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the

ORCHIDS



of

isle royale national park

the ORCHIDS of isle royale national park

by
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Of the vast array of wildflower species occurring on Isle Royale National Park, none seem more attractive to the average Park visitor than do the orchids. It is not difficult to understand why this is so. Orchids have a romantic attachment with the tropics where they are best developed, and they are classically one of the most beautiful of all floral families. Then too, although widely distributed throughout temperate North America, they are nowhere abundant, and must usually be carefully sought out. The singular beauty and relative rarity of wild orchids makes the finding and identification of one an achievement of considerable satisfaction. This booklet has been written in the hope that it will aid visitors to Isle Royale in searching out and identifying the 34 species of orchids to be found within the Park.

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A COMPLETE LIST OF ISLE ROYALE ORCHIDS

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What is an Orchid?

Orchids are members of the large subclass of plants known as **MONOCOTS**, and as such show the characteristics typical of that group. The floral pattern of the monocots is based on the number three, or occasionally on the number six--a simple multiple of three. Monocot flowers have, in other words, three of each of their component parts -- three petals, three sepals, three stamens and three carpels (See Figure 1f below).

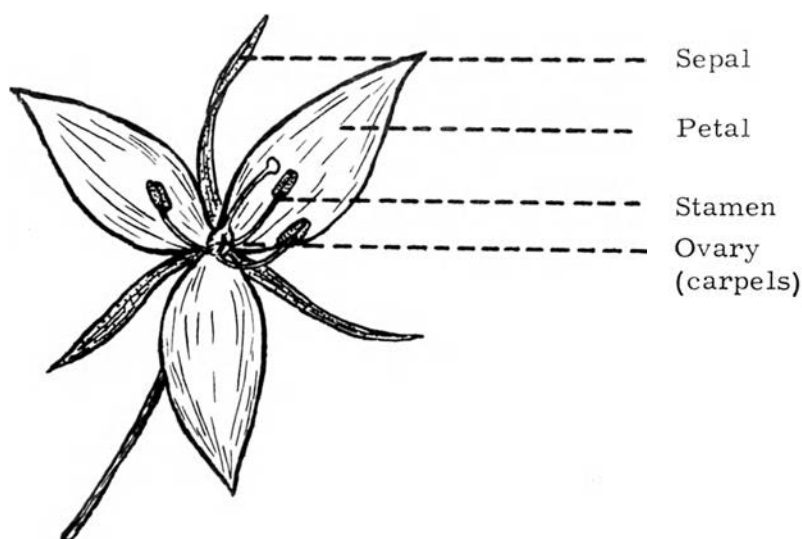


Figure 1f.

The basic monocot floral plan from which all orchids are derived.

Orchids represent the most highly developed family of the monocot group. In them the basic monocot floral plan appears to have been altered. Orchid flowers look very little like the typical monocot flower because they are less regular in the arrangement of their parts. An orchid does, however, share the basic characteristic of all monocots -- its floral organs are in series of three. The floral organs are arranged in whorls or circles of three, but the parts of each whorl do not exhibit the marked symmetry they do in most other monocots. The **SEPALS** are usually not green, but are colored essentially like the petals. Two of the sepals resemble one another, but the third is usually enlarged

and forms a hood or canopy over the petals. This hood-like structure (sometimes formed by union with the lateral petals) is often called a **GALEA**. The petals, too, show this asymmetry of development. One petal, called the **LIP**, is larger than the other two. It is quite variable in structure, and identification of orchids is often based on its variation. The lip may be elongate, expanded, forked, fringed, pouched, or sac-shaped and is often brilliantly colored. In some orchids the lip is prolonged backward into a hollow appendage called a **SPUR**. It may be long and slender and quite conspicuous (See Figure 2f below).

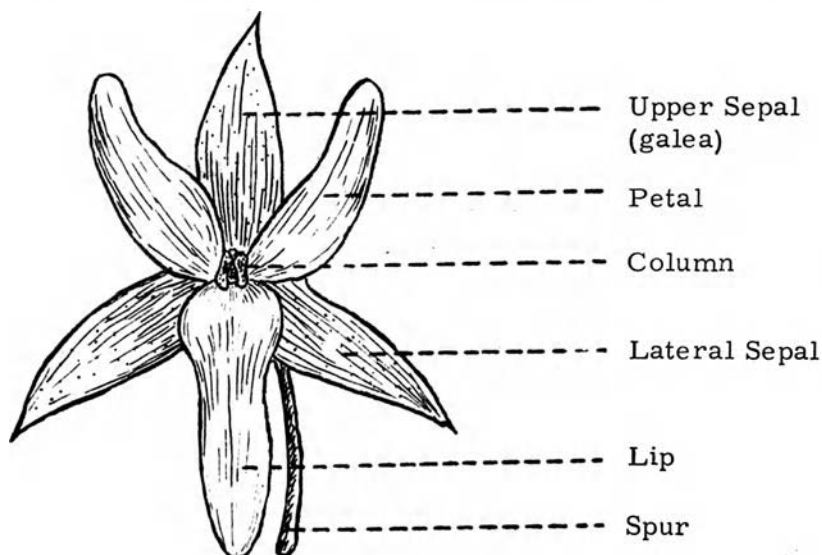


Figure 2 f

The arrangement of floral organs in a relatively unspecialized orchid.

The ovary of orchids is inferior, that is to say, the sepals, petals and stamens appear to be attached to the ovary above its base--the ovary being distinctly below the point of attachment of the other floral parts. The style of the ovary and the stamens are united into a single organ, the **COLUMN**. The structure of the column is quite variable within the family, but a discussion of its variations need not concern us here. (See Figure 3f below)

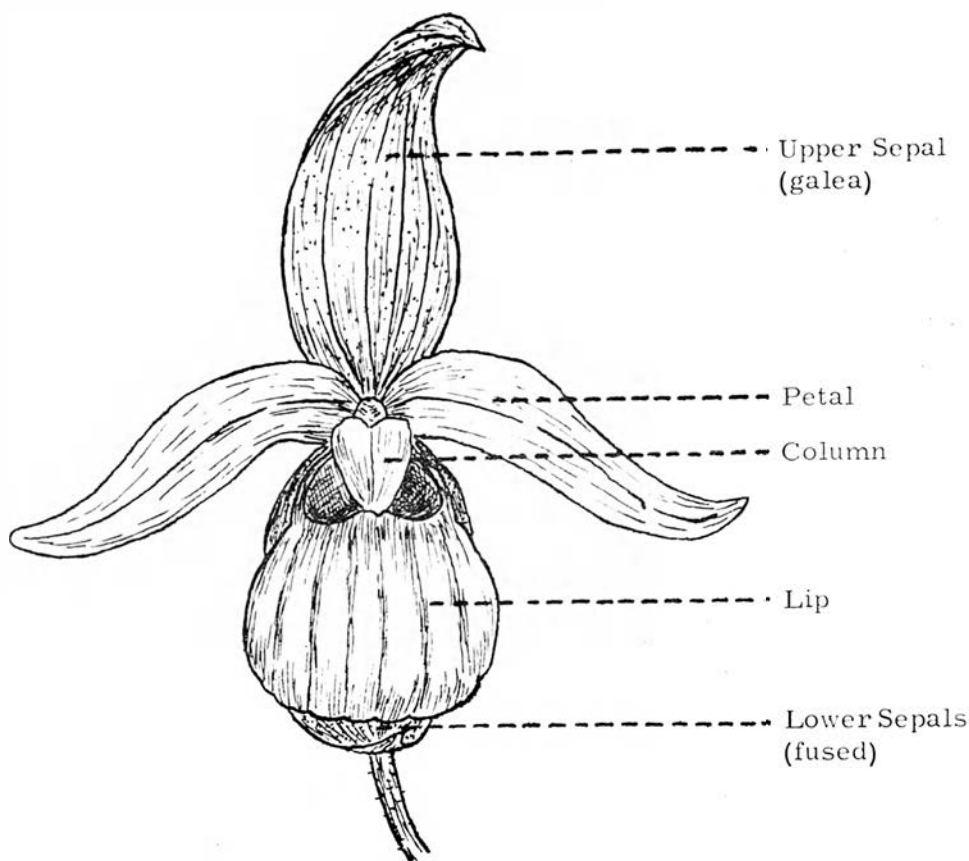


Figure 3 f

The flower of the Showy Ladyslipper, an example of a highly specialized orchid.

An understanding of these basic structures will allow the reader to identify any of the orchids he may find within the Park.

Identification

The following Key is presented as an aid to the identification of Park orchids. This Key is composed of a series of statements arranged in lettered couplets. The couplets contain two alternative descriptions; each of which is mutually exclusive of the other. A particular plant

can satisfy only one of these descriptions. The couplets are designated by letters such as "A, AA . . . B, BB . . . G, GG," etc. To use the Key the reader begins at couplet "A, AA" and compares his plant with the two choices available. Depending on the plant involved, he will decide that either "A" or "AA" best fits the situation. Either choice leads him, however, to another couplet in the Key. This process is repeated until the key finally gives him the name of the plant he is considering.

A Key to Isle Royale Orchids

- A. Plants non-green, or plants green with leaves reduced to sheathing scales at flowering. --- B
- AA. Plants green, with one or more leaves at flowering. --- F
- B. Flower solitary, pink, whitish-pink lip recurved, with yellow or purple markings. --- ARETHUSA
- BB. Flowers more than one. --- C
- C. Flowers white, numerous, in one spiraling rank, lip with green mid-section. --- SLENDER LADIESTRESSES
- CC. Flowers not white. --- D
- D. Flowers and plant greenish-yellow, lip with very short lateral lobes. --- EARLY CORALROOT



Figure 4

- DD. Flowers not greenish-yellow. --- E
- E. Petals and sepals striped with red-purple, lip not lobed. --- HOODED CORALROOT

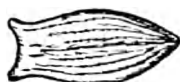


Figure 5

- EE. Flower purple to yellow-brown, with three lobed lip white with purple spots, or white only. --- SPOTTED CORALROOT



Figure 6

- F. Plants with one or more leaves on stem. --- G
- FF. Plants with leaves all basal. --- R
- G. Plants with one leaf on stem. --- H
- GG. Plants with more than one leaf on stem. --- J
- H. Leaf at mid-stem, flower solitary, or, rarely, two, pink, with a lanceolate bract (a blade-like leaflet) at its base. --- ROSE POGONIA
- HH. Flowers green or greenish-white, leaf at mid-stem, coming to a point. --- I

- I. Lip narrowly pointed, not lobed.



Figure 7

---SHEATH ADDERMOUTH ORCHID

- II. Lip broad and deeply lobed at the summit.



Figure 8

---ONE LEAF ADDERMOUTH ORCHID

- J. Plants with two leaves on stem.

---K

- JJ. Plants with more than two leaves on stem.

---L

- K. Leaves heart-shaped and opposite, lip deeply cleft and green to purple in color.

---NORTHERN LISTERIA

- KK. (also see KKK) Leaves heart-shaped and opposite, lip narrow at base, widening to form two lobes at the summit, flowers greenish-translucent.

---BROADLIPPED LISTERIA

- KKK. Leaves heart-shaped and opposite, lip broad at base, with earlike lobes near base, flowers whitish-green.

---CEDARSWAMP LISTERIA



Figure 9

- L. Flowers solitary, or, rarely, one to three, large and brilliantly colored, lip inflated or pouch-like.

---M

- LL. Flowers several to many; small, white, green, or purple, with lip extended backwards to form a spur.

---O

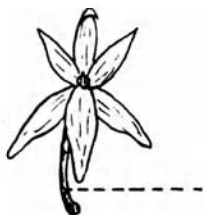


Figure 10

- M. Lip yellow, sepals and petals greenish-yellow to brown.

---YELLOW LADYSLIPPER

- MM. Lip white or red and white.

---N

- N. Lower two sepals separate and spreading, lip prolonged into a conical point at its summit, veined with red.

--- RAMSHEAD LADYSLIPPER



Figure 11

- NN. Lower two sepals fused into one; lip broadly rounded at its summit, suffused with red-pink, sometimes pale or all white.

--- SHOWY LADYSLIPPER



Figure 12

- O. Lip deeply three-lobed and fringed.

--- P



Figure 13

- OO. Lip not three-lobed and not fringed.

--- Q

- P. Flowers pinkish-white to purple.

--- PURPLE FRINGE ORCHID

- PP. Flowers white.

--- PRAIRIE FRINGE ORCHID

- Q. Flowers white, fragrant, lip abruptly widened at base.

--- WHITE BOGORCHID



Figure 14

- QQ. Flowers greenish, lip gradually and uniformly widened towards the base.

--- NORTHERN GREEN HABENARIA



Figure 15

- R. Plants with one basal leaf. --- S

- RR. Plants with more than one basal leaf. --- X

- S. Leaf a grass-like blade, clasping stem towards base. --- T

- SS. Leaf oblong-lanceolate to oval-round. --- U

- T. Flower solitary, pink, whitish-pink recurved lip with yellow or purple markings, leaf emerging from bract near base, at or after flowering. --- ARETHUSA

- TT. Flowers 3 to 15, magenta to rose-pink, apparently inverted, (lip uppermost) lip having a white beard tipped with magenta or yellow.

--- GRASSPINK ORCHID

- U. Flower solitary, rose-pink with yellow and purple, leaf noticeably petioled, with an undulate margin. --- CALYPSO

- UU. Flowers more than one. --- V

- V. Flowers white to pale purple, lip white and spotted with purple, spur shorter than lip. --- ROUNDEAF ORCHIS



Figure 16

- VV. Flowers greenish-white. --- W

- W. Flower twisted sideways, spur much longer than lip, leaf strongly clasping the stem. --- SMALLGREEN WOODORCHID

- WW. Spur about as long as the lip. --- SMALL NORTHERN BOGORCHID

- X. Plants with two basal leaves. --- Y
- XX. Plants with more than two basal leaves. --- c
- Y. Flower solitary, large, lip inflated, pink with red veins, lateral petals and sepals yellowish-green to greenish-brown. --- PINK LADYSLIPPER
- YY. Flowers more than one. --- Z
- Z. Leaves oval-pointed. --- a
- ZZ. Leaves oval, approaching roundness. --- b
- a. Flowers pale green to mauve-purple, 5 to 25 in number. --- LILY TWAYBLADE
- aa. Flowers yellowish-green, 2 to 15 in number. --- BOG TWAYBLADE
- b. Flowers yellowish-green, stem twisted in appearance. --- HOOKER HABENARIA
- bb. Flowers white and green, up to $\frac{3}{4}$ inch across face. --- ROUNDEAF ORCHID
- c. Leaves forming a basal rosette, bluish-green, marked with white, flowers white. --- d
- cc. Leaves all green, flowers white. --- g
- d. Flowers borne essentially on one side of the flowering stalk --- e
- dd. Flowers not confined to one side of the flowering stalk. --- f
- e. Leaves strongly veined with white, lip tapering to a point. Galea 4 to 5 mm long. --- CREEPING RATTLESNAKE PLANTAIN



Figure 17

- ee. Leaves with a pronounced white band along the midrib, other white markings faint or absent, lip tapering to a blunt tip. Galea 8 to 10 mm long. --- GIANT RATTLESNAKE PLANTAIN

- f. Lip oblong, slightly sac-shaped at its base, basal pouch of lip about half as deep as long, tip of lip but slightly recurved.

---CHECKERED RATTLESNAKE PLANTAIN



Figure 18

- ff. Lip rounded, deeply sac-shaped at its base, basal pouch as deep, or deeper than long, tip of lip decidedly recurved.

---DOWNY RATTLESNAKE PLANTAIN



Figure 19

- g. Leaves oval-lanceolate, often withered or withering at flowering, flowers numerous, in one spiraling rank, lip with green mid-section.

---SLENDER LADIESTRESSES

- gg. Leaves linear-lanceolate, flowers creamy-white, numerous, and in three spiraling ranks.

---CONTINENTAL LADIESTRESSES

note: Arethusa and Slender Ladiestresses may be keyed out in two different routes.

Species Descriptions

Ladyslippers *Cypripedium*

Four species of ladyslippers grow within Isle Royale National Park. Owing to their large flower size, brilliant coloration and comparative abundance, they are probably the most spectacular of the island's orchids. All are characterized by a conspicuous lip which is inflated and pouch-like in shape. The petals and sepals are similar in texture, but differ in color.

PINK LADYSLIPPER

Cypripedium acaule

The PINK LADYSLIPPER or MOCCASIN FLOWER is distinguished from other orchids of the park by its large, solitary, pink flower, often nearly three inches in length. The lip, as in all ladyslippers, is pouch-shaped, but in this species it is more pronouncedly drooping and pendulous. From the base (that part nearest the center of the flower) to the summit of the lip the pouch is cleft by a longitudinal opening. It appears merely as a deep fold, the inturned margins of which are in contact with one another. This opening and the basal opening, however, allow small bees and flies to enter the pouch in their search for the sweet secretions produced by the flower. Once within the lip the insects find that the inrolled edges of these openings prevent their escape, and in order to leave the flower they must use other openings near the base of the lip. To use these latter openings the insects are forced into close contact with the reproductive structures of the flower and as they move from flower to flower they inadvertently transfer pollen from plant to plant, thus insuring the cross pollination of the species. Like most orchids the PINK LADYSLIPPER is completely dependent upon the insect world for the transfer of its pollen from plant to plant.

The lip is flanked on each side by a lance-shaped petal about one inch in length. The two lower sepals are fused into one structure beneath the lip, while the upper sepal forms the typical hood over the lip. The lip is pink, strongly veined with red-purple. The sepals and petals are yellowish-green to greenish-brown in color.

The PINK LADYSLIPPER has an essentially naked stem distinguishing it from the other ladyslippers which all have leafy stems. A single lance-shaped bract arching forward over the flower is the only appendage of the stem above the two basal leaves. The dark green, slightly hairy leaves lie close to the ground and are occasionally in

This orchid is an inhabitant of moist woods, especially near shores of lakes and bays. It is also found in bogs and rarely growing with the lichens and heaths on the dry ridges of the park. It blooms generally from early June to early July.

YELLOW LADYSLIPPER

Cypripedium calceolus

The lip of the YELLOW LADYSLIPPER ranges in size from one to three inches long. It is waxy in texture, golden yellow in color, and veined with purple. The petals are long and narrow and frequently quite twisted; they are distinctly longer than the lip. The upper sepal forms a hood over the lip and is broadly oval in outline, while the two lower sepals are united beneath the lip. Only the very ends of these latter two sepals remain free giving the structure the appearance of possessing a forked tip. The sepals and the petals are greenish-brown in color. The flower often possesses a delicate fragrance that to many resembles the odor of vanilla.

The leafy stem is from one to two feet tall and usually bears a solitary flower, although two flowers are occasionally found. The wavy margined leaves, 3 to 6 inches long and 2 to 3 inches wide, clasp the stem. A leaf-like bract arches over the flower. To many people the small glandular hairs present on the stem of the plant are poisonous to the touch, while to others they have no effect. The rootstocks of the YELLOW LADYSLIPPER yield the drug cypripedium occasionally used as a nerve stimulant.

The plant occurs in swamps and boggy places throughout the park. Usually growing in association with grasses, sedges and horsetails, it blooms from early June to mid-July.

SHOWY LADYSLIPPER

Cypripedium reginae

This beautiful orchid is very rare on Isle Royale, and only a few plants have been found. The large pouch-like lip is roughly an inch in each of its dimensions--length, depth and width. It is white in color streaked with delicate shadings of rose-purple and pink. A hair-covered ridge is located within the lip and extends from the basal orifice to the column. This ridge tends to prevent insects from leaving the lip via the large entrance orifice, forcing them instead to emerge, as in the other ladyslippers, through the small basal openings at the rear of the lip. The petals, distinctly narrower than the sepals, are white. The two lower sepals are completely united beneath the lip, while the upper, broadly rounded sepal is slightly arched over it. The sepals are generally white with some pink shading, but they tend to be greener than either the lip or the petals. Both sepals and petals are shorter than the lip.

The stem is bristly to the touch, stands from two to three feet tall, and bears one to four flowers. Five to seven large, strongly-ribbed leaves are borne on the stem. They are from 4 to 8 inches long and about half as wide. The fine hairs on the stem and leaves are the frequent cause of severe skin irritation in many people.

The **SHOWY LADYSLIPPER** has been found in bogs and wet woods on Isle Royale, but it should probably also be looked for in the denser cedar swamps. It is the latest bloomer of the ladyslippers, coming to flower from late June through early August.

RAMSHEAD LADYSLIPPER

Cypripedium arietinum

The **RAMSHEAD LADYSLIPPER** is the smallest and rarest of the island's ladyslippers. Like other members of this group its lip has a pronounced pouch-like shape. In the **RAMSHEAD LADYSLIPPER**, however, the pouch is much less rounded in general form, having instead the shape of a downward pointing cone or funnel. It is whitish in color with deep magenta veins. Towards its summit the lip becomes greenish or yellowish in hue. The orifice is surrounded by fine white hairs. The three greenish sepals are all distinct with no fusion of the lateral two as in the other ladyslippers. The lateral sepals, as well as the petals, may be fringe-like or curled, while the upper sepal is elliptical in shape. Viewed from the side, the flower of this plant is said to resemble the general outline of a ram's head and horns, which probably accounts for its common name.

The flowers are solitary on a slender leafy stem, 6 to 12 inches tall. Three to five smooth, blue-green leaves clasp the stem largely above its middle. The leaves are 2 to 3 inches long and about one inch wide at their widest.

The **RAMSHEAD LADYSLIPPER** occurs in cedar swamps, cold damp woods, and occasionally in evergreen heaths. The plant is very rare on the island. It blooms in late May and early June.

Orchis *Orchis*

ROUNDLEAF ORCHIS

Orchis rotundifolia

The **ROUNDLEAF ORCHIS** possesses a loose cluster of small, delicately colored flowers which terminates a slender stem 6 to 10 inches high. The lip of the flower is three lobed and from 6 to 9 mm. long. The central lobe is notched at its summit and is far more con-

spicuous than the two smaller lateral lobes. The lip is white, conspicuously spotted with purple, and is projected backward into a short and slender spur. The spur is decidedly shorter than the lip. The sepals and petals are 5 to 8 mm. long, pale pink or purple, the three sepals broader in outline and tending to be darker in tint than the petals. Both petals are in close contact with the upper sepal.

A single more or less dull green leaf is present. It is about three inches long and about half as wide. This plant is rare on Isle Royale. It should be looked for in cedar swamps and on bog margins in well-shaded, mossy situations. The flower blooms from mid-June to August.

Habenarias *Habenaria*

Nine species of habenarias are to be found within the park. They are distinguished from the other orchids largely by their long and relatively dense clusters of flowers, and by the fact that each flower is definitely spurred. Habenarias are often called rein orchids because the shape of the lip or spur frequently resembles a rein or thong.

SMALLGREEN WOODORCHID

Habenaria clavellata

The SMALLGREEN WOODORCHID, also known as the CLUB SPUR ORCHID, possesses 5 to 15 greenish-white flowers borne in a loose cluster atop a 12 to 18 inch angled stem. The lip of the flower is 3 to 5 mm. long and is slightly club-shaped. Three blunt and shallow lobes characterize its summit. The lip is projected backward into a pronounced spur of about 10 mm. length. The spur is somewhat dilated at its apex, and is thus superficially club-like in appearance. The petals and sepals are of about equal length and partake of the general greenish-white color of the lip. Each of the flowers is associated with a scale-like leaf (called a bract) that is shorter than the flower itself. The flowers are twisted to one side so that the lip and spur do not hang directly down toward the ground but extend instead laterally out from the stem.

There is one well developed lower leaf, 2 to 5 inches long, and a few smaller leaves higher on the stem. The upper portion of the stem is sometimes bare of leaves or occasionally shows two or three small, linear bracts. The plant is found in shady, damp woods or in amongst the sedges or bog mats. On Isle Royale it has also been found growing around the margins of small pools of water along the rocky shores of the park. It blooms from late June throughout the summer.

The BRACTED ORCHID or LONG BRACTED ORCHIS, as it is often called, derives its name from the conspicuous scale-like leaves (bracts) associated with each of the small greenish or greenish-bronze flowers. The stem is from 6 to 24 inches tall and is very leafy. The lower leaves of the stem (aside from several sheathing scales at its very base) are 5 to 6 inches long and broadly oval in shape. Higher on the stem they become shorter and more slender. Near the 2 to 6 inch long floral cluster the leaves are reduced to bracts. At the base of the flower cluster each flower is subtended by a bract some 2 to 3 times as long as the flower, but near the top of the cluster the bracts are barely as long as the tiny flowers--themselves but a third of an inch across.

The lip is greenish-white, two-lobed with a small tooth between the lobes, and about 6 to 10 mm. long. It is projected into a tiny white sac-like spur 2 to 3 mm. long. The petals are greenish-white, about 7 mm. long, and narrower than the oval greenish sepals.

The BRACTED ORCHID is found in a variety of moist, usually shaded, situations within the park. It blooms from May to mid-August.

NORTHERN GREEN HABENARIA

Habenaria hyperborea

The NORTHERN GREEN HABENARIA resembles the bracted orchid in many ways. It is a tall plant, frequently reaching a height of 2 or 3 feet. Its stout stem bears leaves from base to flower cluster, but as in the bracted orchid the leaves are largest near the base of the stem and become smaller--almost bract-like--upward. The leaves are lance-shaped and clasp the stem at their base. Each flower of the dense terminal cluster is associated with a narrow bract, the lower ones equalling or slightly exceeding the flower in length.

The lip is 4 - 7 mm. long and gradually widened toward its base, giving the structure a tongue-like appearance. It is extended backward into a short spur about as long as the lip, but shorter than the ribbed and slightly twisted ovary. The yellowish-green petals are lance-shaped and incurved under the upper sepal to form a hood-like cover which canopies the column. The sepals are darker green and thicker than the petals. The fragrance of the flowers is usually pronounced and resembles that of lily-of-the-valley.

The NORTHERN GREEN HABENARIA is found with the sedges of bogs and swamps, along stream margins and in wet depressions within the forest. It blooms from June almost to September.

WHITE BOGORCHID

Habenaria dilatata

The WHITE BOGORCHID is typically found within the sedges of floating vegetation mats in the bogs of the parks. In this setting it is a very conspicuous plant, the dense cluster of white flowers easily catching the eye. The flower cluster is from 4 to 12 inches long and is usually raised above the general level of the surrounding sedges by a leafy stem that may reach slightly above 3 feet in height. The plant may also be distinguished by a delicate spicy, almost clove-like fragrance which is associated with it. The lower leaves are from 1/4 to 3 inches wide and up to 8 inches long--being strongly lance-shaped. As with the previous two species described, the leaves are smaller upward on the stem, gradually passing into bracts.

The lip is 6 to 8 mm. long and distinctly and abruptly widened toward its base. The spur is about equal to the lip in length. The petals are oval-lance shaped, curved along their axes, and inclined under the upper sepal. The WHITE BOGORCHID blooms from mid-July to mid-August.

SMALL NORTHERN BOGORCHID

Habenaria obtusata

considerably less than a foot in height. It is characterized by a single basal leaf, 2 to 5 inches long, which is rather bluntly tipped. The stem is squarish and usually naked between the solitary leaf and the two inch long loose cluster of greenish white flowers. Three to fifteen flowers may be present, each of which is only about 1/2 inch long.

The lip is 5 to 9 mm. long, which about equals the tapering spur. The upper sepal is round and broad, and is bowed gently over the column. The lower sepals tend to be reflexed backward and are not so broad, whereas the still narrower petals curve upward.

The SMALL NORTHERN BOGORCHID is probably the most abundant of Isle Royale's orchids. It is widespread in bogs and in swamp margins and throughout the moister woodlands of the island. It blooms from late June to mid-August.

HOOKE HABENARIA

Habenaria hookeri

HOOKE HABENARIA is one of the park's rarer orchids. It has been found only on dry and sunny ridge slopes and in rock openings where it occurs with heaths and grasses. The naked, slightly twisted stem stands some 12 to 15 inches high. At its base, lying flat on the

ground, are a pair of thick, round leaves, deep green above, paler green below. The leaves average between 3 and 5 inches across.

The flowers are borne in a loose cluster on the upper 4 to 8 inches of the stem. They are yellowish-green in color and about $\frac{2}{3}$ of an inch long. The lip is rather triangular in shape and about 8 - 12 mm. long. It is extended backwards into a spur which tapers to a sharp point about an inch from its base. The petals and upper sepals are bent forward to form a hood over the column, while the two lower sepals arch gently back and up from the base of the lip. The ovary of the flower is not stalked, but is instead attached directly to the stem.

HOOKEER HABENARIA is the earliest bloomer among the habenarias. It usually flowers within June and early July.

ROUNDLEAF ORCHID

Habenaria orbiculata

In general outward appearance the ROUNDLEAF ORCHID looks very much like HOOKEER HABENARIA. On close inspection, however, numerous differences between the two species can be found. The ROUNDLEAF ORCHID possesses two flat, roundish basal leaves shining and dark green on their upper surfaces, but more silvery-green below. The leaves, often 9 inches in length and generally about two-thirds as wide, lie flat on the ground. The stem is definitely bracted, about 2 feet tall, and bears at its summit a loose cluster of pale greenish-white flowers. The flower cluster, as in most orchids, is cylindrical in general form; in the ROUNDLEAF ORCHID it is from 5 to 10 inches long and about $1\frac{1}{2}$ to 2 inches in diameter.

The relatively large flowers have stalked ovaries, being attached to the stem by means of slender stalks some 5 to 13 mm. long. The lip is oblong-linear in shape, blunt, and points downward; it is from 15 to 20 mm. long. The spur, 20 to 45 mm. long, is blunt, almost club-like and bent upward at its tip. The upper sepal is roundish in shape and bends forward over the column. The lower sepals are ovate, reflexed, and slightly drooping. The petals are lance-shaped and abruptly reflexed as they rise obliquely upward. They do not enter into the formation of a hood over the column as they do in HOOKEER HABENARIA.

The ROUNDLEAF ORCHID is found occasionally throughout the park in deeply shaded and moist woods. It blooms from late July to early September.

The PRAIRIE FRINGEORCHID is a very beautiful tall orchid typically associated with bogs and swamps. It is, however, very rare on Isle Royale and will not be easily found even by the diligent searcher. The angled stem stands from one to three feet tall. Lance-shaped leaves clasp the stem as in most other habenarias. They are larger near the base of the stem and decrease in size toward the cylindrical flower cluster. The lower leaves are from 3 to 6 inches long. The flower cluster is 2 to 6 inches tall and is composed of conspicuous, fragrant white flowers. The lip is 14 to 27 mm. long and is divided into three wedge-shaped lobes, each of which is markedly fringed around its margin. The very obvious spur is from 1 to 1 1/2 inches long. The sepals are broadly oval, 7 to 13 mm. long, while the petals are slightly larger than the sepals and toothed. The PRAIRIE FRINGEORCHID blooms normally in July, but on Isle Royale it can probably be found well into August.

PURPLE FRINGEORCHID

Habenaria psycodes

The PURPLE FRINGEORCHID is easily recognized by its dense cluster of pale whitish-pink to deep rose-purple flowers with pronounced fringed lips. It is fairly abundant on Isle Royale and is easily spotted among the sedges and grasses of the bogs, swamps, lake margins and other wet places where it grows. It is a tall plant standing from one to three feet high. The narrow lance-like to oval leaves with heavy mid-ribs clasp the thick, purple-mottled and square stem. Near the base of the stem they are from 2 to 4 inches broad but are smaller in size higher on the stem. The cylindrical flower cluster is composed of as many as 80 flowers, although 10 or 20 is a more common number.

Each fragrant little flower is about 1/3 to 1/2 inch in size. The lip is 9 to 13 mm. long and 6 to 16 mm. broad. It is cleft nearly to its base into three distinct lobes, the lateral ones diverging from the central one. The lobes are deeply and jaggedly fringed, giving them a fan-like appearance. The sepals are oval, while the petals are spatula-shaped and may be minutely toothed at their summits. The PURPLE FRINGEORCHID flowers on Isle Royale from mid-July through late August.

Pogonia Pogonia

ROSE POGONIA

Pogonia ophioglossoides

The ROSE POGONIA or SNAKE MOUTH is easily distinguished from the other orchids of the park. It is a small plant rarely exceeding a foot in height, and is dominated by a solitary but showy rose-pink flower. The flower is very sweet-scented (with a fragrance suggestive of raspberries), nodding, and lacks a spur. The lip is 17 to 22 mm. long. It is pink, veined with red, and on its upper surface are three conspicuous rows of yellow-tipped, magenta fringed hairs which give it a bearded appearance. The sepals and petals are separate, rose-pink in color, and about as long as the lip. Both are elliptical to oval, but the petals are somewhat broader. A club-shaped column is free of the lip. The solitary leaf, borne midway up the stem, is elliptical to oval in outline and about 1 to 4 inches long. A prominent bract subtends the flower. ROSE POGONIA blooms from early July to late August in amongst the sedges and grasses of bogs and boggy lake margins.

Calopogon Calopogon

GRASSPINK ORCHID

Calopogon pulchellus

The GRASSPINK ORCHID has been found only in the sphagnum-sedge mats of two of Isle Royale's bogs. It may occur more frequently, though its further occurrence has not been noted. The flowers may number from three to a dozen, and the flowering stalk is usually about one foot in height. The foliage is limited to a single grass-like blade arising from the base of the stalk. The magenta flowers are inverted, unlike most orchids; the lip being uppermost. The lip is bearded with thick white hairs, the hairs being tipped with magenta or yellow. The scientific name, of Greek derivation, means "beautiful beard". The GRASSPINK ORCHID is found in flower from mid-July to mid-August.

Arethusa Arethusa

ARETHUSA

Arethusa bulbosa

The ARETHUSA or DRAGON'S MOUTH is one of Isle Royale's rarer orchids. A single magenta flower terminates the slender stem of 5 to 12 inches height, and is subtended by two small bract-like scales. When the plant is flowering, no leaves are present, the single grass-like leaf coming to maturity only after the plant has bloomed. The lip is oblong and narrowed slightly to its base. From the base the

lip rises initially, then arches outward, and finally hangs downward toward its summit. It is pinkish-white in color splashed with streaks and spots of magenta-red. The surface of the lip is somewhat crested with three, occasionally five, rows of short white hairs, which are often tinged with yellow or purple. The petals and upper sepal arch forward over the column, while the lower sepals are lance-shaped and erect.

ARETHUSA is an inhabitant of the floating sedge mat of bogs within the park, frequently standing out in brilliant contrast to the vivid green sphagnum on which it grows. The flower can be found from early June to the beginning of August.

Listeras *Listera*

Three species of LISTERA are found on Isle Royale. They are small and unimposing and are easily overlooked. A pair of small oval leaves opposite each other midway up the stem and a cluster of small greenish-purple flowers lacking spurs characterizes this group of orchids.

NORTHERN LISTERA

Listera cordata

This cryptic little plant is rather abundant in bogs and very moist woods throughout the park. Its minute stature and inconspicuous color, however, result in it being easily overlooked. The plant is 8 inches tall at best, only the upper inch or two bearing the loose cluster of small greenish flowers. The purplish-green lip is 3 to 5 mm. long and is cleft into two divergent prongs. Near its base are found two small lateral teeth--one on each flank. The oval and spreading petals and sepals are from 2 to 2.5 mm. long. The upper sepal is arched gently over the lip.

The pair of opposite heart-shaped leaves are borne slightly below the middle of the stem. They are from 3/4 to 1 1/2 inches in diameter. The NORTHERN LISTERA blooms from early June to early July.

BROADLIPPED LISTERA

Listera convallarioides

The BROADLIPPED LISTERA, like the previous species, is small, drably colored and easily overlooked. It may, however, be slightly more abundant and should be looked for in moist situations throughout the forests of the park. It stands from 6 to 10 inches tall.

Two smooth round-oval leaves from 1 to 2 inches long are located about midway up the stem. They are attached to the stem opposite or very nearly opposite to one another. Above the point of attachment of the stem is quite hairy in nature.

The flowers of the BROADLIPPED LISTERA are borne in a 2 to 3 inch cluster atop the stem. They are pale watery-green in color, sometimes with faint purple markings. The lip is wedge-shaped, widening rapidly toward its summit where it measures about 5 mm. across. It is about 9 mm. long and is cleft by a wide notch into two distinct and rounded lobes. Near its base the lip bears two short lateral teeth, one on each side. The lip is translucent green with a few fine yellow veins. The sepals are oblong-lance-like, while the petals are narrow and linear and from 4 to 5 mm long. The latter are reflexed. Each flower of the cluster is subtended by a small bract, 3 to 5 mm. long. The plant blooms from late June to early August.

CEDARSWAMP LISTERA

Listera auriculata

The CEDARSWAMP LISTERA possesses two pronounced ear-like lobes which arise from the basal margins of the lip. The lip itself is from 6 to 8 mm. long, oblong, and generally equally broad throughout its length, although it may be slightly constricted near its middle. Like the rest of the flower it is whitish-green in color. It is cleft at its summit into two lobes. The petals are narrowly oblong and rather blunt, while the sepals are lance-like to oval in shape. Both petals and sepals are spreading and about as long as the lip. The floral cluster is from 1 to 3 inches long, each flower of the cluster being associated with a small bract of 2 mm. length.

The plant achieves a height of up to 10 inches on the borders of swamps, in alder thickets, and in moist situations within the island's forests. Its thin, oval leaves are from 1 to 2 1/2 inches long, opposite, and as in the other species of LISTERA, borne midway up the stem. The CEDARSWAMP LISTERA blooms from June to July.

Ladiestresses *Spiranthes*

Two species of ladiestresses occur on Isle Royale. Both are typical of the drier interior openings of the park, and are distinguished from the other orchids by their small and fragrant white flowers which have no spurs. The flowers are spirally arranged within the floral cluster giving rise to the genus name, SPIRANTHES. The lip of ladies-tresses is characterized by two small wart-like knobs on each side of its base.

The CONTINENTAL LADIESTRESSES stands some 10 to 15 inches tall. Its thick grass-like leaves clasp the stem. They are largest near the base of the stem, becoming smaller--almost bract-like--just below the 2 to 3 inch flower cluster. The leaves are broader toward their outer ends than they are toward their bases.

The flowers are white, from 6 to 12 mm. long, and are spirally arranged within the floral cluster. The regularity of the spiral arrangement leads, in the case of this species, to the appearance that the flowers occur on the stem in three longitudinal rows. The petals and sepals are somewhat united to form a hood-like structure over the lip. The lip is ovate, 9 to 12 mm. long, and somewhat fiddle-shaped, being constricted in the center and expanded at each end.

Normally an inhabitant of the sedge mat of bogs, the CONTINENTAL LADIESTRESSES is also found in dry rock openings and on open ridge slopes amongst lichens, grasses, and heaths. It blooms from July through September.

SLENDER LADIESTRESSES

Spiranthes gracilis

The SLENDER LADIESTRESSES may be distinguished from the preceding species by the fact that its smaller white flowers are closer together and spiral around the stem in a single row for some 1 1/2 to 3 inches. Each fragrant flower is less than a quarter of an inch in size. The oblong lip is about 4 mm. long. Its summit is slightly dilated and somewhat ragged. The central area of the lip is green, while the margins are fringed with white. The petals and upper sepals form a hood over the column, but the lower sepals tend to be more spreading. They are a little longer than the lip.

At the time of flowering the basal cluster of 1 to 2 inch oval and thick leaves has often withered and is not to be found. The delicate stem is 8 to 20 inches tall and bears a few small appressed scales. The SLENDER LADIESTRESSES grows in grassy openings and in the lichen mats of rock openings where it blooms from mid-July to September.

Rattlesnake Plantains *Goodyera*

The rattlesnake plantains are easily distinguished from the other orchids by their basal rosette of bluish- to grayish-green evergreen

leaves which are invariably marked with fine white lines. In most species the white markings form a net-like pattern over the surface of the leaf. This general snake-skin pattern has given these orchids their name. The Indians, however, also believed that the plants were useful in combating the bite of the rattlesnake. The spurless white flowers are borne in a narrow cluster atop the stem. The base of the lip is characteristically expanded into a sac-like structure, while the petals and upper sepal form a hood or galea over the lip.

DOWNY RATTLESNAKE PLANTAIN

Goodyera pubescens

The DOWNY RATTLESNAKE PLANTAIN, blooming throughout August, is found primarily in the dense spruce-fir forest of northeastern Isle Royale. Its elongate, oval leaves, 1 to 2 1/2 inches long, are arranged in a basal rosette, and are characterized by 5 to 7 white veins running longitudinally down the leaf. These major veins are joined by numerous smaller white-colored veins to form the typical snake-skin pattern. The stem is downy in texture and stands from 6 to 16 inches tall.

The white flowers are borne in a tight cluster which occupies the last 1 to 4 1/2 inches of the stem. They are quite globular in appearance. The lip is 3.5 to 4 mm. long and is deeply sac-shaped at the base. The summit of the lip is reduced to a mere beak-like appendage which projects from the globose body of the lip. The galea (united petals and upper sepal) is broadly elliptical, upturned at its summit, and about 4 to 4.5 mm. long. The broadly oval lateral sepals are free and of about the same length as the lip.

CREEPING RATTLESNAKE PLANTAIN

Goodyera repens

The CREEPING RATTLESNAKE PLANTAIN is the smallest of the rattlesnake plantains. Its downy stem is but 6 to 9 inches tall. The leaves are oval to oblong, from 3/4 to 1 1/4 inches long, and conspicuously marked with a network pattern of white. The small 10 to 20 white to greenish-white flowers are borne in a loose cluster on one side of the stem. The lip is very deeply pouch-shaped at its base. It tapers to a pointed beak at its summit, which is strongly deflexed and directed downward. The beak of the lip equals or surpasses the base in length. The galea is 3.5 to 5 mm. long. The oval lateral sepals are somewhat shorter. As in all of the rattlesnake plantains, the flower is subtended by an oval to lance-like bract.

The CREEPING RATTLESNAKE PLANTAIN inhabits the deeply shaded coniferous and mixed woods of the island where it is found blooming from late July to early September.

CHECKERED RATTLESNAKE PLANTAIN

Goodyera tessellata

The CHECKERED RATTLESNAKE PLANTAIN is taller than the preceding species, standing from 6 to 16 inches tall. Its leaves are oval-lance-like and from 1 1/4 to 2 inches long. Like the rattlesnake plantains already discussed, the leaves of this species are distinctly marked with white and light green pencilings. The flower cluster is cylindrical in outline with spirally arranged flowers. It measures from 1 1/2 to 4 inches long.

The lip is slightly sac-shaped at its base, but much less so than the other rattlesnake plantains. It is 3.5 mm. long. The beak of the lip is about as long as the basal pouch portion. The galea is 4 to 5 mm. long, while the oval lateral sepals measure 4 mm. The plant is wide-spread in the denser forests of the park where it is found in bloom throughout August and into early September. It is one of Isle Royale's more common orchids.

GIANT RATTLESNAKE PLANTAIN

Goodyera decipiens

The GIANT or WESTERN RATTLESNAKE PLANTAIN, the largest of the rattlesnake plantains, is easily distinguished from the other species found on the island by the character of the markings on the basal leaves. The dark-green lance-shaped leaves are from 2 to 4 inches long and have wavy margins. Rarely they are found to be indistinctly mottled, without white markings of any kind, but more typically they possess a single broad white stripe along the mid-rib. The stiff stem rises some 14 to 18 inches from the basal rosette of leaves and is somewhat hairy in texture. The upper four inches of the stem bear the one-sided cluster of greenish-white flowers.

The flowers of this species are distinctly larger than those of the previous three species. The lip is 6 to 7 mm. long with a semi-globose basal sac. The tip of the lip forms a beak which is about two thirds as long as the saccate portion and is deflected downward. The galea is 8 to 10 mm. long, while the lateral sepals are oval-lance-like in shape and about as long as the lip.

The GIANT RATTLESNAKE PLANTAIN is quite abundant within the park and is widespread throughout heave, mixed woods. It blooms during August and into early September.

Addermouth Orchids *Malaxis*

Two species of ADDERMOUTH ORCHID occur on Isle Royale. Both are quite inconspicuous and generally not very abundant. They

are short plants characterized by a single oval leaf which clasps the stem above ground level. The flowers are borne in a terminal cluster and are very small.

SHEATH ADDERMOUTH ORCHID

Malaxis monophylla

This tiny plant is but 6 inches tall at best. Near its base the erect stem is clasped by an oval leaf some 1 to 2 1/2 inches long and about half as wide. Approximately the final 2 1/2 inches of the stem are occupied by the slender cluster of 20 to 40 minute flowers.

Each greenish- to watery-white flower is attached to the stem by means of a stalk 1 to 2 mm. long. The 2 to 3 mm. lip is widely rounded at its base, but abruptly narrowed near its middle; from its middle it gradually tapers to a fine point at its summit. The sepals are oval to oval-lance-like and from 2 to 2.5 mm. long. The upper sepal is erect, while the lateral ones are deflexed behind the lip. The petals are narrowly lance-to needle-shaped, about 1 mm. long, and horizontally spreading. Blooming from late June to early August, it grows sparingly in the sedges of the island's bogs and in moist swamp and lake margins.

ONELEAF ADDERMOUTH ORCHID

Malaxis unifolia

The ONELEAF ADDERMOUTH ORCHID is usually slightly taller than the previous species. It stands from 4 to 12 inches high. A single dark green leaf clasps the stem near its midpoint. It is oval, about 1 to 2 1/2 inches long, and one third to one half as wide. The flower cluster, from 1 to 3 inches in length, is fully an inch in diameter. This latter dimension clearly distinguishes it from the much thinner flower cluster of the SHEATH ADDERMOUTH ORCHID. Each of the 20 to 60 flowers is borne on a slender stalk 4 to 8 mm. long.

The greenish floral lip is 2 to 2.5 mm. long. At its base two ear-like lobes project backward, while two pointed lobes mark its summit. Between these latter lobes a small tooth is frequently found. The lip is at first drooping, but as the flower matures the small floral stalk twists it into an erect position. The upper sepal is oblong-linear, 1.3 - 1.5 mm. long, and erect. The lateral sepals are oval or elliptical and are spreading to deflexed. The petals curve behind the flower and are thread-like to linear in shape.

The ONELEAF ADDERMOUTH ORCHID occurs sparingly in bogs and on moist lake margins. It is also found on dry wooded ridge slopes. It blooms from July through August.

Twayblades *Liparis*

Two species of *Liparis* occur within the park. These species bear the common name twayblade--a name often applied to the three species of *Listera* on the island. There is little difficulty, however, in separating these two groups of twayblades in the field. The leaves of *Liparis* are basal, those of *Listera* are not. The lip of *Liparis* is not lobed or cleft at its summit, while that of *Listera* is.

LILY TWAYBLADE

Liparis liliifolia

In typical twayblade fashion, the LILY TWAYBLADE rarely exceeds 7 inches in height. Its small stature and inconspicuous color render the plant difficult to detect in the moist and shaded reaches of the forest and on the margins of bogs where it occurs on Isle Royale. It possesses two glossy, light green leaves from 2 to 6 inches long and about one third to one half as wide. They are oval in shape and clasp the stout, angled stem very near its base.

Each of the 5 to 30 flowers in the loosely flowered cluster is borne on the end of a rather long stalk (5 to 10 mm. long). This gives the entire cluster considerable breadth and it may even surpass an inch in diameter. The lip is 10 to 12 mm. long and green to greenish-purple in color. It is greatly expanded, rhomboid or almost square in shape, with two small clasping lobes at its base and a fine tooth at its summit. The petals are of about the same length as the lip. They are greenish purple in color and may project forward under the lip--even crossing one another. Their edges are inrolled to form two long, hollow thread-like tubes. The greenish-white sepals are of the same length and are also inrolled so as to appear somewhat thread-like. The upper sepal curves backward, the lateral two downward. The LILY TWAYBLADE blooms through July to early August.

BOG TWAYBLADE

Liparis loeselii

As its name implies, the BOG TWAYBLADE is an inhabitant of bogs. It is found growing sparingly in amongst the sedges in such locations; it should probably also be looked for in the moister spots within the forest. An early bloomer, it flowers from late May to early July. Like the other twayblades of the park, this species is of diminutive size, generally standing only some 8 inches tall. Two oval to lance-like leaves clasp the angled stem near its base. They are from 2 to 6 inches long, 1 to 1 1/4 inches wide, and are strongly folded along the midvein, thus appearing to be broadly keeled.

The loose cluster of from 2 to 20 yellowish-green flowers is borne on the final 2 to 3 inches of the stem. Each flower is attached to the stem by means of a stalk, slightly ascending and from 2 to 5 mm. long. It is narrowed slightly toward the base and possesses wavy edges. Near its base it is arched upward, but toward its summit it bends downward. A small median ridge projects into a small tip at the summit. The petals, 4 to 6 mm. long, are threadlike and spreading, while the sepals are more oblong in shape. The sepals are about as long as the petals.

Calypso Calypso

CALYPSO

Calypso bulbosa

Of the thirty-four species of orchids found within the park, the brilliant coloration and relative abundance of the CALYPSO make it, beyond a doubt, Isle Royale's most outstanding orchid. During May and June the CALYPSO is locally abundant within the deeply shaded and moist sections of the forest. Its solitary and nodding flower is outstanding in its brilliance and stands out clearly in contrast to the dark tones of the forest floor.

The lip of the CALYPSO is complex in structure and color. It is shoe-like or scoop-shaped and possesses a rather pendulous posture. It measures roughly 20 mm. long. Near its base the lip is narrowed and bears two pronounced horn-like appendages beneath. Nearly overlapping the summit of the lip is a rather broad and flap-like, translucent structure--called the apron. The apron is crested with three double rows of glassy yellow hairs. The lip is whitish near its base but becomes quite yellow toward its summit. On its inner surface it is heavily marked with streaks and spots of red-brown to pink-violet. The apron is whitish and spotted with purple-violet. The petals and sepals are linear to lance-shaped and from 10 to 20 mm. long. Quite similar in color, they vary from rose-pink to deep magenta purple. They ascend and spread over the lip.

The stem of the CALYPSO is generally about 6 inches tall. It is pale purple in color and bears two or three small blunt scales. A single linear bract subtends the solitary terminal flower. A single, somewhat pleated basal leaf occurs. Oval in outline, it is from 1 to 2 inches long, somewhat heart-shaped at its base, and borne on a stalk which is roughly equal to its own length. The leaf is evergreen and persists through the winter. It generally withers and dies following the blooming of the flower. Following a period when the plant has no living parts above ground, a new leaf emerges remaining from late summer until after the flower has bloomed the following year.

Coralroots *Corallorhiza*

Of all the orchids found on Isle Royale, the coralroots are the only ones which possess no green tissues of any kind. Lacking green pigments, they are unable to manufacture their own food and must root in rich soils where there is an abundance of decaying organic matter to sustain them. The stiff yellow to purple stems possess a few scale-like leaves of similar color. The loose cluster of flowers, occupying the upper sections of the stem, are the plant's only adornment.

EARLY CORALROOT

Corallorhiza trifida

The yellowish stem of the EARLY CORALROOT varies in height from 6 to 15 inches. Occasionally growing singly it is more often found in clusters of 3 to 10. An inhabitant of deeply shaded and moist woods throughout the park, it flowers from late May to early August.

The 2 to 10 flowers are borne in a loose cluster which occupies the terminal 1 to 4 inches of the stem. The lip is oblong, 4 to 5 mm. long, and bears two short lateral lobes. It has no spur on its upper basal surface, but bears instead two low and parallel longitudinal ridges. The petals and sepals are about as long as the lip and are lance-like in shape. The petals and upper sepal arch over the lip from above, while the lateral sepals extend forward under the lip. The lip is white in color, the petals and sepals yellowish-green. Occasionally these basic colors are spotted with purple.

SPOTTED CORALROOT

Corallorhiza maculata

The SPOTTED CORALROOT is a taller and stouter plant than the previous species. Its stem is pinkish to purple and stands some 8 to 16 inches tall. Like the other coralroots, it is sheathed by several scale-like leaves which possess the same color as does the stem. A loose cluster of from 10 to 40 flowers occupies the terminal 3 to 7 inches of the stem.

The lip is divided into three lobes--a large rounded and somewhat deflexed terminal lobe of 3 to 4 mm. width and two conspicuous lateral lobes near the base of the lip. The lip as a whole is from 6 to 8 mm. long, and bears a prominent spur on its upper basal surface. It is white, irregularly but conspicuously spotted with purple. The petals and sepals are oblong to lance-like and of about the same length as the lip. They are diffused or spotted with purple. The upper sepal and petals arch over the lip forming a hook-like structure, while the lateral sepals are divergent and spreading.

The variety *flava*, also present in the park, resembles the species in general form and structure, but lacks its typical brownish to pinkish tones. In the variety the stem and flowers tend to be quite decidedly yellowish in hue and the lip is unspotted.

The SPOTTED CORALROOT, as well as its unspotted variety are quite abundant within the park. They are found in the shade of all the various forest types on the island and seem to show a slight preference for sloping land. They bloom from the latter part of June well into August.

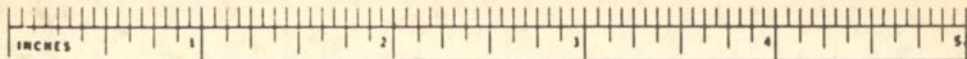
HOODED CORALROOT

Corallorhiza striata

The HOODED or STRIPED CORALROOT stands from 6 to 13 inches tall. Its stem is purple-magenta and bears two to four sheath-like leaves which vary from white through yellow to pale lavender. The uppermost 6 to 8 inches of the stem bear the 10 to 20 flowered floral cluster.

The lip is tongue-shaped and drooping. It measures from 8 to 12 mm. long. It is usually white to white-purple heavily striped with madder-red, especially toward its summit. In some cases no stripe is discernible, but when this is so, the lip is almost uniformly ruby-red in color. The petals and sepals, generally from 10 to 14 mm. long, droop forward over the lip to form a loose hood-like structure. They are oval to lance-shaped, creamy-yellow outside and white within. Each sepal is marked with three longitudinal red-purple stripes, while the petals bear several shorter stripes in addition to the longer ones.

The HOODED CORALROOT inhabits damp and shaded mixed wood area throughout the park. It flowers from early June to early August.



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