

A NATURAL HISTORY OF KINGS COUNTY



THE BLOMIDON
NATURALISTS SOCIETY

A Natural History
of Kings County,
Nova Scotia

The Blomidon Naturalists
Society

Wolfville, Nova Scotia

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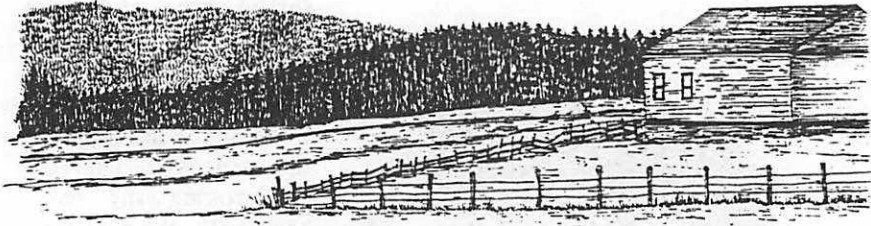
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FORESTED LANDS

The forests of Kings County are richly varied with thick spruce and fir stands, towering hemlocks and pines, and sturdy maples. Beech and birch, woody shrubs and young trees grow in mixed profusion on abandoned fields and on lands where forest harvests for pulpwood and lumber have taken place. The outward serenity of these forests, however, belies the inner thriving mix of life in its multitude of forms, a place where birth, death, decay and rebirth are the primary constants.

Forests

Forests are dynamic ecosystems powered by the sun's energy. The vegetation captures this energy through the process of photosynthesis, utilizing carbon dioxide from the air plus water and soluble minerals from the soil, manufactures a simple sugar that is then used to build the more complex carbohydrates, fats, and proteins required for growth. During daylight hours when photosynthesis is occurring, oxygen is given off through the stomata or tiny pores in the leaves and, at night, when photosynthesis ceases and respiration occurs, the process is reversed and a smaller quantity of carbon dioxide is expelled. Because of the ability to take carbon dioxide from the atmosphere and release oxygen, forests are often referred to as the "lungs of the earth".

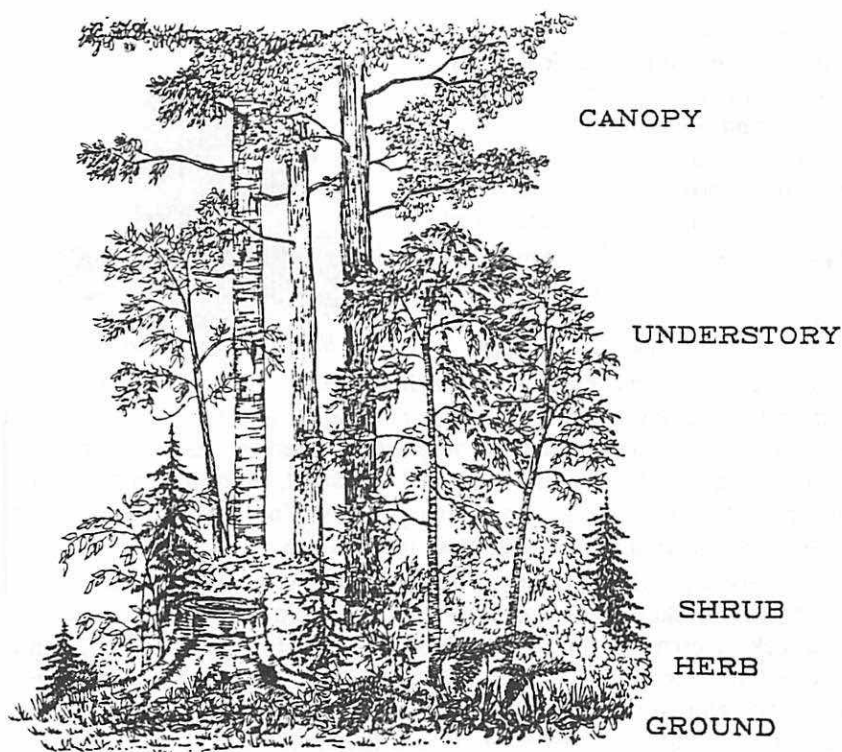
Forests store more solar energy in a year than any other type of habitat. Forests may absorb up to 90% of the incoming solar radiation, with the amount of solar radiation absorbed dependant upon stand density and foliage development. Trees are better adapted for energy fixation than shrubby or herbaceous vegetation. The enormous leaf-carrying capacity of forest trees, each with its large area of leaf surface dispersed through a large volume of air, is ideal for intercepting solar energy and absorbing carbon dioxide. Conifers, or needle-leaved trees, are usually more efficient users of solar energy than deciduous or broad-leaved trees because of their year-round leaf retention, larger weight of leaves per unit land area and conical shape of the tree crown.

Solar energy captured by the forest produces the woody material so

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necessary to our material well-being. It also supplies the needs of all other living organisms in the forest, because virtually all other living organisms depend upon green plants for their energy supply. Thus, the efficiency of the trees and understory vegetation in capturing solar energy sets an upper limit to long-term energy flow and biological activity within the forest ecosystem.

Shade is one obvious feature of the forest. In dense hardwood or conifer canopies in summer, 90% or more of the visible light is screened out. The virgin forests that the first settlers cleared were described as "darke as in a cellar". The amount of light that penetrates a forest canopy depends upon tree type, tree density and other factors. For example, a thick stand of conifers may only admit 0.5 to 7% light, while hardwoods or broad-leafed trees allow 55% or more when leafless. But in full leaf, hardwoods may exclude as much light as conifers, only permitting 1 to 5% percent to reach the forest floor. Stands of uneven age, because of their layering, utilize growing space more completely than even-aged stands, and the various strata cast more shade than single-canopy stands. The flecks of sunlight that play over the forest floor contribute heat energy to the forest



Habitat Layers in a Forest

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soils, providing enough light for the growth of herbaceous plants. The familiar coolness of the forest is not simply a function of the shade provided by the canopy. The process of transpoevaporation (i.e. the transpiration of water vapour from leaves) is a heat absorbing process that actively cools the air in the forest. Forested parks in large towns and cities act as natural air conditioners by preventing excessive heating during the day.

In winter, the ground cover of snow is less deep under thick conifer stands than in open areas making it easier for mammals, such as deer, to forage and move about. Here, under the overhanging branches that protect them from the cold and chilling winds, deer form extensive networks of travel lanes, often called "yards". In winter, deciduous woods, where the snows are much deeper and the winds stronger, offer less protection to large mammals than the coniferous woods. Small mammals, however, tend to avoid areas of shallower snow depths and prefer the protective cover of deep snows where they tunnel at the soil surface safe from predators and colder air temperatures. Deciduous woods in winter, where the snows are much deeper and the winds stronger, are less protective than coniferous woods.

Dead trees, fallen logs and branches, and piles of leaves are major components of the woodland biomass and are essential to a healthy forest. In forest ecosystems, dead and decomposing wood provides sites at which animals can feed, display, nest and seek shelter, and substrates on which fungi and plants grow.



Bracket Fungus on Stump

When a tree dies or a log falls, it is invaded by insects, particularly boring insects, that cut tunnels in the bark and wood and open it to invasion by fungi and bacteria. These are important first steps in the decomposition process. As decomposition progresses, a variety of animals invade the wood, fungi and mosses grow on it and the roots of vascular plants penetrate into it. All contribute to the successive stages of the breakdown of cellulose.

Dead trees provide specialized habitats for a wide variety of animals. In spring, woodpeckers use dead wood for drumming, and some species of woodpeckers excavate their nesting cavities only in dead wood. In winter these cavities provide shelter for such animals as flying squirrels, chickadees and nuthatches. Bats seek the shelter of tree cavities, Brown Creepers nest behind loosened bark, and the shells of well-rotted trees are the nesting sites of Tree Swallows and Chimney Swifts. Fallen logs become drumming sites of Ruffed Grouse and runways for the many small animals

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of the forest floor. Fallen logs retain moisture and accumulate soil along their edges. They enhance the nutrient content of the soil during decomposition through such processes as the oxidation of carbon compounds and the action of nitrogen-fixing bacteria. Nutrient-rich humus produced by the decay process serves as a nursery, helping foster the germination and growth of the new plants necessary to maintain a healthy forest.

Forest Types

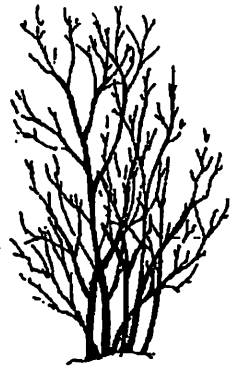
The forests of Kings County are made up of deciduous or broadleaf trees, coniferous trees and mixtures of the two. The stable broadleaf stands are typical of the Alleghanian Forest type with Red Maple, Sugar Maple and Yellow Birch as the dominant species, and including Beech, Ironwood and Mountain Maple. The stable coniferous woods are characteristic of the Appalachian Forest type and include Red Spruce, Eastern Hemlock and White Pine as the dominant species.

Although cutting and burning have altered most of the forest areas of the County, a few mature stands have survived. Remnants of the early Alleghanian Forest type are present on the Blomidon Peninsula with birches and maples that measure almost one metre in diameter. Similarly, remnants of the early Eastern Hemlock-Red Spruce-White Pine forests are present in well-drained gullies along the North and South Mountains and in the ravine at the Kentville Agriculture Centre. Many trees in the Kentville ravine are more than 200 years old, with some of the Eastern Hemlocks dating to about 1755. Earlier trees were likely destroyed by a fire that spread through the ravine at about the time of the expulsion of the Acadians.

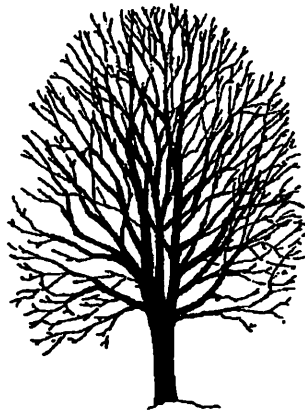
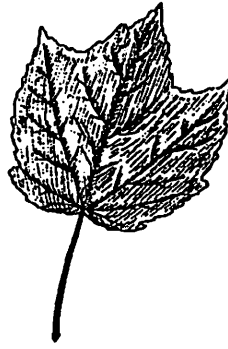
A number of tree associations make up the forests of Kings County, although individual species may grow in several habitats and overlapping occurs between associations. Several tree associations represent early stages in the succession that leads to a stable forest.

One early successional forest is the Red Maple-Red Oak-White Birch association. Young Beech also may be present. This association develops after cutting and is common on the Southern Upland, especially in areas of granite outcroppings. Red Maple is the most common maple in Kings County. It is the tree with bright red leaves in autumn and long, red twigs in winter. White Birch, also called Paper or Canoe Birch, is the tree from which the North American Indians obtained bark to cover their canoes and wigwams. The wood of these species is hard, but easily finished and polished and is used to make furniture and for interior trims. Also, these deciduous trees provide browse for wildlife and seeds and buds that are eaten by a variety of birds. In particular, acorns of the Red Oak are favourites of Blue Jays, Ruffed Grouse, Red Squirrels and White-tailed Deer. Large Beech trees were once more numerous in Kings County than

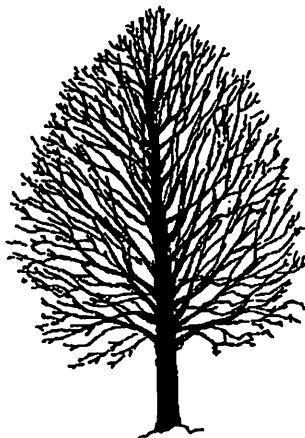
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Mountain Maple



Red Maple



Sugar Maple



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they are now. Beech bark disease has killed many of the larger trees and the younger ones often show extensive areas of abnormal growth called cankers. These develop following a fungus infection that invades sites of injury caused by accident or insect attack. This fungus is of European origin and was first brought to Nova Scotia in the early 1900's. Over time, the Red Maple-Red Oak-White Birch association is usually replaced by a spruce-fir-pine forest.

The White Spruce forest is another early stage in the succession that leads to a relatively stable forest. It is frequently encountered on the North Mountain and Southern Upland where it colonizes abandoned farms. Initially, old fields are invaded by alders, poplars, cherries and birches, but White Spruce soon becomes established and takes over as the dominant tree. Thus, the trees of a White Spruce woods are usually of about the same age. Spruce trees offer shelter to many species of birds and mammals in winter. The thick foliage provides protection from the wind and the drooping branches covered with snow "roof-over" sheltered pockets underneath. Deer, rabbits, grouse and pheasants are often found in these shelters. Spruce seeds are eaten by squirrels and birds such as crossbills, nuthatches and siskins, and the wood is used for pulp and lumber. Gradually, White Spruce woods are invaded and replaced by fir, pine and hardwood trees.

An early successional stage in the transformation of a bog or swamp into a forest is the Black Spruce-Larch association. This association is found in small pockets of poorly-drained areas throughout the County. These trees grow slowly and are often stunted. There are several excellent examples of this type of association in the Greenfield and Black River areas. However, the build-up of soil takes place slowly and the Black Spruce-Larch association persists for a long time.

Several forest types represent midstages in the succession to a stable forest and, because of cutting practices, many woodlands are maintained at these stages. A spruce-fir association occupies damp areas on the North Mountain and Southern Upland and forms much of the forested area along the Bay of Fundy. Both Red and White Spruce are present along with Balsam Fir. These mature trees form a closed canopy and the forest floor is typically covered by a thick layer of humus and moss. Fir is valuable for pulpwood. It is also the preferred Christmas tree because of its symmetry and fragrance, and because it holds its needles longer than do spruces if the trunk is freshly cut and placed in water with a little sugar added. The seeds are eaten by several bird species and squirrels, and larger mammals browse on the twigs and bark. In time, if not disturbed by cutting, pine and hardwoods will invade this tree association.

The spruce-fir-pine association is another mid-successional forest type. It grows extensively on the Southern Upland, usually in areas of granite bedrock. Hemlock, maple and birch often seed into this association. The

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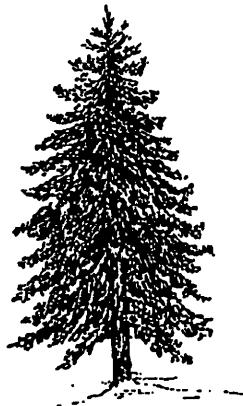


Cone

Black Spruce



Red Spruce



White Spruce

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dominant tree is the Red Spruce which forms a second story below the taller White Pines. Red Spruce and White Spruce are sometimes difficult to distinguish. However, when present their cones assist identification. The cones of Red Spruce are smaller than those of White Spruce and are oval rather than cylindrical in shape. Red Spruce is used for pulpwood and lumber.

The pine-oak association grows on the sandy soils of the Valley floor. Red Pine, White Pine and Red Oak are the dominant species, with varying numbers of Red Maple, birch and poplar along the borders of fields. Both pines are valuable timber trees. The wood of White Pine is used for construction, interior finishings and furniture. The wood of Red Pine has a reddish tinge and is used less for furniture and finishings than White Pine. However, its wood is porous and easily creosoted and is used for ties, cribbings and other products. These pines grow to over 30 m in height and were once used by shipbuilders in Canning and Kingsport, as elsewhere, for masts. Both pines are important seed sources in winter for several species of birds and mammals.

Coniferous Forests

Mature conifers form a dense canopy under which only shade tolerant plants grow. Shrubs are restricted to a few hardwood species such as Mountain Maple, Striped Maple, Hobblebush and Beaked Hazelnut. These shrubs are more numerous around paths and openings in the canopy such as those created by windfalls.

Striped and Mountain Maples are highly branched shrubs or small trees. They are too small to be of commercial value. Striped Maple is so named because its green or brownish bark has conspicuous white or yellow stripes. Both species provide important sources of browse for deer and moose (Striped Maple is also called Moose Maple) and several species of birds feed on their buds and seeds.

Hobblebush is easily recognized in winter by its buds which are oppositely arranged (as are other woodland Viburnums), elongate and stalked. The leaves develop during winter and by late January the unfolding leaves give the buds a green colour aiding in identification of this shrub in the winter woods.

Beaked Hazelnut is a member of the birch family. It grows in dry areas, particularly on the Southern Upland and in the pine woods on the Valley floor. It sometimes forms extensive thickets. Beaked Hazelnut gets its name from its fruit, a nut enclosed by a husk with a long, tubular beak. The beaked fruit is a good identification aid except that it is quickly eaten by a number of birds and mammals; it is a favourite of Red Squirrels and Blue Jays. The nuts ripen in late summer and early autumn. They are edible and very tasty, and may be chopped and added to home-made fudge and cookies.

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The wild flower species of a coniferous forest are few, but provide a colourful contrast to the beds of green moss and brown needles. Mayflowers are one of the first plants to blossom each spring, sometimes beginning in late April. They grow in open woods and often under a coniferous tree. The leaves are oval and the clusters of waxy flowers often hang under the leaves. The flowers are pink, or white, sometimes rose-coloured, and highly fragrant. The stems are woody and trail along the ground. Mayflowers are not now as numerous as they were one or two decades ago. The practice of picking large bouquets should be discouraged.

Two common lilies, yellow *Clintonia* and Wild Lily-of-the-Valley flower in early June. They grow in open coniferous woods as well as in deciduous woods. Like other lilies, they have large leaves with parallel veins. The yellow, bell-shaped flowers of *Clintonia* are borne in clusters at the end of a tall stem that is partially enveloped by two or three long leaves. By late summer, the stem bears a cluster of bright, blue berries and *Clintonia* is also known as the Blue-bead Lily. Wild Lily-of-the-Valley often forms wide carpets. It has two large leaves, each heart-shaped at the base, and a tall spire that bears a cluster of white flowers. Its red berries form in late summer.

Goldthread grows in beds of moss or deep humus, often with Wood Sorrel. Its flowers are white and its leaves are evergreen and divided into three leaflets. It is called Goldthread because its roots are bright yellow. A yellow dye extracted from these roots was used by the Indians and early settlers to colour and decorate their clothing.

Common Lady's-slippers grow in coniferous woods and are especially numerous through the pine woods in the Cambridge and Coldbrook areas. Lady's-slippers flower in early June. The flowers are usually pink, but a few plants of the white-flowered variety are also present. The petals are joined to form a pouch and bees must crawl through this pouch to collect nectar and so inadvertently pollinate the flower. Because of this pouch-shaped flower, the plant is also called the mocassin flower. Common Lady's-slippers are orchids and, like all orchids, must become associated with a fungus at an early stage of growth. The fungus absorbs nutrients from the soil for use by the orchid. It takes several years for a Common Lady's-slipper to



Common Lady's-slipper

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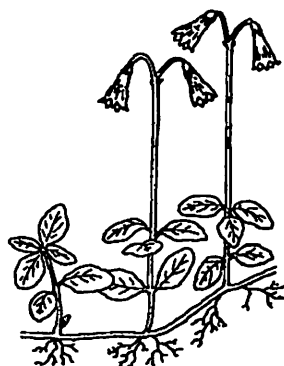
grow and flower - please do not pick it!

Where large conifers blow down, or are cut, the additional sunlight permits wildflowers to invade the mossy hummocks. These are the same species that grow in open, mixed woods and include Wild Sarsaparilla, Bunchberry, Teaberry, Twinflower, asters and goldenrods.

Deciduous and Mixed Forest

Many forested areas of Kings County have been logged and this has resulted in the growth of a mixture of broadleaf (or deciduous) and coniferous trees. The dominant tree species in older woods are Sugar Maple, Yellow Birch, Red Oak, White Pine, Eastern Hemlock and Red Spruce. In the more recently cut woods, the dominant species are Red and White Spruce and Balsam Fir.

Several species of shrubs are common in the understory. Shadbush and Witch-hazel grow in open areas. Shadbush is the first shrub to flower each spring with large, white blossoms covering the shrub. Witch-hazel is the last to flower in the autumn. Sometimes its yellow flowers persist through the early snows and for this reason it is also called Winterbloom. Wild Raisin, Bayberry and Sheep Laurel are also part of the shrubbery of open woods. In spring, Wild Raisin produces magnificent displays of white flowers and in autumn it provides an abundance of blue berries which are eagerly eaten by many birds and mammals. The flowers of Bayberry are small and inconspicuous, but in autumn the twigs of the female shrubs are coated with clusters of waxy berries. These berries are the winter favourites of Yellow-rumped Warblers as well as Northern Flickers and other birds. The twigs, leaves and berries of Bayberry have a pleasant aroma and are collected for decorative purposes. Sheep Laurel is a low shrub that carpets large areas of the forest floor. Its leaves are evergreen and tinged with red during winter. Clusters of pink and purple flowers form in the spring and provide banks of colour along the woodland roads. Sheep Laurel is also called Lambkill because its leaves and twigs are toxic to domestic animals. Alders and willows grow in wet areas, and chokecherries and hawthornes invade recently burned or cleared ground.



Twin-flower

Sandy barrens cover large areas of the Valley floor especially in western Kings County. These expanses of arid, acidic soils are low in natural fertility, but support shrubs such as blueberry, Broom-crowberry, Bearberry and Hudsonia. Stands of Red Pine and White Pine grow on sand ridges around Greenwood and Kingston, as well as around Aldershot, Greenwich and Coldbrook. Where there are sufficient moisture and nutrients, Wire

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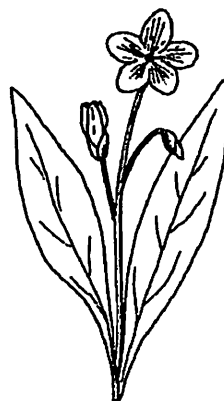
Birch, Shadbush and Sweetfern are also present.

Trembling and Large-toothed Aspens, or poplars, frequently invade sandy areas and are often mixed with birches and cherries. Trembling Aspen is so called because its leaf stems are flattened and the leaf blades flutter or tremble in the slightest breeze. The leaves of Large-toothed Aspen have distinctively large-toothed margins. Both aspens grow rapidly and are important trees in the initial stages of forest succession, re-establishing quickly in cut, burned and abandoned areas. They help stabilize the soil and provide shade for the seedlings of other species. The trees have little commercial value, other than for firewood, but many birds and mammals feed on the twigs and buds. Poplar bark is a favoured food of beavers and cut and peeled poplar trees are often seen about beaver ponds.

The changing colours of leaves of the deciduous trees provide the magnificent displays that spread over the countryside each autumn. The leaves of sumac change colour first: some turn yellow, others orange, a few purple, but most become a brilliant red. The maples are next. The Red Maples become scarlet and the Sugar Maples show a little red at first but gradually turn all gold and yellow. Birches become a clear yellow, elms a lemon yellow and then rust, oak and beech turn gold and yellow and later become tan, cherries first turn red and then bright yellow, and ash becomes a hazy purple.

Shorter days and cooler nights signal the beginning of leaf colour change. The abscission layer between the leaf and twig closes and stops the flow of water and minerals from the tree into the leaf and this, in turn, stops photosynthesis. Several pigments are present in the leaf. Chlorophyll makes the leaf green and is so abundant that it masks the other pigments. However, it breaks down when photosynthesis stops and the carotenoids (yellows) and xanthophylls (browns) may then be seen. The reds of sumacs and maples are caused by anthocyanin, a pigment produced in leaves with a high sugar content. When the abscission layer closes, sugar cannot flow into the tree and accumulates in the leaf. Anthocyanin breaks down quickly and leaves of some trees that are initially red soon turn yellow.

A number of annual and perennial plants grow in the herb layer and prefer the rich soils of a mixed or hardwood forest. Much of their growth and flowering takes place in spring before the trees leaf out and reduce the amount of sunlight that reaches this layer. Bunchberry is abundant and its single, white "flower" is actually a cluster of tiny flowers surrounded by four, white bracts. Its name



Spring Beauty

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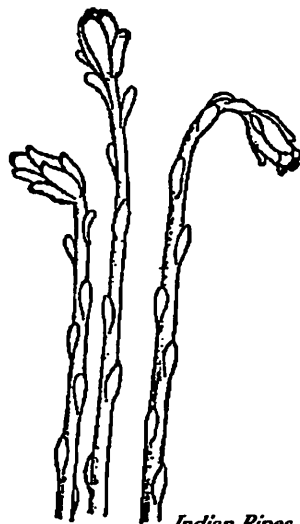
refers to the cluster of red berries that forms in late summer. Starflower is also common and its flower, above a single whorl of leaves, resembles a white star. Pink and White Wood Sorrel grow on mossy banks, and patches of Twinflower cover the woodland floor with creeping vines and pairs of small, bell-shaped flowers. Partridgeberry, which has shiny leaves with prominent veins, also have pairs of flowers but, unlike Twinflower, these are joined at their bases.

Other wildflowers grow in open woodlands and bloom in spring. A hike in late May to Cape Split or through Blomidon Park should be included in the events calendar of everyone who enjoys spring flowers. Spring Beautys and Dutchman's Breeches carpet large areas of the forest floor, and scattered about are groups of trillium, lady's slippers and violets.

Fungi

Fungi play a major role in the decomposition of forest floor litter. They break down animal and plant debris into humus that contains nutrients in forms available for new plant growth. Fungi are also a source of food for a number of animals. Many insect larvae feed within fungi and the two organisms often mature together. Animals such as Red Squirrels collect mushrooms (some of their favourites are poisonous to people!) and store them in underground chambers or hang them in trees to dry for future use.

Many fungi grow on rotting wood: Fir Polypore is most common on conifers; Shiny Ganoderma is found on Hemlock; and bracket fungi grow on maple and birch. Fungi are able to grow in shaded locations because they do not utilize light to manufacture food. Many fungi form symbiotic associations with roots of green plants by way of mycorrhizae ("fungus-roots"). Some of these fungi form distinct layers on the outside of roots (ecto-mycorrhizae - often found on trees) whilst others are found deep inside the roots. This latter group is important in heath plants. The fungi receive sugars from the plant host, and in return, provide the plant with nutrients such as nitrogen or phosphorus. This is of particular value in a nutrient poor environment like a heath. The mycorrhizal fungi also protect their host plants from the toxic effects of heavy metals (such as copper or zinc) in the soil by acting like filters. It has been shown that the yield of crops like blueberries is increased when the plant roots are assisted by mycorrhizae and reforestation programmes now include inoculation of seedlings with mycorrhizae.



Indian Pipes

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Mycorrhizae grow in association with the roots of about 80% of all vascular plants. Plants found in marginal environments grow successfully because of their unseen fungal partners. As well, some flowering plants that lack chlorophyll, such as Indian Pipe and Coral-root Orchids, survive because of their symbiotic association with a fungus. Common local fungi such as Boletus, Lactarius, Amanita and Russula are also among those that have mycorrhizal associations.

Hydniums or “toothed” fungi, possess tiny tooth-like spines on the underside of their caps, and may either resemble the shelf-like polypores or the stalked gilled mushrooms. Coral fungi are often intricately branched, finger-like stalks without gills and grow in both deciduous and coniferous forests.



Destroying Angel

Gilled mushrooms have a stalk supporting a cap with gills on the underside. The white-gilled Amanita mushrooms have a membranous skirt around the upper stalk and a cup at the base of the stalk, often hidden in the earth. The poisonous, all-white Destroying Angel is one of this group and is common in Kings County. The common Fly Agaric, which is also poisonous, has a yellow-orange cap with many white scaly patches. Other gilled mushrooms in forested areas are the Hygrophorus mushrooms with waxy gills; several species of Lactarius, named for the milky latex they exude when the gills are broken; and the bright-red Russula, a genus closely related to the Lactarius group but without the milky latex.

Boletes have the general appearance and texture of gilled mushrooms, but have tiny pores beneath their caps instead of gills. Polypores also have pores, but are woody or leathery and either lack a stalk or have one on the side. They are present throughout the year as intriguing shelves on logs and tree trunks.

Lichens

Lichens represent a unique symbiotic association between a fungus and unicellular algae or blue-green bacteria. Together, they form a living unit. In this partnership, the algae and blue-green bacteria photosynthesize to provide high-energy food. The bacteria also fix nitrogen. The fungus provides support and protection from drying for its photosynthetic partners. This relationship enables the fungus to thrive in sites, such as rock surfaces, where other fungi would starve. Lichens are an important first step in the breakdown of rock into soil.

Lichens are abundant in the woods of Kings County. They grow on almost every tree as well as on rocks and soil. They add a variety of

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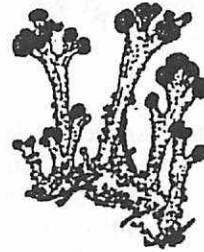


*Parula Warbler and Old Man's Beard
Lichen*

colours to the forest: yellows, greens, black and greys, and reds and oranges. It is easiest to sort out the multitude of lichens by using their growth forms. The forms are: Crustose, crusty layers on surfaces; Foliose, leaf-like forms on rocks and tree trunks; and Fruticose, branching and fruiting shapes hanging on trees or growing up from stumps or soils.

A common lichen is the fruticose Old Man's Beard, *Usnea*, which forms dense tangles of pale green tendrils hanging from the branches of many trees. Parula Warblers build their nests within entangled strands of this lichen. Lung Lichen is a striking foliose lichen that looks like

its name-sake and grows in large masses on the trunks of the larger trees. British Soldiers, a fruticose lichen, has bright red fruiting bodies that are easy to find on old stumps and poor forest soils. In dry winter weather, the orange rosettes of Wall Lichen are sometimes the brightest and most conspicuous objects in the woods. They grow on tree trunks and rocks and turn a dingy yellow-green when wet. On the forest floor are clusters of the Reindeer Lichen. They are grey and look like miniature trees. Crustose lichens form thin coloured patches on trees, rocks and soils. Shield Lichen and Leather Lichen are two of the most common grey, crustose types.



British Soldiers Lichen

Mosses

There are about 200 species of moss in Kings County, growing in both deciduous and coniferous woods. In many places they form a conspicuous ground cover and act as a type of mulch for the larger plants by catching and retaining large amounts of water. Mosses are grouped into two types: those that grow upright with fruiting bodies at the top of the plant, the acrocarpous mosses; and those that creep over the ground with fruiting bodies along the stems, the pleurocarpous mosses.

The most conspicuous of the acrocarpous mosses are the haircap mosses, the *Polytrichums* and *Pogonatum*s. They grow in large clumps and look like miniature spruce trees. The broom mosses are also common and are so named because they sweep over to one side like an old broom

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Some form velvety patches around the base of trees. Cushion Moss is another type that forms wide carpets under coniferous trees. It resembles a mass of pincushions that are pale green, almost whitish, in colour.

The common pleurocarpous mosses form broad carpets on the forest floor. Red-stemmed Feather Moss is one of this group. It usually grows in spruce woods where it trails over the ground and forms loose mats. Shaggy or Rough-necked Moss is another red-stemmed moss that is abundant in damp woods. It is so named because its leaves stand out from the stem at almost right angles.

Two large fern-like mosses are present in both coniferous and deciduous woods. One is the Step-moss, so named because each year's growth sprouts from the middle of the previous year's leaf in a step-like manner. The second, Delicate Fern Moss, forms a fern-like tracery on rotting wood and damp humus.



Step-moss

While the majority of the sphagnum mosses grow in bogs, several species grow along woodland streams and in wet areas. The most common are Star Sphagnum, Prickly Sphagnum and Spoon-leaved Sphagnum.

Ferns

Fifteen species of ferns are common in the woodlands of Kings County and several others can be located with a little searching. Bracken is the most common and the first to appear in spring. It grows in dry, sandy locations, both shady and sunny, and may reach a height of one metre. Its flat-topped fronds are so numerous that it may form a canopy over the ground. The Cinnamon Fern grows in wet woods, often in open stands of Red Maple. The base of its stems are covered with a thick, cinnamon-coloured wool. Its spore-bearing stalks are also cinnamon-coloured and stand erect in the centre of the cluster of fronds. The Interrupted Fern is a curious one. The spore-bearing leaflets grow on the frond stalk. After the spores are discharged in June, the frond is "interrupted" by the brown space. Christmas Fern and Common or Rock Polypody remain green throughout the year even though they may be buried under the snow. Both species grow on wet, rocky slopes and along streams. Common



Christmas Fern

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Polyphy may also grow on old stumps. Christmas Fern has clusters of long, arching leaves and is easily identified by the presence of a small lobe at the base of each leaflet. This lobe is sometimes described as a "toe" and the leaflet as "boot-shaped". At Christmas time both Christmas Fern and Common Polyphy are utilized for making decorations.

Insects

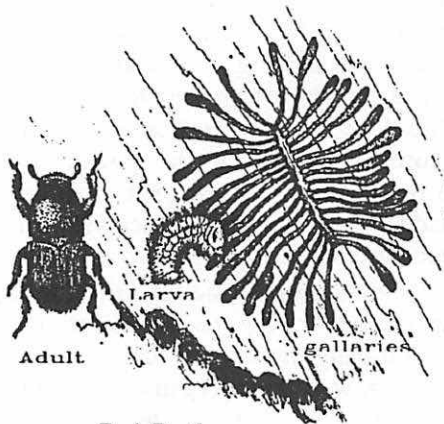
Everyone who has walked in Kings County's woodlands during the spring or summer has no doubt met two common insects, the mosquitos and black flies. Both are well known for the biting habits of the females. These are but two species of a very diverse insect fauna that are distributed from the upper canopy to below the forest floor. Not all insects are as conspicuous as the mosquitos and the black flies, a great many common insects go unnoticed because of their elaborate camouflage, small size or nocturnal habits.

One insect that is commonly heard but rarely seen is the cicada. During warm summer days and evenings, male cicadas use specially developed structures to produce a shrill buzz that attracts females to their perches high in the tops of tall trees. Depending on the species, this is the culmination of a 2 to 5 or, in the case of the periodical cicada, a 17-year life cycle, the greatest part of which is spent in the subterranean nymphal stage. The stout-bodied nymphs have enlarged front legs that enable them to move under ground to feed on roots of the trees that they later climb as adults.



Cicada

A large variety of insects use the stems of living, dead or dying trees for nests and food. Both larval and adult bark beetles feed chiefly between the bark and wood of deciduous and coniferous trees. They excavate tunnels under the bark, with each species making a characteristic pattern. Typically, the adult excavates the initial tunnel, termed a brood gallery, along the sides of which they lay their eggs. The developing larvae bore in a direction away from the adult tunnel forming a characteristic pattern under the bark. Adult metallic wood-boring beetles feed on the foliage and bark of trees and lay their eggs on twigs



Bark Beetle

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and branches. The larvae, known as flat-headed wood borers, excavate galleries of unbranched tunnels deep into the wood. Adult long-horned beetles, such as the White-spotted Sawyer, are robust, seemingly clumsy fliers that are present during the summer. They are found on recently cut trees where they chew tiny slits in the bark in which they lay their eggs. The larvae overwinter in the wood and commence feeding the following spring. The larvae spend their first summer in the wood occasionally reaching the surface, and boring typical U-shaped tunnels. Early in the spring of the second year, the larvae change to pupae in an enlarged chamber just below the wood surface and, in early summer, as adults, chew their way out leaving a round exit hole.

Horntails also use dead or dying wood. Their common name is derived from a spine-like structure at the end of the abdomen of the adult that is used to pierce the bark and insert the eggs. The developing caterpillar-like larvae is preyed upon by the spectacular Ichneumon wasp. When this wasp detects the presence of a tunnelling horntail larva, it inserts its ovipositor through the bark and into the tunnel. Its ovipositor is a sheathed, hairlike structure that may be up to 10 cm long. An egg is then deposited in the tunnel and the resulting Ichneumon larva feeds on the horntail larva.

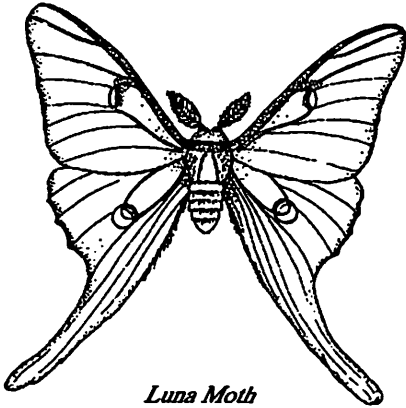


Ichneumon Wasp

Many insects in the forest are difficult to see because they blend in so well with their surroundings. Camouflage is a widespread adaptation in nature that serves to protect many animals, including insects, from predators. Underwing moths are difficult to detect in the daytime because they rest head downward on the bark of trees with their forewing patterning almost precisely in alignment with the bark patterning. The Northern Walkingstick which feeds on deciduous foliage, is very easy to miss because it so closely resembles a woody twig. Males are brown and females are greenish brown, and each sex tends to orient to the branches most similar in colour to themselves. The Buffalo Treehopper is common on understorey vegetation in the forest but is difficult to spot because its green body blends in so well with the green leaves on which it feeds. The Thorn-Mimic treehopper, as its name suggests, closely resembles a thorn which makes it quite indistinguishable from many plants.

The magnificent Luna Moth is a common woodland insect but is highly nocturnal in habit and is often overlooked. During the day this impressive moth remains virtually undetected as it hangs motionless among the leaves of deciduous trees. It is green in colour, with a wing span of 11.5 cm, and resembles a leaf. Other equally impressive large moths, such as the

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Luna Moth

Cecropia and Io, are also rarely seen because of their nocturnal life styles.

Not all nocturnal insects go unnoticed. The fireflies are among our most familiar insects, and are conspicuous because of the luminous organ located at the tip of their abdomens. All larvae and most adults produce light. The characteristic flashing is produced by a chemical process. Flashing patterns are species specific and play an important role in court-

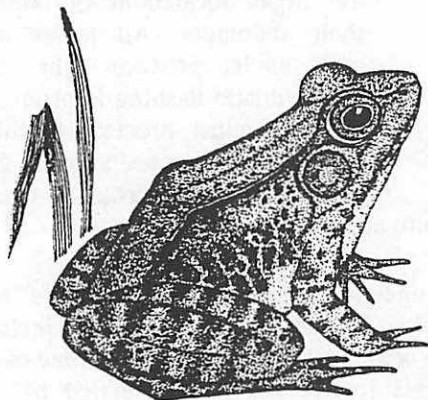
ship. The males flash in flight and are attracted to the answering flashes of the females on the ground.

Many flowers of the forest understorey have bright colours and conspicuous shapes and attract insects. The visiting insects, which include flies, beetles, butterflies, wasps and bees, feed on nectar and in some cases collect pollen. In return, the plants receive the pollen carried by the visitors. The most important pollinators of forest flowers are the bees. Bees can be either colonial, as the bumblebee, or solitary like the leafcutting bee. Queen bumblebees construct nests in deserted mouse or vole nests. Here the queen raises her daughters as workers. They venture from the nest and collect nectar and pollen which they carry back for their developing sisters. Unlike the colonial bees, the solitary bees do not raise daughters that eventually care for their siblings. Female leafcutting bees find circular tunnels in wood and construct a small thimble-like cup out of leaf material. This cup is then partially filled with pollen. The eggs are laid on the pollen and the cell capped. The developing larva feed on the pollen until they reach adulthood. The adults chew their way through the leaf material, usually the following year, and move to flowers to feed.

Burying beetles are commonly seen moving about on the forest floor in search of small dead animals. Working together, male and female beetles dig beneath the corpse and bury it under the soil to serve as food for their larvae. The leaf litter on the forest floor is also home to many minute insects. By carefully sifting the leaf litter one is able to see the wingless, whitish Proturans which measure from 0.5 to 2.0 mm, and the Springtails that are less than 6 mm in size. Springtails are primitive, wingless insects that may be better known as "snow fleas". They have a forked structure on the underside of the abdomen that, when released, allows the springtail to "jump" up to 10 cm. While one species is easily noticed in footsteps in the snow, springtails are a major factor in the soil biology as they feed particularly on decaying plant material, fungi and bacteria.

Amphibians and Reptiles

The fact that eight species of frogs are found in the forested areas of Kings County reflects the diversity of habitats available. Bullfrogs frequent the lush aquatic vegetation of water lily beds in the larger lakes. Mink Frogs sit atop lily pads in smaller bodies of water, in still waters and even along slow, well vegetated streams. When captured, this frog emits a strong musky odour resembling that of mink, hence its name.



Green Frog

Green Frogs are ubiquitous along shores of lakes, bogs, streams, ponds and roadside ditches, and their banjotwang call note may be heard both day and night. The terrestrial American Toad and Wood Frog are active deep within the forest where it is moist at night, although far from open water. Overhead in shrubs and high in the trees are the arboreal Spring Peepers equipped with suction cups on every digit. Near woodland streams, along old logging roads and on exposed gravel shores of lakes, the square-spotted Pickerel Frogs are most often encountered. Grassy logging roads, open meadows and bogs are the habitat of the similar, but round-spotted, Leopard (Grass) Frog.

The aquatic Red-spotted Newt is a salamander occurring in ponds and protected coves of lakes where there is considerable aquatic vegetation. This species has a well developed fin along its tail and periodically swims to the surface, gulps air, and descends back into the water weeds almost too quickly to be noticed. The juveniles of this swimming salamander are terrestrial and spend several years in woodland leaf litter in the brick-red, dry-skinned form known as Efts.

The 16 cm long Yellow-spotted Salamander occurs throughout the County, but being nocturnal during its brief spring spawning period and being subterranean the rest of the year, very few naturalists are familiar with this amphibian. More familiar is the totally terrestrial woodland Redback Salamander. This lungless sala-



Yellow-spotted Salamander

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mander lays large yolky eggs on land, in cavities in logs or under stones. From these eggs hatch little salamanders, not tadpoles. There are three colour varieties of this species: the common red-back colour phase; the less common lead-back colour phase; and a rare, overall salmon-pink, erythristic colour phase.

The most rarely reported salamander in Nova Scotia is a woodland species, the Four-toed Salamander. It lives in sphagnum moss which certainly is not rare in Kings County, but the nearest records are from bogs on the North Mountain at Bridgetown. The unusual life history of this salamander was described in the chapter on Ponds, Bogs and Marshes.

Although four species of snakes, Garter, Green, Red-bellied, and Ringneck, are probably common in our forests, they are seldom found alive, but rather their presence in an area is first established from D.O.R. specimens. D.O.R. is the official acronym for Dead On Road. The wide ranging Garter Snake and the little, brown, nocturnal Red-bellied Snake are the usual casualties run over by vehicles on dirt roads. The diurnal Green Snake keeps more to grassy meadows and open bogs, while the nocturnal Ringneck Snake frequents deciduous and mixed forests especially along lake shores and stream sides, and in thick roadside vegetation. The habits of the first three species are described in the section on Agricultural Lands. Ringneck Snakes often establish communal egg nest sites, usually beneath a large rock, where over 20 females may deposit their eggs. Ringnecks prey chiefly upon Redback Salamanders, but also consume the juveniles of other snake species.

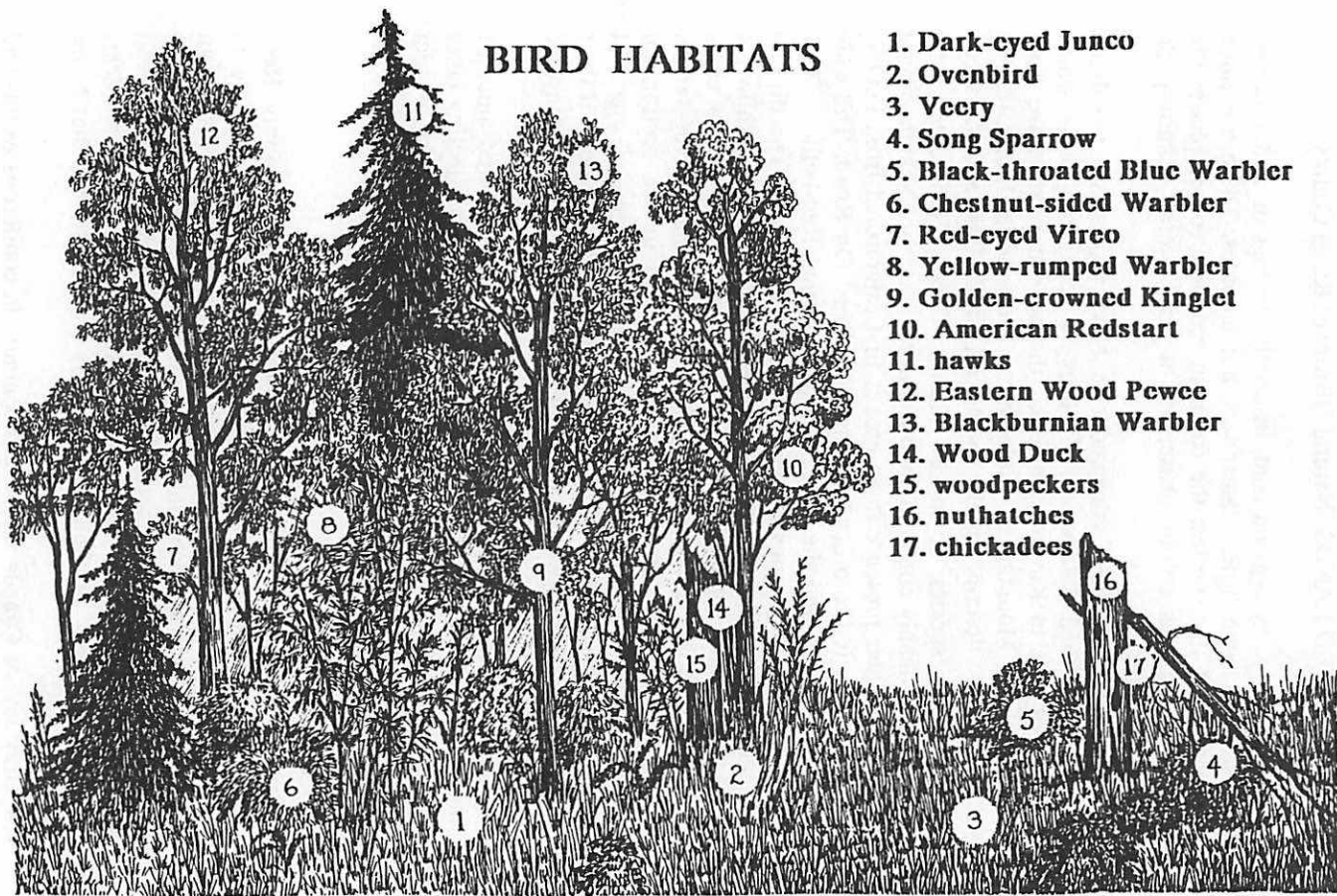
Common Snapping and Eastern Painted Turtles are located amongst the water lilies of shallow bays in lakes, along the canals connecting lakes and in bog ponds. Interesting turtle areas are best discovered by a quiet approach and a careful search with binoculars. Often only their heads protrude from the water.

Forest Birds

A variety of birds live in the coniferous forests of Kings County. Red-and White-winged Crossbills are nomadic birds that wander widely in search of heavy cone crops. Their upper and lower bills are crossed, an adaptation to pry cones open and feed on the seeds at the base of the scales. When cones are abundant, crossbills nest and incubate their eggs at all times of the year, even in mid-winter. Their winter nest is thickly insulated with feathers, in contrast to the airy cluster of twigs that forms their summer nest.

The Gray Jay, or Canada Jay, is also common in coniferous woods and especially those on the Southern Upland. Gray Jays are about the size of Blue Jays but are gray with a dark cap and white face and throat. They are quite tame and may follow you when you are walking in the woods and will certainly come flitting through the trees to join you for lunch. You can

BIRD HABITATS



1. Dark-eyed Junco
2. Ovenbird
3. Vcery
4. Song Sparrow
5. Black-throated Blue Warbler
6. Chestnut-sided Warbler
7. Red-eyed Vireo
8. Yellow-rumped Warbler
9. Golden-crowned Kinglet
10. American Redstart
11. hawks
12. Eastern Wood Pewee
13. Blackburnian Warbler
14. Wood Duck
15. woodpeckers
16. nuthatches
17. chickadees

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entice them to alight near your hand if you offer them food, but watch carefully for they will steal anything they can carry. Gray Jays nest in March and April, while the weather is still cold. Their nest is large and thickly insulated with lichens, grass and feathers. Gray Jays are friendly and inquisitive and well worth the hike to find them.

Flocks of small birds flit through the woods and search acrobatically about the ends of the branches for insects. These mixed flocks include Black-capped and Boreal Chickadees, Orange-crowned Kinglets and Red-breasted Nuthatches. While Black-capped Chickadees occur in deciduous woods and frequently visit gardens and birdfeeders, the Boreal Chickadee usually remains in the company of kinglets in coniferous woods. It resembles the Black-capped in appearance and habits, but it has a brown head and its "chick-a-dee-dee" call is harsher and more nasal. Both the Red-breasted Nuthatches of coniferous woods and the White-breasted Nuthatches of deciduous woods are sometimes referred to as "upside-down" birds because they scamper head-first down tree trunks and under limbs while searching for insects. The Red-breasted Nuthatch has the curious habit of smearing sticky resin, of fir or spruce gum, around the entrance to its nesting hole, perhaps to discourage predators from entering the cavity. A few of these birds migrate south in winter, but most of these four species remain in our woodlands throughout the year.

Several bird species that forage in the low shrubs or on the floor of coniferous woods are: Dark-eyed Junco, White-throated Sparrow, Oven-bird and the thrushes. The junco is grey and is easily recognized by its outer tail feathers which are white and conspicuous when it flies. It scratches about the soil and leaf litter for seeds and insects. In winter, flocks of juncos search along roads and farm fields and visit birdfeeders searching for seeds. The White-throated Sparrow is one of our best known singers. Unfortunately, its numbers have declined by 50% over the past decade. Its song has been described as "I love Ca-na-da, Ca-na-da, Ca-na-da". The notes are sharp and clear and have an ethereal quality



Spruce Grouse

when heard from the evergreens along the edge of a darkening lake as the sun sets. The thrushes are also best known for their singing. Four thrush species regularly seen or heard in the woodlands of Kings County are: American Robin, Hermit Thrush, Swainson's Thrush and Veery. Everyone who has hiked in our woodlands or camped by a lake has heard these thrushes. Their clear, flute-like songs are familiar voices during the early morning and

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evening hours. The quickly repeated "teacher-teacher-teacher" call of the ground-dwelling Ovenbird, uttered as it scratches through the leaf litter, is also a familiar woodland sound. The nest of the Ovenbird is unique because it is dome-shaped with an entrance on one side, and so resembles a miniature, old-fashioned oven.

Two species of grouse inhabit the woodland floor. The Ruffed Grouse, or partridge, prefers wet areas in conifer and especially hemlock woods that are bordered with extensive thickets of young birch and poplar. Often, it will be seen perched in a birch or poplar tree eating the buds or seeds. Ruffed Grouse are best known for their habit of springing into flight with a loud "whirring" of their wings that startles the hiker. The male Ruffed Grouse drums in spring and autumn, usually in the early morning or evening, to attract a female to his territory. He struts on a log, with tail fanned and ruffs erect, and beats the air so rapidly with his cupped wings that a drumming sound is produced. The Spruce Grouse lives in damp conifer woods, usually of mature spruce, fir and larch trees. Here it feeds on the needles, insects, leaves and berries of the undergrowth. Spruce Grouse are birds of old, mature woods and their numbers are decreasing as these woods are cut and their habitat destroyed.

A different group of birds, including vireos and warblers, forage in the tops of coniferous trees. The Solitary Vireo has a blue-gray head and a distinct white eye-ring. With acrobatic skill it works over the ends of branches searching for caterpillars and other insects. This vireo also forages in deciduous trees, but generally nests in a conifer. Several warblers primarily inhabit coniferous trees. The bills of warblers are characteristically narrow and pointed, adaptations for extracting insects from under leaves, between conifer needles or from bark crevices.



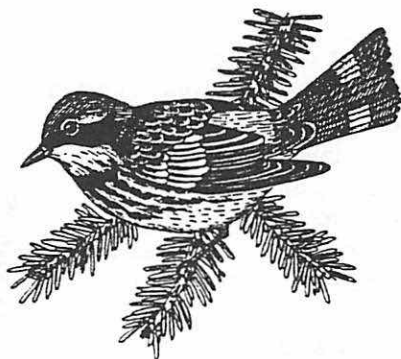
Solitary Vireo

The Magnolia Warbler is a strikingly coloured bird with its black, yellow and white markings. It is often seen searching for insects in trees and shrubs along woodland roads or along the edges of ponds and streams. The Blackburnian Warbler is one of our most beautiful birds with bright orange, white and black markings. This warbler is difficult to see, however, for it spends much of its time flitting through the tops of the trees. It also nests in the top of tall coniferous trees. The Bay-breasted Warbler, with a black face and chestnut-coloured crown, breast and sides, is another

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strikingly marked bird that inhabits coniferous woods. Bay-breasteds, however, forage in young trees and are more easily seen.

A feature of deciduous and mixed woods is that they are divisible vertically into five layers. The upper layer is the canopy, below this is the understory layer, then the shrub layer, the herb layer, and the ground or forest floor layer. Some birds spend a major part of their lives in a single layer and others may range over two or more levels.



Magnolia Warbler

Mature trees form the canopy layer, and include conifers, poplars, birches and maples. This layer is the domain of large birds such as American Crows, Common Ravens, hawks, Bald Eagles and owls. The Great Horned Owls rarely build their own nests but use old ones constructed by other large birds such as crows and ravens. A variety of smaller bird species, such as Red-eyed Vireos, also utilize this layer. This bird nests in the understory, but has song perches in the canopy and hunts for insects there. Purple Finches, Pine Siskins and Blackburnian Warblers are other species that dwell in the canopy. Snags, which are standing dead trees, and dead tops of living trees at the forest edge are favoured perch sites for hawks, Bald Eagles and owls.

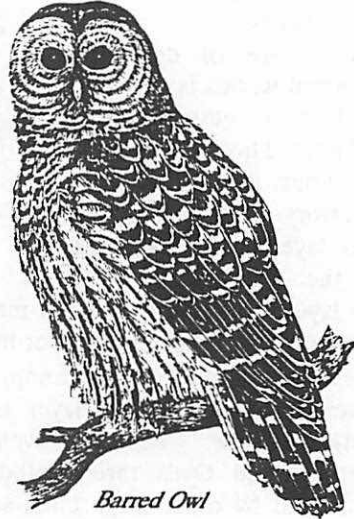
The understory consists of small and young trees and tall shrubs that range in height up to 10 m. In this layer, American Robins, American Redstarts, Northern Parula Warblers and Magnolia Warblers build their nests. The Red-eyed Vireo is one of the most abundant species that nests in this layer and is identified by its red iris, prominent white eye-stripe and gray cap. Birds of the understory are primarily insect eaters; some, such as flycatchers, catch insects on the wing while others forage among the foliage as do the warblers and vireos. The Eastern Wood-peewee and Olive-sided Flycatchers inhabit the understory and are easily recognized by their songs of "pee-a-wee" and "quick, three beers" respectively.

The Northern Goshawk is a forest-dwelling raptor that inhabits extensive stands of older woods, where understory vegetation exists and crown closure is about 50 to 60%. Goshawk nests are usually built on large branches of hardwood trees, often against the trunk and well below the top. Often the nest tree is near a stream or a lake. The hunting territory of a pair of Northern Goshawks may be from 10 to 20 sq.kms and includes a variety of forest types. As with many other birds of prey, the female Goshawk is larger than the male. Goshawks prey on Snowshoe

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Hare, Ruffed Grouse and other medium-sized animals. Goshawks are notorious for defending their nesting territory and will make swooping open-talon attacks on anyone or anything daring to invade it.

Barred Owls are cavity-nesting birds usually found in older stands of dense conifers or mixed coniferous and deciduous trees, but sometimes in wooded swamps and often near a stream or lake. Barred Owls generally nest in hollow trees but occasionally, they will use an abandoned hawk or crow nest. They will also use a nest box if one is provided in a suitable location. The female lays 2 to 3 white eggs, and incubates them for about 28 to 30 days while being fed by the male. Barred Owls prey on insects, fish, reptiles, amphibians, small birds and



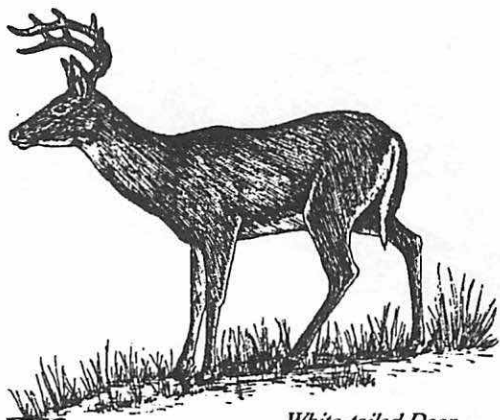
Barred Owl

mammals. They hunt for prey using sight, but they may also use sound location which is enhanced by the slightly offset placement or asymmetry of their ear openings. This anatomical feature (shared by most other owls) allows a sound to be received at slightly different times at each ear and so permits the owl to detect the direction from which the sound is coming. In addition, the ruff or facial disc tends to act as a sound gathering device and channels sounds to the ears. Barred Owls tend to be sedentary and remain on the same territory from year to year. This behaviour allows them to become intimately familiar with their territory and increases their hunting success. Barred Owls have a distinctive voice, consisting of a series of hoots, that sound like "who-cooks-for-you, who-cooks-for-you-all?" It is easily imitated and can be used on early spring evenings to draw birds to the "hooter" for close observation.

Forest Mammals

White-tailed Deer live in the forests of the North Mountain and Southern Upland and frequently visit the orchards and meadows of the Valley floor. They feed on twigs and herbaceous plants and often graze in fields along woodland borders, sides of roads or along lakeshores. While deer have been present in Nova Scotia at least since A.D. 300, a number of animals were introduced in 1894 and again in 1910. It is believed that the present population is derived mainly from these introductions and from those that continue to migrate into the province from New Brunswick. The

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White-tailed Deer

deer population increased rapidly during the first half of the 20th century and reached maximum numbers (possibly 1/4 million) between 1944 and 1956. This rapid growth was possible because land-clearing and lumbering practices led to the establishment of second growth forests with increased supplies of winter browse.

Woodland Caribou, large mammals adapted to old-growth forests and barrens, were present in Nova Scotia when the settlers first arrived. These members of the deer family survived on berries, sedges, willows, mosses and lichens in summer, and on lichens and twigs in winter. The decline and eventual disappearance of Woodland Caribou in the early 1900's was related to several factors including the destruction of lichens and old forests by fire and lumbering, the splitting of their traditional ranges by roads and centres of human activity, and illegal shooting.

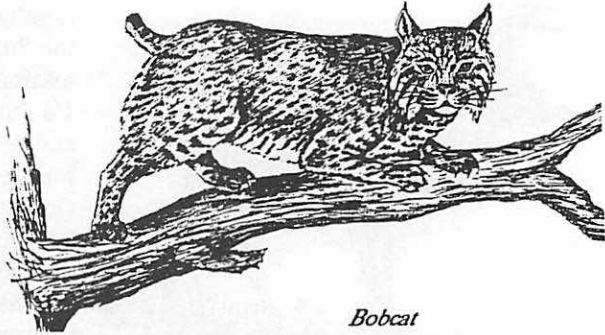
Moose were once common in Kings County and were frequently seen along the edges of farm fields and in swampy areas in the Greenfield-Black River District. Between the 1930's and 1950's many Moose died from "moose sickness", a disease caused by a parasitic nematode known as *Parelaphostrongylus tenuis*. This nematode invades the central nervous system and causes a loss of coordination and balance, progressive paralysis and death. The alternate hosts and carriers of this parasite are the White-tailed Deer, which are not affected by it, and a snail that inhabits the grassy meadows in which the Moose feed. Moose have increased in numbers in some counties during the past two decades, but have remained scarce in Kings County. Black Bears are more common now than they were 40 years ago. They prefer to live in heavily wooded areas. Their diet is varied and includes corn, fruit, grass, leaves, buds, carrion, fish, small mammals, birds, frogs and insects. Bears store fat in late summer and begin a period of dormancy in late autumn. This is not true hibernation. Although their breathing rate drops to 4 or 5 times per minute, their body temperature is not lowered and they may be easily aroused. They den in caves or beneath large windfalls.

Bobcats are also common in the County and prefer open, rocky woodlands. They are nocturnal animals but their tracks can be found in snow or soft ground. Bobcats feed on a variety of birds and mammals, including weakened deer. The Lynx used to be present throughout Nova

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Scotia, but is now restricted to the Cape Breton Highlands. Lynx were occasionally reported in Kings County previous to 1945.

The only native rabbit in Nova Scotia is the Snowshoe Hare. It is also called the "varying hare"



Bobcat

because its coat changes from brown in summer to white in winter. It is common in forested areas where thick brush provides cover from predators. Snowshoe Hare populations peak every 8 to 11 years and then decline by as much as 80 percent.

Porcupines are unusual rodents. Each may possess as many as 30,000 quills, and the longer quills may measure up to 8 cm. Woodlands, especially coniferous and mixed forest, are their preferred habitat. Porcupines feed on bark, buds and leaves; in winter, they frequently strip the bark off large sections of trees. Their favourite food trees include pines, Eastern Hemlock, poplars, fir and Sugar Maple. Porcupines are active all year, although they may den in a hollow tree or a cave for a brief period in winter. They are present throughout the County, but are most numerous on the North Mountain and Southern Upland where large trees and rocky outcrops provide good den sites.

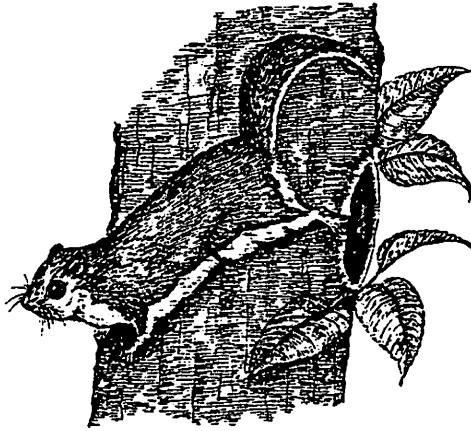
Red Squirrels and Eastern Chipmunks occur in wooded areas throughout the County. They are usually busy gathering nuts, berries, seeds and other woodland edibles for storage in their underground food caches. Squirrels bite off cones from trees and drop them to the ground to be collected and stored. Sometimes new trees grow from these stores making squirrels effective planters of forest trees. Eastern Chipmunks are more common in broadleaf forests where they usually have underground nests. Unlike Red Squirrels, they hibernate between late November and mid-March.

Kings County and the Lake Kejimikujik region are the only two areas in Nova Scotia where both eastern North American species of flying squirrels are known to occur. The Northern Flying Squirrel is the more common of these two grey, silky-furred, nocturnal rodents, and is found in coniferous as well as mixed forests. In Kings County, it also lives in the large trees along streets in small towns. It may occupy attics and is the basis of numerous tales of haunted houses. It eats lichens, buds, fruits, seeds and nuts but is also a noted scavenger of meat. Near dawn or at late dusk, you may catch a glimpse of one of these nocturnal squirrels as it glides with

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outstretched legs across an opening to another tree. During the day they sleep, often in old woodpecker nest cavities and, by firmly tapping on such tree trunks, the squirrels can be induced to peer out to investigate the source of the disturbance.

The Southern Flying Squirrel of the Lake Kejimikujik area, and recently discovered in Gaspereau, is a slightly smaller, paler species common in the extensive deciduous forests to our south. In fact, it is rarely



Northern Flying Squirrel

reported from areas north of southern Maine. Its occurrence in Nova Scotia is probably a reflection of that warmer period several thousand years ago when many trees, plants and animals had an unbroken distribution from southern New England into Atlantic Canada. With progressively cooling climates, most of those plants and animals retreated southward, leaving only isolated pockets in Nova Scotia. The distribution pattern of reptiles within Nova Scotia, with rare species concentrated near Lake Kejimikujik, is an excellent example of the consequences of these climatic changes.

Several species of shrew and mice occur in the woodlands of Kings County. Shrews are small but voracious carnivores, active throughout the day and night, and throughout the year. They have long, pointed snouts and their ears are usually concealed in fur. Although the commonest and often the most abundant mammal in an area, they are rarely seen. However, they are often heard for they are surprisingly vocal, producing twitters, shrill squeals and loud clicks.

Of the four local forest shrews, the Water Shrew (7 cm long) is the rarest. It frequents fast flowing streams in coniferous forests where it forages along the overhanging banks and enters the water for nymphs of stoneflies, caddisflies and mayflies, and small fish. It is blackish-grey and may have a silvery belly, but is easily identified in the hand by its specialized swimming feet. The hind feet are fringed with stiff hairs along the sides and between the toes, creating a functional "webbed" foot. This species has been found at streams in the Gaspereau Valley and near New Minas, and along the canals linking the lakes of the hydro-electric system on the Southern Upland.

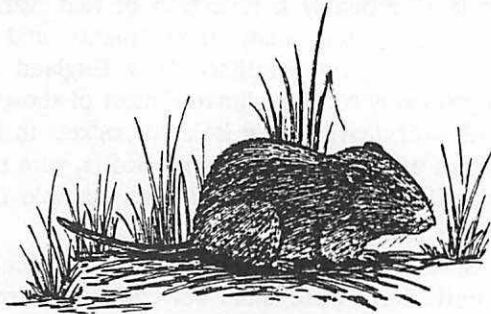
The Short-tailed Shrew, with a body length of 8 cm, is not only our

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largest but also our commonest species. It occurs in every type of habitat. It is especially beneficial to foresters and farmers as it eats the larvae of many insect pests and even attacks bark-eating meadow mice when they become abundant.

The smaller Masked Shrew (5 cm) and Smoky Shrew (6 cm) are similar in appearance and difficult to distinguish. The Masked Shrew is the more common one and is usually greyish-brown and paler beneath with readily discernible ears. It occurs over a range of habitats, including forested areas and old fields, brushy areas and on the dykelands. It eats insects, spiders, worms, snails and small salamanders. The Smoky Shrew is an almost uniform brown and has similar feeding habits, but its habitat is the moist leaf litter of old deciduous and coniferous woods.

Of the smaller forest rodents, Deer Mice and White-footed Mice are common and may be heard rustling through the leaves during late evening. The Red-backed Vole is the only reddish mouse in Nova Scotia. It lives in coniferous or mixed woods and constructs tunnels through the deep leaf litter. The Woodland Jumping Mouse has a long tail (up to 15 cm) and long hind legs. Its tail, which ends in a tuft of white hair, distinguishes it from the Meadow Jumping Mouse which has a tail ending in a tuft of black hair. The Woodland Jumping Mouse lives in thick herbaceous cover along streams and lakes. It travels by taking short hops but, as its name indicates, it may take jumps of one metre in length if alarmed.



Red-backed Vole

Eastern Coyotes have recently colonized Nova Scotia with the first verified specimen captured in Guysborough County in 1977. In Kings County the first specimen was taken in 1981 and the population soon reached a high level by the late 1980's. Coyotes seem to prefer the forested areas of the County but are frequent visitors to farming country and occasionally to residential neighbourhoods. Snowshoe Hare and deer are the mainstays of the coyote diet, but it will take advantage of virtually any food source available, including various fruits and herbaceous material.

Averaging somewhat larger than its western counterpart, adult male Eastern Coyotes may exceed 23 kg (50 pounds). The most common colour is tawny-gray with a black swath along the middle of the back from shoulder to tail. Red and black phase animals may also be found on occasion. Their habit of holding the tail low gives them somewhat of a slinking appearance which serves to set them apart from many dog sightings. This versatile animal is now a permanent member of our fauna

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and its presence has received mixed reviews from Nova Scotians. To many, however, a nighttime chorus of coyote howls adds a new and treasured component to the natural experience.



Rhodora