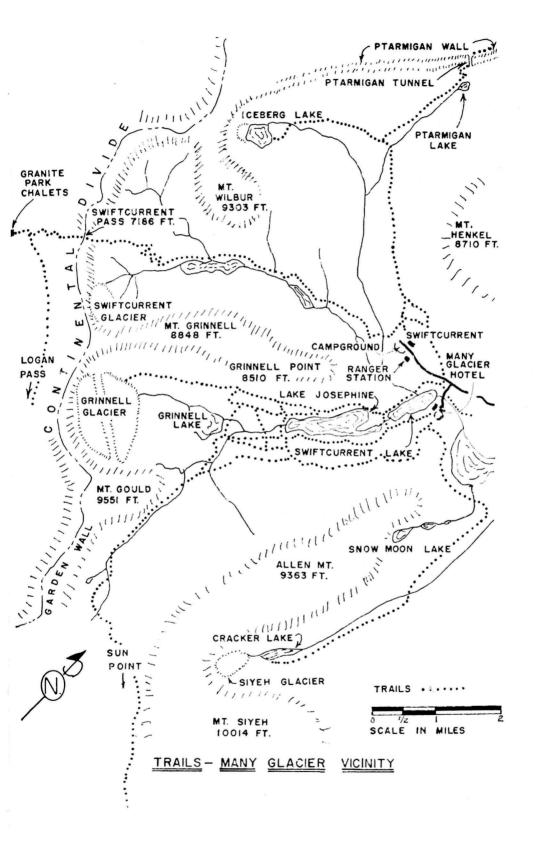


GLACIER NATIONAL PARK



## SWIFTCURRENT LAKE TRAIL

This is a pleasant walk of one mile along the south and east shores of Swiftcurrent Lake between the Many Glacier Hotel and the boat dock at the head of the lake. Features along the trail include a wide variety of shrubs, trees, and flowering plants combined with scenic vistas which present an opportunity to explain the story of the rocks and glaciers.

The leaflet is designed to aid you to a greater enjoyment of the Park. The numbers along the margin of the text correspond to the numbered markers along the trail.

PLEASE KEEP THE PARK CLEAN by carrying any trash until you find a trash receptacle.



- 1. Nearly all of the young trees in this vicinity are the same species—SUBALPINE FIR\*. Note that the flat, blunt needles grow singly. Cones, when present, stand erect near the top of the tree and are black. Black toothpick-like structures occasionally may be seen standing below or toward the center of tree from last year's cones.
- 2. The low shrubs toward the lakeshore are WILLOWS. Most willows have long, narrow leaves, gray underneath, and bear flowers composed of only stamens or pistils resembling

"pussy willow." Some possess red bark on twigs which may taste bitter. There are at least 25 different kinds of willows in Glacier Park. One interesting species in the alpine meadows grows to a height of only 1 or 2 inches.

The tall trees directly in line with the hotel are young BLACK COTTONWOODS. The lance-shaped leaf identifies this species. Black cottonwoods grow larger on the west side of the Park, where there are trees over 5 feet in diameter.

The surrounding open, grassy area has a very showy display of magenta-colored FIREWEED from mid-summer until early September. Other flowers to look for are shrubby and blueleaf cinquefoils. Both have yellow blossoms and are members of the rose family.

BLACK COTTONWOOD

Birds common along this section of the trail are warblers, wrens, fox sparrows and white-crowned sparrows.

3. BLACKBEAD ELDER or ELDERBERRY is the shrub with compound leaves growing 4 to 10 feet off the trail beyond this stake. The compound opposite leaves of 5 to 7 leaflets, are closely toothed. Flowers are small and creamy, borne in a rounded cluster, developing into small black berries.

\* Those of you interested in scientific plant names will find them in the back of this booklet.

Behind the elderberry is SITKA MOUNTAIN-ASH sometimes confused with the elderberry. (See No. 10)

- 4. ALTYN LIMESTONE. This is the same as the rock ledge upon which the Many Glacier Hotel stands. It is the oldest of the rocks in the Park, exposed as a result of folding and faulting. Evidence indicates that this rock formed in an inland sea which covered this entire region some half billion to 3 billion years ago. Above this limestone are layers of green and red ARGILLITES or hardened shales which you may see exposed on the adjacent mountainsides. Both the green and red colorations are due to varying degrees of oxidation of iron minerals. Above the red argillite is a grey limestone which weathers to yellow. This SIYEH LIMESTONE forms the bulk of the Garden Wall and the upper portions of many of the Park's mountains. Through it runs a dark streak of igneous rock.
- 5. The towering pyramidal-shaped peak directly across the lake is GRIN-NELL POINT, named after George Bird Grinnell, who explored the area in the 1880's and 1890's. To the left is the Garden Wall (Continental Divide) and roof-shaped Mt. Gould (9,551 feet), named in honor of a hunting companion of Grinnell's. Two glaciers are visible from here—Gem Glacier, which nestles near the top of the Garden Wall to the right of Mt. Gould, and Grinnell Glacier, partly visible at the base of the Garden Wall. Gray streaks seen on the glacier later in the summer are places where last winter's snow has melted, exposing the ice. The darkest gray color is due to the fact that the glacier is liberally rock-strewn.

GRINNELL GLACIER, covering around 270 acres, is the most accessible of the Park's glaciers. It may be reached by six miles of good trail from the Hotel, or by taking the launch ride to the head of Josephine Lake and then walking 3½ miles to the glacier. Naturalists conduct trips to the glacier during the summer. (Schedules posted at hotels and cabin camps.)

6. STRAWBERRY is the abundant, low ground cover here. The fruit, often hidden under the leaves, is small but very tasty.



QUAKING ASPEN

All of the rocks visible from here are at least half a billion years old. They were pushed to the surface as a result of a great earth movement of thrust faulting, known as the Lewis Overthrust. They have since been changed by glaciation, weathering and by water erosion.

7. Abundant growth of QUAKING ASPEN here results from the 1936 fire. Fire destroys existing vegetation, allowing penetration of full sunlight, and also destroys organic litter exposing mineral soil. These conditions favor the germination of aspen. The establishment of lodgepole pine will

also follow a fire. (See No. 16). After sufficient shade is provided by aspen and lodgepole growth, and some organic matter is added to the soil, the Engelmann spruce, and more slowly, the subalpine fir begin to reappear.

In the fall the golden-yellow leaves and white bark of the aspen form a pleasing contrast to the dark-green evergreen forest. The leaf of the aspen

is smaller and more rounded than that of the cottonwood, and has a slightly pointed tip and finely toothed margin. The leafstalk is long, slender, and flattened causing the leaves to tremble or quake in the slightest breeze. Beavers extensively use the aspen for food and building purposes.

Under the aspens is a low creeping shrub, BEARBERRY, better known by its Indian name, KINNIKINNICK. The Spanish word "manzanita" means "little apple" and, although the fruit does resemble a little apple at a glance, its contents are dry, tasteless and seedy. The small, pink, bell-shaped blossoms resemble heather, to which family bearberry belongs. The small, paddle-shaped, leathery, evergreen leaves, mixed with leaves from other plants, were smoked by the Indians.

About 60 feet toward No. 8, between the trail and lake, is one prostrate plant of COMMON JUNIPER.

8. The black, gray, and green splotches on this rock are LICHEN (pronounced "LIKE-en.") It is composed of two types of plants which live together in a close-knit mutually beneficial relationship (symbiosis). Upon microscopic examination, the tissue of one plant may be seen intertwined with that of the other. One plant partner in this relationship is an alga which possesses chlorophyll and can produce plant foods from such basic materials as carbon dioxide and water. The other member of the partnership is a fungus which may absorb water to be used by the alga in its food manufacture. Actually the relationship between the alga and fungus in a lichen is more complex than the above would indicate.

Lichens often represent the first plants to grow on bare rocks. They hasten normal weathering by chemically aiding in the slow disintegration of rocks. An accumulation of lichens will form an extremely thin mantle of soil which thickens in time, allowing such plants as mosses to become established. The mosses produce more humus increasing the amount of soil, and thus creating conditions more favorable for seed plants. In time the roots of various plants penetrate cracks in the rock and further promote breaking of the rock into soil. This progression of plants, as a result of proper environmental preparation by the earlier plants, is called PLANT SUCCESSION.

The shrub, with numerous small clusters of pink, fuzzy, fragrant blossoms, along the trail is the SUBALPINE SPIREA or PINK MEADOW-SWEET.

9. Late in August 1936, one of the most devastating fires ever to burn in Glacier National Park swept through the Swiftcurrent Valley. This fire, resulting from a lightning strike, smouldered on a shoulder of Heavens Peak west of the Continental Divide for several days before being blown out of control over Swiftcurrent Pass into the Many Glacier area. The only building in this area which did not burn was the Many Glacier Hotel. Several hotel employees were kept busy extinguishing burning embers which continually fell upon the hotel. Across the lake may be seen the "ghost forest" composed of thousands of trees killed by the fire. A large herd of mountain sheep which ranged on the side of Altyn Pk. prior to the fire was



LIMBER PINE

reduced to about half its former number by the fire and its aftermath. Today mountain sheep ewes may often be seen browsing on the hill near the hotel parking lot early in the morning.

Scattered among the spruce and fir are several species of pine, easily distinguished from the short-needled spruce and fir by their longer

needles. This rather unhealthy specimen of LIMBER PINE is one of the white, or 5-needled pines. Often the young twigs on trees of this species may be bent double without breaking, thus giving rise to the name. Limber pine is difficult to distinguish from a closely related species, WHITEBARK PINE, another 5-needle pine. Older trees with cones can easily be distinguished, however, for the cones of the limber pine are brown and longer while those of the whitebark pine are reddish purple and generally present a more stubby appearance.

10. Two species of ALDER in the Park rarely attain tree size. The species common at lower elevations is THINLEAF ALDER, which seldom grows taller than 15 feet. The fruit, similar to that of the related birches, is small and conelike about one-half inch long, changing from a green to brown as it matures.

On the side of the trail away from the lake, is SITKA MOUNTAIN-ASH, which often becomes 12 feet high. The compound leaves have 5 to 13 leaflets, each leaflet about 2 inches long with finely toothed margins. The



LODGEPOLE PINE

white flowers are borne in a flat to convex cluster and give rise to very showy bright orange or red berries late in the summer. They are not edible... but bears eat them!

- 11. Most of the trees by the stake are LODGE-POLE PINE, the only 2-needle pine in the Park. The tall, slender trunks of the younger lodgepole pines were used by the Indians for the framework of their tepees, or lodges.
- 12. This building served in the past to store ice for use at Many Glacier Hotel. Ice was cut from the nearby lake in winter and stored in sawdust for use in summer. Adjacent buildings are for winter launch storage and housing for boat personnel.

Birds to look for in this vicinity include chickadees, nuthatches, pine siskins, juncos, and occasionally crossbills and grosbeaks.

Early in the summer purple and yellow PENSTEMONS may be seen along the trail. In the exposed areas is an abundant growth of wild strawberry.

13. This young ENGELMANN SPRUCE has foliage which looks a lot like the true firs and the Douglas-fir. However, the spruce needles will appear stiff, sharppointed and square in contrast to the more flexible, blunt-tipped, flat needles of the subalpine fir. Demonstrate the stiff, sharp-pointed



nature of the spruce needles by lightly grasping a twig with your hand. Examining and grasping the twigs of any of the subalpine firs adjacent will provide comparison of spruce and fir foliage. Light-brown cones may be seen hanging from the upper branches of several larger spruces behind and to the left of this tree. These spruce cones may be contrasted with the black, erect cones of subalpine firs in this vicinity.

14. This tiny creek continues to flow during most of the summer, making possible this miniature garden. Plants one might find here include: White flowers: WHITE BOG-ORCHID, FRINGED or ROCKY MOUNTAIN PARNASSIA, NORTHERN

BEDSTRAW, COWPARSNIP, SHINYLEAF SPIREA, and COMMON PEARLYEVERLASTING. Yellow flowers: ARNICA, BUSH CINQUEFOIL, BLUELEAF CINQUEFOIL. Red flowers: SCARLET PAINTED-CUP, or INDIAN PAINTBRUSH. Purple flowers: SIBERIAN CHIVE or PURPLE ONION, SELFHEAL. Blue flowers: HAREBELL. Greenish-white flowers: MOUNTAIN DEATHCAMAS. Please enjoy the wildflowers without picking them so that others who follow may share your pleasure.

- 15. COMMON BEARGRASS is considered to be the Park flower and usually blooms at some elevation in the Park all summer. The common name is misleading as this is not a grass, nor has it any connection with bears. The coarse, narrow, grass-like leaves at the base are 1 to 2 feet long. The flowers are tiny, but are crowded into a magnificent showy head. This member of the lily family is also known as squaw grass, or basket grass, because the leaves were used by the Indians for weaving baskets.
- 16. The taller tree near the lakeshore is a LODGE-POLE PINE with hundreds of small cones clustered on the branches. Although normally most pine cones mature and are shed in 2 years, many of these lodgepole



BEARGRASS

cones persist on the tree, closed until exposed to considerable heat. Thus heat from a fire opens the cone scales allowing thousands of seeds to fall upon a soil from which the fire has most likely burned much of the organic matter. A mineral soil exposed to direct sunlight is particularly favorable for lodgepole pine seedlings. Undoubtedly many of the lodgepole seeds are burned in the fire; still enough remain to produce dense lodgepole pine thickets such as those in the vicinity of the Many Glacier Ranger Station and campground. Spruce and fir seedlings may be seen becoming established where lodgepole pine or other vegetative cover has been provided in the burned area (as indicated in No. 7.)

17. The bark on this tree, composed of large, gray, scaly plates, is typical of mature ENGELMANN SPRUCE. On the other side of the trail is a mature LODGEPOLE PINE with rather different small-scaled bark. In contrast to both of these, the SUBALPINE FIRS, on either side of the lodge-

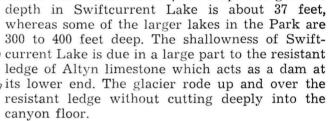
pole pine, have the smooth grayish bark, sometimes containing pitch blisters, typical of true firs.

During the summer, the showy white flowers or brilliant blue fruit of the QUEENCUP BEADLILY may usually be seen in the shade of the forest floor.

18. RED-OSIER DOGWOOD. The willow-like shrub with the red-barked stem and opposite leaves growing near this stake, is one of two species of dogwood that occur in the Park. The loose cluster of small white dogwood flowers may be seen on this shrub in the summer, followed by bluish-white, inedible berries. The other Park species, BUNCHBERRY DOGWOOD, is a low plant with small greenish flowers at the center of showy white petallike bracts resembling those of the "flowering dogwoods." The greenish flowers in the center give rise to a dense cluster of bright-red fruits. Bunchberry Dogwood is more commonly seen in forests on the west side of Park.

To the left of the dogwood, the smaller shrub with maple-like leaves and black berries is PRICKLY CURRANT.

19. SWIFTCURRENT LAKE lies close to a mile above sea level, (4,871 ft.) During the Ice Age, great glaciers descended these valleys to join the Continental Ice Sheet on the Great Plains. These glaciers cut deep into the valley floor where the bedrock was soft or badly broken; but where the rocks were more resistant, the glaciers could only rasp and polish the surface. As the glaciers retreated at the close of the Ice Age, the depressions in the valley floors were filled with lakes—some quite deep. The greatest



Swiftcurrent Lake, and other lakes in this valley, contain several kinds of fish. Good catches are more common during the early part of the summer. The principal species are rainbow trout, eastern brook trout and little redfish (also called silver trout or landlocked salmon.)

20. Located a few feet from the marker is a large shrub with gray-green leaves and in early summer, small, pinkish-bronze, bell-shaped flowers, known as SMOOTH MENZIESIA or FOOL'S HUCKLE-BERRY. The smaller shrub underneath with similar, but darker-green leaves, is the BIG WHORTLE-BERRY, which bears large, purple berries. This is one of the best known and most delicious of the edible, wild fruits. The GROUSE WHORTLEBERRY, smallest of the three shrubs, grows immediately around the stake. It bears a much smaller, but edible, red or purple berry. Upon comparison of these three plants, one may see why smooth menziesia is sometimes confused with huckleberry.

SMOOTH MENZIESIA



BIG WHORTLEBERRY

21. The tall shrub with oval leaves is SASKATOON SERVICEBERRY. It bears white flowers during late June followed by sweet, edible, blue berries which ripen through the summer. Some people confuse this plant with the huckleberry, but the huckleberry fruit is generally much juicier and better tasting.

The rather abundant plant in this vicinity with fern-like leaves and an unbranched stalk one to three feet high, terminating in a spike of somewhat tubular, greenish-yellow or purple flowers is BRACTED PEDICULARIS or INDIAN WARRIOR.

From here the SELF-GUIDING TRAIL continues to the right across the footbridge for those coming **from** the hotel. Those going **to** the hotel should turn left at this stake. The trail alongside the creek upstream is the alternate route to Josephine and Grinnell Lakes.

Between this stake and the footbridge may be found the BEARBERRY HONEYSUCKLE or BLACK TWINBERRY, a shrub easily recognized by pairs of tubular yellow flowers succeeded by shiny black berries enclosed by two red, leaf-like bracts.

22. The growth of this subalpine fir, 6 inches in diameter, illustrates a slightly different type of plant succession from that which may be observed at No. 8. Here, a fir tree has found root in an old rotten stump. In the National Parks the forest floor is left in as untouched a state as possible, thereby promoting most suitable conditions for natural growth. Rotting logs add a considerable amount of very rich humus to the forest floor.



BLACK TWINBERRY

Plants which may be observed in this vicinity include pyrola, American adenocaulon, queencup beadlily, thimbleberry and arnica.

The stream flowing under the bridge originates at Grinnell Glacier. The pale-blue color that is evident here is due to minute particles of finely pulverized rock (called "glacial flour") carried in suspension in the water. This indicates that there is a glacier at the headwaters, as the grinding action of moving ice produces "rock flour." The rock flour content gradually settles out so that the color of the Park lakes varies from turquoise to blue as one proceeds down canyon.

23. The WESTERN THIMBLEBERRY is one of the most common plants in the Park. It has large maple-like leaves and white flowers, 1 to 1½ inches in diameter. The red edible berry is similar to a large soft raspberry. Red raspberries also may be seen along this trail in the more exposed places.

Many people mistake the foliage of WESTERN MEADOWRUE for that of the columbine. The flowers of meadowrue, however are entirely different from the yellow columbine. Meadowrue flowers are of two types, each form growing on separate plants. Flowers on the male plants resemble minute green drapery tassels, where those on the female plants appear as clusters of tiny "bowling pins."

24. The big, coarse plants with broad, parallel-veined leaves growing in this vicinity are AMERICAN FALSE-HELLEBORE or CORN LILY. The tall stalk of small, greenish flowers is not particularly showy since both



CORN LILY

flowers and foliage are green. This plant is reputed to be poisonous to cattle and man, although its leaves are often eaten by insects.

MOSSES, LICHENS, and LIVERWORTS may be seen covering the rock and adjacent soil under the shade of a rather dense canopy of menziesia. (Many of the gray-green leaves of the menziesia are covered with a leaf spot fungus.)

Note the fragile, dark-stemmed WOOD-FERN, only found growing in deep shade. In this vicinity also may be found such plants as the common LACEFLOWER or COOLWORT FOAMFLOWER. The tiny, but conspicuous, lace-like blossoms of the laceflower are borne on a six- to ten-inch stem which bears small maple-like leaves below the blossoms.

The natural root graft between these two firs is unusual. Within this grafted area food—and water—conducting vessels and other tissues of one tree are quite likely linked with those of the other tree. Budding and grafting is very commonly practiced in the growing of cultivated woody plants, to progagate some varieties of nearly seedless plants, such as the navel orange, or to obtain a desirable variety of fruit on a particularly hardy rootstock, or for various other reasons. Natural root grafts are rare, however, in forest or orchard.

In rather dense forests, the lower limbs of many of the trees may appear dead or dying, as is the case here. This is generally indicative of the fact these lower branches are being shaded out in the competition for light, and is not necessarily an indication of disease. However, the forests of the Park are subject to the ravages of many plant parasites and insect enemies, as well as to damage by porcupines and fire. Occasionally, extensive means of control must be used, our primary objective always being, however, to preserve and maintain the national parks as superlative wilderness areas.

The RED TWINBERRY or UTAH HONEYSUCKLE is the other of the two honeysuckles found in the Park. Easily identified by its white, trumpetlike twin flowers, later replaced by closely joined twin red berries, this honeysuckle and its close relative, the black twinberry (see No. 21), are very conspicuous throughout most of the summer.

NOTE: From the trail junction near this point one trail leads over the ridge to the Lake Josephine Boat Dock (0.2 miles) and up the valley to Grinnell Lake and Grinnell Glacier. The trail along the west shore of Swiftcurrent Lake leads on around the lake to the Many Glacier Hotel (1.7 miles), or to the Swiftcurrent Cabin Camp and Campground, (approx. 1¼ miles.) It is one mile back along the self-guiding trail to Many Glacier Hotel. If you prefer, the Swiftcurrent motor launch leaves the dock near this point for the hotel at approximately 9:45 and 11:45 a.m., and 2:45 and 4:45 p.m. daily during the operating season.

We hope this leaflet has been helpful to you. It is provided by the Glacier

Natural History Association and the Glacier National Park naturalist staff.

## LIST OF COMMON AND SCIENTIFIC NAMES SWIFTCURRENT

ALDER, THINLEAF — (Alnus tenuifolia) ASPEN, QUAKING — (Populus tremuloides) BEARBERRY — (Arctostaphylos uva-ursi) BEARGRASS, COMMON — (Xerophyllum tenax) COTTONWOOD, BLACK — (Populus trichocarpa) CORN LILY — (See falsehellebore, American)

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CURRANT, PRICKLY — (Ribes lacustre)
DOGWOOD, BUNCHBERRY — (Cornus canadensis)
DOGWOOD, RED-CSIER — (Cornus stolonifera)
DOUGLAS-FIR — (Pseudotsuga menziesii glauca)
ELDER, BLACKBEAD — (Sambucus melanocarpa)
ELDERBERRY — (See elder)
FALSE-HELLEBORE, AMERICAN — (Veratrum viride)
FIR SUBALPINE — (Abies lasiocarpa)
FIREWEED — (Epilobium augustifolium)
FOAMFLOWER, COOLWORT — (Tiarella unifoliata)
HONEYSUCKLE, BEARBERRY (or BLACK TWINBERRY) (Lonicera involucrata)
HUCKLEBERRY — (See whortleberry)
HUCKLEBERRY, FOOL'S — (Menziesia glabella)
INDIAN WARRIOR — (See pedicularis)
JUNIPER, COMMON — (Juniperus communis)
LACEFLOWER — (See bearberry)

LACEFLOWER — (See foamflower)

MEADOWRUE, WESTERN — (Thalictrum occidentale)

MEADOWSWEET, PINK — (See subalpine spirea)
MENZIESIA, SMOOTH — (See huckleberry, fool's)
MOUNTAIN-ASH, SITKA — (Sorbus sitchensis)
PEDICULARIS, BRACTED — (Pedicularis bracteosa)
PENSTEMON. PURPLE OR YELLOW — (Penstemon spp.)
PINE, LIMBER — (Pinus flexilis)
PINE, LODGEPOLE — (Pinus contorta)
PINE, WHITEBARK — (Pinus albicaulis)
QUEENCUP BEADLILY — (Clintonia uniflora)
SASKATOON SERVICEBERRY — (Amelanchier alnifolia)
SPIREA, SUBALPINE — (Spiraea densiflora)
SPRUCE, ENGELMANN — (Picea engelmannii)
STRAWBERRY — (Fragaria sp.)
TWINBERRY, BLACK (or BEARBERRY HONEYSUCKLE) (Lonicera involucrata)
TWINBERRY, RED (or UTAH HONEYSUCKLE) — (Lonicera utahensis)
THIMBLEBERRY, WESTERN — (Rubus parviflorus)
WHORTLEBERRY, BIG — (Vaccinium membranaceum)
WHORTLEBERRY, GROUSE — (Vaccinium scoparium)
WILLOW — (Salix spp.)
WOOD-FERN — (Dryopteris disjuncta)
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OTHER PUBLICATIONS ON ANIMALS, TREES, FLOWERS, AND GEOLOGY, AS WELL AS GUIDEBOOKS AND MAPS ARE ALSO AVAILABLE FROM THE GLACIER NATURAL HISTORY ASSOCIATION. WRITE TO GLACIER NATURAL HISTORY ASSOCIATION, WEST GLACIER, MONTANA 59936, FOR A CURRENT PRICE LIST.

## GLACIER NATURAL HISTORY ASSOCIATION, Inc.

## Glacier National Park

West Glacier, Montana 59936

Organized for the purpose of cooperating with the National Park Service by assisting the Division of Interpretation of Glacier National Park in the development of a broad public understanding of the geology, plant and animal life, history, Indians, and related subjects bearing on the park region. It aids in the development of the Glacier National Park library, museums, and wayside exhibits; offers books on natural history for sale to the public; assists in the acquisition of non-federally owned lands within the park in behalf of the United States Government; and cooperates with the Government in the interest of Glacier National Park.

Revenues obtained by the Association are devoted entirely to the purposes outlined. Any person interested in the furtherance of these purposes may become a member upon payment of the annual fee of one dollar. Gifts and donations are accepted for land acquisition or general use.



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