

Oakapiney Beach Resort: Plant Assessment

Tom McLinden requested that I do a plant assessment of the Oakapiney Beach Resort property. I interpreted that as visiting the site to observe and identify the plant species and to summarize observable factors influencing their existence.

So, I visited Oakapiney Beach Resort and collected over six hundred plant identification photographs and notes on June 27th through 29th, 2020. I spent about fourteen hours foraging (super fun) around the approximately four acre site. The weather was amazing every day, sunny with a high of 70-80 degrees Fahrenheit.

The plant assessment resulted in observing a total of 120 plant species. Of those, I identified 106 plant species to the species level, including 14 species of trees, 35 shrubs and vines, 45 wildflowers, 3 grasses, 3 rushes, 4 sedges, and 2 ferns. Of those, 84 species are native, whereas 22 species are introduced. I observed five species of grass (Poaceae family), two species of Sedge (*Carex* spp.) and one species of Horsetail or Scouring Rush (*Equisetum* spp.), all of which I was unable to identify to the species level. There were six additional plants that I was unable to identify.

Coefficient of Conservatism is a scale from 0 to 10 that indicates an estimated probability that a plant is likely to occur in a landscape relatively unaltered from a pre-settlement condition. Species designated with a Coefficient of Conservation of 10 usually only occur in high quality natural habitat remnants. These plants are likely the quickest to disappear as the landscape experiences anthropomorphic influence.

So, it is always super special to see any species with a high Coefficient of Conservation. Of the native species, three, one, and four have Coefficients of Conservatism of 10, 9, and 8, respectively. On the Oakapiney Beach Resort site, the species observed which have a Coefficient of Conservation of 10 are the perennial wildflower, *Anticlea elegans* (White Camas), and the shrubs, *Hypericum kalmianum* (Kalm's St. John's-wort), and *Salix cordata* (Sand-dune Willow, Furry Willow). The species which has a Coefficient of Conservation of 9 is the shrub, *Salix myricoides* (Blueleaf Willow). The species which have a Coefficient of Conservation of 8 are the perennial wildflower, *Aralia racemosa* (Spikenard), and the shrubs, *Arctostaphylos uva-ursi* (Bearberry, Kinnikinick), *Chimaphila umbellata* (Pipsissewa, Prince's-pine), and *Rhododendron groenlandicum* (Labrador-tea).

I entered the plant assessment results into the Universal Floristic Quality Assessment calculator at UniversalFQA.org. **The Total Floristic Quality Index (FQI) for the site was 35.** The Native FQI was 39.4 and the Adjusted FQI was 38.3. Generally, it is my understanding that **an FQI above 35 is considered to be of exceptional quality.**

This plant assessment was my first. Performing this plant assessment was a huge learning experience. I increased my skills both with plant identification and the process, such that, if I were to tackle a similar effort, I could do so with increased efficiency.

Per the reasons listed in the below disclaimer section, I am sure this plant list is incomplete. If you happen to come across a plant species at the Oakapiney Beach Resort property that is not yet mentioned, please document it by collecting a number of photographs (whole plant, close ups of leaves, leaf, underside of leaf, twig, buds, bark, fruit or flower and any other identifying features) and note the date and location and quantity. Send all that documentation to me at pat@reedecologicaldesign.com and I will attempt to identify it and add it to the list! Your input would certainly be much appreciated.

Thank you to Tom McLinden for providing the opportunity to perform this work. My family enjoyed an excellent stay in Cabin #4 for the duration of the site visit.

Plant List

Below are the plant species observed and identified on the site. For each species, I included notes detailing:

- A population size of one, few, many, or numerous specimens.
- Sometimes, a location or landcover presence.
- Native species that have a Coefficient of Conservatism of 6, 7, 8, 9, or 10. Species with a higher Coefficient of Conservation are considered more fragile and rare and should be paid extra attention. It was a special pleasure in getting to see these species.
- Non-native species were noted as introduced. Non-native species, specifically known for ecosystem degradation, are indicated by a font color change and capital letters, eg: **INTRODUCED**.
- My confidence in identification (medium or low), if other than high. I often listed alternative possible plant species identifications.
- Known hybridizations that might be occurring.
- Miscellaneous comments of interest.

Trees

***Betula papyrifera* in the Betulaceae family, Paper Birch, White Birch, Canoe Birch**

Few specimens. Near beach.

***Thuja occidentalis* in the Cupressaceae family, Arbor Vitae, White-cedar, Cedar**

Many specimens.

***Quercus rubra* in the Fagaceae family, Red Oak**

Many specimens. (Identification confidence: high. Possibly *Q.alba*, which hybridizes with several other *Quercus* species.)

***Fraxinus nigra* in the Oleaceae family, Black Ash**

Few specimens. Coefficient of Conservatism: 6.

***Abies balsamea* in the Pinaceae family, Balsam Fir**

Few specimens.

***Larix laricina* in the Pinaceae family, Larch, Tamarack**

Few specimens. On beach. Only dead specimens observed.

***Picea pungens* in the Pinaceae family, Colorado Blue Spruce**

Few specimens. Introduced probably as an ornamental. (Identification confidence: medium. Possibly *P. glaucans*.)

***Pinus banksiana* in the Pinaceae family, Jack Pine**

Few specimens. Near beach.

***Pinus resinosa* in the Pinaceae family, Red Pine**

Many specimens. Coefficient of Conservatism: 6.

***Pinus strobus* in the Pinaceae family, Eastern White Pine**

Many specimens. State Tree of Michigan.

***Populus balsamifera* in the Populaceae family, Balsam Poplar, Hackmatack**

One or few specimens. Near beach. (Identification confidence: Medium. Possibly a hybrid.)

***Populus grandidentata* in the Populaceae family, Large-tooth Aspen, Big-tooth Aspen**

Many specimens.

***Populus tremuloides* in the Populaceae family, Trembling Aspen**

Few specimens. On beach. (Identification confidence: Medium. Possibly *P. balsamifera* or hybrid.)

***Sorbus aucuparia* in the Rosaceae family, European Mountain-ash, Rowan**

One specimen. Lawn behind yellow house. Introduced as an ornamental. (Identification confidence: Medium. Possibly *S. decora*. Possibly but less likely *S. americana*) The size of the particular specimen and its leaves being pubescent on the underside and its leaves lack a conspicuous elongated terminal tooth on its leaflets all are indicative of *S. aucuparia*.

***Acer rubrum* in the Sapindaceae family, Red Maple**

Numerous specimens. This species is historically found in/near wetland, but due to fire suppression has spread uphill.

Woody Shrubs and Vines

***Viburnum trilobum* in the Adoxaceae family, American Highbush-Cranberry**

Few specimens. (Identification confidence: Medium. Difficult to distinguish from the introduced *V. opulus*.)

***Toxicodendron rydbergii* in the Anacardiaceae family, Poison Ivy**

Numerous specimens. (Identification confidence: Medium. Possibly *T. radicans* or both. *T. radicans* is known to hybridize with *T. rydbergii*. *T. radicans* is not noted to occur in Alpena county, per Michigan Flora.)

***Ilex verticillata* in the Aquafoliaceae family, Michigan Holly, Winterberry, Black-alder**

One large specimen.

***Alnus incana* in the Betulaceae family, Speckled Alder**

Few to many specimens. Near beach. Also, found a specimen in the woods. This is the species whose leaves look similar to *Corylus cornata*, Beaked Hazelnut.

***Lonicera canadensis* in the Caprifoliaceae family, Canadian Fly Honeysuckle**

Few specimens. (Identification confidence: Medium.)

***Lonicera dioica* in the Caprifoliaceae family, Glaucous Honeysuckle, Red Honeysuckle**

Few specimens. (Identification confidence: Low. Only small seedlings were present.)

***Cornus rugosa* in the Cornaceae family, Round-leaved Dogwood**

Few specimens. Coefficient of Conservatism: 6.

***Cornus sericea* in the Cornaceae family, Red-osier**

Few specimens. Near beach.

***Juniperus communis* in the Cupressaceae family, Common Juniper, Ground Juniper**

Many specimens.

***Diervilla lonicera* in the Diervillaceae family, Bush-honeysuckle**

Numerous specimens.

***Elaeagnus umbellata* in the Eleagnaceae family, Autumn-olive**

Few specimens. INTRODUCED.

***Shepherdia canadensis* in the Eleagnaceae family, Soapberry**

Few specimens. Near beach. Coefficient of Conservatism: 7. Some texts seem to refer to this as Buffalo-Berry, but that common name seems to apply to *S. argentia*. *S. argentia* is native of the western side of the North American continent and has been introduced and collected in one county of Michigan, which just happens to be Alpena County. *S. argentia* typically grows in dryer fields, whereas this specimen was observed in the wetland near the beach.

***Arctostaphylos uva-ursi* in the Ericaceae family, Bearberry, Kinnikinick**

Many specimens. On the beach. Coefficient of Conservation: 8.

***Chimaphila umbellata* in the Ericaceae family, Pipsissewa, Prince's-pine**

Many specimens. Coefficient of Conservatism: 8!

***Gaylussacia baccata* in the Ericaceae family, Huckleberry, Crackleberry**

Numerous specimens. Commonly mistaken as a blueberry. Coefficient of Conservatism: 7.

***Kalmia angustifolia* in the Ericaceae family, Sheep-laurel, Lambkill**

One or few specimens. Coefficient of Conservatism: 7.

***Rhododendron groenlandicum* in the Ericaceae family, Labrador-tea**

Few specimens. Coefficient of Conservatism: 8!

***Vaccinium myrtilloides* in the Ericaceae family, Velvetleaf Blueberry, Canada Blueberry**

Few specimens.

***Hypericum kalmianum* in the Hypericaceae family, Kalm's St. John's-wort**

One or few specimens. Wetland near beach. Coefficient of Conservatism: 10! (Identification confidence: Medium.)

***Syringa vulgaris* in the Oleaceae family, Common Lilac**

One specimens. Near yellow house. Introduced.

***Frangula alnus* in the Rhamnaceae family, Glossy Buckthorn**

Few to many small specimens. INTRODUCED.

***Amelanchier interior* in the Rosaceae family, Serviceberry**

Few to many specimens. (Identification confidence: Low. Possibly *A. arborea*, but also *A. sanguine*, and *A. spicata*. All are noted to occur in Alpena County.) There is disagreement as to whether *A. interior* is a species or a hybrid of other species.

***Physocarpus opulifolius* in the Rosaceae family, Ninebark**

Few specimens. Near beach.

***Prunus virginiana* in the Rosaceae family, Choke Cherry**

Many specimens.

***Rosa acicularis* in the Rosaceae family, Wild Rose**

Few to many specimens. Occurs in forest. (Identification confidence: Medium. Possibly *R. blanda*, with which *R. acicularis* readily hybridizes.)

***Rosa blanda* in the Rosaceae family, Wild Rose**

Few to many specimens. Occurs on the beach. (Identification confidence: Medium. Possibly *R. acicularis*, with which *R. blanda* readily hybridizes.)

***Rubus allegheniensis* in the Rosaceae family, Common Blackberry**

Few to many specimens.

***Rubus setosus* in the Rosaceae family, Bristly Blackberry**

Many specimens. (Identification confidence: medium. Species in the *Rubus* genus are difficult to differentiate. Possibly *R. hispidus*, *R. flagellaris*, or *R. pensilvanicus*. According to Michigan Flora website, *R. hispidus* and *R. flagellaris* do not occur in Alpena County, although this could be just missing data, because they do occur in nearby counties.)

***Rubus strigosus* in the Rosaceae family, Wild Red Raspberry**

Few to many specimens. (Identification confidence: low. Species in the *Rubus* genus are difficult to differentiate.)

***Salix cordata* in the Salicaceae family, Sand-dune Willow, Furry Willow**

Few specimens. On beach. Coefficient of Conservatism: 10! (Identification confidence: Low. Definitely *Salix* spp. The *Salix* genus hybridizes abundantly.)

***Salix lucida* in the Salicaceae family, Shining Willow**

Few specimens. On beach. (Identification confidence: Low. Definitely *Salix* spp. The *Salix* genus hybridizes abundantly.)

***Salix myricoides* in the Salicaceae family, Blueleaf Willow**

Few specimens. On beach. Coefficient of Conservatism: 9. (Identification confidence: Low. Definitely *Salix* spp. Possibly *S. eriocephala*. The *Salix* genus hybridizes abundantly. In particular, *S. myricoides* and *S. cordata* are known to hybridize.)

***Vitis riparia* in the Vitaceae family, River-bank Grape**

Few specimens.

Wildflowers

***Apocynum androsaemifolium* in the Apocynaceae family, Spreading Dogbane**

One or few specimens. (Identification confidence: Medium.) This species and *A. cannabinum*, which is also present on the site, hybridize. This species is a herbaceous perennial vine.

***Apocynum cannabinum* in the Apocynaceae family, Indian-hemp**

Many specimens. (Identification confidence: Medium. Possibly *A. androsaemifolium*.) These two species hybridize.

***Asclepias syriaca* in the Apocynaceae family, Common Milkweed**

Few to many specimens. On or near beach.

***Aralia nudicaulis* in the Aracaceae family, Wild Sarsaparilla**

Numerous specimens.

***Aralia racemosa* in the Aracaceae family, Spikenard**

One large specimen. In woods near yellow house. Coefficient of Conservatism: 8!

***Artemisia campestris* in the Asteraceae family, Wild Wormwood**

Few specimens. On or near the beach. (Identification confidence: Medium.)

***Centaurea stoebe* in the Asteraceae family, Spotted Knapweed**

Few specimens. On the beach. **INTRODUCED.** (Identification confidence: Medium. Possibly *C. diffusa*, which is noted to occur in Alpena County by Michigan Flora and hybridizes with *C. stoebe*.)

***Erigeron philadelphicus* in the Asteraceae family, Common Fleabane, Philadelphia Fleabane**

Few to many specimens.

***Eurybia macrophylla* in the Asteraceae family, Large-leaved Aster, Big-leaved Aster**

Many specimens.

***Hieracium aurantiacum* in the Asteraceae family, Orange Hawkweed, Devil's-paintbrush**

Many specimens. Introduced. (Identification confidence: High. However, hybridizes with *H. piloselloides*, which also occurs on the site.)

***Hieracium piloselloides* in the Asteraceae family, King Devil, Yellow Hawkweed**

Many specimens. Introduced. Hybridizes with *H. aurantiacum*, which also occurs on the site.

***Lactuca canadensis* in the Asteraceae family, Wild Lettuce, Tall Lettuce**

Few specimens. (Identification confidence: Medium. Possibly *L. serriola*.)

***Packera paupercula* in the Asteraceae family, Northern Ragwort, Balsam Ragwort**

Few specimens. Near beach.

***Prenanthes alba* in the Asteraceae family, White Lettuce**

Few to many specimens. According to Michigan Flora website, *P. alba* does not occur in Alpena County, although this could be just missing data, because it occurs in most counties of Michigan.

***Solidago altissima* in the Asteraceae family, Tall Goldenrod**

Few specimens. Found near beach. (Identification confidence: Low. *Solidago* spp. are notoriously difficult to differentiate and no flowers available yet. Possibly *S. juncea*, *S. canadensis*, or *S. gigantea*.)

***Solidago gigantea* in the Asteraceae family, Late Goldenrod**

Few specimens. (Identification confidence: Low. *Solidago* spp. are notoriously difficult to differentiate and no flowers available yet. Possibly *S. juncea*, or *S. canadensis*.)

***Solidago rugosa* in the Asteraceae family, Rough-leaved Goldenrod**

Few specimens. Near the beach. (Identification confidence: Medium, as no fruiting structures present at time of observation.)

***Symphotrichum urophyllum* in the Asteraceae family, Arrow-leaved Aster**

Few specimens. (Identification confidence: Medium. Possibly *S. ciliolatum*.)

***Taraxacum officinale* in the Asteraceae family, Common Dandelion**

Numerous specimens. Introduced. (Identification confidence: medium. Possibly *T. erythrospermum*.)

***Lithospermum officinale* in the Boraginaceae family, Gromwell**

Few specimens. Introduced.

***Arabisopsis lyrata* in the Brassicaceae family, Sand Cress**

Few specimens. Beach Coefficient of Conservatism: 7. (Identification confidence: Medium.)

***Silene latifolia* in the Caryophyllaceae family, White Cockle, White Champion**

Few specimens. Introduced.

***Clintonia borealis* in the Convallariaceae family, Corn-lily, Bluebead-lily**

Many specimens.

***Convallaria majalis* in the Convallariaceae family, Lily-of-the-valley**

Many specimens. Near yellow house. Introduced.

***Maianthemum canadense* in the Convallariaceae family, Wild Lily-of-the-valley, Canada Mayflower, False Solomon-seal, False Lily-of-the-valley**

Numerous specimens.

***Maianthemum stellatum* in the Convallariaceae family, Starry False Solomon-seal**

Numerous specimens.

***Gaultheria procumbens* in the Ericaceae family, Teaberry, Wintergreen**

Numerous specimens.

***Pyrola americana* in the Ericaceae family, Round-leaved Pyrola**

Few specimens. Coefficient of Conservatism: 7. (Identification confidence: High. But also could be *P. chlorantha*.)

***Euphorbia virgata* in the Euphorbiaceae family, Leafy Spurge**

Many specimens. INTRODUCED.

***Medicago lupulina* in the Fabaceae family, Black Medick**

Few to many specimens. Introduced.

***Anticlea elegans* in the Melanthiaceae family, White Camas**

Few specimens. Near beach. Coefficient of Conservatism: 10! (Identification confidence: Medium. Just early a bit for flowers, which would have made identification more certain.) Poisonous.

***Pycnanthemum tenuifolium* in the Lamiaceae family, Slender Mountain Mint**

Few to many specimens. Coefficient of Conservatism: 6. (Identification confidence: Medium. No fruiting structure available. *P. tenuifolium* is the only species in this genus noted to occur in Alpena County. *P. virginianum* sure looks similar.)

***Trientalis borealis* in the Myrsinaceae family, Star-flower**

Many specimens.

***Vinca minor* in the Opacynaceae family, Periwinkle, Myrtle**

Numerous specimens. Near yellow house. INTRODUCED. According to Michigan Flora website, *V. minor* does not occur in Alpena County, although this is obviously just missing data.

***Cypripedium parviflorum* in the Orchidaceae family, Yellow Lady-slipper**

Few specimens. Most specimens observed occurring near end of driveway and to the right. (Identification confidence: Medium. *Cypripedium* spp. are much easier to identify when flowers are present.)

***Epipactis helleborine* in the Orchidaceae family, Helleborine**

Few specimens. Introduced.

***Plantago lanceolata* in the Plantaginaceae family, Ribgrass, Buckhorn, Narrow-leaved Plantain, English Plantain**

Few to many specimens. Introduced.

***Plantago rugelii* in the Plantaginaceae family, Rugel's Plantain, Red-stalked Plantain**

Few to many specimens. (Identification confidence: Medium. The observed specimen did not have a fruiting structure and the species is highly similar to the introduced species, *P. major*.) *P. rugelii* and *P. major* are often mistaken for one another. Michigan Flora does not list *P. rugelii* as occurring in Alpena County. However, that is hopefully simply due to incomplete data as it occurs in the majority of Michigan counties.

***Anemone canadensis* in the Ranunculaceae family, Canada Anemone**

Few specimens. Near yellow house.

***Aquilegia canadensis* in the Ranunculaceae family, Columbine**

Many specimens.

***Ranunculus acris* in the Ranunculaceae family, Common Buttercup, Tall Buttercup**

Few specimens. Introduced. (Identification confidence: Medium.)

***Fragaria virginiana* in the Rosaceae family, Wild Strawberry**

Many specimens. (Identification confidence: high. Though difficult to distinguish from *F. vesca*.)

***Potentilla anserina* the Rosaceae family, Silverweed**

Few to many specimens. On the beach. Identification confidence: Medium.)

***Potentilla inclinata* in the Rosaceae family, Ashy Cinquefoil**

Few specimens. Introduced. (Identification confidence: Medium. Possibly *P. recta* or *P. simplex*.) *P. inclinata* has not been noted to occur in Alpena County according to Michigan Flora. There is uncertainty as to whether *P. inclinata* is a species or a hybrid of other *P.* species. If it was indeed a hybrid and both parent plants were present, the hybrid would naturally occur.

***Galium triflorum* in the Rubiaceae family, Fragrant Bedstraw**

Few specimens. (Identification confidence: High.)

***Verbascum thapsus* in the Scrophulariaceae family, Mullein, Flannel Plant, Common Mullein**

Few specimens. Introduced.

***Viola blanda* in the Violaceae family, Sweet White Violet**

Few to many specimens. (Identification confidence: Low. No flowers or fruiting structures available. Possibly *V. adunca*, *V. nephrophylla*, or *V. rostrata*.)

Grasses and Sedges and Rushes

***Carex bebbii* in the Cyperaceae family, Sedge**

Few to many specimens. Wetland near beach. (Identification confidence: Low. There are a number of highly similar species: *C. cristatella*, *C. crawfordii*, *C. projecta*, *C. spoparia*, and *C. tribuloides*.)

***Carex pellita* in the Cyperaceae family, Sedge**

Few to many specimens. Wetland near beach. (Identification confidence: Low. Is a *Carex* specimen.)

***Carex pensylvanica* in the Cyperaceae, Sedge**

Few to many specimens. (Identification confidence: Low. No fruiting structure available and there are eighty species in the *Carex* genus in Alpena County.)

Unidentified *Carex* species 1 in the Cyperaceae

Few specimens. In the woods.

Unidentified *Carex* species 2 in the Cyperaceae

Few specimens. In the woods.

***Schoenoplectus pungens* in the Cyperaceae family, Threesquare**

Few to many specimens. Wetland near beach.

***Juncus articulatus* in the Juncaceae family, Jointed Rush**

Few to many specimens. Wetland near beach. (Identification confidence: Very low. Florescence was at an early stage in development. Possibly *J. brachycephalus*, *J. Juncus alpinoarticulatus*, or *J. brevicaudatus*.)

***Juncus balticus* in the Juncaceae family, Rush**

Many specimens. Near beach. (Identification confidence: Low. Is a *Juncus* specimen.)

***Juncus effusus* in the Juncaceae family, Soft-stemmed Rush**

Many specimens. Wetland near beach. (Identification confidence: Medium. Is a *Juncus* specimen.)

***Alopecurus pratensis* in the Poaceae family, Meadow Foxtail**

Few specimens. Near beach. Introduced. (Identification confidence: Medium. Possibly *Phleum pratense*.)

***Lolium pratense* in the Poaceae family, Meadow Fescue**

Many specimens. Near Yellow House. Introduced. (Identification confidence: Medium. Possibly *Bromus inermis*)

***Oryzopsis asperifolia* in the Poaceae family, Rough-leaved Rice-grass**

Few to many specimens. Coefficient of Conservatism: 6. (Identification confidence: Low.)

Unidentified species 1 in the Poaceae family

Few specimens. In the woods.

Unidentified species 2 in the Poaceae family

Few specimens. In the woods.

Unidentified species 3 in the Poaceae family

Few specimens. On or near beach.

Unidentified species 4 in the Poaceae family

Few specimens. On or near beach.

Unidentified species 5 in the Poaceae family

Few specimens. On beach.

Ferns and Equisetum and Lycophytes

***Pteridium* spp. in the Dennstaedtiaceae family, Bracken Fern**

This fern is colony forming...so the number of specimens is impossible to easily count. There could be several or there could be one specimen sending up fronds over the whole site. (Identification confidence: Low. I am simply not confident with my fern identification skills.) Plants of the *Pteridium* genus are the most commonly seen fern in Michigan...occurring on sandy acidic soils. *Pteridium aquilinum* is the species identified in Michigan Flora, however, these species are typically not identified past the Genus level due to, well, much disagreement over if there are several species or one species with several subspecies and hybrids. Please note that *Pteridium* spp. should really not be eaten or handled due to containing carcinogenic compounds (i.e. do not attempt to transplant these ferns without gloves).

***Equisetum* spp. in the Equisetaceae family, Horsetail or Scouring Rush**

Many specimens. Near beach. (Identification confidence: Low. *Equisetum laevigatum* also known as Smooth Scouring Rush is a best guess. There are ten [eleven according to Daniel Palmer's book, Michigan Ferns and Lycophytes] *Equisetum* species as well as numerous hybrids having been observed in Michigan.)

***Selaginella eclipes* in the Selaginellaceae family, Selaginella**

Few to many specimens.

Additional Observations

One species that was not observed on site was *Phragmites australis*. Accordingly to Tom McLinden, this species has been present in the past along the beach wetlands. As none was present, I am not sure if the subspecies was the native or the **INTRODUCED** invasive. It is possible that control efforts by county and state agencies have successfully removed the invasive from the site.

Exobasidium vaccinii was present on the site. It is a common fungus that causes galls on species in the Ericaceae family.

Site Background

Oakapiney Beach Resort is located in the County of Alpena in the great State of Michigan.

According to "Atlas of Early Michigan's Forests, Grasslands, and Wetlands", the site historically was home to two landcovers. The first and majority of the site was Mixed Conifer Swamp land cover. The map in the book is unclear about the second landcover, which consists of a thin ribbon right along the Lake Huron beach. The second is likely a Shrub Swamp/Emergent Marsh landcover. For the purposes of this plant assessment, I am going to refer to this landcover as the Beach Wetland, and it appeared inclusive of both, along the Lake Huron beach, hydric inundated areas and sparsely vegetated sandy areas.

The Beach Wetland seemed a thin strip along the shoreline at this site. Per observations nearby, the landcover reached further inland along the beach, or in other words, was a thicker ribbon...but not on the Oakapiney Beach Resort property. Some species are in one ecosystem, where some are in both. Species associated solely with the beach marsh wetland habitat are noted.

At the site, Highway 23 runs parallel to the coast of Lake Huron past the property roughly 950 feet inland. The installation of the highway and associated swales most likely influenced the hydrology of the site, which is mostly downhill from the Highway. The property is roughly rectangle shaped, with two skinny sides being bordered by Lake Huron and Highway 23, and two long sides being bordered by, well, the neighbors.

Another influence on the hydrology of the site is Lake Huron! According to the Great Lakes Environmental Research Laboratory (GLERL), the Lake Michigan – Lake Huron water system is currently experiencing record setting high water levels this summer since data started being collected. Here is a cool website, <https://www.glerl.noaa.gov/data/dashboard/GLWLD.html>, that shows water level data for all the Great Lakes.

According to the USDA NRCS soils database, the soil on the site is nearly 100% Croswell sand and sloped between 0 and 6 percent. A typical soil profile of Croswell sand:

- Oe - 0 to 1 inches: moderately decomposed plant material
- A - 1 to 2 inches: sand
- E - 2 to 5 inches: sand
- Bs1 - 5 to 11 inches: sand
- Bs2 - 11 to 16 inches: sand
- BC - 16 to 30 inches: sand
- C - 30 to 79 inches: sand

As you can see, it is sandy.

A Few Disclaimers

I am squarely an amateur botanist. I have little formal training in plants and my abilities are, well, entirely developed from my passion for observation and plant identification. I am most definitely still continuously learning.

I likely missed several plant species due to a mixture of reasons, such as: Simply missing them on my forays; Maybe the species was not conspicuous; And lastly, some species were likely not present (visible above ground) when I visited. An obvious example would be Spring ephemerals which come and disappear so quickly from the landscape.

I referenced a number of sources in my effort to identify plant species, but, mostly, the website, michiganflora.net.

Author's Note

Patrick Reed, owner of Reed Ecological Design, LLC. pat@reedecologicaldesign.com

This plant assessment was finalized on December 9th, 2020.