

Basin 3: Otter Creek, Little Otter, Lewis Creek

Including the following sites:

Sutherland Falls	Otter Creek, Proctor
Middlebury Gorge	Middlebury River, Middlebury
Clarendon Gorge	Mill River, Shrewsbury
New Haven River Gorge	New Haven River, Bristol
Belden Falls	Otter Creek, Weybridge-New Haven
Lana Falls	Sucker Brook, Salisbury
Battell Gorge	Otter Creek, Weybridge-New Haven
Falls of Little Otter Creek	Little Otter Creek, Ferrisburg
Bristol Memorial Forest Gorge	Baldwin Creek, Bristol

The following sites on the State list have not been done:

Abby Pond Brook Falls	Abby Pond Brook, Bristol
Lewis Creek Gorge	Lewis Creek, Starksboro

For the following site see the appendix:

Big Branch Ravine	Big Branch, Mt. Tabor
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Basin 3 is located in central western Vermont and includes the northern Taconic Mountains, the central western Green Mountains, and the southern half of the Champlain Valley. It is an area that contains many different rocks and land forms, and the sites described here vary accordingly. Many of the mountain streams are poorly known and we consider it likely that there are additional sites of moderate and possibly high importance which are currently unknown to us.

Report 5, Sutherland Falls, Otter Creek, Proctor, Rutland County, Vermont.

Site 758, surveyed 3 October 1983 by J.C. Jenkins.

Major cascade and limestone gorge developed as an industrial site.

Atlas map 19, USGS Proctor 7.5' quadrangle. Just east of the main Vermont Marble plant in Proctor.

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Site is just north of the center of town, adjacent to a large industrial plant and used for power generation. There is a dam above the falls, retaining walls, roads and buildings to the west, and an elevated pipe and roads and wires below it. There are a number of other buildings and roads in the vicinity. The dam diverts much of the flow to a powerplant, resulting in low summer flows through the gorge. There is no minimum flow requirement through the bypass.

The Otter Creek is a large river at the site, averaging 50-100 feet wide. It receives a large amount of slightly treated sewage in Rutland (eight miles upstream) and is designated a cold water fish habitat to Proctor and beyond. The water at the site is turbid and smelly and the rocks are very slimy. The diversion of water for the powerplant probably aggravates the dissolved oxygen problems downstream.

The falls are in a major limestone gorge about 100-140 feet deep and perhaps 200 feet wide, with exposed vertical rock walls 30-50 feet high. This is one of the three large limestone gorges in the state. From upstream there is a dam about 120 feet wide by ten feet high, an upper falls of about five feet, a gentle cascade about 100 yards long, and finally a steep cascade (the "falls" proper) about 60 feet high and 50 yards long. To the east of the steep cascade there is a side channel or chute with vertical rock walls about 40 feet high.

The rock is a blue or blue-brown dolomite (Cambrian Winooski dolomite). The strata are almost vertical at the falls. It is cracked along the bedding, separated into blocks, and been smoothed and rippled some. There is not much sculpture and only a few potholes. The rock is good-looking and massive but not particularly fine or dramatic.

The east side of the gorge has young hemlock-white cedar-pine-hardwoods forest; the west side has a few trees and bushes adventive on quarry tailings and miscellaneous industrial waste. The rocks in the channel have comparatively few vascular plants but a number of limestone species live on the east wall of the gorge above the channel. No rare or scarce species were seen.



SUTHERLAND FALLS

There is some good habitat for mosses on the gorge walls and on exposed rocks in the channel. Eleven species were noted; the low diversity is probably the result of polluted water and the lack of flow in the summer.

The falls are not used except as an industrial site; given the pollution and the low flow they offer no swimming and probably little fishing. With better water quality and more flow the pool at the bottom would have the potential to be a nice swimming hole. This river segment is designated a Class C zone. Even if the water quality improved, swimming would not be a proper use because of the hazard to health in Class C zones downstream of sewage treatment plant discharges.

A major site, once certainly one of the most beautiful in the state, but currently unattractive, and often largely dry. It is regrettable that the City of Rutland does not yet have secondary treatment* of its sewage, and that the Vermont Marble factory was originally placed right on the edge of one of the finest gorges in the state.

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Summary: Industrial setting, nice rocks, average botany, no seclusion, no trash but lots of metal and stone and machinery and industrial junk. Polluted water, site used only for power generation.

* A secondary plant is under construction as of 4/86.

Plants From Sutherland Falls

Mosses and Liverworts

Amblystegium tenax	? (Pottiaceae)
Marchantia polymorpha	Philonotis marchica
Ceratodon purpureus	Fissidens adiantoides
Lophozia sp.	Hygrohypnum ? eugyrium
Anomodon attenuatus	Mnium punctatum
Bryum sp.	

Vascular Plants

Aquilegia canadensis	Eupatorium rugosum
Cystopteris bulbifera	Scutellaria galericulata
Solidago gigantea	Festuca elatior
Apocynum cannabinum	Aster cordifolius
Diervilla lonicera	Campanula rotundifolia
Acer spicatum	Acer saccharum
Lycopus uniflorus	Betula lenta
Dryopteris marginalis	Poa compressa
Achillea millefolium	Athyrium filix-femina
Aster macrophyllus	Elymus riparius
Taraxacum officinale	Salix sericea
Aster puniceus	Aster lateriflorus
Andropogon gerardi	

Report 6, Middlebury Gorge, Middlebury River, Middlebury, Addison County, Vermont.

Site 585, surveyed 3 October 1983 by J.C. Jenkins.

A deep wooded ravine with discontinuous rock walls, containing pools and small falls and cascades; one of the major chains of pools and cascades.

Atlas map 24 and 25; East Middlebury 7.5' quadrangle. You can walk up the gorge from the west end where Route 125 crosses it, or bushwhack down from further along Route 125.

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The Middlebury River runs in a steep wooded ravine for three miles between Ripton and East Middlebury. I surveyed one-half mile of this, a particularly fine stretch below where the North Branch joins the main stream. This area had cascades and rock walls and so qualifies for this study. Other parts of the ravine were not surveyed owing to time, and difficulties in descending parts of the ravine without a rope. Some stretches appear to be fairly uniform and unrocky and so are not properly called a gorge or falls, but it is quite possible that there are other cascades along the stream that would qualify for study.

The site surveyed is in dense spruce-hemlock-hardwoods forest, in a very steep ravine, about 100 yards and about 120 vertical feet below Route 125. No houses or other roads are near. This section of the ravine has rock walls and you have to climb or fall down the last 30-50 feet.

The river is a mountain stream, averaging ten to 15 feet wide, with very clean water.

The part of the river surveyed contains a small gorge with rock walls 25-50 feet high sloping at about 60-80 degrees to the horizontal. The stream has a gradient of about 150-200 feet/mile and is confined to a narrow channel and so has done a lot of rock moving and rock cutting. There are 20 foot boulders in the stream channel, potholes and sculptured walls ten to 15 feet above water level, undercut rock caves in the banks, and rock-circled pools. The largest feature I saw, and one of the prettiest I have ever seen, was an eight foot falls with a rock-walled pool 30 feet in diameter below it and water carved walls extending 20 feet above the pool.

The ravine is steep enough that the trees overhang half the stream and hence, the whole area is dark, cool, mountainy and mossy. The banks are all ledge or boulder and it is comparatively hard to move up or downstream in this section. You have to climb or swim in a number of places.

The rocks in this section were blue schist with vertical strata. A number of formations occur close together here, and presumably to a geologist the gorge would be interesting because you would have, in a short space, a section of the whole west limb of the Green Mountain anticline. (According to the state geological map and sequence in the two miles from East Middlebury to the area surveyed would be: Cambrian Cheshire quartzite; Cambrian Moosalamoo phyllite; Cambrian Forestdale marble; Precambrian Mt. Holly gneiss.)

No marble outcrops were noted but both the moss and vascular floras contained some lime-requiring species, and the gorge had the sort of general lushness we associate with limy soils in the mountains.

The vascular plant flora was fairly limited (about 25 species, no rarities), as is to be expected in a steep dark ravine with comparatively few habitats and not much horizontal space. The moss and liverwort flora was anything but limited: 36 species were collected (and doubtless a number were missed), and many species were strikingly robust and plentiful. It is the kind of a place where you look up and all the rocks are shaggy with mosses. After a summer of looking at little timid things in dry gorges it was exciting to see just how big and happy and luxuriant the mosses of a good place can be. No species were seen that are rare in Vermont, but five species were seen that did not occur at any other waterfall where we made moss collections, and this indicates that the habitat is quite unusual. A number of rare species of moss are restricted to this habitat. Hence, with further investigation the gorge might yield some important records.

The lower gorge is used for swimming, and certainly a number of parts of it are fished; the part I was in is particularly hard to get down to, and seems to receive no use.

A remarkable place; not that far from a road, but seeming to be completely undisturbed and private; beautiful mosses and rocks and water.

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Summary: Mountain setting, fine to spectacular rocks, possible geological importance, exemplary and potentially rare botany, very wild and private, no trash, very clean water, good swimming.

HIGH IMPORTANCE: as fine an example of a mountain gorge with a chain of potholes as any we saw.

Plants Seen in Middlebury Gorge

Mosses and Liverworts (* = a species not seen elsewhere in this study).

Sphagnum squarrosum	Sphagnum sp.
Atrichum undulatum	Tricholea tomentella*
? Mylia*	Scapania nemorosa
Blepharostoma	Lophozia species
trichophyllum*	
Polytrichum juniperinum	Hypnum imponens
Bazzania denudata	Cephalozia sp.
Dicranum scoparium	Paraleucobryum longifolium
Pogonatum alpinum	Pogonatum urnigerum
Hypnum ? curvifolium*	Brachythecium sp.
Plagiothecium denticulatum	Mnium punctatum
Leucobryum glaucum	Mnium (double toothed)
Fissidens adianthoides	Rhytidiadelphus triquetrus*
Thuidium sp.	Herzogiella striatella
Pohlia cruda*	Bazzania trilobata
Coniocephalum conicum	Pellia epiphylla
Diplophyllum apiculatum*	Amblystegium varium
Anomodon attenuatus	Hygrohypnum ? eugyrium
? from Pottiaceae	Hylocomnium splendens
Pleurozium schreberi	

Vascular plants

Hemlock-spruce-northern hardwoods forest

Aster umbellatus	Polypodium vulgare
Aster acuminatus	Oxalis montana
Thelypteris phegopteris	Aster divaricatus
Athyrium filix-femina	Dryopteris intermedia
Thalictrum polygamum	Agrostis sp.
Gymnocarpium dryopteris	Aralia racemosa
Streptopus amplexifolius	Galium triflorum
Laportea canadense	Circaea alpina
Asplenium trichomanes	Rubus odoratus
Sagina procumbens	Rubus flagellaris
Osmunda claytoniana	Mentha arvensis
Festuca obtusa	

Report 7, Clarendon Gorge, Mill River, Shrewsbury, Rutland County, Vermont.

Site 612, surveyed 20 July 1983 by J.C. Jenkins and Roy Perry.

A large rock-walled gorge with many small cascades and rock pools, very popular for swimming and also with a good moss flora.

Atlas map 14, USGS Rutland 7.5' quadrangle. Site is easily accessible from Route 103; use the parking area for the Long Trail.

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The site is in hemlock-pine-hardwoods forest, and begins about 100 yards from Route 103. The river has been running in a fairly open valley next to the road and railroad, and then enters a ravine about 100 feet wide and 100-150 feet deep. No houses are near. There is a parking lot (for Long Trail and Appalachian Trail hikers) at the upper end of the gorge and the trail itself crosses the gorge on a footbridge. No other structures are visible from the gorge.

The river is a medium-sized stream, alternately in alluvium and in a rock channel. Above the gorge it is perhaps 30-50 feet wide. The water is clean and there are no official polluters above the gorge.

The gorge itself is wider than deep; standing in the channel, you have as much the sense of being in a stream with high bluffs on either bank as you do of being in a ravine. There are more or less continuous rock walls from 25-75 feet high. The natural areas report on the gorge mentions 100 foot high walls, but they are either exaggerating or not distinguishing between rocks and wooded slopes.

The gorge is about 800 feet long and is skewed at a right angle to the overall axis of the valley. According to the geological maps there is a thin belt of schistose quartzite with dolomite and conglomerate (Cambrian Dalton formation) sandwiched between the Mt. Holly gneiss and the Cheshire quartzite. The latter two are very hard, massive rocks, and it appears that the stream turned at right angles to its average course to cut through the softer schists.

If this interpretation is correct, then the gorge is one of our better examples of a gorge created by the differential erosion of soft and hard rocks.

The stream channel is piled full of boulders, the largest 20 feet or more long and up to ten feet high. The rock is soft enough to be carved by the water, and there are many potholes and consequently many pools. The slope is rather flat and there are

no major falls or cascades, but there are small falls or chutes under three feet in height above some of the pools.

The surrounding woods are normal hemlock-hardwoods forest, generally rather dry. The gorge has a sloping wall and there is a lot of space for plants above the scoured portion of the channel, so there is a fairly varied vascular flora, including a number of lime-requiring species. No rarities were seen.

The moss and liverwort flora is exceptional. About 35 species were recorded, including several (Bryhnia novae-angliae, Timmia megapolitana) that occurred at only one other site each. Roy Perry, who helped in the survey, is a moss expert from the University of Cardiff; he made a number of collections and eventually we should have a good idea of the flora from his work. Altogether we collected about 40 species and estimate that, with the common plants included, the gorge contains 50-60 mosses and liverworts, making it one of the most diverse areas we studied.

The gorge has superb bathing and swimming. It is sunny, has big rocks with all kinds of nice hollows and shapes, and has a series of perhaps 15 pools so that you can have your own pool by going further upstream. It is a good place for sitting and great place for kids because it is pretty safe, for a Vermont kid anyway. There are no big ledges or drops and the rocks are not very slippery, and there are all the different pools to explore. We were there on a weekend and perhaps 50 people were picnicking or swimming, and the kids were running like rabbits up and down the gorge.

Currently, it is moderately clean and can stand the use it gets. It would be nice if someone could get in there once or twice a season and take a few bottles out.

The rocks are not exceptionally pretty and because it is a wide gorge you do not have a great sense of seclusion or enclosure. The best things about it are the boulders and hollowed out pools and cascades, and the variety of the rocks and the water in the channel. We, of course, enjoyed all the mosses on the gorge walls, but they are varied rather than lush, and unless you look at the gorge with a taxonomist's eye you will probably not think of it as a very mossy place.

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Summary: Woodland setting, fine rocks, exemplary to rare botany, some seclusion (at the far end on weekdays), a little trash but not much considering the use, clean water, great swimming and bathing, much used.

HIGH IMPORTANCE: one of the major chains of potholes in the state, important botany, important for recreation.

WE RECOMMEND: that someone pick up the litter twice each season.

Plants Seen at the Clarendon Gorge

Mosses and Liverworts

Marchantia polymorpha	Bryum pseudotriquetrum
Mnium (double-toothed)	Herzogiella striatella
Bryhnia novae-angliae	Pohlia sp.
Thuidium delicatulum	Climacium dendroides
Pogonatum urnigerum	Anomodon attenuatus
Mnium thompsonii	Homomallium adnatum
Brachythecium plumosum	Brachythecium rivulare
Scapania nemorosa	Timmia megapolitana
Marchantia polymorpha	Encalyptera ciliata
Amblystegium tenax	Coniocephalum conicum
Preissia quadrata	Dicranum sp.
? from Pottiaceae	Bryoerythrophyllum recurvirostrum
Hypnum curvifolium	Drepanocladus uncinatus
Brachythecium ? populeum	Plagiochila asplenioides
Tortella tortuosa	Anomodon rostratus
Bartramia pomiformis	Lejunea cavifolia
Radula complanata	Frullana sp.
Myurella sibirica	Cratoneuron filicinum
Cephalozia sp.	etc.

Vascular Plants

Hemlock-pine-hardwoods forest

Cystopteris fragilis	Cystopteris bulbifera
Athyrium felix-femina	Thelypteris hexagonoptera
Dryopteris spinulosa	Taxus americana
Sphenopholis intermedia	Glyceria striata
Agrostis perennans	Solidago rugosa
Solidago gigantea	Poa compressa
Carex flava	Carex torta
Aster puniceus	Aster lateriflorus
Erigeron annuus	Dryopteris marginalis
Pilea pumila	Rubus pubescens
Tussilago farfara	Taraxacum officinale
Eupatorium maculatum	Eupatorium purpureum
Mitella diphylla	Thalictrum polygamum
Danthonia spicata	Cicuta bulbifera
Solidago juncea	Aster divaricatus
Polypodium vulgare	Apocynum cannabinum
Aster macrophyllus	Rubus odoratus
Carex communis	Achillea millefolium
Salix rigida	Calamagrostis canadensis
Aquilegia vulgare	Solanum dulcamara
Diervilla lonicera	Chrysosplenium aureum
Aralia racemosa	Acer pensylvanicum
Prunus serotina	Lycopus americanus
Betula alleghaniensis	Plantago major
Phalaris arundinacea	Juncus dudleyi
Woodsia ilvensis	Solidago canadensis
Epilobium sp.	Asplenium trichomanes
Rumex obtusifolius	Rorippa sp.

Report 8, New Haven River Gorge, New Haven River, Bristol, Addison County, Vermont.

Site 756, surveyed 27 September 1983 by J.C. Jenkins and P.F. Zika.

A series of three adjacent sites with small falls, small cascades, pools, a small gorge, and some low rock walls.

Atlas map 31; Bristol and South Mountain 7.5' quadrangles. Adjacent to the road from Bristol to Lincoln. The first cascade is right above the highway bridge at Rocky Dale; the gorge is about 0.2 miles upstream from the bridge and the upper cascade about 0.4 miles upstream.

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The site is in a wooded gorge at the edge of the mountains, adjacent to a paved road but with no houses in sight. The Village of Rocky Dale is about one-eighth mile from the lowest falls. The lower and upper cascades are natural; at the middle one there is a small dam, apparently fairly old, of uncertain origin and purpose.

The river is a large mountain stream over 25 feet in width, with a bouldery channel. The water appears quite clean.

The lowest site is a flat cascade over tilted ledges, about 50 yards long.

The next site is a small gorge with a dam and falls. There are rock walls to 30 feet high, some overhanging walls, a falls about 12 feet high, and a nice rock-circled pool below the falls.

The uppermost site has more tilted quartzite ledges with pools and cascades.

The rock is largely the Cambrian Cheshire quartzite, a smooth, hard rock that usually fractures into cubical blocks and so far as we know does not make ripples or potholes. Normally this formation has no lime, but we were surprised to find several plants at the site we think of as limestone indicators and a greater variety of both higher plants and mosses than is usual for quartzite. It is quite possible that, as seems to be the case in the Middlebury Gorge, some of the Forestdale marble which outcrops upstream is mixed or interbedded with the quartzite here.

The forest is northern hardwoods-hemlock woods plus elm, basswood, aspen, etc. There are a reasonable number of plant species, but no rarities are present. The diversity is not exceptional but at the middle falls we have the rather odd situation of at least six different limestone mosses growing on



NEW HAVEN RIVER GORGE

normally unlimy quartzite outcrops. This seems to us an odd enough situation to be worth noting, and we rate the botany as exemplary although we do not know just what it is it exemplifies.

All three cascades seem to be popular swimming and take-your-girl-and-look-at-the-water-places. From the lower and middle ones there are nice views of Rocky Dale and the cliffs there. They lack large flat-topped rocks and so are less suitable as party places. Some of the pull-offs are trashy and need cleaning.

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Summary: Rural woodland setting, nice rocks, exemplary botany, no seclusion, some trash, clean water, good swimming.

Plants Seen at The New Haven River Gorge

Mosses and Liverworts

Preissia quadrata	? Rhynchostegium serrulatum
Bryum pseudotriquetrum	? Gymnostomum aeruginosum
Myurella sibirica	Ceratodon purpureus
Coniocephalum conicum	Cololejunea biddlecomiae
? from Pottiaceae	Hygrohypnum ochraceum
Brachythecium rivulare	Brachythecium sp.
Amblystegium ? tenax	Platydictya sp.
Anomodon rostratus	Plagiothecium sp.

Vascular plants

Betula alleghaniensis	Acer saccharum
Ulmus americana	Tilia americana
Populus tremuloides	Tsuga canadensis
Lonicera morrowi	Tussilago farfara
Poa compressa	Taraxacum officinale
Hieracium sp.	Solidago juncea
Aster cordifolius	Apocynum cannabinum
Solidago caesia	Polypodium vulgare
Polystichum acrostichoides	Osmunda claytoniana
Polygonum cuspidatum	Rubus idaeus
Elymus riparius	Saponaria officinalis
Solidago gigantea	Panicum capillare
Verbascum thapsus	Rubus odoratus
Trifolium pratense	Rubus pubescens
Eupatorium maculatum	Cystopteris bulbifera
Laportea canadense	Lactuca sp.
Equisetum arvense	Pilea pumila
Thelypteris phegopteris	Agropyron repens
Muhlenbergia frondosa	Achillea millefolium
Aster umbellatus	Agrostis sp.
Cystopteris fragilis	Solidago flexicaulis
Sagina procumbens	Campanula aparinoides
Galium triflorum	

Report 9, Lana Falls, Sucker Brook, Salisbury, Addison County, Vermont.

Site 583, survey based on visits prior to 1983 by P.F. Zika and J.C. Jenkins.

Several small cascades.

Atlas map 25, East Middlebury 7.5-minute quadrangle. The trail to Lana Falls and Silver Lake starts on the east side of the road about one-quarter mile south of the state park on the east side of Lake Dunmore. The hike takes a half hour if you are a botanist.

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The falls are in a wooded ravine of Sucker Brook. The nearest buildings are the houses on the roadside about 0.1 mile to the west. A powerline clearing and a penstock pass 1,000 feet to the south of the falls. They are obvious from the hiking trail but not from the falls.

Sucker Brook is a mountain stream less than 15 feet wide, clear and cold.

The falls are actually two angled cascades ten to 15 feet high in a steep rock chute. Below this is a pool perhaps 25 feet wide and then several very small cascades. The rocks around the stream are sheer in places, varying from ten to 30 feet in height above the water.

The rock appears to be quartzite and is not at all limy. The site is mapped as a probable contact between two Cambrian formations: Moosalamoo phyllite and Forestdale marble. The Forestdale formation is quartzitic in places. Perhaps the map is slightly inaccurate, and the bedrock is actually Cambrian Cheshire quartzite that is common up to the west shore of Silver Lake. Whatever it is, the angular form of the rocks around the main cascades is unusual, and the rocks are very nicely exposed.

Vascular plants are not common or diverse at the site. One species of note was found on the ledges: Potentilla tridentata, the three-toothed cinquefoil. About 50 plants were seen in 1982. This is the only waterfall or gorge in the state that is known to have the species. Elsewhere in Vermont P. tridentata is only known from the summits of Mt. Mansfield, Camels Hump, and Jay Peak, and from granite cliffs on several lesser mountains. Liz Thompson of The Nature Conservancy reports Lindera benzoin grows at Lana Falls.

Bryophytes at the falls have not been studied.



LANA FALLS

The falls are heavily visited by campers from nearby Branbury State Park, and are well known to the locals. The pools are deep enough for bathing. The site is clean.

A pretty place and somewhat remote, by Vermont standards.

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Summary: Mountain setting; nice rocks; poor biological diversity but with one rare species; moderately private if you time your visit right; in a wild setting; very clean water; popular for hiking; a nice place to sit and be cold and wet on a hot day.

HIGH IMPORTANCE because it is moderately wild and secluded (and that is rare for Vermont waterfalls) and because it is much visited by hikers.

Report 10, Beldens Falls, Otter Creek, Weybridge and New Haven, Addison County, Vermont.

No site number, surveyed 15 November 1983 by P.F. Zika.

A dam and powerstation, with a small gorge between two rocky islands at the foot of the dam.

Atlas map 24, USGS Middlebury 7.5' quadrangle. Drive north from Middlebury three miles on U.S. Route 7 and turn west on a dead end road (opposite River Road, which runs east). At the end of the road is the dam and Otter Creek. The islands are accessible from walkways below the dam.

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The site is a densely wooded portion of the floodplain of Otter Creek. Much of the surrounding land is farmed. A dam, powerhouse, access road and powerlines are visible from the site. There are no houses nearby.

The Otter Creek is a broad alluvial river, about 50 feet wide near the site, with clean but fertile and slightly muddy water. There was some algae near the dam but very little further downstream.

The dam is about 50 feet wide by 30 feet high, with 30 foot high cliffs to the west of it. There are two rocky islands below it and between them the river has carved a gorge 100 feet long and 15-25 feet high. The walls of the gorge are nearly vertical, and there are a number of eroded caves (less than two feet across) and potholes within the gorge. The western channel of the river ends with two broad potholes, 15 and 20 feet wide.

The eastern island is high and made of broken rock with deep cracks; the water tunnels under it and in places you can look down 30 feet into the rock and see flowing water. The tunnel is about 15 feet wide and reenters the channel between the two islands near the foot of the gorge. Rippled, water-carved rocks occur near the summit of the island, high above the current channel.

The rocks are variously white and grey marbles and an orange dolomite, mapped as the Belden member of the Ordovician Chipman formation. It is possible that the falls are the type locality for this rock. Many of the rocks are rounded, fissured, rippled and carved.

The vascular plants were typical for limy and sunny ledges in the Champlain Valley. One unusual species was found: Sporobolus neglecta, an inconspicuous grass. It is currently known from only two stations in Vermont, here and in Middlebury. The site should be rechecked early in the season to look for other limestone rarities.



BELDENS FALLS

Probably about 15 species of bryophytes occur on the islands: no collections are made.

The site probably does not receive much use (there are a bunch of No Trespassing signs) from sightseers. The water is designated Class C, and swimming is not recommended. Fishermen are likely to come here. There is very little trash. Kayakers and canoeists use the access road to the dam to get down to the river. They launch their boats at a point just below the powerhouse. The site is to be expanded to generate more electricity. As part of this redevelopment, a canoe portage route and scenic overlook are to be provided.

The prettiest thing about this site is the bedrock, with its bright color and rippled surfaces. The tunnel under the eastern island is a unique feature, and the island itself with its sculptured rocks and deep fissure is both attractive and unusual.

* * *

Summary: Developed for hydroelectric generation, open setting on one shore and woods on the other, fine rocks and erosional features, possibly a type locality for the Belden Member, average botany with one rare species, not secluded, clean, mildly polluted water, no swimming, heavily used for fishing, kayaking and canoeing below the project.

Vascular Plants of Beldens Falls

Salix alba ?	Solidago canadensis
Ulmus americana	Solidago nemoralis
Betula papyrifera	Lemna minor
Acer rubrum	Sporobolus neglecta
Quercus rubra	Muhlenbergia sp.
Fraxinus americana	Agrostis stolonifera ?
Lonicera sp.	Poa compressa
Amelanchier sp.	Chrysanthemum leucanthemum
Pinus strobus	Aquilegia canadensis
Picea rubens	Dryopteris marginalis
Thuja occidentalis	Polypodium virginianum
Tsuga canadensis	Achillea millefolium
Cystopteris bulbifera	Hieracium sp.
Cerastium vulgatum	Taraxacum officinale
Hypericum perforatum	Carex eburnea
Erigeron canadensis	

Report 11, Battell Gorge, Otter Creek, Weybridge and New Haven, Addison County, Vermont.

Site A, surveyed 15 November 1983 by P.F. Zika.

A small limestone gorge, deeper than wide. No dam.

Atlas map 24, Middlebury 7.5' quadrangle. Drive north from Middlebury on U.S. Route 7 for three miles to a four-corners; River Road goes east, take the dead end to the west. Park by the railroad bridge and walk north along the tracks for five minutes, passing through a cut in the bedrock. The gorge is a short distance below (west of) the tracks and just north of the cut.

* * *

The site is in the floodplain of Otter Creek. The banks are wooded, mostly with hemlock and cedar, for one-quarter mile below the site. The surrounding country is mostly farmland. The dam at Beldens Falls is barely visible in the distance and passing trains can be seen from the gorge but otherwise the landscape is natural.

Otter Creek is a lowland river, 40-50 feet wide above the gorge and 15-20 feet wide within the gorge. The water is very turbulent within the gorge, and appears clean but is designated as Class C.

The gorge is about 20-25 feet deep and 250 feet long, with vertical to overhanging walls. The limestone is carved and grooved, and there are many potholes and small caves at the edges of the channel. At the bottom of the gorge is a 150 foot wide pool and several large flat ledges, very spacious and pleasing after the narrow gorge. If the water did not receive a treatment plant discharge it would be a good swimming spot.

The bedrock is a light grey limestone, part of the Belden member, of the Ordovician Chipman formation. This may possibly be the type locality for that rock.

No uncommon vascular plants were seen, but a visit should be made earlier in the season to check this. Mosses were very common on the shaded lime ledges and over the ground on the rim of the gorge. The walls of the gorge are scoured by high water in the spring and had essentially no plants at all.

The east shore of the river north of the gorge is a coniferous woods with numerous limestone outcrops, and appears to be a possible habitat for rams-head lady-slipper (Cypripedium arietinum) and giant birds-nest (Pterospora andromedea). A search should be made for the two in June.

The gorge is scenic but does not seem to be heavily used. It may be an excellent short whitewater run in the spring.

Although small, this is a wild and pretty site, little used and hence, relatively undisturbed. It is valuable because it is one of the few gorges on a large river in Vermont that is not dammed, and of those gorges it is perhaps the prettiest.

* * *

Summary: Woodland setting, fine rocks, average botany, somewhat secluded and quite wild, clean, mildly polluted water, no swimming because of the Class C water designation, nice scenery, good fishing, good whitewater.

HIGH IMPORTANCE: one of the two undisturbed gorges on a large river; fine sculptured rocks. Flora needs to be checked in spring.

NOTE. The thin soils on the rim of the gorge could be easily eroded and the site degraded by any increase in the use.

Vascular Plants of Battell Gorge

Thuja occidentalis	Campanula rotundifolia
Tsuga canadensis	Aster divaricatus
Ulmus americana	Verbascum thapsus
Lonicera morrowi	Rubus occidentalis
Carex eburnea	Geranium robertianum
Panicum lanuginosum	Asplenium platyneuron
Eleocharis tenuis	Asplenium trichomanes
? Deschampsia caespitosa	Symphoricarpos albus
Poaceae spp.	Saxifraga virginiana
Chrysanthemum leucanthemum	

Report 12, Falls of Little Otter Creek, Little Otter Creek,
Ferrisburg, Addison County, Vermont.

Site 294, surveyed on 22 June 1983 by P.F. Zika.

A wide low cascade.

Atlas map 30, Monkton 7.5' quadrangle. Take Monkton Road east out of Vergennes, through a four-corners, across Mud Creek, bear left (north) at a fork, cross Little Otter Creek and turn left (northwest). The site is one mile up this road, on the right (east). Access is along an old road that leads to the former bridge over the river.

* * *

The site is a flat pasture in the floodplain of the Little Otter Creek, with young second-growth woods containing aspens, elms, pines and hemlocks. Much of the surrounding land is agricultural. No houses can be seen from the site but the road is within 50 yards and there is no sense of remoteness.

Little Otter Creek is a shallow, muddy stream, at most 20 feet wide below the falls. There is no official pollution but the creek receives runoff from many fields and barnyards and the rocks are coated with algae.

The site is a single cascade of six to eight feet over red ledges extending to a width of perhaps 25 yards. At the time of the visit there was not much flow over the cascade. A pool 20-30 feet wide is at the base of the west side of the cascade.

The bedrock is the Monkton quartzite, a hard red stone of Cambrian age. The ledges are limy. No sculpture or rippling occurs.

The vascular plants were typical damp limy ledges. Two unusual sedges were found, Carex amphibola and Carex formosa. C. amphibola is currently known from about 20 stations in Vermont, C. formosa from about ten. Both are plants of wet, somewhat disturbed sites like floodplains. Both may be more common in the Champlain Valley than current work has shown.

Bryophytes are common at the site.

The falls are not heavily used. There are some fishermen's trails and cow paths in the area. The water is too shallow and muddy for good swimming. It probably receives light use as a picnic and party place. The site was not messy, but some litter was present at the time of the visit.

Although the cascade is quite wide it is not high. The muddy water is not appealing, and the site is not really very choice.

* * *

Summary: Open woodland setting, average rocks, average botany with two unusual species, not secluded, some trash, mildly polluted water, no swimming, light local use of scenery, picnics, and parties.

LOCALLY IMPORTANT.



FALLS OF LITTLE OTTER CREEK

Vascular Plants of The Falls of Little Otter Creek

Carex amphibola	Lysimachia ciliata
Carex stricta ?	Phleum pratense
Carex stipata	Hypericum perforatum
Carex formosa	Bromus sp.
Iris versicolor	Medicago lupulina
Solidago gigantea	Lonicera morrowi
Geranium robertianum	Rhamnus cathartica
Cerastium vulgatum	Oxalis europaea
Potentilla recta	Daucus carota
Potentilla simplex	Tragopogon pratensis
Vicia tetrasperma	Stellaria graminea
Poa compressa	Vicia cracca
Poa pratensis	Veronica serpyllifolia
Taraxacum officinale	Chrysanthemum leucanthemum
Stellaria longifolia	Solidago juncea
Potamogeton sp.	Prunus virginiana
Thalictrum polygamum	Parthenocissus sp.
Berberis vulgaris	Rubus occidentalis
Cornus amomum	Juniperus communis
Hieraceum aurentiacum	Carex sp. (ovales)
Hieraceum pratense ?	Fragaria virginiana
Poa palustris	Ranunculus acris
Anemone canadensis	Carex swanii ?
Scirpus validus	Centaurea sp.
Cicuta maculata	Veronica officinalis
Poaceae sp.	Plantago lanceolata
Lycopus americanus	Antennaria plantaginifolia
Scirpus spp.	Toxicodendron radicans
Salix rigida	Galium triflorum
Carex vulpenoidea	Lactuca sp.
Thelypteris palustris	Lonicera dioica
Juncus tenuis	Equisetum arvense
Betula papyrifera	Armoracia lapathifolium
Nymphaea odorata ?	Eupatorium maculatum
Vitis riparia	Cornus stolonifera
Tilia americana	Potamogeton epihydrus
Fraxinus pensylvanica	Carex sp.
Ulmus americana	Carex torta
Rhus typhina	Solidago canadensis
Prunus serotina	Amphicarpa bracteata
Salix alba ?	Carpinus caroliniana
Quercus macrocarpa	Geum sp.
Solanum dulcamara	Caltha palustris
Chenopodium album	Cystopteris fragilis
Eleocharis tenuis ?	Athyrium filix-femina
Viola sp.	Galium sp.
Impatiens sp.	

Mosses (in part)

Thuidium abietinum	Anomodon rostratus
Anomodon attenuatus	Brachythecium ssp.

Report 13, Bristol Memorial Forest Park Gorge, Baldwin Creek,
Bristol, Addison County, Vermont.

Site 293, surveyed 17 May 1984 by P.F. Zika.

A small falls and deep gorge in a local park.

Atlas map 31, USGS Bristol 7.5-minute quadrangle. The site is exactly at the tip of the geological indicator symbol in the VT atlas. From Rocky Dale, take Route 116 north about two miles and turn right on Route 17. The park is on the right about 1.5 miles up, and is marked with a sign. The gorge is accessible from a short trail starting at the parking and picnic area. A dangerous bridge, currently blockaded by a fence, crosses the gorge. The rotten planking and supports were supposed to be replaced in the summer of 1984. At the time of the visit no repairs had been started.

* * *

The falls and gorge are in the foothills of the Green Mountains. The land is steep, forested, and much logged. The woods near the road are a young mixed forest of birch, maple and hemlock; at the stream there is mostly hemlock with a few yellow birch. There are no houses in the vicinity. The highway passes nearby, and a conspicuous sign marks the parking for the picnic area and trail to the gorge. The highway is visible from the base of the gorge.

Baldwin Creek is a shallow mountain stream about 15 feet wide. Its water is very clean and clear. No thick growths of algae were observed in the stream channel. Below the gorge a small culvert delivers a very rusty dribble of water over the rubble used as roadfill. This is the most unattractive feature of the site; fortunately it is not very visible from the public trail.

Along the path from the parking lot, there are several cascades on Baldwin Creek, ranging from one to six vertical feet in height. At the head of the gorge is a ten to 15 foot waterfall. Below the falls the stream is diverted at a right angle and flows through a 35-40 foot high narrow gorge with sheer walls. The gorge is about 120 feet long and ten to 15 feet wide. At the foot of the gorge there is a pool, and then the channel widens and forms nearly continuous riffles until its junction with Beaver Brook.

The bedrock at the site is Cambrian and is somewhat confusing to interpret from the geological map. Most likely the schist of the gorge walls is the Fairfield Pond member of the Underhill formation. Underneath it is a softer rock, perhaps the dolomite or limestone of the Forestdale member. To the east the map shows graywacke of the Pinnacle formation. The rock at the



BRISTOL MEMORIAL FOREST PARK GORGE

base of the gorge is a little limy. Some ripple rock is present. There are about six potholes between two and eight feet in diameter along the lower walls of the gorge. One of these is active.

The vascular plants are quite ordinary and are listed at the end of this report. Bryophytes are abundant on the walls of the gorge and are largely inaccessible without ropes. This is potentially an important moss locality, and it would be good to have a thorough inventory.

The park was established by the Town of Bristol as a memorial to veterans of World War II and Korea. It is well-kept. Locals and tourists use the site as a rest area and for picnics or short hikes. There is no swimming.

This is a highly important site, with considerable visual appeal, heavy use, and protected status. There are very few other deep and narrow gorges in Vermont without dams. Currently there are no known threats to the integrity of the park. We offer two recommendations: that the bridge is repaired and a trash barrel is supplied by the Town. At the time of the visit all the trash at the parking area had been neatly piled in the fireplace in the absence of a more proper receptacle.

* * *

Summary: Wooded mountainous setting, fine rocks, average biology, clean, clean water, no swimming, popular for picnics and short hikes.

HIGH IMPORTANCE.

Vascular Plants of Bristol Memorial Forest Park Gorge

Dryopteris marginalis
Polypodium virginianum
Acer saccharum
Taxus canadensis
Betula alleghaniensis
Cystopteris fragilis
Tiarella cordifolia
Populus balsamifera
Equisetum arvense
Acer spicatum
Tussilago farfara
Taraxacum officinale
Aster puniceus
Mitella diphylla
Barbaria vulgaris
Ranunculus acris
Myosotis scorpioides