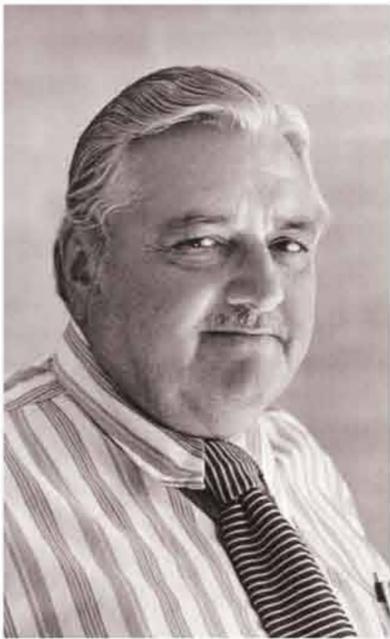


THE PHILIP C. WALKER MEMORIAL NATURE TRAIL

Point au Roche State Park
Spring 2013



Trail Introduction

The "Friends of Point au Roche State Park" welcomes you to our nature trail, which is designed to interpret natural processes that are taking place today, some of which were set in motion by land use changes dating to the 1700s. Understanding the historical connections to our present-day ecology will help us envision what nature may provide for future generations.

PHILIP CALEB WALKER BIOGRAPHY

Dr. Philip C. Walker was a botanist and field biologist who spent his life inspiring several generations of students with his boundless enthusiasm for the natural world. Point au Roche held a special place in his repertoire of wild stomping grounds. If he were here today at the head of this trail, your hike with Phil Walker would take a near eternity for he would stop every second or so to show you a universe under your feet or above your head in just one yard of trail. He was a man who was happiest out of doors in nature's perfect atelier and would be delighted that you've come to explore the park and enjoy its unspoiled beauty.

Philip Caleb Walker was born in Pittsburgh, PA on November 11, 1911. He graduated from the University of Pittsburgh with a B.S. in botany-biology in 1934. He earned a Ph.D. in biology from the University of Pittsburgh in 1958. Prior to coming to Plattsburgh State University, Dr. Walker taught at the University of Pittsburgh, Geneva College, West Virginia Institute of Technology and, during the summers of 1946 - 1950, he taught outdoor education at New York University. In 1951, Plattsburgh State hired Dr. Walker to teach field biology and develop summer science camps at the college's new Twin Valleys Outdoor Education Center in Lewis, NY. He taught botany, plant ecology, and field biology at Plattsburgh State for 32 years, retiring in 1982.

Dr. Walker was one of the founders of the county-wide Sixth Grade Conservation Field Day, first held at Miner Institute and later at Point au Roche State Park. College students in biology and education got valuable teaching experience by staffing the station-exhibits of the program.

Phil Walker's comprehensive understanding of the North Country's flora and fauna was unparalleled. He was equally at home in a forest, an open field, a marsh, a bog, or the summit of an Adirondack high peak. Dr. Walker was a passionate naturalist who had a life long effect on students of all ages with his knowledge of plants and animals and his unique way of describing the natural history of living creatures in any environment.

During his retirement, Phil Walker continued to develop and teach programs in outdoor education, especially at Point au Roche State Park, which he helped design. His field trips throughout the park instilled a greater appreciation for the natural world in thousands of visitors.

Dr. Philip C. Walker died on July 7, 1991. A memorial nature trail was dedicated to him in 2002. The "Friends of Point au Roche State Park" is honored to dedicate this revised nature trail in Dr. Walker's memory.



POINT AU ROCHE STATE PARK

History of the Park

Point au Roche's shoreline, bays, peninsulas and elevations were formed gradually, millennia ago. Then, the area was below sea level and inundated by salt-water from the Atlantic Ocean. Today, of course, Lake Champlain is fresh-water and nearly 100 feet above sea level.

Native Americans—mainly Mohawks—lived in this area for centuries. In 1609 Samuel de Champlain heralded a European presence by canoeing through the lake's northern regions and almost surely passed by Point au Roche on his way south to Chimney Rock.

During the seventeenth and eighteenth centuries, Europeans increasingly displaced the Native Americans. The first permanent residence in this area was reputedly built in or around 1783 by Benjamin Mooers.

The Point au Roche settlement became part of Beekmantown when it was established in 1820. During World War I, the "Junior Plattsburgh" program was launched here to train ROTC cadets. Later, the land use became recreational. Camp Theodore Roosevelt was succeeded by other camps, culminating in Camps Red Wing and Red Cloud which remained active until 1964 and still enjoy a regional alumni support group.

A club/resort once stood near the Short Point coastline; parts of its foundation can still be seen. In the late 1950s, a theme park (*Fantasy Kingdom*) opened here with fairytale buildings, rides and theatrical productions that entertained people of all ages into the 1970s. Visitors walking through the park can still see interesting old supports and remnants from days long past.

The Park Today

In 1978 these grounds were established as an 850-acre (344 ha) "Forever Wild" state park under the aegis of New York State's Office of Parks, Recreation and Historic Preservation (OPRHP).

The non-profit "Friends of the Park" association was formed in the 1980s to "protect, preserve and promote" the park's use as a recreational and educational site. The group's web-site offers trail maps, publicity about events and a gallery of photos highlighting special features of the park.

The park ranges along six miles of Lake Champlain shoreline, with glades interspersed through abundant woodlands and a terrain that includes rocky outcroppings, sandy beaches, marshlands, beaver lodges, attractive geological formations and a variety of flora and wildlife habitats. The park's trails are used year-round for nature walks, school programs, hiking, jogging, cross-country skiing and snow-shoeing. Around Deep Bay one can boat and sunbathe in summer, picnic in autumn, ice-fish in winter and enjoy wildflowers in spring!

The Friends invite you to take notice of the Dr. Philip C. Walker Memorial Trail that is named for a prominent field biologist who used this area for explorations with his students and, in the process, widely popularized the park. The Friends have dedicated years to creating Dr. Walker's trail and are pleased to see its 2013 renewal dedication.

The park's buildings include a Nature Center housing interpretive literature, wildlife displays, and charts illustrating regional habitats. The park's staff has recently expanded the family recreation areas. Picnic grills, tables and a new playground are available by the beach; and public benches, rest areas and "relief stations" are scattered through the park.

This is a public park – a spectacular resource owned by and intended for the enjoyment by the people. We – the Friends of the Park – are happy to welcome you and hope that during your stay you will encounter things that you expected, but also, that you will meet with some unexpected discoveries!

For information on the park:
Park Manager's Office: (518) 563-0369
Or e-mail: contact@friendsofpointauroche.org



BECOME A "FRIEND"

Become a "Friend" today and support the Point au Roche State Park and projects like the "Dr. Walker Memorial Nature Trail." In addition to supporting the park, "Friends" will receive all newsletters and mailings about upcoming park events.

To become a "Friend" of the park:
Please mail your name, contact info (address, phone, email), level of membership and payment to:

Friends of Point au Roche State Park
P.O. Box 2923
Plattsburgh, New York 12901

Yearly memberships levels:

\$15 Adult
\$10 Senior (60+)
\$10 Student (full time)
\$25 Family
\$50 Sponsor

All donations are tax deductible!



Point au Roche State Park



#1 INTRODUCTION

Dr. Philip C. Walker was a well-known interpreter of the natural wonders of this park. Although he is no longer here to guide visitors on nature hikes, his friends, colleagues, and students have established a Memorial Nature Trail consisting of 22 locations that Dr. Walker would have used to illustrate natural processes at the park. The Walker Memorial Nature Trail will bring you through a sampling of the various habitats in the park, including several types of wetlands, fields and forests. This pamphlet will serve as an interpretive guide to some of the plants, animals, and ecological processes that are important to the Park. In Dr. Walker's memory, The Friends of Point au Roche State Park hope that this nature trail experience will encourage you to learn more about the natural and cultural history of the park.



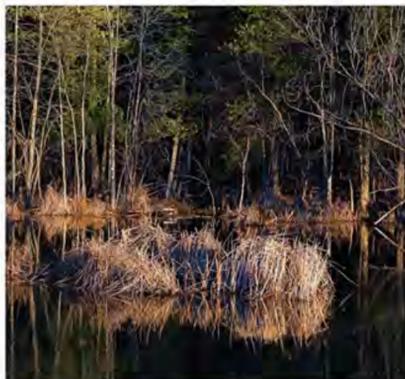
#2 CATTAIL MARSH

The dominant, tall plants with strap-like leaves are cattails (narrow-leaved and broad-leaved). Cattails and other herbaceous plants (such as sedges and rushes) define this type of wetland which is dependent upon a consistent presence of shallow, standing water. A key marsh animal is the muskrat, which feeds on the underwater stems and roots of cattails, creating areas of open water, favorable to many species of waterfowl. The uneaten remnants of cattails are piled up to form the brown, dome-shaped muskrat houses in which the young are raised. Bird species that nest in cattail marshes include American and least bittern, moorhen, pied-billed grebe, Virginia rail, sora, swamp sparrow, marsh wren, and red-winged blackbird.



#3 BAY-HEAD POND

This pond, which includes marsh and swamp woodland habitats, was created at the shallow water end of Deep Bay by powerful waves pushing sand and woody debris into a dam. This impounds surface water flowing down from the upland. In addition to herbaceous plants, woody plants include black willow, green ash, red maple, and ash-leaved maple, plus buttonbush and spirea. Beavers have cut trees along the edges of the pond and built a lodge. Semi-aquatic mammals that may utilize this habitat are otter, mink, and raccoon, which prey on amphibians and fishes. Great blue heron, green heron, and kingfisher also prey on these animals. Cavities in dead trees provide nest sites for bird species such as black-capped chickadee, tree swallow, bluebird, wood duck, common goldeneye, woodpeckers, nuthatches, and mergansers. Snapping, painted, and musk turtles also live here.



#4 DEEP BAY

During the last Ice Age, huge glacial ice masses enlarged the embayment we know today as Deep Bay and formed the adjacent peninsulas, Long Point and Middle Point. Deep Bay is named for the mile-long cut into the shoreline, not the maximum water depth, which is only about 25 feet (7.6 m). Since 1900, several organizations have called Deep Bay and its surrounding land area their home: In 1917, the Junior Plattsburgh Program used the area to train young men for service in World War I, and naval training exercises also took place in the bay at that time; the Long Point Boys Club enjoyed the site 1921-1923, as did the Theodore Roosevelt Club for Boys, 1925-1933; from 1936-1964, the co-ed camps Red Wing and Red Cloud flourished here. Winter ice-cutting took place in Deep Bay a century ago, providing blocks of ice for use in warmer months. Deep Bay is a perfect shelter for people who enjoy fishing and boating. Today, boaters often moor in this safe harbor and in winter, ice-fishing shanties dot the frozen waters.



#5 HIRAM CONNER BURIAL SITE

Hiram Conner was born in 1825. The Conner family acquired their farm on Point au Roche circa 1834. Mr. Conner took ownership of the farm in 1867 and he spent his lifetime as a farmer on Long Point. Phil Walker was just a toddler when Hiram Conner died on January 17, 1914 at the age of 88. Mr. Conner never married and he bequeathed the property to the Methodist Episcopal Church of Point au Roche with instructions that the Church bury him at the location he had designated. Mr. Conner had arranged for a granitic stone to be engraved by the West Chazy Granite company to mark his grave. Mr. Conner also requested a wrought iron fence be built surrounding his burial plot. To assure he would forever stay on his beloved farm, he had his remains placed in a cement vault. This is the only gravesite in the park.

#6 OLD-FIELD SUCCESSION

Early settlers of Point au Roche converted the original forests to agricultural land such as fields and pastures. In the early 1900s, this open area was used as a military encampment followed by youth summer camps. Now, after decades free of plowing, mowing, and grazing, the area is becoming dominated by a diverse mixture of plants including goldenrod, milkweed, red-panicked dogwood, dwarf juniper, staghorn sumac, green ash, gray birch, aspen, and red cedar. Currently, this habitat provides the needs for many species of sparrows, eastern bluebirds, and eastern kingbirds, for examples. Eventually, the green ash will be joined by other long-lived species such as white pine, red oak, white cedar, sugar maple, and hemlock as the dominant trees on this site once again.



#7 SHAGBARK HICKORY (CARYA OVATA)

This species is represented here by two trees: the larger tree in the background and the smaller tree in the foreground. The bark on the larger and older tree is characteristic of shagbark hickory; it has narrow, vertical plates, attached at the middle and curved outward at both ends. In contrast, the younger tree's bark is smooth, with narrow, light and dark vertical stripes. It is likely that a gray squirrel buried the oval-shaped nuts, never recovered them, and they germinated. The shell of the nut is thick and hard, which only animals such as squirrels and other rodents can penetrate to consume the sweet kernel within. In Clinton County, shagbark hickory typically grows near the shoreline of Lake Champlain; this area is close to the northern limit of shagbark hickory's natural range.



#8 TWO JUNIPERS

The evergreen trees growing here are eastern red cedar (*Juniperus virginiana*). The name "red cedar" refers to the color of the aromatic heartwood which is used to make storage chests and closets. Red cedar may be found on poor soil sites, but grows best on soils containing calcium. The clump of low, evergreen shrubs is named common, dwarf, or pasture juniper (*Juniperus communis*). This widespread species is usually found in open, rocky environments. The bluish, berry-like seed cones of both junipers are eaten by many species of birds. Both junipers produce aromatic oils used to make perfumes and medicines.

#9 CEDAR APPLE RUST

During the spring and summer, many red cedar trees will have on their branches, gelatinous, orange growths with prominent "spore horns." These galls are caused by the cedar apple rust fungus. The fungus over-winters on red cedar trees; spring rains bring about the growth of the orange galls. Spores from these "horns" are carried by wind to nearby apple trees. The fungus affects the twigs, leaves, and fruit of apple trees. Lesions develop on the twigs and in May, pale-yellow spots appear on apple leaves. Apple trees are damaged by this fungus more than red cedars. In late summer, the rust spores produced on apple trees are spread by wind to red cedar trees, making the cycle complete.



#10 RED-OSIER DOGWOOD AND RED-PANICLED DOGWOOD

Thickets of these dogwood shrubs grow in this wetland. Most of the stems on red-osier dogwood are bright red. The stems on red-panicked dogwood (shown below) are gray or brown-gray and the flower stalks are red. Both species have small, white flowers and white, berry-like fruits. The flower/fruit clusters on red-osier dogwood are flat-topped, while the clusters on red-panicked dogwood are cone-shaped. The fruits are eaten by many species of songbirds and ruffed grouse. The twigs are browsed by rabbits, snowshoe hare, and deer. Red-panicked dogwoods are most abundant at this location, with interspersed red-osier dogwoods. These mound-like dogwood thickets show cloning, a vegetative growth form with the oldest stems in the center and the younger stems at the periphery.



#11 TRANSITION FROM SHRUB WETLAND TO FOREST

Small changes in elevation can cause important differences in soil moisture and thus produce large differences in plant species composition. Although some dogwood shrubs and some species of trees require or tolerate water-saturated soils, many trees and shrubs require only moist or well-drained soils. Such is the case for the conifer-northern hardwood forest you are now entering. Smaller and younger stems of eastern hemlock, American beech and sugar maple, plus herbaceous plants, flourish at the edge of this forest because of abundant sunlight close to the ground. Farther into the forest, sunlight and rainfall are intercepted by the mature trees, resulting in sparse ground vegetation.

#12 MATURE CONIFER-NORTHERN HARDWOOD FOREST

On the somewhat higher and drier ground between two wetlands is this superb example of a conifer-northern hardwood forest. In addition to eastern hemlock, other evergreen conifers are white pine and white cedar. Deciduous tree species include sugar maple, American beech, northern red oak, green ash, yellow birch, and hophornbeam. The bordering wetlands contain black ash and red maple. In summertime, look and listen for birds such as eastern wood pewees, least flycatchers, red-eyed vireos, and black-throated green warblers.



#13 THE POWER OF ICE, WIND, AND WATER

During the most recent Ice Age, about 20,000 years ago, the Lake Champlain Basin was covered with a one-mile thick sheet of ice. With global warming about 12,000 years ago, the meltwaters formed glacial Lake Vermont. About 10,000 years ago, as the glacier receded northward, an opening to the Atlantic Ocean was created and seawater flowed into the Lake Vermont Basin, creating the Champlain Sea. With removal of glacial ice, the land surface rebounded and the basin gradually rose to elevations above sea level, cutting off the flow of saltwater. Eventually, freshwater from tributary streams and rivers filled the modern-day Lake Champlain basin. Today, Lake Champlain is 125 miles long from north to south, with a maximum width of 14 miles. With such a long and narrow stretch of open water, wind and waves can reach destructive levels of intensity. During the month of May 2011, the lake level rose to record levels, exceeding 103 feet above sea level. During this period of record lake water levels, fierce wind storms generated waves up to five feet in height. The shoreline was battered, resulting in severe erosion and undercutting of the shoreline vegetation. Huge amounts of woody debris floated in the lake and some were cast high up on the banks as can be seen here and on other shoreline areas in the park.

#14 BEECH BARK DISEASE (BBD)

BBD begins when the non-native beech scale insect feeds on the bark of beech trees and provides entry points for the disease-causing fungus. The beech scale insect was accidentally introduced to Nova Scotia in 1890 and the disease continues to spread westward and southward, causing high rates of American beech mortality. The spread of BBD in the United States and Canada is causing concern to forest managers because American beech is a principal species of northern hardwood forests and beech nuts are an important food for many forest mammals and birds. Scale insects on beech trees can be detected by the white, waxy covering. The fungal infection is seen a few years after the scale insects appear. At this stage in disease progression, beech bark has a "pock-marked" appearance. These cankers are callus tissue produced by the tree at the infection point. Once BBD has been detected in a forest, high mortality rates of beech trees larger than 10 inches (25 cm) in diameter can be expected.



#15 OLD-GROWTH HEMLOCK-NORTHERN HARDWOODS

Most of the forests in Clinton County were cleared for agriculture or heavily cut several times for forest products. However, there are patches of forest in Clinton County that have not been harvested for timber or fuelwood for many decades, perhaps even a century or longer. These small forest patches, perhaps less than 10 acres (4 hectares) in size, sometimes have traits characteristic of old-growth forest. In New York, old-growth stands are usually dominated by tree species such as eastern hemlock, white pine, sugar maple or American beech. Other attributes of old-growth forests in New York include trees older than 150 years, similar tree species in the over-story and under-story, standing dead trees (snags), and an abundance of logs on the forest floor in various stages of decomposition. This patch of forest includes large hemlock, white pine, sugar maple, green ash and red oak trees, with ages estimated to be near 200 years and older. The species composition of the young trees in the understorey is similar to the species of old trees in the overstorey. The presence of snags, fresh logs, and punky (highly decomposed) logs on the forest floor indicates that natural die-off has taken place, and log removal has not occurred for a long time. This remnant patch of forest in the park meets the minimum requirements for "old-growth" status in New York.

#16 DECOMPOSITION AND RECYCLING IN THE FOREST

Trees are the dominant organisms of forests and, although some trees may live for centuries, eventually all trees die and the trunks, branches, and roots decompose and the nutrients become available for growth of new plants. In autumn, the leaves of deciduous trees fall to the soil surface. This annual production of leaf litter is also decomposed and the nutrients are released. Decomposition of biomass and recycling of nutrients are complex ecological processes involving specially-adapted bacteria, fungi and soil invertebrates such as earthworms, millipedes, and sowbugs. Some types of biomass, such as leaves, can be completely decomposed in a few years. Logs and branches on the forest floor require decades for complete decomposition. The cool, moist conditions at the forest floor keep the woody material damp and promote the growth of fungi, bacteria and invertebrates. The decomposition and recycling of nutrients is vital for healthy forests.

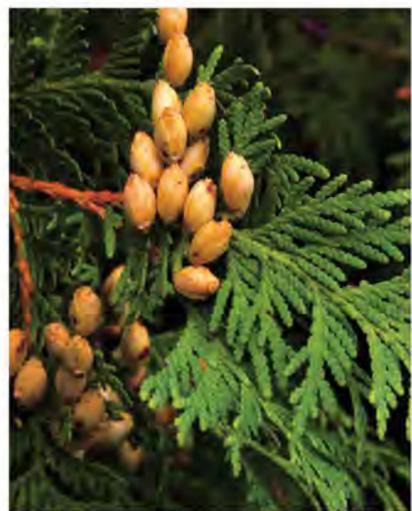


#17 TREE REGENERATION AND SUCCESSION

This location shows the results of a gap in the forest canopy that was created by the death of a single, large tree. When the branches of adjacent trees are in close contact high above ground level, the leaves intercept sunlight and the forest floor is shaded. When openings in the canopy are created by the death of one or more mature trees, sunlight reaches the ground level and growth of seedlings and other small plants is stimulated. In this example, it appears that a large white birch tree once occupied the space where these young sugar maple trees are now growing. A decomposing birch log can be seen in the foreground. White birch trees often grow in recently disturbed areas where there is full sunlight at ground level. White birch is a relatively short-lived species and its seedlings are not tolerant of the shade created by a dense overstorey canopy. There are shade-tolerant species, however, such as sugar maple and eastern hemlock, whose seedlings can survive for long periods of time under a closed canopy. When canopy openings are created by the death of a large overstorey tree, these seedlings are prepared to grow quickly with the increased sunlight.

#18 NORTHERN WHITE-CEDAR

Here you are surrounded by mature northern white cedars, one of the most abundant tree species in the park. White-cedar grows well in swamps and also on upland soils containing calcium. White-cedar foliage is a preferred winter food of white-tailed deer. The foliage also contains aromatic oils which are highly valued for making perfumes and medicines. The seeds are produced in small cones and are eaten by red squirrels and many bird species. The wood is decay-resistant and valued for fence posts, roofing shingles, and outdoor furniture. An alternate common name for white-cedar is arbor vitae, meaning "tree of life." This refers to its use by early French explorers at Quebec City who survived certain death from scurvy by consuming arbor vitae foliage which contains ample amounts of vitamin C. Native Americans told the French sailors about the nutritional value of this northern tree species.



#19 OPEN-GROWN NORTHERN RED OAK

Here stands a magnificent northern red oak tree with a fully-developed crown and live branches close to the ground. In this respect, the tree is much different from red oaks growing in the mature forest, where their live branches are high above ground level. The lower branches of forest-grown trees are "self-pruned" due to the lack of light at lower canopy levels. This produces a bare trunk for much of the tree's height. In contrast, this red oak has been "open-grown" for all of its life. Therefore, its lower branches received ample sunlight and have expanded outward to produce the admirable specimen before you. Farther along the trail you'll see another full-crowned red oak tree.

#20 EARLY FOREST SUCCESSION

This open area of young aspens and birches exemplifies the early stages of succession to a mature forest. Notice that the growth pattern of each tree conforms to the availability of sunlight on all of its sides. Open areas such as this site are often colonized by gray birch, white birch, and aspens. Trembling aspen (often called "popple"), bigtooth aspen and eastern cottonwood are favorite food of beavers. You can find evidence of beaver activity throughout the park where these trees grow close to water.

#21 COMMON REED GRASS (PHRAGMITES AUSTRALIS)

Reed grass is a non-native invasive species that can grow to a height of 12 to 15 feet. Reed grass can rapidly overtake wetlands because it produces a prolific amount of seeds and it also spreads by expansion of underground rhizomes. The rapid growth of stems above-ground and rhizomes below-ground gives the non-native reed grass a reputation of being a wetland "thug" that out-competes native wetland plants and alters wildlife habitat. Common reed grass has become the "poster plant" for non-native invasive plants in Clinton County. Common reed grass is now found in all of the lower 48 states and southern Canada. Where large monocultures of reed grass have developed, control methods can include mechanical harvesting, herbicides and prescribed burning.



#22 SPORTS FIELD TRANSFORMED

Given the climate and soils of northeastern New York, forests are the native ecosystem type. Frequent disturbances such as plowing, grazing, and mowing are required to maintain grasslands in this region. This site is another example of an open field that was created and maintained by human activity. Now that it has been abandoned for decades, the field is being transformed to a forest once again by plant succession. Until the mid-1900s, this area was frequently mowed for use as sports fields for military personnel and then by youth camps. After the fields were no longer used, early successional plants such as grasses, sedges, and wild flowers covered the area. Soon, a variety of shrubs became established, along with pioneer tree species such as birches, aspens, white pine, and red cedar. Eventually, tree species that are more tolerant of shade will begin to grow beneath the pioneer trees and the forest will once again include northern red oak, green ash, black cherry, hemlock and sugar maple.