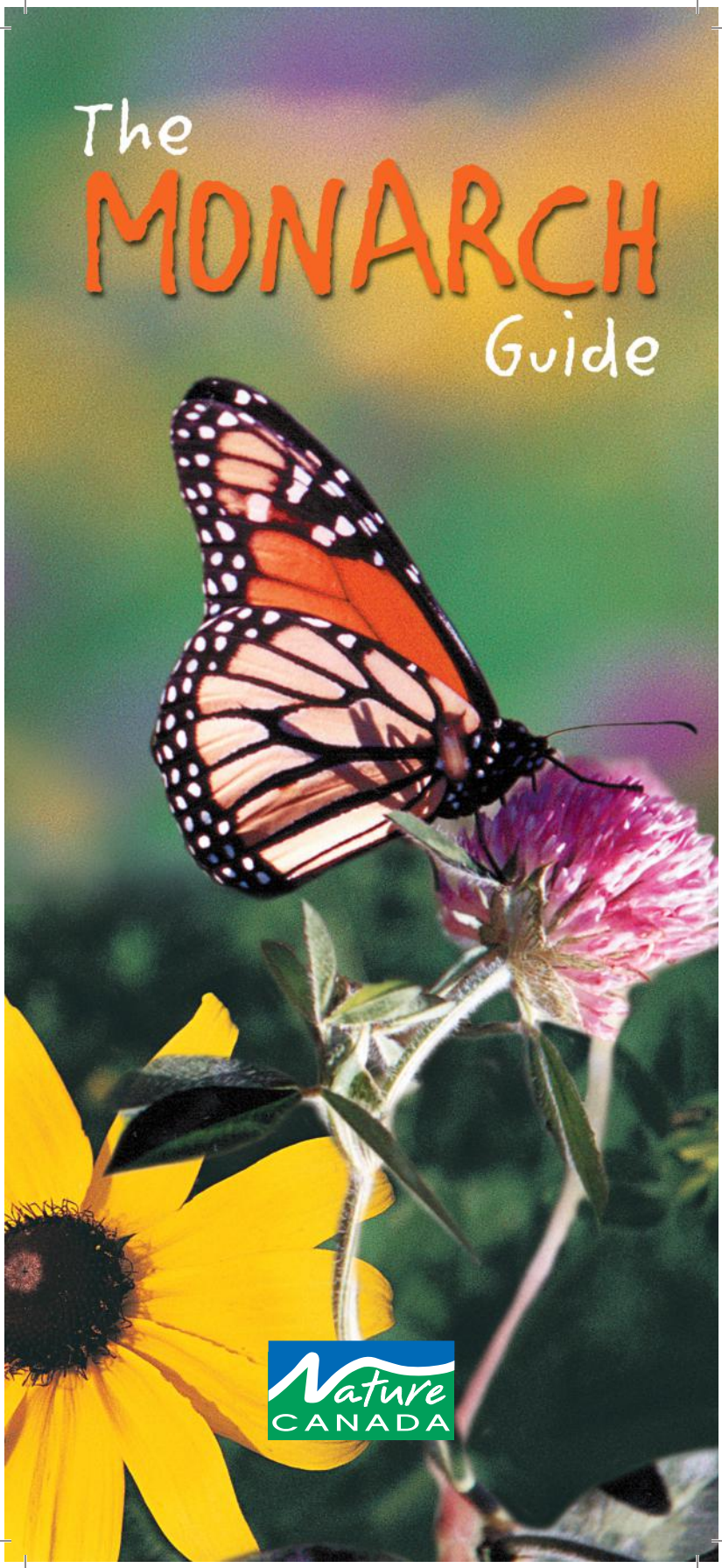
The MONARCH Guide



Nature CANADA

Monarch butterfly, Dan Sokolowski

About this guide

To most Canadians the monarch butterfly (*Danaus plexippus*) is a sure sign of summer. Yet catching a glimpse of this seasonal icon along roadsides and fields is becoming an increasingly rare event. While not at immediate risk of extinction, monarch populations are now being monitored for signs of trouble. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) listed the monarch butterfly as a species of "Special Concern" in 1997.

Under the Species at Risk Act (SARA), species in the "Special Concern" category do not receive formal protection. However, Canada and Mexico have made a joint declaration to nominate sites within both countries as part of an International Network of Monarch Butterfly Reserves. Three areas along the north shore of lakes Ontario and Erie have been designated as reserves—Long Point National Wildlife Area, Point Pelee National Park, and the Prince Edward Point National Wildlife Area. This guide is intended for use by residents of these areas and beyond who wish to help create natural corridors for monarch staging areas and migration beyond the network's boundaries.

This guide provides background information on the monarch butterfly, suggestions and tips on native butterfly gardening, and descriptions of specific plant species that are necessary for the monarch's survival. By using this guide, not only will you attract these black-and-orange jewels for your enjoyment, but you will also be protecting local ecosystems and encouraging biodiversity.

Nature CANADA

Nature Canada works with partners across Canada to promote conservation and sustainable land-use practices that benefit people and biodiversity.

Most scientists agree that human activity is causing rapid deterioration in biodiversity. The loss of critical wildlife habitat from human expansion, including urban settlements and agricultural development, is destoying ecosystems and upsetting nature's balance.

By reclaiming natural spaces through activites such as wildflower gardening and organic farming, individuals can help to create corridors for at-risk species beyond official protected areas networks.

This monarch butterfly guide was developed to assist residents of southern Ontario and others who want to encourage biodiversity by creating monarch habitat on their properties.

MONARCHS—THE "MILKWEED BUTTERFLIES"

Monarch egg, Robert McCaw

LIFE HISTORY

The monarch butterfly is also known as the "milkweed butterfly" because milkweed is the only plant monarch larvae can eat. The female butterfly lays about 400 little yellow eggs on the underside of milkweed leaves. The eggs develop in about two weeks, their colour turning from yellow to light grey. Once the larvae or caterpillars hatch they begin an eating frenzy, consuming the plant's leaves, flowers and sometimes seed pods. The larvae have yellow, black and off-white rings. The insect completes all of its growing in this stage, which takes nine to 14 days under normal summer temperatures. Once grown, the larvae attach themselves to a twig. Hanging upside down by their tail they shed their outer skin and transform into a pupa or chrysalis in a matter of hours. The pupa resembles a waxy, jade-coloured vase adorned with golden spots. After about two weeks the adult butterfly emerges and takes a couple of hours to dry its wings before taking its first flight. The adult male monarch is bright orange with a black pheromone scent patch in the middle of the hind wing. The female is dull orange or brown with more noticeable scaled black veins. Adults subsist largely on nectar produced from fall wildflowers.

As well as containing nutritional value, milkweed plants also contain a bitter heart poison called cardenolide that is stored in the wings and abdomen of monarchs throughout most of their life cycle. This poison provides some protection from predation.

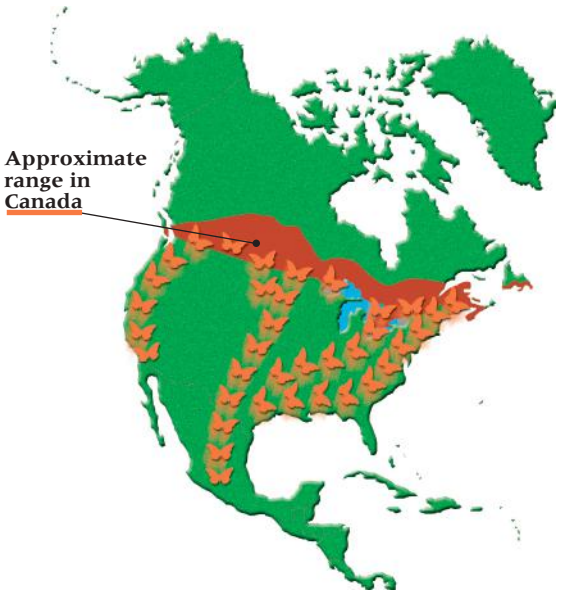
The viceroy butterfly (*Limenitis archippus*) looks like the monarch, but is smaller and has a curved vein that parallels the hind wing. By mimicking the monarch it probably fools predators into thinking it too has cardenolides as a poisonous defence.

MIGRATION

In Canada there are two distinct populations of monarchs: a large, widely distributed eastern population found east of the Rockies, and a second smaller western population found only in central British Columbia. The breeding range in Canada closely reflects the distribution of milkweed species.

The monarchs that appear in southern Canada are not the same individuals that migrated south the season before—they are the latter's offspring, or in some cases offspring several generations down the line. Monarchs are one of only a few butterfly species in North America that migrate.

Until 1975 no one knew exactly where the monarch's wintering grounds were located. A tagging project began in the 1930s and after thousands of tagged butterflies and several decades of work, the overwintering roosts in the mountains of central Mexico were finally discovered. Adults that hatch in mid-summer in Ontario will fly 3,000 kilometres (travelling about 50 kilometres a day), reaching the Michoacan state of central Mexico by October. Here they congregate by the millions in a Canadian-type northern fir forest. The forest provides cover as the monarchs drape themselves from the fir trees in the millions. This behaviour protects them from temperature extremes and dryness.



Unlike the eastern population of monarchs that migrate to Mexico, the smaller western population migrates to wintering sites in southern California.

In mid-March the monarchs leave their wintering grounds and begin their northward journey. They may only get as far as Texas where they will breed. This process of breeding and flying north continues through several generations until the third or fourth generation reaches Ontario in early June.

There are several theories about how monarchs that have never been to Mexico find the traditional roost the following fall. They may orient themselves based on the sun's position or the earth's magnetic field, by landscape features, or by a combination of these. Another theory claims that because of their small body size, monarch migration may be influenced by weather and climate conditions, such as wind. Tagging programs continue in an attempt to learn more about this migratory phenomenon.

Monarch butterfly chrysalis about to emerge, Robert McCaw

THREATS

Threats include the use of pesticides and herbicides, the loss of native plant species and the propagation of invasive non-native plant species, and more recently the spread of genetically modified pollen (some of which are equipped with DNA programmed to kill non-specific butterfly and moth larvae). However, because millions of monarchs congregate in one somewhat localized area in Mexico, the largest threat facing this species at present is the destruction of their wintering grounds. The fir forest in which they seek protection is being cut down by large logging companies and burned by local communities for agricultural purposes. As a result researchers are seeing monarch colonies breaking up earlier and exposing themselves to late frosts in the United States and Canada.

In an attempt to solve this problem, a 100,000-acre buffer zone has been proposed for the current 40,000-acre Monarch Butterfly Reserve in the Michoacan state. As well, Mexico is creating their first ever conservation trust fund that will guarantee local people a payment for every tree they do not cut down.

HOW TO HELP

Improve and protect monarch habitat in your area by planting native host species, such as those included in this guide. Native host species are important for the following reasons:

- Native plants have adapted to local soil and climate conditions so they do not need watering or chemical fertilizers and pesticides to thrive.
- Many native species thrive in poor soil.
- Native species have evolved with the local bird, mammal, butterfly and insect populations and therefore provide them with food and habitat.
- Growing native species improves biodiversity and creates a local seed source.
- Planting native species connects existing green spaces which provide migration corridors for urban wildlife, like the International Network for Monarch Butterfly Reserves.

Monarch caterpillar, Tony Beck

TIPS ON PLANTING YOUR BUTTERFLY GARDEN

Follow these guidelines for the most successful monarch butterfly garden.

- Include plants the butterfly will need at all four stages of its life cycle. The egg and larvae stage are restricted to species of milkweed, while adults feed on flowers that are fragrant, rich in nectar, and large enough for the butterfly to land on. Favourite flowers are mainly from the *asteraceae*, or sunflower and daisy, family of plants. But adults are not discriminating browsers, so any nectar-producing flower will do. In general, butterflies prefer yellow, pink, orange and purple flowers. (See the enclosed species list.)

Once you have determined which plant species are right for your area, contact a local nursery for information about obtaining plants or seeds.

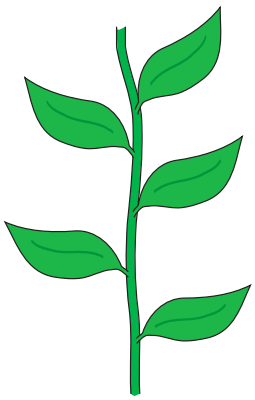
- The ideal garden location receives sun for most of the day (butterflies are active between 10 am and 3 pm) and borders a treeline to provide shelter from wind and predators. (Some plants have specific habitat requirements. Please pay special attention to the "Habitat" and "Planting tips" sections for each species to ensure they are right for your property.)
- Do not use any pesticides or herbicides on your garden, as they will kill butterflies and other beneficial insects.

PLANTS NECESSARY FOR DEVELOPING LARVAE

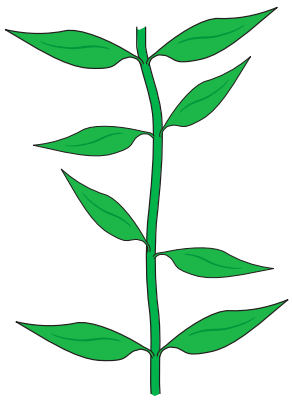
Monarch larvae depend exclusively on milkweeds (the *Asclepiadaceae* family) for food and protection. These wildflowers are found in fields, roadsides, and other open areas. There are an estimated 2,000 species of milkweed worldwide (most are found in Africa and South America). The species found in Canada are at their most extreme northern range and are found in every province except Newfoundland and Labrador. In this guide we have included only common species. It is best to plant species native to your locale.

Milkweed is a perennial, and once planted will brighten up your garden for many years. Only large insects, such as butterflies, moths and bumblebees, can successfully pollinate milkweeds. In nature, seeds are dispersed by the wind in the fall, but you can also collect them in the early fall and sow them yourself in late fall. Seeds can be stored indefinitely:

- For the first nine to 11 months store seeds in your refrigerator.
- After one year store seeds in glass jars in a cool, dry place for up to seven years.
- Scarring the seed coat and exposing the seed to a few days of a moist, low temperature will break dormancy (scarification). This is required for some milkweeds and might improve the germination rates of other species.
- Seeds can be planted in the spring as long as the temperature has reached 15ºC.



Alternate leaves



Opposite leaves

Robert McCaw

COMMON MILKWEED

Asclepias syriaca

Also known as: silkweed
Bloom time: June to early August
Ontario status: very common

DESCRIPTION

This plant stands 0.6 to 1.8 metres high and is normally found in large colonies. Drooping rounded flowers occur in clusters of pink, lavender or white. Leaves are opposite, oblong in shape and the undersides are covered in woolly, grey hair. Warty, grey-green seed pods begin to form in August to September. Once opened the pods reveal masses of silvery plumed seeds.

HABITAT

This plant is commonly found on roadsides, in fields, meadows, and rocky flat areas.

PLANTING TIPS

Although common milkweed is often too invasive for most backyard gardens, it may be appropriate for larger acreages. It is important to note that it may interfere with crops such as oats, sorghum, and soybeans. This species is best propagated from seed as it has large rootstalks making it difficult to transplant.

CONVENTIONAL USES

Two types of fibre are obtainable from this plant: the long, quite strong bast fibre and fibre from the seed hairs. During the Second World War the seed hairs were used to stuff life jackets. The Chippewa Indians also used the flowers and young shoots for food.

RANGE

Saskatchewan to New Brunswick, most common in southern Ontario and Quebec

Robert McCaw

SWAMP MILKWEED

Asclepias incarnata

Also known as: rose milkweed, silkweed, water nerve root, white Indian hemp, marsh milkweed
Bloom time: last week of June through August and sometimes into September
Ontario status: very common

DESCRIPTION

Swamp milkweed stands 0.9 to 1.5 metres high and is often found in large colonies. The flowers have elaborate hood and horn structures and are arranged in pink, flesh-coloured clusters. Leaves are opposite and lance shaped with short stalks. The seed pods, which mature between August and October, are slender and elongated and tapered at both ends. The juice of this plant is less milky compared to other milkweed species.

HABITAT

This species is found in a range of wet conditions from standing water to saturated soil. It commonly occurs on stream banks, the shores of ponds and lakes, in sedge meadows, marshes and in low wet woods.

PLANTING TIPS

Swamp milkweed is a semi-aquatic plant that requires full sun exposure. This species is ideal for shoreline restoration. Seeds should be sowed in the late fall in outdoor flats and mulched lightly.

CONVENTIONAL USES

This plant was cultivated for food and medicinal purposes by Aboriginal peoples who also used the root of the plant to induce sterility and to expel internal parasites. During the Second World War the military experimented with the sap of this species as a rubber substitute. Today swamp milkweed is most commonly used for wetland restoration.

RANGE

Manitoba and provinces to the east, except Newfoundland and Labrador

Andrew McLachlan

BUTTERFLY MILKWEED

Asclepias tuberosa

Also known as: pleurisy weed, yellow milkweed, orange swallowwort, orangeroot, whiteroot, Indian posy, windroot, Canada tuber, Canada flux, chigger flower
Bloom time: June to September
Ontario status: common

DESCRIPTION

This species reaches 0.6 to 0.9 metres high and is the only milkweed species that does not produce a milky juice. The flower clusters are typically bright orange, but can be yellow or red, and the leaves are alternate and oblong in shape. The slender seed pods are long, green, and tapered at both ends.

HABITAT

Butterfly milkweed is commonly found along old country roads, abandoned roads and abandoned railroads, and is fairly common in open sandy areas and dry fields, such as prairies or prairie remnants.

PLANTING TIPS

This favourite garden plant can be poisonous to livestock and therefore it should be planted appropriately. This species needs full sun to partial shade and fairly dry, well-drained sandy or gravely soil is recommended. Propagate this species from cuttings, best taken in May, or from seed. Cuttings or seedlings should be planted in the fall.

CONVENTIONAL USES

The root of this species was once thought to cure pleurisy, an inflammation of the membranes that line the thorax and partially enfold the lungs, hence the name "pleurisy root." Historically, it was also used medicinally as a diaphoretic, expectorant, diuretic, laxative, astringent, anti-rheumatic and anti-syphilitic. Health Canada has listed this species as a restricted herb that may not be sold in traditional herbal medicine as it contains glycosides that affect the human cardiovascular system.

RANGE

Ontario and Quebec

POKE MILKWEED

Asclepias exaltata

Also known as: no other names
Bloom time: June to August
Ontario status: common

DESCRIPTION
The poke milkweed stands 0.6 to 1.8 metres high. Its loosely clustered flowers are white with lavender or a tinted green. The leaves are opposite and oblong in shape.

HABITAT
This species is commonly found in rich woods and wood edges.

PLANTING TIPS
Poke milkweed requires partial to little sun and moderately moist soil. It is best propagated from seed or seedling.

CONVENTIONAL USES
None

RANGE
Southern Ontario and Quebec

Monarchs gathering, Art Explosion Images

PREFERRED PLANTS FOR ADULTS

The availability of adequate nectar resources is an absolute must for monarch habitat. The fuel monarchs require for their long migration south is obtained exclusively from fall wildflowers. The wildflowers in the following section are commonly preferred plant species for adult monarchs and are also favourite garden plants.

Robert McCaw

CANADA GOLDENROD

Solidago canadensis

Also known as: Common goldenrod
Bloom time: May to September
Ontario status: very common

DESCRIPTION
Canada goldenrod is one of the most common species of goldenrod in North America and is easily recognized for its very tiny yellow flower heads atop arching branches. It stands about 1.5 metres high. Its leaves are alternate, canoe-shaped, and coarsely toothed.

HABITAT
Natural habitats include disturbed areas of moist to dry prairies, openings in floodplains and upland forests, thickets, savannas, limestone glades, and gravel seeps. In more developed areas this species occurs in cultivated and abandoned fields, vacant lots, power-line clearance areas, and along fences, roadsides, and railroads.

PLANTING TIPS
Canada goldenrod prefers full to partial sun and average moisture levels. It will tolerate some drought, in which case it will probably drop some of its lower leaves. This plant tolerates a variety of soils. It can be propagated from seed or by dividing clumps in the fall and replanting them 60 centimetres apart.

CONVENTIONAL USES
Contrary to popular belief, goldenrod does not cause hay fever. This species is an important source of nectar for honeybees and is also used as an aromatic in some essential oils. It contains tannin and several shades of dye can be produced from its flowers.

RANGE
Newfoundland and Labrador to British Columbia

Dan Sokolowski

NEW ENGLAND ASTER

Aster novae-angliae

Also known as: starwort

Bloom time: August to October

Ontario status: very common

DESCRIPTION

This species stands between 0.6 and 1.8 metres high. The large, rosy-lilac to deep purple flowers have distinct yellow to orange centres found clustered at the end of branching stems. The long, alternate leaves clasp around its numerous stiff, hairy stems.

HABITAT

New England aster is commonly found in meadows, thickets, damp areas, and along roadsides.

PLANTING TIPS

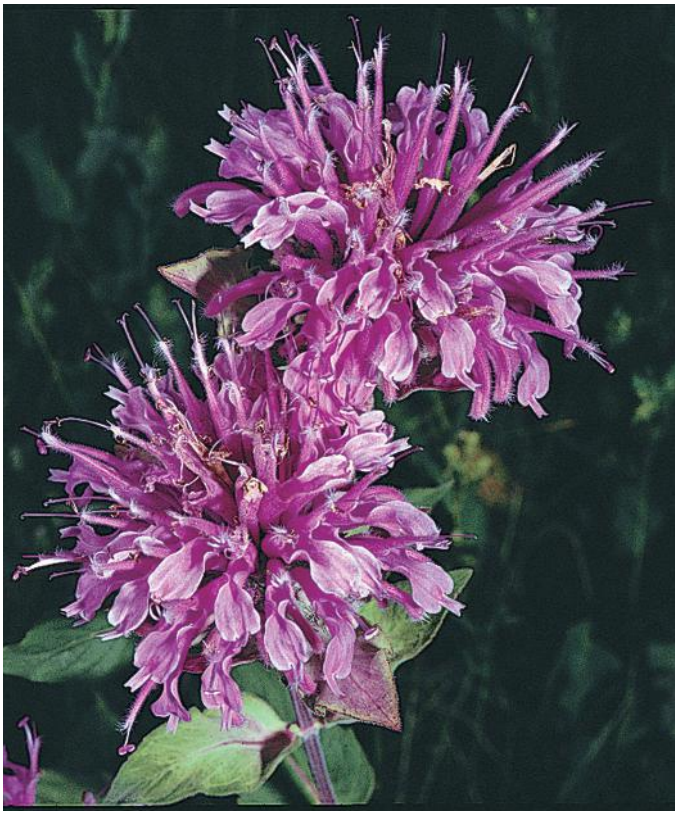
This species is not the easiest variety to grow from seed but can be one of the most rewarding. Plants can also be easily divided in late fall and replanted. This should be done every two to three years. It prefers full to partial sun in moist, rich soil.

CONVENTIONAL USES

The crushed leaves release an aroma similar to turpentine. Native Indians used the juice from crushed leaves to relieve poison ivy and the roots for fever, catarrh and pain. New England aster is very popular for wildflower gardens and makes an excellent fall cut flower.

RANGE

Across southern Canada



Edgar T. Jones

WILD BERGAMOT

Monarda fistulosa

Also known as: horsemint

Bloom time: July to August

Ontario status: very common

DESCRIPTION

Wild bergamot can reach up to one metre in height. Its pale violet flower clusters are solitary at the ends of branches. The leaves are opposite, long, lance-shaped, and toothed and have a distinctive mint-like smell.

HABITAT

This rigorous species is often found in meadows with sandy soil and dry conditions.

PLANTING TIPS

Wild bergamot does best where animal grazing is light or moderate and should be planted in moist soil high in organic matter. It can be propagated by division or by seed and requires full sunlight.

CONVENTIONAL USES

Bergamot leaves are wonderful as a fragrant herbal tea when three to four dried or fresh leaves are placed in a cup of boiling water with honey. Aboriginals used this plant medicinally as a stimulant to remove the pain of colic. Likewise, oil of thyme (thymol) is contained in this plant, which has been used as a stimulant and to relieve digestive flatulence and nausea.

RANGE

Quebec to Manitoba, and British Columbia

Dan Sokolowski

BLACK-EYED SUSAN

Rudbeckia hirta

Also known as: brown-eyed Susan, brown Betty, yellow daisy

Bloom time: June to September

Ontario status: very common

DESCRIPTION

Black-eyed Susan is one of North America's most common and easily recognizable wildflowers. It stands about 0.6 to 0.9 metres high. The flowers are yellow-orange with dark purple-brown disks. Its leaves are alternate, oblong in shape and slightly toothed.

HABITAT

Black-eyed Susan is native to the Great Plains but was introduced into Ontario where it has spread aggressively. It is usually found in coarse-textured soils in meadows, pastures, and along edges of woods, river valleys, lakeshores and roadsides.

PLANTING TIPS

This plant only propagates by seed, which should be planted in the late fall or early spring in moist soil and full sun.

CONVENTIONAL USES

Black-eyed Susan is primarily used for bug guards near fields and houses because the hairy stem makes it difficult for insects to climb. They also make beautiful cut and dried flowers.

RANGE

Throughout southern Canada

Robert McCaw

COMMON YARROW

Achillea millefolium

Also known as: milfoil, sanguinary, thousand-seal, nosebleed, carpenter's weed

Bloom time: June to August

Ontario status: very common

DESCRIPTION

Common yarrow stands 0.3 to 0.9 metres tall with dense white or yellow flowers that form flat clusters at the stem ends. The leaves are alternate, feathery and resemble carrot leaves. The foliage has a pungent odour, hence the name "nosebleed."

HABITAT

This species is commonly found in fields, along fencerows and in wildflower gardens.

PLANTING TIPS

The plant is easily grown from seed, which should be planted in the fall. They grow rapidly so the plants may have to be divided and reset each spring. Any soil will do, although they thrive best in rich, well-watered soil where they have full sun.

CONVENTIONAL USE

The Forest Potawatomi used common yarrow as a witch charm by placing seed heads over hot coals and producing a smouldering scent. Aboriginal peoples also used this species to halt the flow of blood from a wound and modern testing has proven chemicals in the plant are effective in clotting blood. Pioneers found chewing on the leaves would help settle an upset stomach or help regulate the menstrual flow.

RANGE

Throughout southern Canada

Erich Haber

BONESET

Eupatorium perfoliatum

Also known as: thoroughwort

Bloom time: July to September

Ontario status: very common

DESCRIPTION
Boneset stands 0.6 to 1.2 metres high. Broad flat clusters of tiny white florets top the tall stems and the leaves are opposite, hairy and lance shaped. The leaves are very distinguishable because although they are opposite, they appear as one leaf with the stem poking through.

HABITAT
This plant is commonly found growing along streams and in low meadows and fields.

PLANTING TIPS
Boneset can be propagated by seed or by division in the fall or spring. It requires wet soil and full sunlight.

CONVENTIONAL USE
This plant's perfoliate stem caused early herbalists to believe it would be useful in setting bones, hence the name "boneset." Aboriginal tribes made a bitter tonic from its leaves and blossoms as a cure for fever and rheumatism. Today some people still believe that boneset tea can cure everything from broken bones to colds and coughs.

RANGE
Southern Canada

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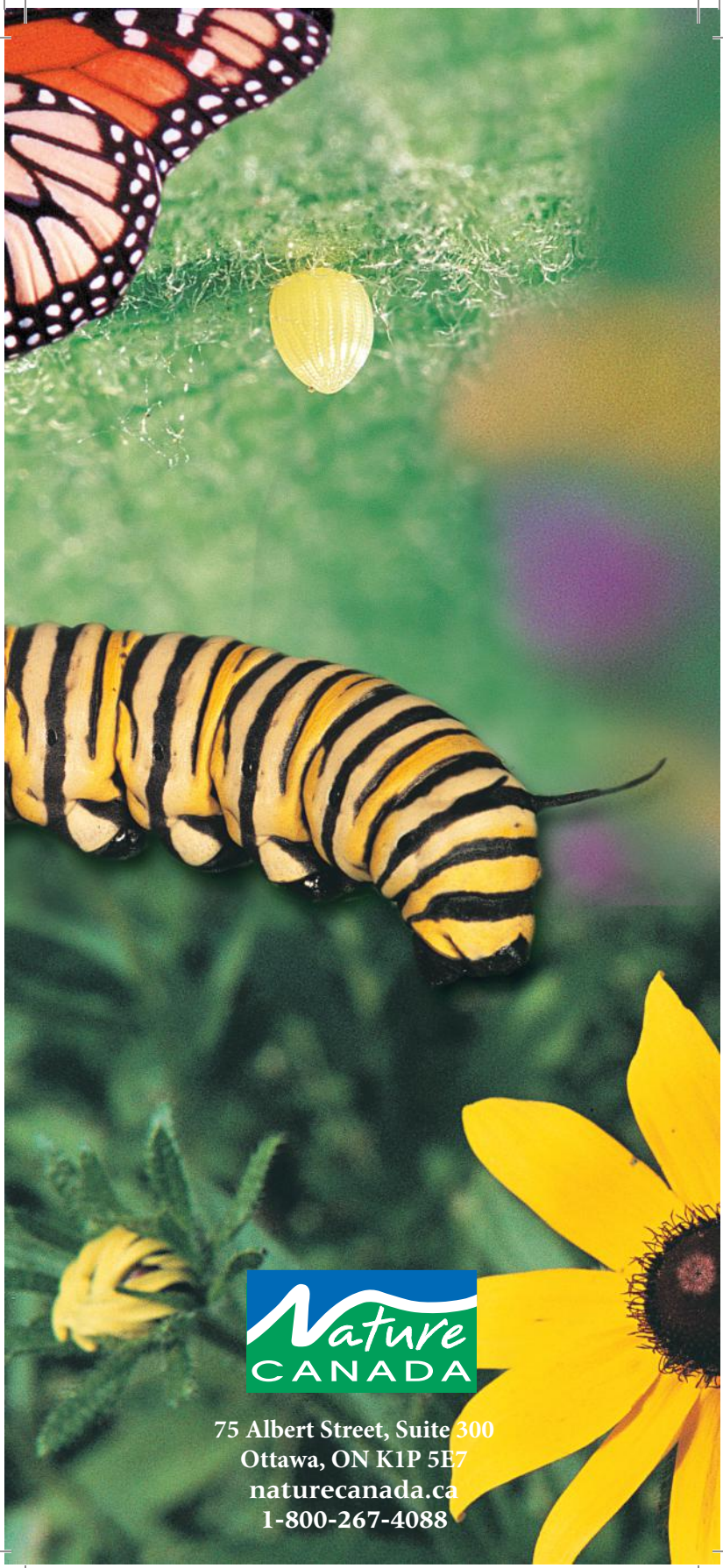
For further information on plants that are native to other areas, please contact your local plant nursery.



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