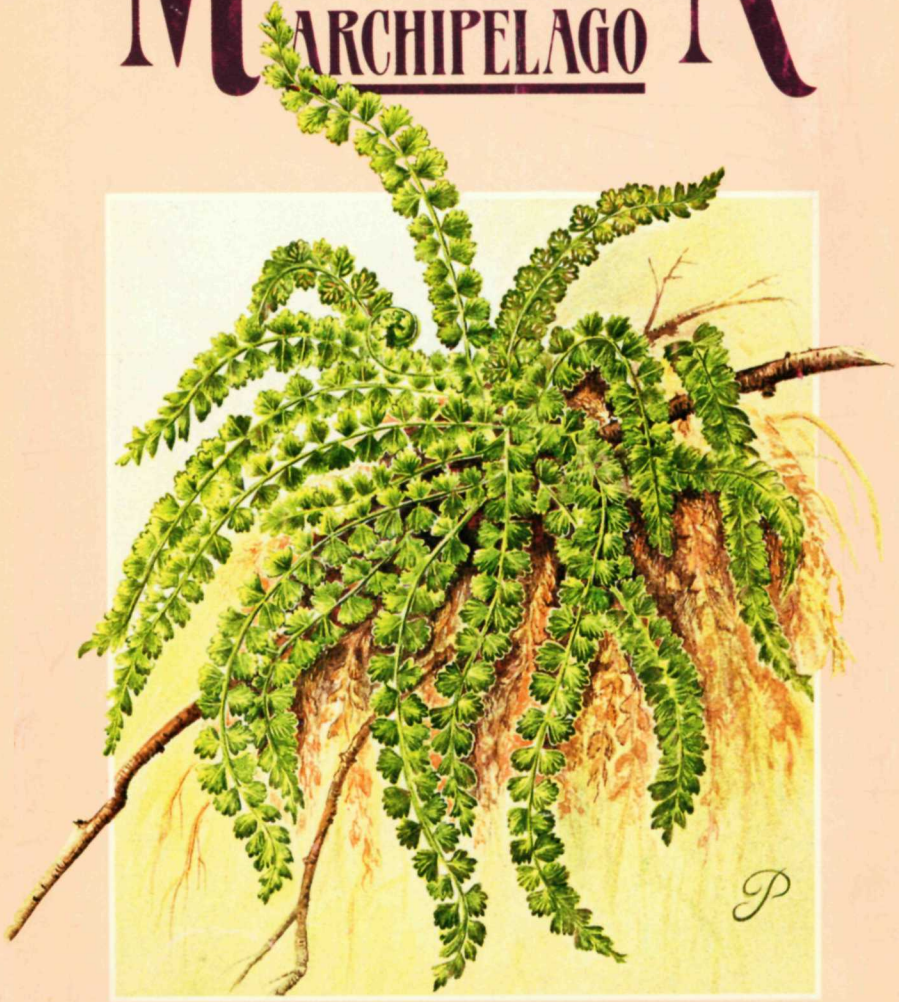
THE RARE PLANTS OF THE MINGAN ARCHIPELAGO



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THE RARE PLANTS OF THE MINGAN ARCHIPELAGO

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FOREWORD

The publication of the work "Rare Plants of the Mingan Archipelago" by Parks Canada is an important step towards the preservation of these unusual elements in the Gulf of St. Lawrence. In effect, their protection depends largely upon public recognition of their great value.

The principal authors of this work, Line Couillard and Pierre Grondin, have been interested in the Mingan Islands for several years and they have vulgarized the accumulation of more than 60 years of scientific data in a most capable fashion. Brother Marie-Victorin, founder of the Montreal Botanical Gardens, explored the area from 1924 to 1928. He was accompanied by Brother Rolland-Germain. Their work made the scientific community aware of the enormous interest of this calcareous archipelago. Later, other botanists added to the ecological and phytogeographical knowledge of this sector which is now extremely well-known.

After briefly describing the Mingan Archipelago, presenting the various categories of rare plants, then discussing their origins, mostly with respect to the last ice age, the authors explain the origin of the name and describe the habitat and geographical location of a selection of rare Mingan plants. Once the meanings of the Latin names are known, they are less forbidding. For example, *Cypripedium passerinum* is less formidable when one learns the origin of *Cypris*: Venus, *pedilon*: clog and *passerinum*: a flower that resembles a sparrow's egg. The ecological and phytogeographical data also allow these species to be examined as elements of our natural heritage.

Drawings by artist Denise Pelletier make it possible to recognize and appreciate these rare plants from the archipelago. Drawn in careful detail on location, they show the habitat and neighbouring plant species. Not only do the drawings make it easy to identify certain plants while on location, they will introduce these rather inaccessible species to a wider public.

This work reflects the desire of Parks Canada to preserve unusual territories in the Gulf of St. Lawrence, such as Mingan, Cape Breton, Forillon and Gros Morne so that they may become known and be appreciated by the Canadian public and the international community, who are increasingly preoccupied by the preservation of a natural heritage that is irreplaceable.

André Bouchard
Curator, Montreal Bonatical Gardens
Associate Professor, Botanical Institute
Montreal University

WHY A BOOK ON RARE PLANTS?

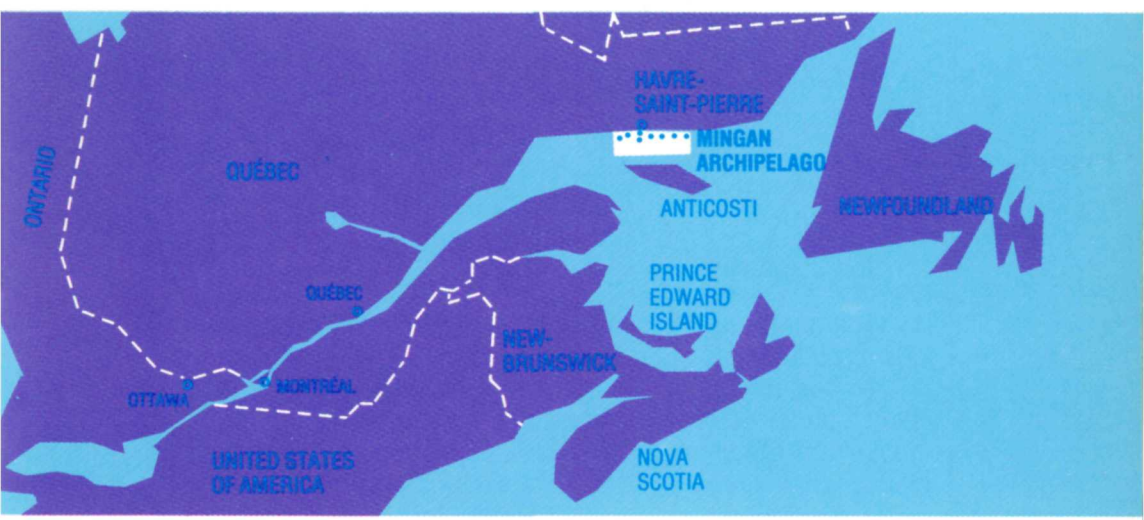
The Mingan Archipelago offers unique landscapes of exceptional beauty. Exploring the islands, the visitor will be fascinated by the crystal clear waters, the bright colours of the shoreline,and the extraordinary shapes sculpted in the rock. These readily apparent attractions are complemented by others that are less likely to catch the eye, but every bit as special. Rare plants are a case in point — because of their small size or limited habitat, they may escape the visitor's notice. But this little book, with its delightful sketches, provides a fine opportunity to discover some of the rare plants of the Mingan Archipelago in all their splendour. For how better than through botanical sketches to instil a sense of wonder and show the vivaciousness, colour, and fragility of plants?

The rare plants of the Mingan Archipelago are of various origins. Some have come to us from the north, the south, or the west, while others are peculiar to the Gulf of St Lawrence region. These plants reflect the features of the local climate and geology, and their presence reveals surprising facets of the islands' history. This is one reason why they are so interesting to study. Although these plants are rare, they do not have monetary value and harvesting them will profit no one. They should instead be protected for the remarkable natural value and originality they impart to the flora of the Mingan Archipelago. Besides, **picking of all plants is strictly prohibited in national parks**.

THE MINGAN ARCHIPELAGO

Geography

The Mingan Archipelago lies off the Middle North Shore in the vicinity of Havre Saint Pierre, a village located 850 km east of Quebec City. The archipelago is composed of some thirty islands and numerous islets, rocks, and reefs scattered over a distance of approximately 95 km. Total land area is 90 km^2 or about one percent of the size of Anticosti Island, which is located farther south in the middle of the Gulf of St Lawrence. Renowned for their spectacular erosion shapes, the Mingan Islands attract thousands of visitors each year. Daily boat excursions are run from the wharf at Havre Saint Pierre.



Local map of the Mingan Archipelago.

Climate

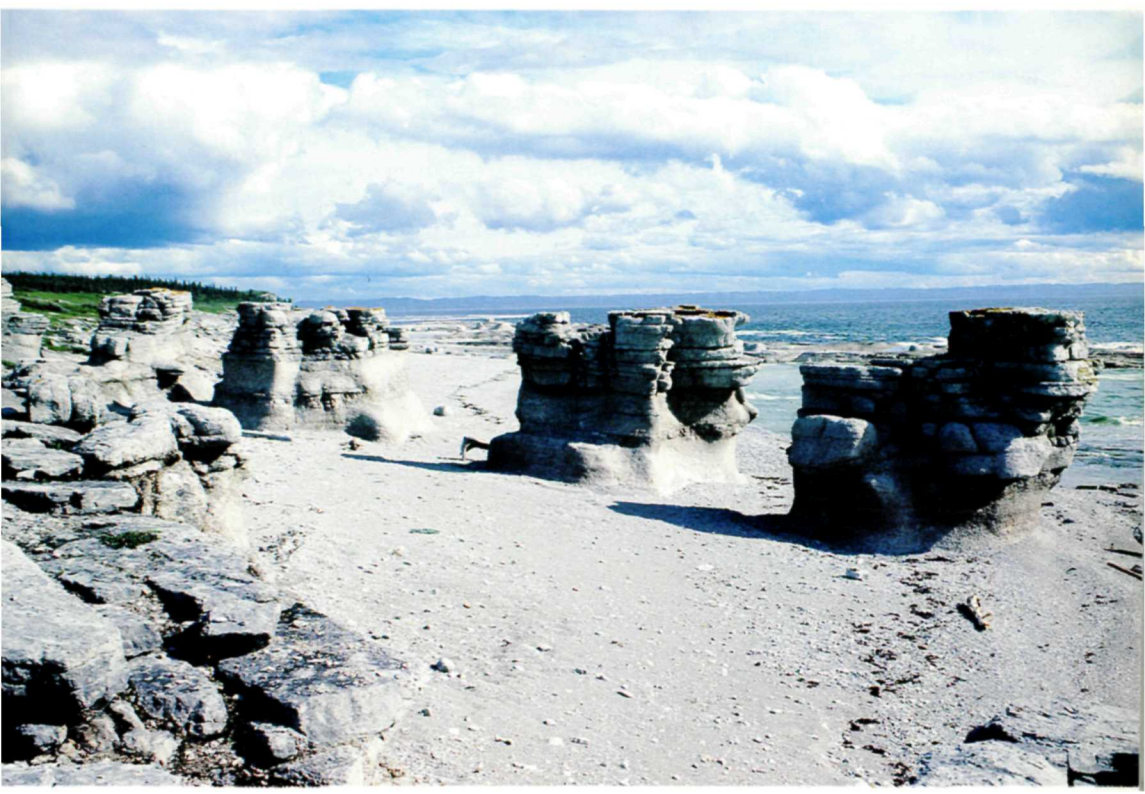
While exploring the Mingan Archipelago, visitors will also experience its special climate, which is strongly influenced by the sea. In summer, expect variable temperatures, high atmospheric humidity, and frequent fog. The sea-cooled breeze from offshore is often extremely chilly despite the radiant sunshine. And should the wind drop, the weather can suddenly become stiflingly hot. Summer brings many fine days, but the contrasts within a single week can be astonishing.

A foggy day on Grande Île.

The sea tempers the cold of winter but delays the coming of spring. The local growing season is short: 140 days compared with 180 in the Quebec City area. As a result, the vegetation is markedly different (for example, no maple trees grow on the islands). In areas most exposed to offshore winds, the climate becomes extremely harsh. Intense cold and limited snow accumulation in winter give rise to dwarfed trees, creeping shrubs, lichens, and other species adapted to these conditions, including a number of rare plants.

Geology

The rock formations of the Mingan Archipelago differ in several respects from those of the North Shore. The former are relatively young (500 million years old), while the latter contain some of the oldest rock in the world (over one billion years old). On the islands, gray shades predominate rather than the darker browns and beiges of the mainland. This difference in the colour of the rocks reflects two very distinct origins. The geological formations of the North Shore are the result of the cooling, hardening, and transformation of initially molten materials that escaped from the earth's core. In contrast, the archipelago formations are derived from sediments — mineral particles and remains of marine organisms — which accumulated and solidified on the sea bottom. A large proportion of these sediments formed calcareous rock, or limestone. Without this highly friable rock that has been so magnificently sculpted by erosion, the Mingan shoreline would be much less spectacular. The limestone also accounts for the local presence of a number of rare plants.



Typical Mingan shore-line sculptures.

Nearly one-tenth of the Mingan flora

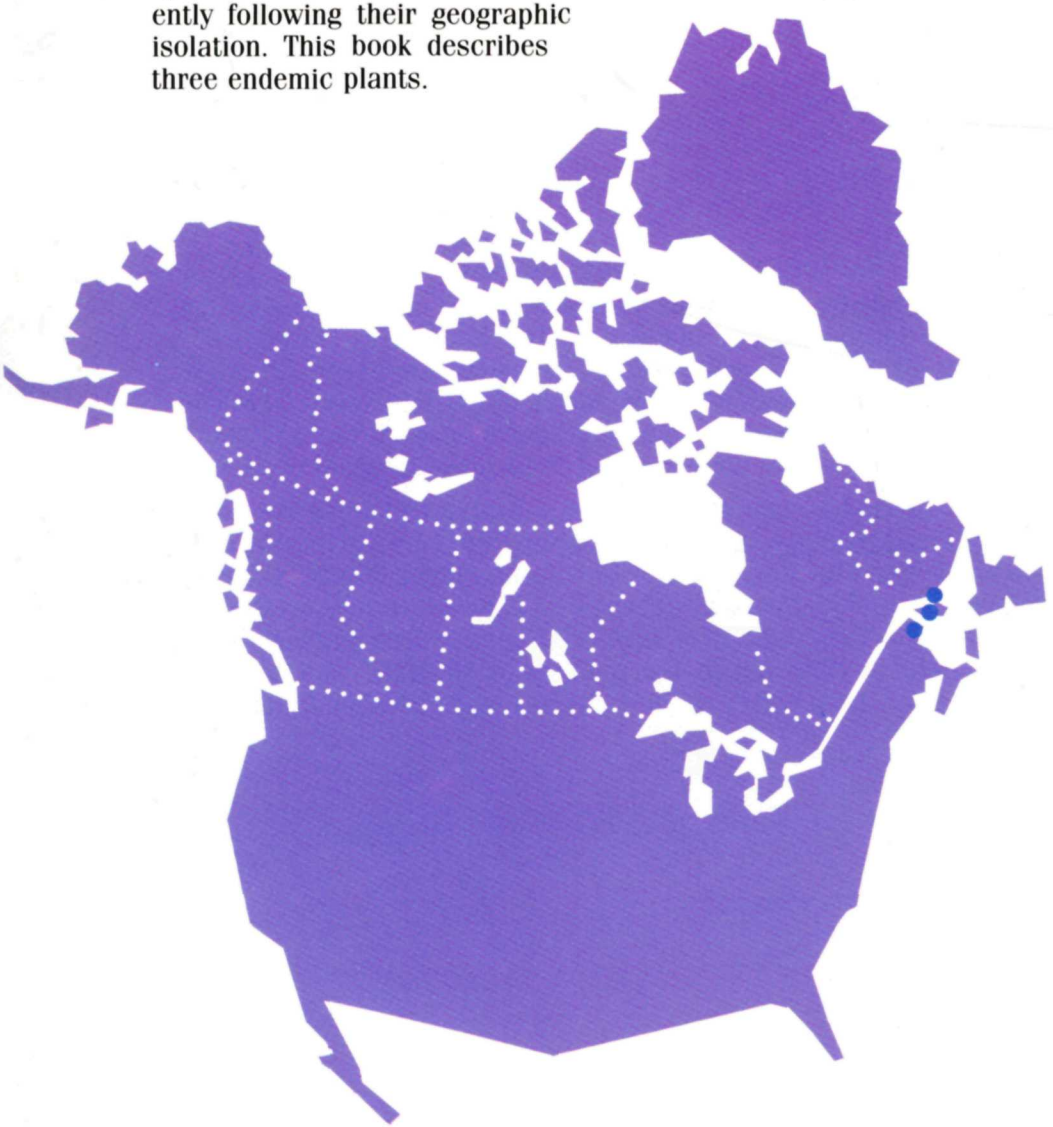
It is mainly by studying the worldwide range of plant species that botanists can identify the particularly interesting features of a flora. Of the 452 species making up the Mingan florae, 39 exhibit unusual range characteristics. About 15 of these species are considered rare in Quebec. Others are common in northern or southern Quebec but are none-the-less rarities within the Mingan area.

Our knowledge of the Mingan florae and its rare plants is the fruit of studies extending over more than a hundred years. Among the many botanists who have visited the archipelago, Brothers Marie-Victorin and Rolland-Germain made a particularly noteworthy contribution. Their stays in the Anticosti-Mingan area in the summers of 1924 to 1928 led to the publication of *Flore de l'Anticosti-Minganie*, from which we have taken a number of quotations.

Five categories of rare plants

1. Species confined to the Gulf of St Lawrence (endemic plants)

The rare plants of the Mingan Archipelago include five species which are essentially found on the perimeter of the Gulf of St Lawrence. These are endemic plants — their range is limited to a single region of the globe. In a number of cases, they are varieties of species found elsewhere in North America that developed differently following their geographic isolation. This book describes three endemic plants.



Distribution of a species confined to the Gulf of St. Lawrence: Small-flowered Rocket.

2. Species from the west (cordilleran plants)

The second category includes eight species which are widespread in the Rocky Mountains or the western portion of the continent, but are limited to only a few sites in eastern North America. Since the mountain system of western North America is also known as the Cordilleras, botanists refer to these plants as cordilleran species. We will present five of these species.

Distribution of a species from the west: Spear-leaved Fleabane.

3. Arctic or arctic-alpine species

About fifteen of the rare plants of the Mingan Islands are common on the arctic tundra or mountain tops of the northern hemisphere. At the latitudes of the Anticosti-Mingan or Gaspé regions, they are seldom encountered. In four cases, the archipelago is at the southern limit of their range. Most of these species grow on cliffs, taluses, or pebbled surfaces where the prevalent ecological conditions are similar to those found in arctic or alpine environments. Seven of these species are illustrated.

Distribution of an arctic-alpine species whose southern limit is in the Mingan Archipelago: Three-flowered Rush.

4. Quebec boreal species

The plants in this group grow at the latitudes of the coniferous forests, between the tundra to the north and the deciduous forests to the south. These species, only five in number, are also found in Europe and Asia. They are confined to sites with limestone outcrops, which explains their very limited range in Quebec. All five species are presented.

Distribution of a boreal species that is rare in Quebec: Green Spleenwort.

5. Species at the northern limit of their range

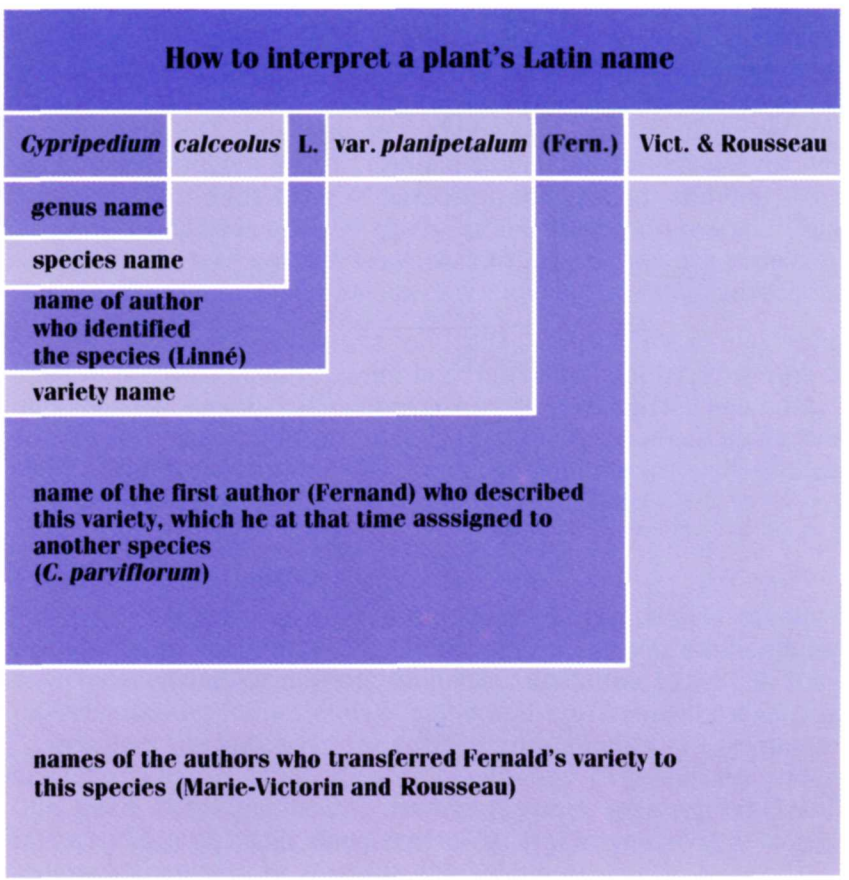
In addition to the rare plants from the north, the west, and the boreal forest there are nearly twenty-five species found primarily to the south of the Mingan Archipelago. These plants grow mainly in forests of deciduous trees such as maple. In the Mingan area, they are at the northern limit of their range, which, for 17 species, abruptly stops at the archipelago. Four of the species in this group are described.

Distribution of a boreal species whose northern limit is in the Mingan Archipelago: Broad-lipped Twayblade.

How plants are named

Like people, plants are members of families and have an official name, usually in two parts. To allow scientists of different linguistic backgrounds to refer to them easily, this official name is in Latin. Generally, the name reflects the shape, colour, habitat, or medicinal properties of the plant.

The first part of the name indicates the plant's genus. A family is usually made up of several genera, each containing a number of species. The second part is the species name, followed by an abbreviation for the name of the person who identified the species. Sometimes, the species name is complemented by a subspecies or variety name. Plants are also known by various common names in different languages and regions. This publication lists the Latin, English, and French names of each rare plant.



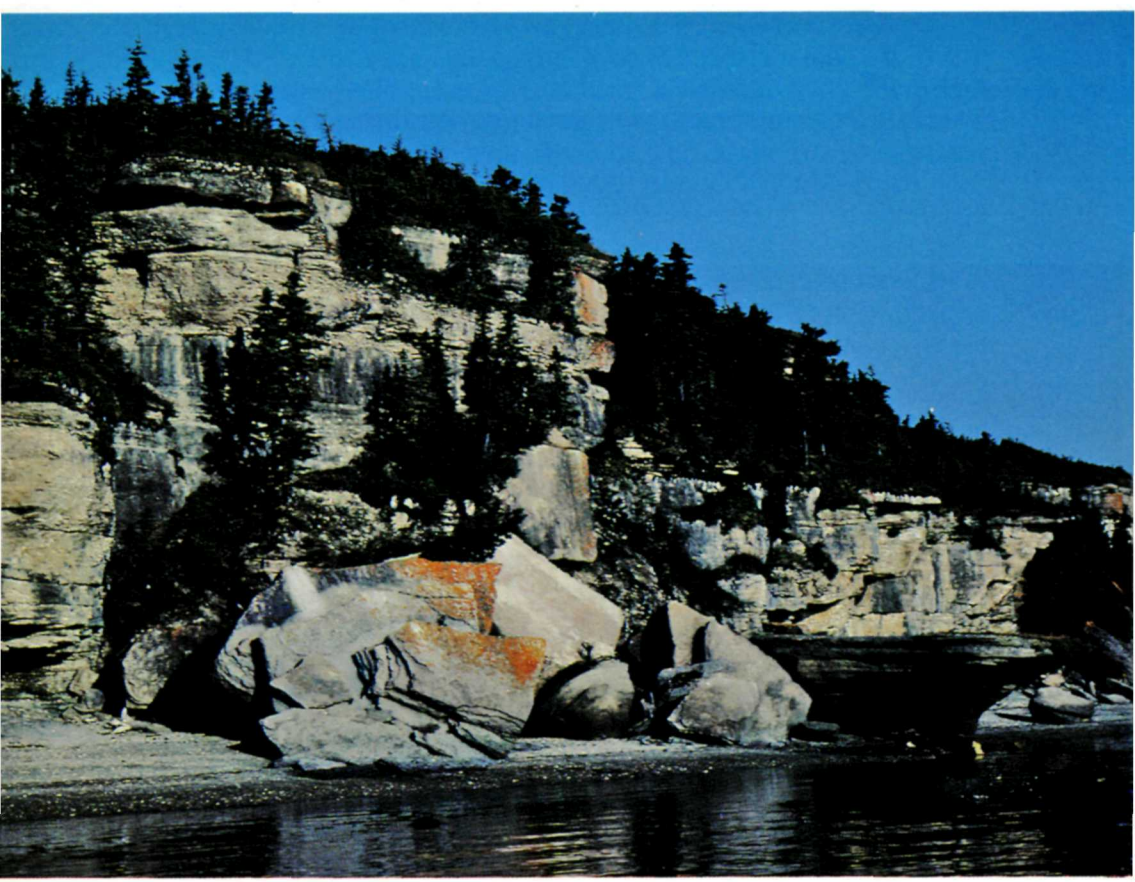
WHERE DO RARE PLANTS GROW?

Most rare plants in the Mingan Archipelago have special needs. For example, several species require the presence of limestone. Since this is the dominant type of rock in the islands, we might expect to find these plants almost anywhere. However, they will only grow where the nutrients released by the limestone, such as calcium and magnesium, are accessible to their roots. In some environments, such as the Mingan forests, the maritime climate encourages the formation of a thick layer of humus on the ground, and this layer prevents exchanges between the roots and the calcareous soil. This is why the forests contain very few rare plants and are primarily populated by common boreal species with less exacting nutritional requirements.

Most of the rare plants require high intensity light to grow, and a number also need occasional exposure to sodium-rich sea spray. For these reasons they are mainly found in open areas along the shore. Within the archipelago, only four habitats are suitable for rare plants: cliffs, moorland, shorelines, and bogs.

Clinging to the cliffs

Over the centuries, erosion of the shores of the islands has produced a large number of cliffs. Some border the sea, while others have receded and are partially hidden by vegetation. In the cliff habitat, excessively steep slopes, shallow soil, and frequent rockslides have halted the spread of the forest, but a number of rare plants have managed to adapt to these conditions. To obtain the water they need, these plants take root in fissures, between blocks of fallen rock, or on small, damp ledges. Most grow in strong sunlight, although some can be found in shaded sites.



Cliff bordering the sea.

Limestone Polypody, a rare fern growing on a scree.

In the harsh moorland climate

On the shores most exposed to waves, the sea has deposited a thick layer of pebbles as the islands have emerged. Broken down by the action of the cold, these pebbles may today be exposed or covered by lichens and creeping shrubs. The result is the moorland habitat, similar to tundra, where difficult climatic conditions (heavy exposure to ocean winds, limited snow cover in winter, etc.) and the coarse texture of the pebbles prevent establishment of the forest. Unable to develop properly, the trees scattered here and there across the moor are dwarfed or slanted, almost like bonsai.

Arctic-alpine plants are abundant on the moorland. Some are found in very dry pebbled sites. A few grow on carpets of vegetation, wherever their roots can acquire the nutrients released by the limestone.

Pebbled surface shattered by cold.

Vegetation carpet of lichens and low bushes.

On the upper shore washed by ocean spray

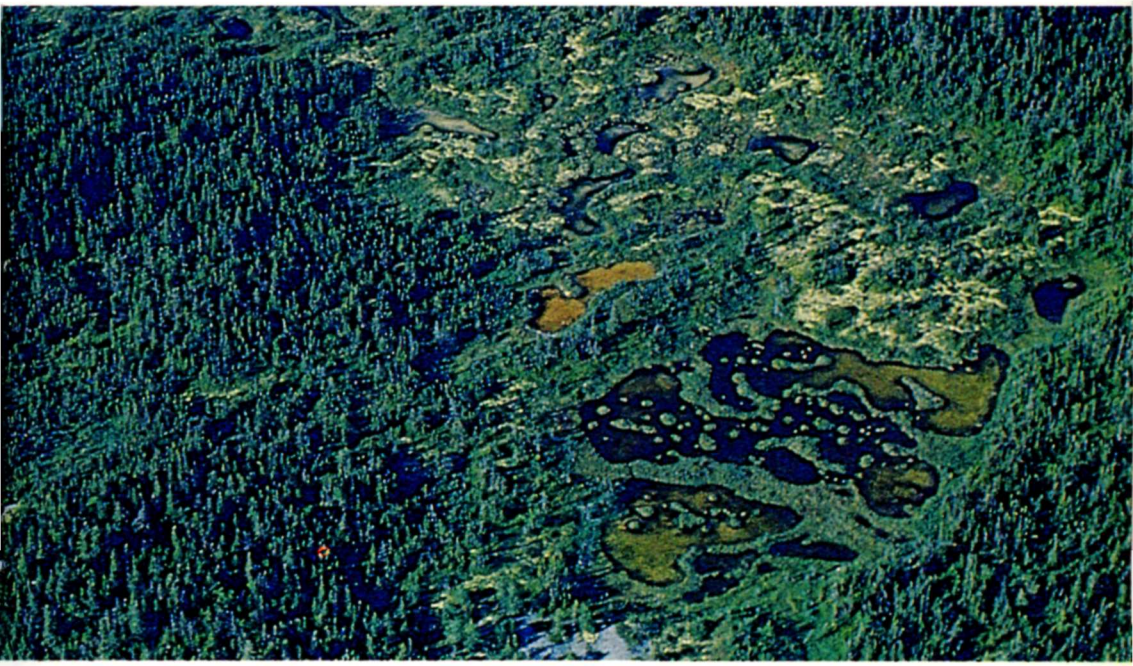
The upper shore of the islands — the area washed by the sea spray and sometimes inundated by storm tides — is another open habitat suitable for rare plants, provided they can tolerate strong sunlight, higher than normal salinity, and very variable moisture levels. Some take root in damp fissures in the large rock platforms, while others grow on the pebbles piled up by the sea on the shores of the islands. Still others find a home amongst the flourishing vegetation in the sheltered bays near the forest.

Fissured rock platform.

The pink of a plant, that is rare in the Mingan area, livens up a gravel beach: HERB-ROBERT.

In bogs

Scattered here and there across the surface of the island are bogs: large treeless wetland areas often dotted with ponds. In this habitat, water tends to stagnate. Plant debris is very slow to decompose due to the lack of oxygen needed to support the activity of most break-down micro-organisms. With time, this debris accumulates to form deposits of organic matter know as peat. Vegetation cover is primarily composed of moss, grasses, and small shrubs, although tree species such as larch and black spruce are sometimes present. Rare plants, which are limited to bogs where the circulating waters are rich in calcium, grow side by side with the dominant herbaceous species: rushes and sedges.



Aerial view of a bog in Île Quarry.

Grasses of a rich bog containing a rare plant: Kalm's Lobelia.

Some rare plants have such singular ranges that their presence in the Mingan Archipelago seems impossible to explain at first. The cordilleran plants, which are primarily found in the Rocky Mountains and only occupy scattered sites in eastern Canada, are a case in point. How can we explain the thousands of miles that separate the locations where they grow today? This enigma has sparked the interest of North America's most eminent 20th century botanists. In their efforts to solve it, they have turned to the events marking the last millenia of the earth's history.

The Wisconsin glacial stage

The species from the west grow in open habitats and are demanding in terms of nutrients. For these plants to reach the eastern side of the continent, an unbroken corridor suitable for their growth must necessarily have been created to bridge the natural barriers, the vast western plains and the boreal forests, that stood in their way. An extraordinary event occurred some 100,000 years ago to form just such a bridge between east and west: the Wisconsin glacial stage.

At that time the climate was so cold that snow had begun accumulating from year to year. After more than 80,000 years, an enormous ice layer had formed with numerous lobes, or glaciers, in some places more than one kilometer thick. These glaciers covered all of Canada and extended into the northern United States as far as Wisconsin, which explains the name given to this glacial stage.

Territory affected by the last glaciation. The arrows indicate the movement of the glaciers.

The sidewalk hypothesis

In the vicinity of the glacial front, climatic conditions were too harsh for the survival of the boreal forest, which retreated southward. Some Rock Mountain plants, which were better adapted to the climate, may have taken advantage of the open spaces created at the edge of the glaciers to migrate toward the east.

Present distribution of the Yellow Dryad (blue zones).
Fossil remains of this same Dryad (triangles).

This very plausible scenario, known as the "sidewalk hypothesis", is supported by a growing number of scientists. To demonstrate it, they note the presence of various cordilleran plants on the edges of current glaciers. If the plants are there today, they must have also been there earlier. The traces some species have left of their migration provide even more tangible evidence. One of the most sensational related discoveries has been fossil remains of the Yellow Dryad at the bottom of bogs in southern Canada, where the species no longer grows. Now the migration enigma has been solved, but when did these plants reach the Mingan Archipelago?

The missing link

About 20,000 years ago, the climate started to warm up, gradually melting the glaciers and causing them to recede northward. At the same time, the boreal forest reclaimed the land that was now free of ice and water. In the eastern part of the continent, a number of habitats that were inaccessible to the forest, such as cliffs and high peaks, became refuges for the plants that had migrated from the west along the edge of the glaciers.

In the Mingans, the chain of events has proved to be much more complex. After the melting of the glaciers, which served as gigantic water reservoirs, the sea level rose considerably. The Mingan Archipelago and part of the North Shore were under water for nearly 2,500 years. Thus, questions remain unanswered. Where were the cordilleran plants during the period of high water and how did they become established as the islands emerged? This is the missing link in their history on the islands.

SPECIES CONFINED TO THE GULF OF ST LAWRENCE (ENDEMIC PLANTS)

FLAT-PETALED YELLOW LADY'S-SLIPPER

Cypripède jaune à pétales plats

Cypripedium calceolus L. var. *planipetalum* (Fern.) Vict. & Rousseau

Family: Orchidaceae
Size: 15-25 cm

"The great beauty of the species resides in the rich green of the stem and leaves, the bright golden colour of the flowers, and the floating spiral of lateral petals."

Marie-Victorin and Rolland-Germain
Flore de l'Anticosti-Minganie
[Translation]

Origin of Latin name

Botanists who come across a particularly beautiful plant sometimes look to mythology for a name that will do it justice. This is what happened in the case of the Lady's-slipper, whose genus name *Cypripedium* means "Venus's slipper," after Venus, the goddess of love. In the Middle Ages, the name of the Virgin Mary was substituted for Venus to yield the common name "Our Lady's Slipper." The species name, *calceolus*, indicates the plant's preference for calcareous rock (limestone), while the variety name acknowledges the presence of lateral petals that are shorter and flatter than those of other, more widespread varieties.

The plant and its habitat

This elegant lady's-slipper is found in full daylight among the lichens and creeping shrubs of the moorland. It grows in the fibrous humus, which keeps the plant's roots slightly moist. The Flat-petaled Yellow Lady's-slipper is modest in size and blooms in early July. Its brilliant yellow flowers dot the moorland for a period of about two weeks.

Range

The Yellow Lady's-slipper is a boreal species found throughout the world. However, the flat-petaled variety has only been observed in a few North American locations: in Newfoundland and the Anticosti-Mingan area and, recently, on the western shore of James Bay. Unlike other plants in this category, the Flat-petaled Yellow Lady's-slipper is not strictly confined to the Gulf of St Lawrence region. It is rare in Quebec, but relatively abundant in the Mingan area, where it grows on more than ten of the islands.

LAURENTIAN DANDELION

Pissenlit du golfe

Taraxacum laurentianum Fern.

Family: Compositae
Size: 10-35 cm

Origin of Latin name

What a surprise to learn that one of the rare plants of the Mingan Islands is a dandelion, a member of the same genus as the persistent weeds that we work so hard to remove from our lawns! What is equally surprising is the origin of the Latin genus name, *Taraxacum*, which is derived from Greek and means: "I trouble, confuse." Could this be a reference to the effects of dandelion wine? No one knows. The species name, *laurentianum*, indicates the plant's presence on the shores of the Gulf of St Lawrence.

The plant and its habitat

Far from being solitary, the Laurentian Dandelion grows among the many plants that invade the sand and gravel pushed onto the upper shore by the sea. It is a hardy species and flowers in early July. After a short time, the yellow flowers turn into downy balls. Each seed is attached to the tip of a long, silky thread that will allow it to be carried over long distances by the wind.

Range

Limited to the Gulf of St Lawrence region, the Laurentian Dandelion is a rare species in Quebec. Botanists have noted its presence in only two locations outside the Mingan Archipelago: Anticosti Island and the west coast of Newfoundland. In the Mingans, it grows on at least six islands but its distribution remains scattered.

SMALL-FLOWERED ROCKET

Vélar à petites fleurs

Erysimum inconspicuum (Wats.) MacM. var. *coarctatum* (Fern.) Rossbach

Family: Cruciferae
Size: 15-50 cm

Origin of Latin name

Popular medicine believed that some mustards had the ability to heal the vocal cords, whence the genus name *Erysimum*, meaning "I save the voice." The species name, *inconspicuum*, refers to the small size of the flowers.

The plant and its habitat

The Small-flowered Rocket is found on the moor, on the surfaces of pebbles broken by freezing and thawing cycles. It also grows on the stones that have accumulated on the upper shore. The dryness of these sun-baked locations seems to be reflected in the plant's spare appearance. Its flowering extends through the month of July, at which time the brilliant yellow blooms are easily spotted. Samples of the species were taken in the Mingans for the first time in 1861 by three visiting American botanists — A.E. Verrill, A. Hyatt, and N.S. Shaler.

Range

The variety present in the Mingan Islands bears a close resemblance to typical members of the species distributed primarily in western North America, but its range is limited to the Gaspé and Anticosti-Mingan areas. Within the archipelago, this variety grows on six islands but is most abundant on Île Niapiskau.

SPECIES FROM THE WEST (CORDILLERAN PLANTS)

SWAMP THISTLE

Chardon de Mingan

Cirsium scariosum Nutt.

Family: Compositae
Size: 25-100 cm

"The most spectacular discovery of our explorations in the Anticosti-Mingan area is undoubtedly the Swamp Thistle. New to science, of prodigious size for its genus, very limited in range, distinguished in stature, it is related to a far-off Cordilleran species."

Marie-Victorin and Rolland-Germain
Flore de l'Anticosti-Minganie
[Translation]

Origin of Latin name

The Latin name *Cirsium* means "swollen vein," and plants of this genus have long been reputed as a treatment for varicose veins. The species name, *scariosum* (dry and shrivelled in appearance), refers to the whitish, membranous tips of the narrow leaves surrounding the flower.

The plant and its habitat

The Swamp Thistle grows along the inner edges of sheltered coves among the other herbaceous shore plants. It roots in the sand or in a mixture of humus, sand, and gravel and blooms in early July. Usually, thistles of this type produce a ring of leaves on the ground in the first year and flower in the second year. But in the Mingans, there are exceptions to this rule. The highly complex biology of this species is still not fully understood.

Range

Some believe that the plant was introduced to the Archipelago at the beginning of the century through cattle being shipped to Europe from the West. When the boats called at Havre-Saint-Pierre, thistle seeds were mixed in with the straw bedding that was thrown overboard. The seeds would have washed up on the beach and sprouted on the shore line of several islands. Today, the thistle is still found on four islands in the vicinity of Havre-Saint-Pierre.

SPARROW'S-EGG LADY'S-SLIPPER

Cypripède blanc

Cypripedium passerinum Richards.

Family: Orchidaceae
Size: 10-35 cm

"This species is so rare and localized in the Mingans that it has escaped the notice of the various botanists who have worked in the area — Saint-Cyr, St John, Verrill, Lindon, and so on — and that we ourselves, despite spending the seasons of 1924 and 1925 methodically at work in the archipelago, did not come across it."

Marie-Victorin and Rolland-Germain
Flore de l'Anticosti-Minganie
[Translation]

Origin of Latin name

The rare plants of the Mingan Islands include another member of the orchid family, the Sparrow's-egg Lady's-slipper. Note how the spotted flower resembles a sparrow's egg, whence the species name *passerine*, or "sparrow-like."

The plant and its habitat

The Sparrow's-egg Lady's-slipper grows among the low, tangled shrubs of the moor. Always found near the shore, it roots in thin humus, thus maintaining contact with the limestone pebbles. This magnificent lady's-slipper blooms in early July, producing a beautiful moon-white flower with tiny purple spots. Flowering lasts only until mid-July. After that, it is easy to confuse the species with the Flat-petaled Yellow Lady's-slipper. However, the Sparrow's egg Lady's-slipper can still be identified with certainty by its longer, denser stem hairs.

Range

Concentrated at the latitudes of the coniferous forest, the Sparrow's-egg Lady's-slipper is one of the few Orchidaceae to range into arctic habitats. In Quebec, it is found only on three of the islands in the Mingan Archipelago. In recent years, disturbances caused by nesting gulls have apparently eradicated the species from Île Nue de Mingan, where several botanists had noted it earlier.

GILDED DRABA

Drave Dorée

Draba aurea Vahl

Family: Cruciferae
Size: 10-30 cm

Origin of Latin name

Draba means bitter, and some members of this genus contain very bitter sap. The species name, *aurea* (golden), refers to the bright yellow of the flower.

The plant and its habitat

The Gilded Draba's most representative habitat is the pebbled surfaces of the moor. Its secondary habitat is the rocks of the cliffs. Both are extremely dry, and the plant has a dense covering of insulating hairs to prevent water losses from heat. The Gilded Draba, with its pretty blue-green foliage, blooms in mid-July. Once it has passed the flowering stage, it is very difficult to spot. The species was first discovered in the Mingans more than one hundred years ago, in 1882, by a botanist named Lindon from Buffalo.

Range

The Gilded Draba is encountered mainly in northern Quebec. It is also found on Île du Bic, near Rimouski. Along the edges of the Gulf of St Lawrence, it grows only on one island, where it is very widespread.

YELLOW DRYAD

Dryade de Drummond

Dryas drummondii Richards.

Family: Rosaceae
Size: 3-15 cm

"The circular colonies of Dryas drummondii
have downy spheres that tremble
in the sea breeze."

Marie-Victorin and Rolland-Germain
Flore de l'Anticosti-Minganie
[Translation]

Origin of Latin name

The dryads were wood nymphs of Greek mythology and were believed to mete out punishment for any harm done to the trees in their care. They took the form of women, strong but ethereal, wearing a garland of oak leaves in their long hair. Like the wood nymphs, the dryads of the plant world are wreathed with small leaves resembling those of some oaks. The Latin name *drummondii* honours the discoverer of the species, English botanist Thomas Drummond (1780-1835).

The plant and its habitat

In the Mingans, the Yellow Dryad grows on the pebbled surfaces scattered across the moor. Some of the plant's characteristics have aided it in colonizing these desert-like sites. The dense hairs on the stem and underside of the leaves serve to limit water losses. Its creeping form reduces exposure to the abrasive action of snow crystals driven by strong winter winds. And because the leaves survive the winter, they are ready to make use of the sunlight as soon as spring comes, and thus take full advantage of the growing season. The Yellow Dryad flowers in June. In July, the petals wither and the drooping stem straightens up to help ensure the seeds are carried away by the wind.

Range

The species is common in the west, in the Rocky Mountains, but rare in Quebec, where it can only be found in the Gaspé, on Anticosti Island, and in the Mingan Archipelago. Within the Mingans, it is limited to two islands.

SPEAR-LEAVED FLEABANE

Érigéron à tige hirsute

Erigeron lonchophyllus Hook.

Family: Compositae
Size: 2-15 cm

"An agreable surprise awaited us when we landed at Île Sainte Geneviève: a tiny Erigeron, new to our experience, growing in cracks in the sandy limestone of the shore."

Marie-Victorin and Rolland-Germain
Flore de l'Anticosti-Minganie
[Translation]

Origin of Latin name

The genus name is from two Greek roots — *eri* (early) and *geron* (old man) — and originally designated a plant that flowered early and had whitish hairs like an old man's beard. The Spear-leaved Fleabane has long white hairs but flowers quite late, at the beginning of August.

The plant and its habitat

A plant that likes full daylight, the Spear-leaved Fleabane grows at the water's edge, on rocky ledges that are rarely inundated and often pocked with small rounded cavities. It occupies these cavities or fissures in the rock, where it roots in thin layers of sand or humus. The species is easily overlooked because of its small size and particular habitat. But once discovered, it makes a strong impression with its distinctive shape, highly elongated leaves, and delicate flower.

Range

The Spear-leaved Fleabane is rare in Quebec, and has only been reported on the eastern shores of James Bay and in the Anticosti-Mingan area. Within the archipelago, it is limited to two islands.

ARCTIC OR ARCTIC-ALPINE SPECIES

RHACHEOLED SEDGE

Carex à petite arête

Carex microglochin Wahl.

Family: Cyperaceae
Size: 10-30 cm

"C. microglochin, *one of the most widespread species of the genus, is also one of the most interesting from a taxonomic viewpoint in that it is a primitive type which, in its developed state, retains a character equivalent to the rudimentary state in most modern sedges.*"

Marie-Victorin and Rolland-Germain
Flore de l'Anticosti-Minganie
[Translation]

Origin of Latin name

Because of the sharp leaves of many sedges, it is believed that their Latin name *Carex* is derived from the Greek verb *keirein*, meaning "to cut." The species name is also formed from two Greek roots — *mikros* (small) and *glochis* (protecting point) — and refers to the pointed tips of the fruits on the end of the slender stem.

The plant and its habitat

In the archipelago, the Rhacheoled Sedge occupies the damp areas bordering the moor or the stunted forest. In these locations, the ground is regularly moistened by spray. The species forms small brownish carpets and, in more favourable sites, strips several metres long. Seen from close up, its fruits arranged in an inverted "V" shape give the plant an oriental appearance. Because of their unusual arrangement, the fruits stick more easily to the feathers of birds and are thus more likely to be dispersed.

Range

In Quebec, the Anticosti-Mingan area is the southernmost refuge of this arctic-alpine species, found primarily in coastal locations. The Rhacheoled Sedge is present on six of the Mingan islands.

ALPINE MOUSE-EAR CHICKWEED

Céraiste alpine

Cerastium alpinum L.

Family: Caryophyllaceae
Size: 10-15 cm

Origin of Latin name

Cerastium means "horned" and refers to the narrow, curved fruit capsules that are characteristic of the genus. The species name, *alpinum*, indicates that the plant is sometimes found on mountaintops.

The plant and its habitat

In the Mingans, the Alpine Mouse-ear Chickweed grows on the moor, on pebbled surfaces containing a certain amount of fine particulate matter. The fine particles, which can retain some moisture, are produced by erosion of the upper layers of rock. This chickweed grows to a height of only about 10 cm, and thus offers less resistance to the winds from the sea. It is an early species and flowers in June. The straw yellow of its foliage adds a touch of colour to the drab gray pebbles.

Range

This species is widespread in northern Quebec. To the south, its only refuge is the Mingan Archipelago, where it is very rare and can only be found on one island.

MOUNTAIN BLADDER-FERN

Cystoptéride des montagnes

Cystopteria montana (Lam.) Bernh.

Family: Polypodiaceae
Size: 30-50 cm

Origin of Latin name

Bladder-ferns are characterized by their delicate fronds and rounded spores within a small hood-shaped membrane. The genus name is derived from two Greek words, *cystis* (bladder) and *pteris* (fern), while the species name, *montana*, reflects the plant's frequent association with mountain screes.

The plant and its habitat

The fragile stem and finely sculpted foliage of the Mountain Bladder-fern immediately suggest that it needs special conditions in which to develop. Low light, high humidity and calcareous soil suit it best. In the Mingan Archipelago, this fern grows at the bottom of cliffs in wet, well-decomposed humus. Generally found in clumps behind a screen of trees or large herbaceous plants, the Mountain Bladder-fern sends out its lacy fronds into the filtered half-light.

Range

An alpine-arctic species limited to calcareous soils, the Mountain Bladder-fern is not common in Quebec. It is very rare in the Mingans, and has been found on only two islands.

THREE-FLOWERED RUSH

Jonc à trois fleurs

Juncus triglumis L.

Family: Juncaceae
Size: 5-20 cm

Origin of Latin name

The idea of attributing the name *Juncus* (from the Latin *jungo:* to join) to certain plants comes from their utilization in the weaving of baskets. From its small size, we can see that the Three-flowered Rush was never put to such use.

The plant and its habitat

On the moor, this rush colonizes small, damp pebbled areas. It also grows along ledges in the cliffs or on fine screes. Its sparse flowers, bunched at the tip of the stem, form a highly characteristic small, compact head.

Range

The Three-flowered Rush is an arctic-alpine species which, in North America, is evenly distributed from one ocean to the other. The southern edge of its Quebec range is in the Gaspé. Within the Mingan Archipelago, it is found on only four islands.

SIMPLE-STEMMED KOBRESIA

Kobrésie à tige simple

Kobresia simpliciuscula (Wahl.) Mack.

Family: Cyperaceae
Size: 3-50 cm

Origin of Latin name

Forming a genus or species designation from a botanist's name is certainly an effective way of paying tribute to a colleague. This is what happened in the case of the genus *Kobresia*, named after botanist Von Kobres of Augsburg, Germany, by his fellow countryman Willdenow (1765-1812).

The plant and its habitat

The Simple-stemmed Kobresia grows mainly on the moor, on pebbled surfaces or in depressions carpeted with vegetation. It is rarely encountered in dry soil. The species forms small scattered tufts and occasionally, large even carpets. Because of its muted colours and undistinguished appearance, it generally blends in with the surrounding vegetation.

Range

In Quebec, Anticosti Island is at the southern limit of this arctic-alpine species' range. Within the archipelago, it has been noted on three islands.

ALPINE MEADOW RUE

Pigamon alpin

Thalictrum alpinum L.

Family: Ranunculaceae
Size: 6-30 cm

Origin of Latin name

Thalictrum means "rapid growing." The species name *alpinum* was apparently inspired by the presence of this plant in the mountains of central Europe.

The plant and its habitat

In the bogs, its preferred habitat, the Alpine Meadow Rue grows in nutrient-rich sites. It is also found at the edge of the moor, on various wet substrates: small pebbled surfaces or spongy carpets of organic matter. The species flowers around the beginning of July but remains sterile in many locations. As an adaptation to arctic conditions, the plant's leaves function more efficiently in reduced light. The plant has two distinctive features: small, shiny, fan-shaped leaves and arched fruits distributed uniformly along the stem.

Range

In North America, the range of the Alpine Meadow Rue is quite remarkable, being limited to the eastern and western extremities of the continent. In Quebec, it grows along the edges of Ungava Bay and the Gulf of St Lawrence. Within the Mingan Archipelago, it is found on four islands.

GREENLAND PRIMROSE

Primevère du Groënland

Primula egaliksensis Wormsk.

Family: Primulaceae
Size: 10-15 cm

"And imagine our surprise on finding, in full flower, a fine colony of Primula egaliksensis, *an arctic plant not found to the west, in the St Lawrence Estuary.*

Marie-Victorin and Rolland-Germain
Flore de l'Anticosti-Minganie
[Translation]

Origin of Latin name

Many of the primroses, whose name derives from the Latin *primus* (first), are mountain plants that bloom very early. The species name *egaliksensis* indicates that this particular primrose was discovered in the Egalik Fjord of Greenland.

The plant and its habitat

Two habitats in the Mingans are suited to the Greenland Primrose: the shore and the cliffs. In these locations it finds the proper levels of light, humidity, and nutrients. The soil, which is nearly always the same, is made up of a carpet of moss or a layer of organic matter. When this delicate primrose flowers in June, the pure white of its scalloped petals catches the eye. Later, the plant still stands out because of its almost phosphorescent green colour.

Range

The Greenland Primrose grows primarily in calcareous soils in arctic habitats. The Mingan Archipelago marks the southern limit of its range in Quebec. This plant has been noted on six islands but is not very abundant.

QUEBEC BOREAL SPECIES

GREEN SPLEENWORT

Asplénie verte

Asplenium viride Huds.

Family: Polypodiaceae
Size: 2-15 cm

Origin of Latin name

The meaning of the Latin word *Asplenium* is still uncertain. Some believe that it used to be applied to certain ferns reputed to cure depression. Others, breaking it down (a: privative prefix and splen: spleen), see in it a therapeutic prescription to counter swelling of the spleen. The species name, *viride*, refers to the plant's green colour.

The plant and its habitat

The Green Spleenwort is a cliff plant. It springs up between blocks of fallen rock or finds a hold in the cracks of the cliff face, rooting in a thin layer of well decomposed organic matter. The species can tolerate bright light but prefers shade, and the finest colonies grow in diffused light. The stems fan out in all directions from a single base, forming a gracious bouquet.

Range

In Quebec, the Green Spleenwort is a rare fern. Its range coincides with the distribution of calcareous sites (Anticosti-Mingan area, some locations in the Gaspé). It grows on five of the Mingan islands.

MINGAN MOONWORT

Botryche de Minganie

Botrychium minganense Vict.

Family: Ophioglossaceae
Size: 10-25 cm

"But our trip is made worthwhile by the discovery of hundreds of fine specimens of Botrychium minganense *above the shoreline, among the tall plants in a* Lathyrus japonicus *meadow"* . . .

Marie-Victorin and Rolland-Germain
Flore de l'Anticosti-Minganie
[Translation]

Origin of Latin name

This is a most unusual fern, with a leaved stem and a separate reproductive stem that ends in a little grapelike cluster (the spores). The plant's singular appearance is evoked by the genus name *Botrychium*, which means "bunch of grapes." By naming the species *minganense*, Marie-Victorin wished to stress its remarkable abundance in the Mingan area.

The plant and its habitat

The Mingan Moonwort grows among the grasses, dwarf willows, and junipers of the shore. It roots in a thin layer of well decomposed humus over calcareous gravel. In full bloom by July, it withers in early August. The plant's bizarre shape and notched lobes give it a truly prehistoric appearance.

Range

In the Mingan area, this fern is near the northern edge of its range. It grows on at least ten islands. The most abundant colonies are found on Île Niapiskau, which Marie-Victorin appropriately referred to as "Botrychium Island."

LIMESTONE POLYPODY

Dryoptère de Robert

Gymnocarpium robertianum (Hoffm.) Newm.

Family: Polypodiaceae
Size: 8-35 cm

Origin of Latin name

In this case, the genus name is formed by combining two Greek roots: *gymnos* (naked) and *karpos* (fruit). It tells us that the spores on the underside of the frond are not covered by a protective membrane as in other ferns.

The plant and its habitat

To discover the Limestone Polypody, you must scan the cliff faces or the screes. Unable to attach itself to bare rock, the plant finds the moisture and humus it needs in cracks or spaces between broken boulders. More common in shaded sites, the species can tolerate intense light but presents a withered appearance in bright locations. The tiny hairs on the stem distinguish it from an almost identical species, the Oak Fern, that also grows in the Mingans. The soft green of the Limestone Polypody adds a note of freshness to the sober gray of the cliffs.

Range

This fern, which has a limited range in North America and is restricted to calcareous habitats, is considered a rare plant in Quebec. Within the Mingan Archipelago, it has been reported on seven islands.

ISLAND-LOVING GENTIAN

Gentiane des îles

Gentianella detonsa (Rottb.) Don ssp. *nesophila* (Holm) Gillett

Family: Gentianaceae
Size: 2-20 cm

"But the find of the day was Gentiana nesophila, *which we had sought for two years. Here it was at last, growing abundantly but each plant separate from the others."*

Marie-Victorin and Rolland-Germain
Flore de l'Anticosti-Minganie
[Translation]

Origin of Latin name

According to an old legend, Gentius, the king of Illyria,* recovered the strength needed to continue his battles thanks to a small plant. In return, the king honoured the plant with his name. The subspecies name, derived from the Greek *nesos* (island) and *philein* (to love), indicates this gentian's fondness for island and marine shorelines.

The plant and its habitat

To meet its needs for light, wetness, and salt, the Island-loving Gentian grows on the shores of the Mingan Islands. The rocky criss-crossed ledges bordering the sea are among its preferred habitats. Over these nearly denuded surfaces, only the cracks and depressions hold enough water, organic matter, and fine mineral practicles to encourage the species' growth. This gentian blooms rather late, at the very start of August. The majestic simplicity of its flower is truly worthy of the legend that surrounds it.

Range

The Island-loving Gentian is restricted to northeastern North America. This boreal sub-species' small range can be explained by the fact that it is limited to calcareous, saline soils. In Quebec, it is found only on the coastlines of Hudson Bay and the Gulf of St Lawrence. Within the archipelago, it grows on eight islands.

* Ancient province bordering the Adriatic Sea to the east of Italy.

DWARF RUSH

Scirpe nain

Scirpus pumilus Vahl

Family: Cyperaceae
Size: 5-15 cm

"After a short botanical excursion, the departure signal was given; a storm was brewing. But my colleague, Brother Rolland-Germain, hastily picked stem after stem, from a tiny Scirpus *he had never seen before, as the calls of the crew became more and more insistent."*

Marie-Victorin and Rolland-Germain
Flore de l'Anticosti-Minganie
[Translation]

Origin of Latin name

Some people believe the word *Scirpus* comes from the Celts; others maintain it is from the Romans. The one thing that is certain is that it has long been used to designate various rushes. The Latin word *pumilus* means "dwarf," and refers to the small size of the species.

The plant and its habitat

In the Mingans, the Dwarf Rush is found along the shore or on the moor. In these habitats, it grows under bright light in a soil of fine mineral particles or a thin layer of humus. The little plant, with a tiny inflorescence at its tip, is only remarkable for its tiny size. Nevertheless, relating its discovery in his journal of 1925, Marie-Victorin spoke of the species as a true botanical treasure.

Range

The Dwarf Rush is found on the eastern and western extremities of the North American continent. In Quebec, it is limited to calcareous sites and has been reported on Anticosti Island, in the Mingans, and at Knob Lake, near Schefferville. Within the archipelago, it grows in small areas on six islands.

SPECIES AT THE NORTHERN LIMIT OF THEIR RANGE

HERB-ROBERT

Géranium de Robert

Geranium robertianum L.

Family: Geraniaceae
Size: 10-50 cm

Origin of Latin name

The seed capsule of the Herb-Robert resembles the long bill of a wading bird, whence the genus name *Geranium* meaning "crane." The species name, *robertianum*, is thought to have been chosen in honour of Saint Robert.

The plant and its habitat

The Herb-Robert's only habitat in the archipelago is on the heaps of gravel piled up by the sea around the shores of the islands, indicating that the species is highly tolerant of dryness, salinity, and sunlight. Its bright red leaves contrast with the pale gray of the gravel. In July, the plant is even more eye-catching when its pink flowers bloom. The flower is short-lived, blossoming and withering in the same day.

Range

The Herb-Robert is found on both sides of the Atlantic Ocean. In Quebec, it follows the shores of the St Lawrence River from Montreal to La Gorgendière township, located approximately 150 km east of Havre Saint-Pierre. In the Mingans, it brightens the shore of Grande Île, Île Quarry, and especially, Île Niapiskau.

HOOKER'S ORCHID

Habénaire de Hooker

Habernaria hookeri Torr.

Family: Orchidaceae
Size: 20-40 cm

Origin of Latin name

The elongated shape of one of the petals is responsible for the name of the genus, which is derived from the Latin *Habena* (strap, thong). The species name was created in honour of English botany professor Sir Willian Jackson Hooker (1785-1865).

The plant and its habitat

In the Mingans, the Hooker's Orchid grows on the edge of the forest, among the lichens and low shrubs of the moor. It roots in fibrous humus over coarse, very dry calcareous gravel. The humus layer, approximately ten centimetres thick, retains enough water for the plant's survival. Flowering takes place in early July. Scattered across the moor, the species can be identified by its pair of rounded, shiny leaves.

Range

The Hooker's Orchid grows in the temperate regions of Quebec, from the Appalachians to the Gaspé. It has recently been discovered in the Mingans and has only been observed on Grande Île, where less than twenty specimens have been counted.

BROAD-LIPPED TWAYBLADE

Listère faux-muguet

Listera convallarioides (Sw.) Nutt.

Family: Orchidaceae
Size: 12-20 cm

Origin of Latin name

The genus *Listera* is dedicated to Martin Lister (1638-1711), a famous English naturalist and physician. The slightly odd-sounding species name, *convallarioides*, stresses the species' resemblance to the lily of the valley (genus *Convallaria*).

The plant and its habitat

In the Mingans, the Broad-lipped Twayblade grows in the shade of larches in the rich bogs or on the wet flanks of shrub-covered slopes. It blooms in July. Like most orchids, the species has a flower structure adapted to pollination by insects. When an insect enters the flower, it brushes against a small stalk charged with pollen. At the slightest stimulation, the stalk releases a sticky substance so that the grains of pollen are adhered firmly to the insect's back. The insect then carries the pollen to other flowers, thus ensuring their fertilization.

Range

This twayblade is only found in North America. In Quebec, it is widespread in the Eastern Townships and the Appalachians, and the Anticosti-Mingan area marks the northern limit of its range. Within the archipelago, the species grows on at least four islands: Île Grosse Romaine, Île Niapiskau, Île Firmin, and Île Sainte Geneviève.

KALM'S LOBELIA

Lobélie de Kalm

Lobelia Kalmii L.

Family: Lobeliaceae
Size: 8-30 cm

Origin of Latin name

Kalm's Lobelia was named in recognition of two eminent naturalists. The genus name is a tribute to Flemish botanist Mathias de Lobel (1538-1616). The species name comes from its discoverer, explorer Peter Kalm (1715-1779), who took specimens on the shores of Lake Champlain in 1749 during an expedition to Canada.

The plant and its habitat

In the Mingans, Kalm's Lobelia grows among the grasses of rich bogs, where it finds the moisture and nutrients it needs. Flowering extends from mid-July to early August. During this period, its small mauve bloom stands out against the yellowed stems of the other plants.

Range

Kalm's Lobelia is a North American species. In Quebec, its affinity for limestone prevents its spreading north of the Lake Mistassini area. The species is not common in the Mingan Archipelago, and has been observed only on Grande Île, Île Quarry, and Île à la Chasse.

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DENISE PELLETIER

Denise Pelletier travelled to the heart of the Mingan region to create 24 water-colour illustrations of some of the rare plants to be found in this natural area that time has passed by.

Originally from Kamouraska, this artist is fascinated by the subject-matter provided by the flora of Quebec. From 1974 to 1976, she studied plastic arts at the Sainte-Foy C.E.G.E.P.. She then continued her studies and research on the traditional techniques used by great European masters.

Since 1981, her particular interest has been botanical iconography, an art "which, over the ages, has helped to give a better understanding of certain subjects in nature".

In 1984, she presented an exhibition at the Montreal Botanical Gardens under the theme "Orchids From Here and Elsewhere". In 1986, she took part in an exhibition on the history of botanical illustrations, "The Paper Garden", presented in the"Musée du Séminaire de Québec."

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