows are suitable as a low cover in windbreaks as long as the site is not too dry.

Mountain ash
(Sorbus spp.)

Description: two species of mountain ash are native to Prince Edward Island - American and showy. Both are quite common and can grow to the size of a small tree. Small white flowers are borne in flat-topped clusters in May and early June. Clumps of berries turn orange in late August and September, often hanging on through most of the winter. Leaves are alternate and compound, with 11-17 leaflets. Leaflets of the American mountain ash (shown here) are long and pointed, while those of the showy are more rounded at the base. Buds are dark, sticky and can be slightly hairy. Bark is smooth and grayish-brown.

Growing conditions: a common sight along fencelines and windbreaks, mountain ash is also found along hillsides, railway lines or forest clearings. It prefers full sunlight and rich, deep soil, but will grow under a variety of conditions. It will not tolerate flooding, but can stand some salt spray.

Propagation: gather berries in late September and remove pulpy flesh by hand. Each berry contains up to 10 tiny seeds. Plant in nursery beds and cover lightly with soil. Seeds will germinate the second spring and grow quite quickly. At Macphail Woods, our first year's growth averaged 16 inches (40 cm).

Wildlife use: berries are a preferred food source of ruffed grouse, gray catbird, American robin, eastern bluebird, European starling, cedar waxwing, common grackle, northern oriole, evening grosbeak and pine grosbeak. Crops are fairly regular and the ability to hang on throughout winter makes the berries excellent emergency food. Beaver eat the bark and snowshoe hare browse on winter twigs. Yellow-bellied sapsucker drill larger specimens for the sweet sap.

Areas of usage: this is another shrub well-suited for use around the home, since it has attractive foliage, flowers and fruit and is a food source for many bird species. The leaves are poisonous, so this might be a consideration if there are young children present. The fruit can be eaten by humans and is rich in iron and Vitamin C. A few frosts improve the taste, but the berries are most often used in jellies. These shrubs can be used in group plantings or as individual specimens. Mountain ash are suitable along roadsides, in windbreaks, and especially around ponds and open streambanks. They are also useful when converting areas of old field white spruce to a mixed forest. The shrubs provide shade and protection for young trees, and attract wildlife to the area. Plant one or two in openings along with a mixture of other shrubs and trees.

Common elder
(Sambucus canadensis)

Description: a small shrub, usually with many stems arising from the base, that can grow up to 7.5 feet (2.75 m) high. Flat clusters of creamy white flowers contrast with lush, compound leaves containing 5 to 15 leaflets. The dark purple, almost black fruit, about 1/4 inch (6 mm) in diameter, ripens during late August and September. Elder leaves exude an unpleasant odour when crushed. The tips of twigs die back and branches often break off over the winter. Buds are opposite and large, although though not as big as those of red-berried elder and pointed rather than round. Bark is pale deep green, changing to light brown as the plant grows older.

Growing conditions: unlike the closely-related red-berried cousin, this elder likes moist soil and can stand flooding conditions. It is often found in damp areas along roadsides, fencelines and streambanks. Common elder prefers full sunlight but is very tolerant of shade.

Propagation: common elders can be grown from cuttings, both summer or winter. If you want just a few plants, cut the ends of branches with three sets of buds in late fall. Plant directly into a well-worked nursery bed, making sure the soil is loose. Bury two sets of buds and leave the top set exposed. Mulch well. For larger amounts of plants, it is easier to grow common elder from seed. Collect ripe berries, crush them between your fingers, and plant. Each berry contains 3-5 seeds, so they can be planted 1-2 inches (2.5-5 cm) apart. Most will not germinate until the second spring.

Wildlife uses: berries are a preferred food of blue jay, northern mockingbird, gray catbird, American robin, wood thrush, Swainson's thrush, gray-cheeked thrush, veery, cedar waxwing, rose-breasted grosbeak and white-throated sparrow, and are eaten by dozens of other species. The shrub provides good cover, and is used as a nesting site by alder flycatcher, yellow warbler and American goldfinch. In winter, snowshoe hare and other mammals browse the twigs and buds.

Areas of usage: this shrub is useful for planting in a wide variety of sites, as long as sufficient moisture is present. As a landscape plant around the home, it is well-suited to larger clumps or hedges. It fits in well with the earlier-flowering red-berried elder. The combination of lush green foliage, common elder's white flowers and red-berried elder's colourful fruit is striking. The berries of common elder are also used as a food source by humans - as fresh fruit or for elderberry wine, jams, jellies, pies. The twigs, bark and leaves are highly toxic. Common elder adds an important source of food and cover and should be incorporated into any plantings near wetlands, streambanks or ponds.

Red-berried elder
(Sambucus pubens)

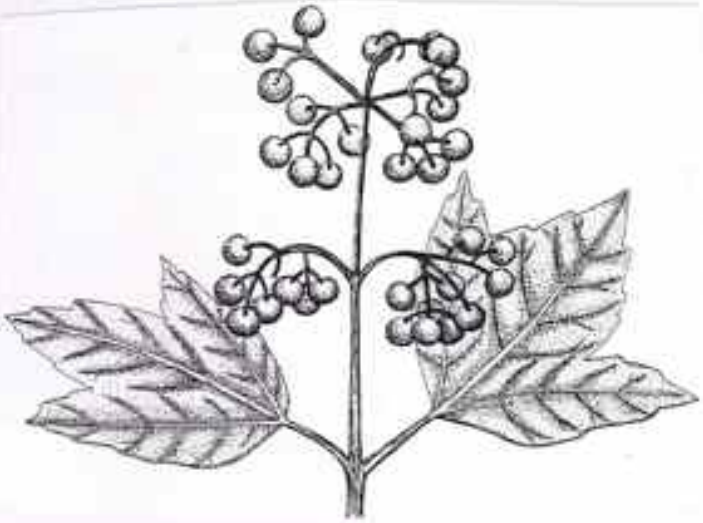
Description: although easily confused with common elder, the red-berried elder has much larger buds and stouter twigs. It tends to be somewhat taller and stockier, growing up to 12 feet (3.7 m) high. Small, creamy flowers give way to cone-shaped clusters of small scarlet berries in June and July. Fruit is thought to be poisonous. Bark is light brown and covered with what appear to be warts. Buds are opposite and the largest of all our native shrubs.

Growing conditions: this elder thrives on fairly dry sites and is very intolerant of flooding. It is common along the edges of newly bulldozed forest roads or the sunnier edges of woodlands. Red-berried elder tolerates some shade but achieves best growth and fruit production in full sun.

Propagation: very easy to grow from seed and will usually show up in large numbers in any nursery or garden if seed sources are nearby, spread by birds. Large numbers of seed are produced annually. Collect when seed is scarlet in late July and August. Germination will often take place over two seasons and percentages can be low. Plant seeds 1/2 inch (13 mm) apart. Since the seeds are so easy to collect, try planting some at several different stages of ripeness, before they turn dark scarlet. This may speed up germination significantly and give you a higher success rate. Because it is quite common along forest roads, large numbers of young plants can often be transplanted. This can be difficult because of the deep, fibrous roots, but with some care and top pruning they survive quite well.

Wildlife use: berries are a preferred food of ruffed grouse, American robin, Swainson's thrush, veery, cedar waxwing and rose-breasted grosbeak. Red-berried elder is also extensively used by many other birds for both food and cover. Red squirrel, chipmunk, skunk, raccoon, snowshoe hare and red fox also eat the berries. Red-berried elder often grows near fox dens, providing cover and food. In winter, ruffed grouse feed on the buds and snowshoe hare browse the twigs.

Areas of usage: as described earlier, it makes an excellent companion in plantings of common elder around the home. Flocks of cedar waxwing often arrive to devour the entire seed crop and it is worth planting red-berried elders just to attract these birds to your home. This plant is well-suited to windbreaks and forest edges. On drier sites, red-berried elder is a better choice than common elder. It is sensitive to salt, so avoid planting it along shorelines and roadsides where salt spray occurs.



Highbush cranberry
(Viburnum trilobum)

Description: this is one of our more confusing native shrubs, since it is not a true cranberry and has a European cousin *(Viburnum opulus)* that is quite common locally. It grows up to 15 feet (4.6 m) high, with clusters of white flowers in late June. Fruits are cranberry-size and bright red, often hanging on through the winter. Leaves are three-lobed and maple-like, but vary considerably even on the same shrub. Buds are opposite and the tips of twigs die back during the winter. Bark is smooth and gray to light brown. The European variety is generally found around homesteads and parks and produces bitter fruit often totally ignored by wildlife. The native variety is more at home along streams, swamps and low, open woods. Its berries are tastier and seem to be eaten before the non-native variety.

Growing conditions: can be found in damp thickets and moist woods, but will grow on drier sites. It does best on rich soils and full sunlight although it is quite tolerant of a variety of conditions.

Propagation: if you can find sources of native highbush cranberry, cuttings are the easiest method of propagation. Summer cuttings work especially well, with success rates usually over 90 per cent. Seed takes two years to germinate but should give satisfactory results. Make sure to either clean the fruit or crush the berries between your fingers to break the skin before plant ing. Each fruit contains one flat seed.

Wildlife use: native highbush cranberry fruits are much more desirable for wildlife than those of the showier European variety. It is a preferred food only of ruffed grouse and cedar waxwing, but fruit is also eaten by over 20 other species. More importantly, fruits hang on throughout the winter and serve as critical emergency food when other sources are not available. Because the tips die over the winter, plants become very bushy as they get older. They provide valuable cover and are used as nesting sites by several species of birds.

Areas of usage: for landscape planting, it is hard to beat highbush cranberry. While not the best of our shrubs for wildlife, it is a very attractive plant and the persistant ruby-red berries are a pleasing sight throughout the winter. Berries are edible (though not choice) and were once commonly used with other fruits in pies and jams. Around the home, plant highbush cranberry singly, in clumps or as a hedge. These plants can also be used as part of a windbreak, along streams or when planting the edges of ponds. Since they can grow in sun or shade and in moist or dry conditions, you have flexibility in planning where to use them. Unfortunately, they are sensitive to salt spray and should not be used along roadsides and shorelines.

Wild raisin
(Viburnum cassinoides)

Description: also known as witherod, this common woodland shrub grows to 12 feet (3.7 m) tall and has umbrella-shaped clusters of white flowers. In early September, each cluster will have green, white, pink and dark purple fruit present, as ripening is independent. If not eaten by birds, fruits turn dark and shrivel like raisins. Leaves are opposite, thick and leathery, and vary even

on the same shrub. Some are heavily toothed while others have almost smooth edges. Light brown buds are very distinctive, lance-shaped and 1/3-1/2 inches (8-13 mm) long. Bark is grey or brown and covered with small white spots.

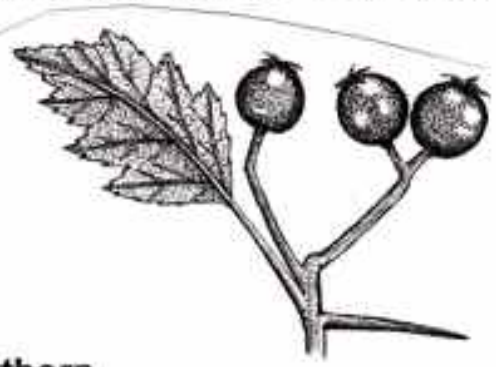
Growing conditions: often present as an understory plant in mixed forests, it is common in a wide variety of habitats. Wild raisin prefers moist, shady sites, but can grow in almost any condition - in clearings, on the edges of swamps and along roadsides. It is one of our most shade and flood tolerant shrubs.

Propagation: despite other information we have read, production from seed is quite easy. Crops are usually heavy, making seed collection a simple task. Mash ripe fruit in a strainer with water and clean seeds. Plant in the fall. Germination occurs late in the first summer and is usually less than 50%. Plant seeds about 1/2 inch (12 mm) apart. They will continue germinating throughout the first growing season, even into November. A light mulch during summer and fall protects the soil from drying out and allows for late germination. Early seed collection may improve germination rates.

Cuttings are useful for certain purposes, such as along steep streambanks where you may not wish to dig much of a hole for roots. We have had more success with summer cuttings than winter cuttings, but neither method has been as easy or productive as growing plants from seed.

Wildlife use: unlike some other shrubs, wild raisin consistently bears heavy crops of fruit. Berries are not a preferred food, but are eaten by ruffed grouse, American robin, rose-breasted grosbeak, purple finch, cedar waxwing and other birds. Snowshoe hare, chipmunk, red squirrel, skunk and mice all eat the fruit, which can hang on late into the winter. Especially where it forms dense thickets, wild raisin provides valuable cover for many types of mammals and birds.

Areas of usage: this is another excellent ornamental shrub, with lush foliage, white flowers and very attractive, multi-coloured clusters of fruit. The foliage can also be quite glossy and in fall the leaves turn rosy-orange. Due to its shade tolerance, it is important as an understory shrub in forest plantings. Within a forest, planting wild raisin will increase diversity of height, cover and food sources. Wild raisin can also be planted along the banks of streams and ponds, windbreaks and roadsides. Since it is salt tolerant, it is suitable for coastal plantings.



Hawthorn
(Crataegus spp.)

Description: another shrub with a wide variety of species, generally from 6 feet (1.8 m) to 20 feet (6.1 m) high and forming dense thickets. Keys to identification are the clusters of orange-red "haws" or fruits, and the long, hard thorns. Leaves are opposite, toothed and usually lobed. Showy clusters of white flowers give way later in the year to small apple-like fruits, which often remain on the shrub late into the year. Buds are small, brown and rounded, and thorns can be over 2 inches (5 cm) long. Bark is red to grey with lighter spots.

Growing conditions: commonly found on abandoned fields, forest edges and around older homesteads, it is adaptable to a wide range of conditions. Hawthorn prefers rich, moist well-drained soil but will tolerate some flooding. It grows best in full sun and makes poor growth in shade.

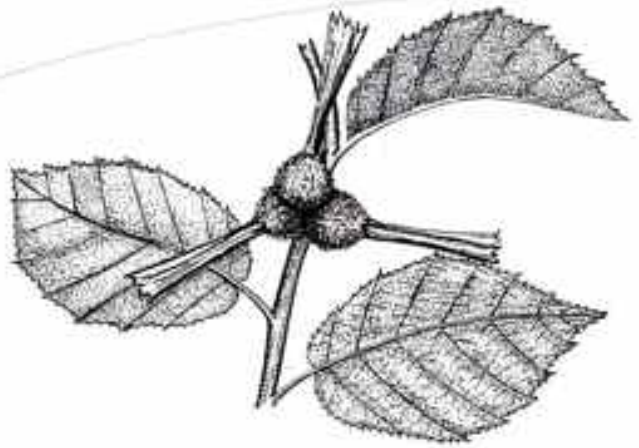
Propagation: this is one of the hardest natives to grow from seed. Transplanting from the wild is the best route, again taking smaller plants. Remember to wear thick gloves, as the thorns really can tear up your hands. If you would like to try seeds, collect fruit from September on and clean by hand. Each fruit contains 1-5 seeds, with extremely hard seedcoats. Germination usually takes place the second spring after planting, but may take longer.

Wildlife use: hawthorn's value to wildlife is not as a preferred food, although it is well-utilized by ruffed grouse, American robin, cedar waxwing, fox sparrow and pine grosbeak. More important are its emergency food value and the protection it offers. Since the fruit hangs on quite late into the winter, it is often available when other food is not. The heavy thorns also provide the best protection for small birds fleeing hawks and other predators. This is also why hawthorn is used as a nest site by so many species. In winter, snowshoe hare browse on twigs and buds.

Areas of usage: this is an excellent plant to have around the home in combination with some of the more important fruit bearers, such as serviceberry and the dogwoods and elderberries. Allow it to form a dense clump (you probably will have little choice, since it freely spreads from root suckers). The flowers and berries are quite attractive and its protective thorns are especially valuable near feeders. This is also a good choice for windbreaks, and unshaded streambank and pondside plantings. It should not be planted near commercial apple orchards, since it can act as a reservoir for the apple maggot. It can also spread into farmlands, causing flat tires on tractors and damage to cattle feet. Take this into consideration and avoid planting in livestock areas or where spreading will cause problems. Hawthorns are sensitive to salt and are poor candidates for shore plantings or at the edge of salted roads. Despite these concerns, hawthorns should be greatly encouraged in appropriate areas.

Beaked hazelnut
(Corylus cornuta)

Description: this small shrub grows up to 10 feet (3 m) under good conditions. Male flowers appear in the form of small catkins in fall, pollinating tiny red female flowers in the spring. This is our only nut-bearing native shrub, producing large round nuts, covered with bright green bristly husks that form a long "beak". The nuts may grow singly, but more often are found in clumps of 2-3. Leaves are alternate, toothed and bright green. Buds are small and round, on slender twigs. The bark is light brown, often with a white striping.



Growing conditions: often found in the forest understory and along the edges of forests, hazelnut tolerates fairly heavy shade, especially from tall, old trees. It

grows best and produces more fruit in full sun. Hazelnut prefers rich, well-drained soil, but can grow on the edges of wet sites.

Propagation: transplanting small root suckers from larger plants can be done quite successfully with a moderate amount of care. Seed is the best route for more than a few plants, but it is not easy. Red squirrels seem to come out of nowhere just before the nuts are ripe and strip the shrub. Collect nuts when husks are starting to turn brown, although they usually don't last long. Find an area with lots of shrubs bearing nuts and race the squirrels. Keep nuts in a dry place for a few days and remove the husks. Nuts are best planted in a bed that can be screened with wire mesh small enough to keep out squirrels. No matter what you do, germination will probably be low. Despite this, it is still a very worthwhile shrub to grow.

Wildlife use: as you would expect, the nuts are rich in protein and fat and favorites of red squirrel and chipmunk. They are also a preferred food source of ruffed grouse, ring-necked pheasant, hairy woodpecker and blue jay. The buds in winter and catkins in spring are a valuable protein source for ruffed grouse, snowshoe hare and American woodcock. Snowshoe hare heavily browse young shoots during the winter.

Areas of usage: this is another good choice for an understory shrub when rebuilding forests, or just to add to a wooded area lacking diversity. Like many shrubs, hazelnut plays an important role in nutrient cycling within a forest. Its leaves are rich in calcium and manganese and help fertilize nearby trees and other plants. This attractive shrub is useful for plantings around the home where some shade and protection are available. The nuts are tasty and in the past were much more commonly eaten by humans. Since it does not tolerate much wind, hazelnut grows poorly in open windbreaks, but can be used along streambanks.

Choke cherry
(Prunus virginiana)

Description: commonly a shrub 6-20 feet (1.8-6.1 m) tall, with gray bark marked by small pale spots. Leaves are dark green and finely-toothed. Although the shape is oval, choke cherry leaves are broader near the tip than at the base, making them easy to recognize. Clusters of red cherries turn dark purple in late August and September. These fruits are very sour but are edible, and contain a single seed. Twigs are stout and when the bark is scraped, give off an unpleasant odour. Buds are alternate, pale brown and pointed.

Growing conditions: common along edges of woodlands and in existing windbreaks, choke cherry prefers rich, moist well-drained soil and will not tolerate flooding. It will grow under light shading but best fruit production occurs in full sun.

Propagation: young seedlings are easy to transplant where they can be found in the wild. When growing from seed, collect fruit when ripe in late-July through September. If the fruits are ripe, the seeds are very easy to clean and it is worthwhile taking this extra step. Just mash ripe fruit in a strainer with holes small enough to catch the pits and rinse under water.

Wildlife uses: fruits are a preferred food for ruffed grouse, pileated woodpecker, yellow-bellied sapsucker, eastern kingbird, common crow, gray catbird, American robin, wood thrush, Swainson's thrush, gray-cheeked thrush, eastern bluebird, cedar waxwing, European starling, rose-breasted grosbeak and evening grosbeak. Dozens of other bird species utilize the fruit to a lesser degree, as do many small mammals. In winter and spring, red fox, skunk, chipmunk and snowshoe hare browse twigs and buds. This shrub bears consistent, heavy crops of fruit.

Areas of usage: although one of the best food sources for wildlife, regularly bearing heavy crops, choke cherry has some faults. The leaves are poisonous to humans and cattle, so this should be taken into consideration if there are young children around or cattle have access to the area. It also is a host of black knot fungus, showing up as black growths on branches, which make it less than ideal for landscaping around the home.

Further, it is a host of another disease which will kill commercial cherry and peach trees nearby. Take this into consideration and avoid future difficulties with neighbours. So why plant choke cherries at all, especially since they can spread aggressively? Their quick growth and heavy crops of fruit make them excellent plants for windbreaks if cattle are not farmed in the area. They can also be used in forest plantings when converting areas from old field white spruce to a mixed forest, providing shade and protection for other seedlings while attracting wildlife. Choke cherry is also resistant to salt and can be used along roadsides and shorelines. The closely-related pin cherry is also an exceptional wildlife plant but more often grows to a tree form and will be discussed in a future publication on native trees.

Staghorn sumac
(Rhus typhina)

Description: one of the easiest shrubs to identify throughout the year, staghorn sumac has a spreading, open form growing up to 15 feet (4.6 m) tall. Tiny green flowers in the spring are insignificant, but are later replaced by large cones of crimson berries that remain throughout the winter. Leaves are alternate, compound and turn a beautiful scarlet red in the fall. Buds are small, covered with brown hair and borne on fat, furry twigs. Bark on older wood is smooth and grey to brown.

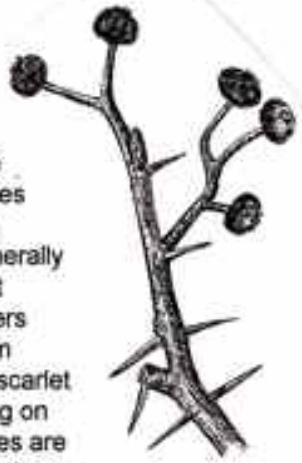
Growing conditions: sumac is commonly found on abandoned farmland, near old homesteads or along fencerows. It prefers full sun but will grow under light shading. Sumac does best on well-drained sites and will not tolerate flooding. Even in poor soil, it usually makes good growth and requires little care.

Propagation: this is a very difficult shrub to grow from seed, but fortunately it spreads prolifically from root suckers. Most people who have these shrubs growing on their lawn will let you have some young plants. Dig up small shoots early in the spring before the leaves have formed. It is best to move young sumac to a nursery bed. Water well and keep the bed mulched. After a year or two, they can be transplanted out to the final site. If the suckers do have leaves on them they can still be moved. Just keep them well-watered and mulched and cut them back to just above ground level. Cuttings can be made in the late fall from roots. If you are trying sumac from seed, collect cones when crimson, separate individual berries and plant closely, about 100 to 200/square foot (.09 sq. m). The seed coat is very hard and may take many years before it breaks down enough for the seed to germinate.

Wildlife use: berries are a preferred food source for ruffed grouse, ring-necked pheasant, eastern phoebe, common crow, northern mockingbird, gray catbird, American robin, wood thrush, hermit thrush, eastern bluebird and European starling. It is also used by over 30 other species, and since the fruit hangs on throughout the winter, is another excellent emergency source of food. Honeybees are attracted to the flowers in spring.

Areas of usage: a good choice for landscape plantings around the home, especially where spreading from root suckers will not be a problem. Its distinctive shape, exotic foliage, furry twigs and cones of red berries make it one of the best ornamentals available. Sumac can be used in clumps for more natural plantings, or as a single specimen with root suckers controlled by mowing. Shallow, widespreading roots make sumac a good choice for soil conservation along slopes, streams and pondsides if the soil is well-drained. Staghorn sumac is an excellent addition to a windbreak if the spreading root suckers will not cause problems. Since it is resistant to salt, this is one of the best native shrubs for protection along shorelines or highways.

Wild rose
(Rosa spp.)



Description: a common site on abandoned land, wild roses come in a variety of colours, shapes and sizes. They generally are low shrubs, from 2-6 feet (.6-1.8 m) tall, with pink flowers from May until August. From July onwards, they produce scarlet "hips" or fruits that often hang on throughout the winter. Leaves are alternate and compound, made up of 5-7 small, toothed leaflets. Twigs have distinctive (and very sharp) thorns. Bark is green on new growth and turns red-to-brown as the plant gets older.

Growing conditions: can be found most often on unfarmed pastureland, and in meadows, hedgerows and windbreaks. Of the two main native species, Carolina or pasture rose *(Rosa carolina)* grows on drier sites, while Virginia rose *(Rosa virginiana)* tolerates wetter conditions along edges of marshes or swamps. Both grow best in full sun and will not tolerate much shading. Wild rose suckers freely from roots and underground stems, forming dense colonies if allowed to run wild.

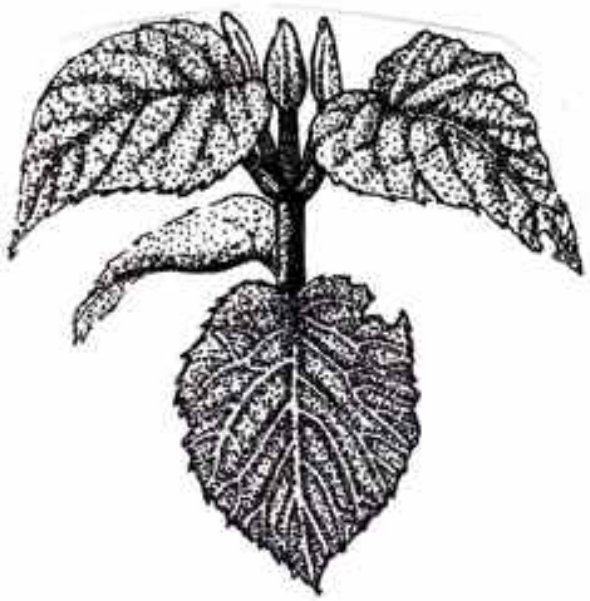
Propagation: transplanting can be successful, but since you are usually digging up runners with few roots, it is best to cut off most top growth above 2 inches (5 cm). Cut just above a bud where possible. Plant where you can provide adequate water, mulch thoroughly, and do not give up hope. Often they will initially turn brown and wither, but weeks later one or two new green shoots appear from the crown. They really are tough, resiliant plants. Summer cuttings also work well if you avoid the soft tips, but success is usually less than 50%. Propagating from seed is the best way to grow large numbers of plants. Collect any time after hips ripen, separate seeds from fruit by hand and plant in a nursery bed. These seeds have hard seed coats and usually take two years to germinate.

Wildlife use: rose hips are a preferred food of northern mockingbird, Swainson's thrush and cedar waxwing. They are also eaten by a dozen other species and used as emergency food during the winter. Ruffed grouse and ring-necked pheasant also eat the buds in winter, while many birds use thickets of wild rose for cover and protection from predators. Many types of small mammals are also known to browse fruit, leaves and twigs.

Areas of usage: a very ornamental addition to semi-wild landscape plantings around the home. Again, plant wild rose only where thickets can form. Leaves change colour in the fall and the scarlet fruit contrasts nicely against a snowy background. Rose hips are rich in Vitamin C and can be added to jellies and teas. Wild roses are also useful as a low shrub in windbreaks and hedgerow plantings, enhancing both the landscape and wildlife habitat. Since wild roses frequently hybridize, try to plant roses from wet areas into wet areas and from dry sites to dry sites. This is a good idea whether transplanting or growing from seed or cuttings.

Hobblebush
(Viburnum alnifolium)

Description: one of our showiest plants throughout the year, although these shrubs are so rare that few Islanders have had the chance to see them. Growing to a height of 6 ft. (2 m), hobblebush has opposite, velvety buds. These develop into large, heart-shaped leaves that take on a very attractive bronze colour in the fall. The flowers form large, flat clusters early in the spring and are very white. The berries turn cranberry red in late August and finally purple-black when fully ripe. These plants are a pleasure to see in any season, though so rare that most Islanders never see them.



Growing conditions: like so many of our rare plants, these favour shade and rich soil and are usually found in mixed wood stands.

Propagation: the plant gets its name because if the tips bend down and touch the ground, roots can form and the shrub can literally "hobble" you as you walk through the woods. The easiest way to grow this shrub is from seed. When ripe in mid-to-late September, the seeds are mashed by hand to break up the fruit and planted every 2 in. (5 cm) in rows 4 in. (10 cm) apart, at a depth of 1/4 in. (6 mm). Seeds generally take two years to germinate and should be lightly mulched and given light shade. Any that germinate the first summer should be transplanted to a separate nursery bed under light shade and mulched well.

Wildlife uses: hobblebush produces heavy crops of berries, which are used by ruffed grouse (below), pine grosbeak, Swainson's thrush and other birds. Although it is not listed as a preferred food by most wildlife manuals, for several years now the heavy seed crops have vanished quite quickly, so they obviously are a favourite food of some Island birds.

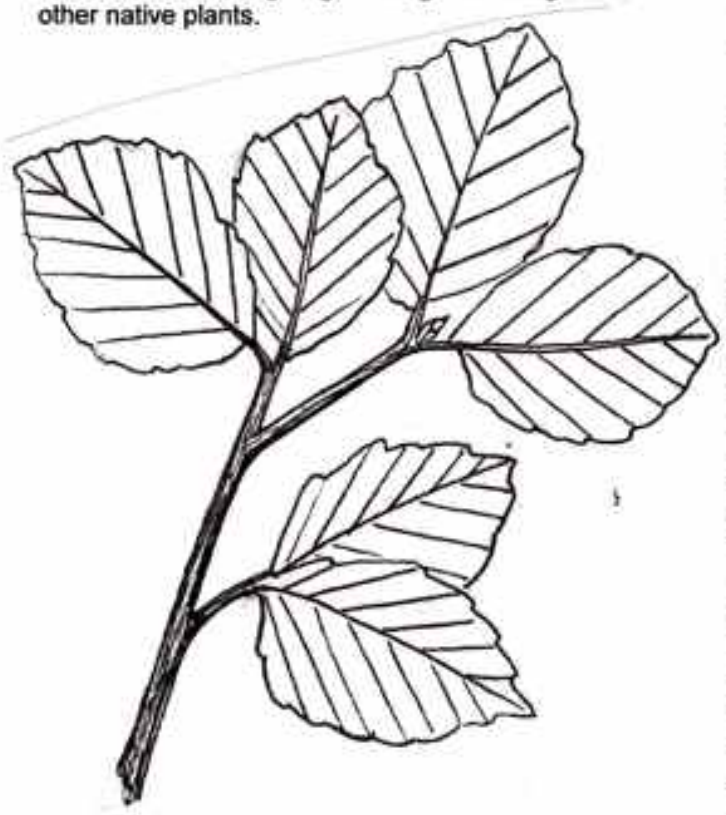
Areas of usage: a premier landscaping plant if you have any shade at all around your home, especially given its attractiveness throughout the year. It works best in a naturalized situation, perhaps in a wild area under larger trees. It is also important in woodland plantings, not only for its beauty but for its heavy seed crops for wildlife and the diversity it provides.

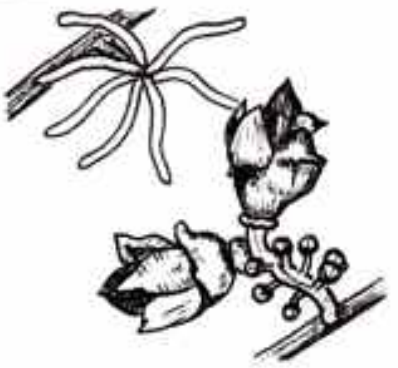
Witch hazel
(Hamamelis virginiana)

Description: another very attractive yet rare native shrub. It grows to a height of 20 ft. (6 m) and is a slender, graceful shrub. The leaves are 2-6 in. (5-15 cm) long, wavy and toothed, and turn yellow in the fall. In September and October, as the leaves are falling, the bright yellow flowers bloom. The flowers look like those of the forsythia shrubs commonly planted around Island homes, yet appear at the opposite end of the growing season. The seeds are shiny and black, encased within a capsule 1/2 in. (1.2 cm) long. Buds are small, velvety-brown and alternate.

Growing conditions: the best growth is made under light shade in rich, well-drained soil, but it tolerates a wide range of soil conditions. Witch hazel is a slow growing shrub but is quite hardy.

Propagation: collect the capsules as they turn from green to light brown throughout September. Place these in a paper bag or cardboard box in a warm place and allow to dry. The bag should be closed, since as the capsules dry, they split in half and throw out the seeds with a loud "snap". Plant the seeds every 2 in. (5 cm) in rows 4 in. (10 cm) apart, at a depth of 1/4 in. (6 mm). Seeds generally take two years to germinate and should be lightly mulched and given light shade. Any seedlings that germinate the first year should be carefully transplanted to another bed with some shading. Witch hazel is not as forgiving of rough handling as some other native plants.





Wildlife uses: the value to wildlife is relatively low, but red squirrel and ruffed grouse eat the seed and the plant provides cover and protection for other species.

Areas of usage: another excellent landscape plant if you have some shade. The plant has a very attractive shape and fall leaf colour and the unique time of flowering alone makes it a worthy addition to any suitable yard. Again, it is important in wood land plantings for its beauty and the diversity it provides.

Witch hazel is very important as a medicinal plant. Twigs and bark are used to produce oil of witch hazel, while the roots are used to produce a tincture known for its healing powers. Also, witch hazel is the shrub of choice for making the divining rods used in water-witching. This is one of the rarest native shrubs in the province, being found to date only in Murray River and a few isolated plants in Valley.

Some of our rarer native trees

As with the shrubs, we simply didn't have the resources to put together fact sheets on every native tree species, though we hope to sometime in the future. The following six deciduous trees and three conifers are not common on the Island but can play an important role in restoring this province's natural diversity. Most are highly valued for their wood and are desirable for a variety of other reasons. Some of these trees are so rare that they should be encouraged on every suitable site in the province just to start to bring back healthy populations. Since so little of the original Acadian forest mix still occurs, we should look both at restoring suitable sites and conserving the remaining healthy areas. This might mean protecting that one beautiful elm in the stand or not clearing land that is regenerating in red oak.

At Macphail Woods we are especially interested in finding any seed sources for black ash and ironwood. While we have a few sources for ironwood, black ash has proved to be elusive, though it certainly grows here. If we are to restore Island forests, we need to find and maintain the best seed sources of these and many other species of both trees and shrubs. Please let us know if you find some of these rarer species.

Ironwood (*Ostrya virginiana*)

Description: this member of the birch family is one of our rarest native trees. It is mainly found in scattered patches around Prince County, although there are small amounts in other areas. Also known as eastern hophornbeam, it is a relatively short-lived and small tree. It grows to be 40 ft. (12.5 m) tall and 12 in. (30 cm) in diameter, although it rarely reaches this size. It is a slender tree, with leaves like yellow birch, although ironwood leaves have teeth of two different sizes. The bark of ironwood is light brown and scaly, shredding off in narrow, curling strips.

Growing conditions: ironwood prefers rich, moist soil and grows best in the partial shade of other trees.

Propagation: in September, small, greenish seeds can be collected from the trees. The seeds are enclosed in a papery sac, with many sacs being held together in a cluster like true hops. When ready for harvest, the clusters will start to turn brown and some will drop to the ground. Pick seeds off the tree if possible. When you separate the seed from the sac, you might want to use thin gloves, since the sacs have fibreglass-like hairs that stick into your fingers. Plant seeds every 2 in. (5 cm) in rows 4 in. (10 cm) apart, at a depth of 1/8 in. (3 mm) and mulch for the winter. If the bed is in full sun, some form of shading should be provided during the growing season. Most seeds take two years to germinate but any that germinate the first summer should be transplanted to another bed. This avoids the problem of having older plants in the bed when seedlings are germinating the second year. We have not had very high rates of germination in this species so be sure to plant lots of seed.

Wildlife use: the buds and catkins of ironwood are valued by ruffed grouse and red squirrel. The seeds are eaten by purple finch, rose-breasted grosbeak and other birds.

Areas of usage: this tree almost lives up to its name. Its wood is our hardest and heaviest and in the past was used for tool handles, sled runners, mallets, ladder rungs and firewood. However, until ironwood is much more common in our woodlands, it should be a protected species in almost all woodlands - it is critical that we keep as many sources of seed as possible. It is an excellent choice for underplantings or interplanting after a mixed wood thinning, and will help provide diversity of height in older forests. As well, it is a good for landscape plantings where there is shade.

Red oak (*Quercus rubra*)

Description: our provincial tree and only native oak is now quite rare and primarily found in scattered areas around Charlottetown, Tracadie and Georgetown. The largest specimen on P.E.I., a 5 ft. (1.6 m) diameter giant in Charlottetown's Royalty Oaks, fell to the ground in 1994. Red oak leaves are deeply cut with pointed lobes. Some oaks around churches and homes look like red oak but are actually scarlet or black oaks. It can be hard to tell them apart (and they can hybridize) so if you are collecting from these areas get a leaf sample and acorns and check them with a good field guide.

Growing conditions: red oak is a fast-growing tree and makes good growth in almost all well-drained soils. It can grow in full sun or partial shade.

Propagation: acorns should be collected off the tree when some have already started to fall to the ground, usually mid-September to late-October. Seeds can be visually inspected and those with holes discarded. Another method is to put them in large buckets of water and keep only the ones that sink. If you use raised beds with wooden sides and can use hardware cloth to protect the acorns from squirrels, fall planting works well. Otherwise store in a stratification bed (see page 40) and spring plant as soon as the ground is workable. Place acorns every 2 in. (5 cm) in rows 6 in. (15 cm) apart, at a depth of 1 in (2.5 cm). Oaks grow long tap roots, so either plant seedlings out the second spring, or transplant them to another bed after pruning the tap root to 6 in. (15 cm). Red oak responds well to pruning. If the seedling does not have a straight, single stem, it can

be pruned back almost to the ground in the spring. One or more sprouts will come up and these can be pruned to give the desired structure.

Wildlife uses: as you will no doubt experience if you plant any amount of red oak, snowshoe hare love to browse oak and red squirrel feast on the acorns. As well, blue jay, grackle, the woodpeckers, ruffed grouse and many other birds and small mammals favour acorns, making red oak one of our most important wildlife trees.

Areas of usage: given its status as provincial tree, its wide range of uses, quick growth and high value, red oak is at the top of our list for tree planting. It can be used in reclaiming fields, especially if there is some alder present, and also works well in diversifying existing conifer plantations. At Macphail Woods we use it in almost all of our forest plantings, except in wet conditions or under dense shade. The wood is hard and heavy and one of the most valuable that can be grown here. It is used for furniture, flooring and interior finish work. Red oak is also a premier tree for planting around homes and can be used in windbreaks along with other deciduous and coniferous trees.

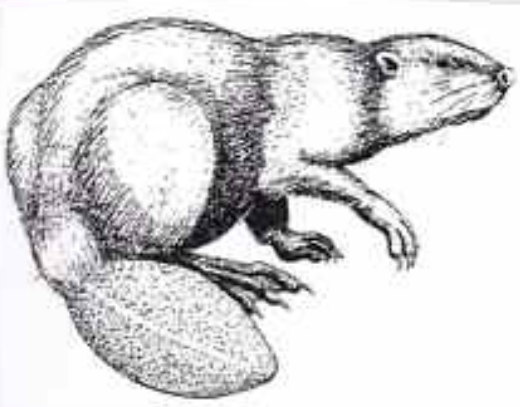
White ash
(Fraxinus americana)

Description: another rare native tree that turns up in surprising places - not only in West Prince, but in scattered patches in Kings and Queens counties as well. It is a tall, slender tree with gray or light brown bark, furrowed into diamond patterns. The leaves are compound, with small stems attaching leaflets to the main stem. The leaflets tend to be slightly rounded. Buds are opposite, furry and dark brown.

Growing conditions: this ash tolerates a wide variety of conditions, from moist soil to dry sites, from partial shade to full sun. It makes its best growth on rich, well-drained sites and light shading.

Propagation: seed should be collected from the tree if possible. Crops are usually quite heavy and occasionally hang on late into the year. Through September and into October, collect seed and plant as soon as possible. If the seed is allowed to dry out, it may take two years to germinate. Plant seeds every 2 in. (5 cm), in rows 6 in. (15 cm) apart, at a depth of 1/4 in. (6 mm). White ash makes very fast growth, generally over 12" (30 cm) each year, so you can have very nice seedlings to plant out quite quickly.

Wildlife uses: the seeds are an important food source for red-winged blackbird, evening grosbeak, pine grosbeak, purple finch and other birds. Beaver often use young white ash for food.



Areas of usage: along with red oak, yellow birch and white pine, it is a favourite tree for reforestation. It can be used to diversify existing plantations, underplanted after thinnings and planted in small openings in areas of old field white spruce. It grows quickly and can be used where raspberries and other competition might pose a problem. The wood is very valuable and used in making canoe paddles and tool handles, framing light vehicles and for a wide variety of other purposes. It is also excellent as an ornamental and can be used as a component in windbreaks.

Black ash
(Fraxinus nigra)

Description: black ash is a slender tree, though not as tall as white ash. It seldom reaches over 50 ft. (16 m) or a diameter of 12 in. (30 cm). It has compound leaves with pointed leaflets that turn yellow in the fall. Unlike white ash, it has no stem connecting the leaflet to the main stem. The bark is grey, with shallow fissures and becoming scaly as the tree ages. Buds are opposite and dark brown to almost black. The seeds are ripe in September and can hang on the tree until late fall. The sam-ara (the actual seed plus the wing that it is attached to) is oblong and has a much broader seed cavity than the white ash.

Growing conditions: generally only found along stream banks and the edges of swamps, although it was used for street plantings in some areas. It grows well in open stands of eastern white cedar, red maple and other swamp hardwoods. It does not tolerate shade.

Propagation: as with white ash, plant seeds every 2 in. (5 cm), in rows 6 in. (15 cm) apart, at a depth of 1/4 in. (6 mm). We have yet to find a good seed source for black ash, so if anyone can help out please contact the Macphail Woods project at 651-2575.

Wildlife uses: as with white ash, the seeds are an important food source for red-winged blackbird, evening grosbeak, pine grosbeak, purple finch and other birds. Beaver will use young black ash for food.

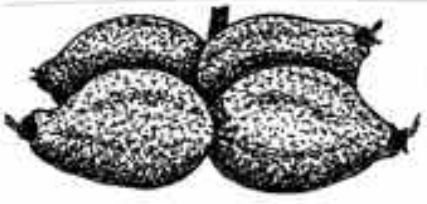
Areas of usage: in the past, black ash was heavily used by native people for basket making and it is still used today for this purpose. It is a good choice for streambank and wetland restoration if the site has full sun.

Butternut
(Juglans cinerea)

Description: there is some debate as to whether this tree is native to Prince Edward Island. There seems to be evidence on both sides of the argument, but it is a rather academic debate. Butternut is native to the Saint John River valley in New Brunswick and would have eventually found its way here anyway. It is a very exotic looking tree, with large, compound leaves made up of 11 to 17 leaflets. With light shading, trees become tall and stately and make good growth. In spring, butternut trees produce small, purple flowers. Nuts are smaller than walnuts and more egg-shaped. The nut shell itself is very rough.

Growing conditions: butternuts do well in moist, rich soil and with light shading. Several butternut plantations were established at Macphail Woods and Brudenell Park in the early 1980's. Those in full sun are excessively branched and have not made good growth, while those with some shading have done exceptionally well.

Propagation: collection begins when seeds begin to fall, from September to mid-October. As with red oak, fall or spring planting works well. When fall planting, keep nuts in a container for a few weeks until the husks can be rubbed off (this is a messy job, so wear gloves). For spring planting, store in a stratification bed. Plant nuts every 2 in. (5 cm), in rows 8 in. (20 cm) apart, at a depth of 2 in. (5 cm). Butternuts produce tap roots and should be root pruned the same as oaks. Most seed will germinate the first season, but if the winter was very mild, some may not germinate until the second or third growing season. These trees also respond well to pruning, both in the nursery and especially in the field. It makes a world of difference to properly prune young trees, as they often suffer winter damage. If you don't prune them back to a single stem, you will get bushy trees with structural problems. A few minutes with pruning shears will greatly increase the health and value of these trees.



Wildlife uses: butternuts are eaten by red squirrel, chipmunk and blue jays. Smaller birds and mammals often consume butternuts on the ground that have split naturally or have been partially eaten by larger species.

Areas of usage: excellent for diversifying young conifer plantations, these trees can also be planted in openings in old field white spruce. Small patch cuts are ideal places for a few butternuts mixed with other species of trees and shrubs. Try to find conditions where they will be stretching for the sun, instead of making wide, branchy growth. Light shade encourages tall, straight growth, which will produce a higher-value tree. If there is a heavy grass cover, mulch all plantings to conserve moisture and deter mice.

Butternut is also a good choice for plantings around the home. The nuts are tasty, although smaller than walnuts and more difficult to crack. Selecting the largest nuts for seed should produce superior trees. The wood is attractive and easy to work. It is often used for furniture making and decorative woodwork.

Sugar maple
(Acer saccharum)

Description: perhaps our most beautiful native tree, it reaches a height of 80 ft. (25 m) and can be 3 ft. (1 m) or more in diameter. Sugar maples usually grow tall and straight in the forest, while when grown in the open they are shorter and more heavily branched. The leaf closely resembles the emblem on the Canadian flag, sharp-point-ed with rounded notches. Buds are opposite, reddish-brown and sharp. Sugar maples produce a brilliant array of red, scarlet, orange and yellow fall colours.

Growing conditions: best growth is made in rich, well-drained soil and with light shading. It grows mainly in mixed stands with American beech, yellow birch, eastern white pine, red spruce and eastern hemlock and is a key component of our climax Acadian forest.

Propagation: seed should be collected from the tree if possible, or from the ground if the tree cannot be climbed. Seed production is unpredictable there is little available some years. Consider collecting extra during a heavy seed year and storing the seeds in a dry place for future planting. The winged parts of the samara should be dry before picking and some should have already started to fall from the tree. In each paired samara, only one seed is viable. Germination can be poor, so plant more than you think you might need. Plant individual samaras 1 in. (2.5 cm) apart, in rows 6 in. (15 cm) apart, at a depth of 1/4 in. (6 mm). Mulch the area over the winter removing most of this in the late spring. Provide seedlings with light shade during the growing season. After planting out, check seedlings regularly and prune when necessary to maintain a strong central leader. Young plants can be cut back to the ground if they have poor form.

Wildlife uses: seeds of the sugar maple are eaten by grosbeaks and other birds and small mammals. The trees are also extremely important as nesting sites for a wide variety of birds and mammals, and the young plants are often browsed by snowshoe hare.

Areas of usage: sugar maple is one of our best woods for furniture and instrument making, being the source of bird's eye and flamed maple. It is used for veneer, plywood and vehicle stock. Maple syrup and sugar are made from the sap. In forest plantings, it works well in thinnings and even in gaps in old field white spruce. It is valuable as a landscape specimen throughout the year, especially for its fall colours.

Red spruce
(Picea rubens)

Description: a very tall, straight conifer once much more common than it is today. It grows up to 70 ft. (22 m) in height and 2 ft. (60 cm) in diameter. Red spruce can hybridize with black spruce, so it is best to collect from areas with only large red spruce. As a generalization, white spruce is found in old fields, treelines and along the shore, with branches straight out from the trunk. Black spruce is found in wetter areas and the branches droop. Red spruce grows in rich mixed wood stands and is not nearly as bell-shaped as black spruce. Twigs of red spruce are reddish and hairy and the new growth flushes much later in the spring than its other two relatives.

Growing conditions: red spruce grows best in mixed wood stands, often along the sides of streams in deep, rich soil. It is found growing with hemlock, white pine, sugar maple and yellow birch in the climax of the Acadian forest. Light shading when the tree is young keeps it growing tall and straight and prevents the soil from drying out.

Propagation: given the height of most of the red spruce we collect seed from, wait until the red squirrels have knocked down a bunch of cones. This means that you may have to visit the site every few days during October, but it is a lovely excuse to get out into the woods. Each cone will contain many seeds, although some may not be viable. Place the cones in a paper bag or cardboard box with some ventilation, and keep in a warm place. As the cones dry out and open, the seeds will drop out. These can be fall planted or stored in a dry place until spring. Plant seeds every inch (2.5 cm), in rows 4 in. (10 cm) apart, at a depth of 1/4 in. (6 mm). Mulch the

area over the winter removing most in the spring. Beds should have some shade and not be allowed to dry out.

Wildlife uses: all spruce are extremely valuable for wildlife, whether as a food source, nesting site or protection. Red spruce seeds are the preferred food of white-winged crossbill, red-winged crossbill and pine siskin, although many other birds and mammals also rely on them. Especially in hardwood stands which lack conifers, red spruce plays an important role in providing cover and protection for both predators and prey.

Areas of usage: red spruce is very valuable for lumber production and for log home building. It should be a component of many forest plantings, especially after a hardwood thinning where conifers may be lacking. Red spruce does not do well under white spruce, since an attack of spruce budworm will devastate the seedlings, but if the opening is large enough they can be successful. They also make poor growth under deep shade so make sure there are partial openings in the canopy.

Eastern hemlock
(Tsuga canadensis)

Description: although still common in a few areas, hemlocks are quite rare across the province. It is one of our largest native trees, reaching a height of over 70 ft. (22 m) and a diameter of 3-4 ft. (1-1.3 m). Its small, flat needles resemble those of balsam fir, but hemlock needles are attached to the stem by a small, string-like stalk. The ends of the branches and leader also droop, unlike the balsam fir branches which grow straight out to the end. Older hemlock trees have a very round profile, when seen from a distance.

Growing conditions: hemlock makes its best growth in rich, well-drained land, growing with yellow birch, sugar maple, white pine and red spruce.

Propagation: cones can be collected from the tree when ripe in late September and treated the same as red spruce. An easier method is to find a 4-10 year old forest road that has been bulldozed through a stand containing good hemlocks. You will usually find healthy seedlings growing on the roadway. These transplant easily and can go into a shaded nursery bed, at six to 12 inch (15-30 cm) spacings depending on the size of the seedlings. In a few years you can use these transplants for your forest, streamside or home plantings. Placing rotted wood in the hole when planting out will make sure the seedling does not dry out and provide nutrients for future growth. Seedlings should also be mulched well.

Wildlife uses: hemlock seed is a preferred food for American goldfinch (left), boreal chickadee, ruffed grouse, pine siskin and the crossbills. Many other species of birds and mammals eat the seeds. Since hemlock a tree that is long-lived and can grow very large, it is used by raccoon for dens and is a common nesting spot for a wide variety of birds. Hemlocks also offer great cover and protection for both small and large birds and at Macphail Woods the largest hemlock contains a hive of honeybees that has overwintered successfully for many years.

Areas of usage: an excellent species for underplanting, since it tolerates shade. We use it in almost all woodland plantings, especially hardwood thinnings that have few other conifers. We also use hemlock when replanting patch cuts made in stands of old field white spruce. As with red spruce, they should not be planted beneath older white spruce as they tend to suffer more insect damage. This species is also well-suited to stream-side plantings where there is some existing cover. Hemlock can also be used to great advantage around the home. It can be pruned quite heavily and used for hedging if the site is protected, or allowed to grow to its full stature to recreate some wild areas. Many older barns and homes on Prince Edward Island were sided with hemlock boards, but the wood is not as valuable as pine or spruce.

Eastern white cedar
(Thuja occidentalis)

Description: this small tree can reach a height of 40 ft. (13 m), with a diameter of up to 1 ft. (30 cm). The trunk usually has a lot of taper and is often twisted. Leaves are small and scale-like and stay on all year. The bark is thin and reddish brown, furrowing and peeling as it gets older.

Growing conditions: cedar grows in swamps or wet sites, mainly in Prince County. It can grow on dry areas, but usually does not make good growth. It will not tolerate much shade.

Propagation: cedar cones can easily be collected from the trees, since some the branches often droop down within reach. Collect the cones in late September and October, before they turn brown and release the seeds. Treat the cones the same as for red spruce. Seedlings should be given partial shade and not be allowed to dry out. Cedar can also be grown from cuttings, taken in mid-summer or mid-winter and treated with rooting hormone. The rooted cuttings should be raised in a nursery bed for a year or two and given light shading and mulch.

Wildlife uses: a healthy cedar hedge is a thing of beauty, for humans and other forms of wildlife. Seeds are a preferred food for pine siskin and are eaten by evening and pine grosbeak, American redpoll, red-winged and white-winged crossbill and other species of birds and mammals. But it is as protection and cover that cedar excels, since smaller birds can find solace from both winter winds and predators within the dense branches.

Areas of usage: cedar can be used for streamside or wetland rehabilitation and in reforestation on wet sites. Some cedar were planted at Macphail Woods in a wetter part of the old field white spruce area and are growing well. This is due to the dampness of the area and the taller trees around it providing light shade. Cedar can also be used around homes if there is already some protection. It does not make a good hedgerow or wind-break tree if there is no protection, since the leaves dry out from heavy winter winds. The wood is our most rot resistant and is used for fence posts, shingles and boats.

Eastern white pine
(Pinus strobus)

Desription: this species produces some of the largest trees in the province. White pine is the only native pine with bundles of five needles (red pine and jack pine needles come in bundles of two). The needles have a blueish tinge to them and feel quite soft. Though high-quality trees have become harder and harder to find, white pine can grow to 100 ft. (30m) tall and over 4 ft. (1.2m) in diameter. The tops of older specimens often break off, giving them a flat-topped appearance. This makes them easy to pick out from a distance.

Growing conditions: grows on a variety of sites but does best on a moist, sandy soil. It can be found in mixed stands with red pine in the Murray River area and is quite common in hardwood mixes with eastern hemlock. Older specimens can also be found along property lines. Will tolerate a fair amount of shade.

Propagation: the easiest way to propagate White Pine is to collect cones after the squirrels have cut them off the tree. Find large, healthy specimens that have a heavy seed crop and make regular trips to the site. Squirrels cut off the cones and accumulate large numbers under the tree before taking out the seeds. Place cones in a paper bag (this is a very messy job, since the cones exude resin) and store in a warm, dry place. The cones will open and the seed can be shaken out and stored in a cool, dry place. If the seeds are ready, plant in the fall, or you can wait until spring. Plant seeds every inch (2.5 cm), in rows 4 in. (10 cm) apart, at a depth of 1/4 in. (6 mm). Lightly mulch the planted area. Seed beds should be in a shaded area or you can place a shade table above the bed. Like most conifers, white pine seedlings are slow to develop but don't let that deter you from planting them.

Wildlife uses: many eagles nest in the tops of white pine, attracted by their height and wide, flat tops. Robin, blue jay and many other birds are known to build nests in these trees and they make great homes for the cavity-nesting species such as black-capped and boreal chickadee and red-breasted nuthatch. Seeds are favoured by pine siskin, junco, white-winged crossbill, red-winged crossbill, black-capped chickadee, boreal chickadee and a host of other birds. Red squirrel, flying squirrel and chipmunk depend on pine seeds for food.

Areas of usage: if you are working on restoring native forests, white pine is especially suited for planting in patch cuts made in stands of old field white spruce, or underplanting in mixed wood stands after a thinning. White pine that grow up stretching for the sun usually become tall, straight trees free of lower branches. It is a very attractive tree for planting around homes if you have enough space. Also, it can be pruned very heavily and kept as a small, dense tree. The wood is highly-valued and excellent for all kinds of woodworking, homebuilding and shipbuilding projects. Although the overall-quality of white pine has been degraded in the province, you can still find good sources of seed. It is increasingly important that the remants of Acadian forests containing quality white pine should not be cut. With our help its past glory could be restored.

Glossary of terms

Biodiversity: the most common definition looks at three levels of diversity - genetic diversity (variety within species); species diversity; and ecosystem diversity. Put simply, what is the variety within a given species, what is the total variety of species, and how many types of ecosystems are present over a given area.
Cuttings: certain shrubs and trees can be grown from vegetative cuttings, using a short length of stem taken during the winter or summer months.
Ecosystem: groups of plants, animals, microorganisms, soil, water, minerals, sunlight, water and air that form a living, changing community. It could be a small ecosystem such as the area along a stream, or a larger ecosystem such as a bog.
Native plants: plants that are assumed to be naturally occurring in an area, although some have migrated naturally and others that appear to be native may have been transported by aboriginal peoples.
Riparian zone: the area adjacent to a stream or river, including the waterway itself.
Trees and shrubs: generally, mature trees are taller and single-stemmed, while shrubs are shorter (under 25' or 7.6 m) and often have multiple stems.

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Wilson, Edward O., **The Diversity of Life.** The Belknap Press of Harvard University Press, Cambridge, MA, 1992.

Resources

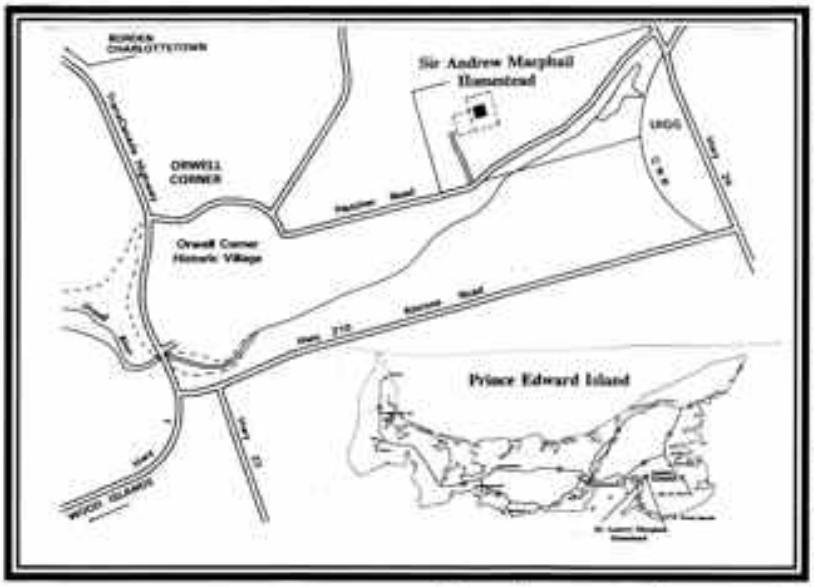
Soil tests: Soil and Feed Testing Laboratory, P.E.I. Department of Agriculture, Fisheries and Forestry, P.O. Box 1600, Research Station, Charlottetown, C1A 7N3. Phone 368-5600.
Tree and shrub pruning workshops: contact the Macphail Woods project (651-2575) for information on dates (usually in late spring).
Ecological forestry-related workshops: throughout the year we offer workshops on forest restoration, starting community nurseries, collecting seeds, tree and shrub identification and more, both at Macphail and in other places. Please call 651-2575 for information.
Information on ecological forestry and other environmental topics: for information on a broad range of issues or to get involved with bringing positive environmental changes to the province. Call the Environmental Coalition of Prince Edward Island: 566-4696 or stop in at our office at 126 Richmond St., Charlottetown, PEI C1A 1H9.
Lee Valley Tools:an expensive but high-quality supplier of a variety of tools. Home of our favourite pruning saws and shears. Call 1-800-267-8761 for a free catalogue.
Vesey's Seeds: an Island company with a good supply of tools and other things you might need around a nursery - dormant oil spray, rooting hormone, dolomitic limestone and more. Visit their store in York or call 1-800-363-7333 for a free catalogue.

Sources of plant material

Macphail Woods Ecological Forestry Project: Sir Andrew Macphail Homestead, Orwell, P.E.I. The largest variety of native trees and shrubs in the province. Write or call Gary Schneider c/o ECO-PEI, 126 Richmond St., Charlottetown, P.E.I., C0A 1G0 (902) 651-2575, for price list or hours of operation. Our price list and more infor-mation are also on our website:
www3.pei.sympatico.ca/garyschneider
J. Frank Gaudet Tree Nursery: Department of Agriculture, Fisheries and Forestry, P.O. Box 2000, Charlottetown, P.E.I., C1A 7N8, (902) 368-4711. Source for most conifer and some hardwood tree seedlings.
Community nurseries: more and more watershed groups, schools and other organizations across the are setting up small nurseries of native plants and may have extra stock available. Contact your local watershed group for more information.
Private nurseries: there are many retail sales outlets across the province. Most import their stock, but some do grow limited amounts of native species.

Helping out at Macphail Woods

Macphail Woods is a joint effort of the Environmental Coalition of Prince Edward Island and the Sir Andrew Macphail Foundation. Most of the homestead's 140 acres (57 hectares) is wooded and includes a stream valley full of large hemlock, white pine and yellow birch, a reminder of the original Acadian forest. The remaining woodlands include older mixed wood stands, abandoned fields grown up predominantly in white spruce, thickets of balsam fir and young coniferous and deciduous plantings. A dam on the larger of the two streams creates a pond that attracts great blue herons, belted kingfishers, osprey and many species of waterfowl, as well as mink, muskrat and beaver.



Macphail Woods combines protection of the natural area along the stream with wildlife enhancement, watershed protection, forest stewardship, environmental education and ecological research.

The project began in September 1991 with a wildlife garden and native plant nursery. It includes three nature trails and demonstrations of forest restoration, innovative windbreaks and erosion control. We offer regular workshops on a wide variety of natural history and silvicultural topics - birds, wildflowers, mushrooms, pruning, transplanting - as well as tours of the property and our work. The nursery and wildlife garden attract special attention, showcasing a wide variety of native trees, shrubs and wildflowers. Our recent efforts have included planting an arboretum beside the nursery and converting the barn into the Macphail Woods Nature Centre. These two works in progress will greatly enhance our abilities to teach natural history conservation.

Would you like to help with our efforts at Macphail Woods? Government and corporate funding, as well as income from sales of wood products and seedlings, help support the project. But we rely heavily on donations of both time and money from the public. If you like to garden, maintain trails, plant trees and shrubs, or lead tours, please contact the Environmental Coalition of Prince Edward Island, 126 Richmond St., Charlottetown, C0A 1G0 (566-4696). Financial contributions help us continue our research and educational efforts. ECO-PEI is a registered charity and issues receipts for tax purposes for all donations. Please make donations payable to ECO-PEI - Macphail Woods.

The sale of native trees and shrubs from our nursery helps fund many of our other programs at Macphail Woods. Why not come out for a walk or a workshop and pick up some trees for your property? From mid-April to the end of October you can call us at the nursery (651-2575) for information, hours, or a catalogue. Visitors are welcome to tour the site on their own at any time of the year. A map of the trails is available on-site, with descriptions of what you can expect to see along the way. To arrange for group or school tours of Macphail Woods or the Nature Centre, call the above number or e-mail: garyschneider@pei.sympatico.ca

The Macphail Homestead

The Sir Andrew Macphail Foundation was incorporated in 1990 as a private, not-for-profit, registered charitable organization. It is governed by a Board of Directors chosen from among the Foundation's members. Membership is open to anyone supporting the aims and objectives of the Macphail Foundation.

The organization leases the Macphail Homestead from the provincial government under a commitment to manage the property in ways that recognize the life and interests of the brilliant scholar Sir Andrew Macphail (1864-1938). Born and raised on the site, Sir Andrew became a successful writer, editor, scientist, social critic and professor at McGill University. He regularly returned to the homestead, inviting friends and colleagues to enjoy the Prince Edward Island landscape in summer.

Informally known as the "Friends of Macphail", the Foundation is dedicated to promoting education and interpretation of the house and surrounding property as a living memorial to Sir Andrew's genius and diversity of interests. The homestead, 18 miles (25 km) east of Charlottetown, has used funding from private and public sources to establish a museum interpretive area. It caters to small conferences and workshops and provides a secluded space for retreat and renewal. The site is also available for weddings and other activities and offers special events throughout the year. There is a tea room and small gift shop on site to serve day visitors during the summer months. For information, write to the Sir Andrew Macphail Foundation, Orwell, P.E.I., Vernon P.O., C0A 1E0, or call (902) 651-2789.

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