

Natural Features Report

Introduction

The primary objective of this project was to assist Alpena Township with the development of a science based management plan for a recently acquired 133 acre tract located along the southern shoreline of El Cajon Bay. The primary role of the Michigan Natural Features Inventory was to conduct surveys for rare plants and high quality natural communities, summarize the results, and provide recommendations for future management and protection strategies within the site boundaries.

Methods

Michigan Natural Features Inventory conducted rare plant and rare and/or high quality natural community surveys within the boundaries of the 133 acres park in Alpena Township from August 1-3, 2007. These surveys were completed by staff botanist M. Penskar. Prior to conducting the field inventory, the statewide natural heritage database was reviewed for previously identified element occurrences of rare species and high quality natural communities within and near the park. In addition to examining the comprehensive database, the MNFI Web-based Species Explorer was queried to develop a list of potential rare species to seek based on the natural communities known to occur in or near the park.

The park and local environs were examined via 1998 color infrared (CIR) aerial photos, USGS topographic maps, and also digital orthophotos displaying the MNFI data layers for known element occurrences. Botanical and natural community surveys were subsequently scheduled based on the results and the necessity of optimizing field work owing to the limited time and resources available for field studies. Due to the limited amount of field work, this study was not intended to be a comprehensive survey of plant species.

Other MNFI staff members were consulted for recommendations regarding particular natural features and specific survey sites familiar to them within the area. In addition, a meeting was held with Rick Deuell of NEMCOG immediately prior to field inventories. This resulted in the acquisition of additional aerial imagery and other information, including Mr. Deuell's personal knowledge of the site, which assisted significantly in directing the field efforts.

Field surveys were conducted primarily through meander searches within targeted habitats based on their potential to harbor rare plant species and comprise high quality natural communities. Initially, a traverse of the principal trails throughout the site was performed as a general reconnaissance and to confirm the presence of delineated community types. For the remainder of the study, meander searches were conducted throughout representative portions of the natural communities present, and when encountered, high quality communities were more systematically and intensively searched to document their quality and seek potential rare plant colonies.

A comprehensive vascular plant list was compiled for the park, recording plant species by natural community type, and photo documentation was obtained as needed throughout the survey area.

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Where identified, data for rare plant populations or high quality natural community occurrences were recorded on the appropriate MNFI field forms. GPS equipment was used as necessary to record specific rare plant locations for subsequent mapping in the MNFI database. Additional field notes were recorded on local disturbance features (natural and artificial) and the presence of exotic plant species.

Following field surveys, rare plant and natural community data were reviewed, summarized and queued for processing into the MNFI statewide database. As part of the transcription and entry process, the occurrences will include mapped boundaries and a ranking indicating their relative quality and viability. Both rare plant and natural community occurrences will be given a rank (A-D) based on relative quality, condition, and landscape context. Plant lists, including a master plant list for the park, were entered and prepared via the Michigan Floristic Quality Assessment System (FQAS) (Herman et al. 2001). Digital photos were downloaded, examined, and annotated by community type and/or location for inclusion with the MNFI report.

General Site Description

The site is located in Alpena Township, Alpena County. The park is bordered by El Cajon Bay to the north, Lake Huron to the east, and Misery Bay Road to the south. The western boundary is a narrow strip in between El Cajon Bay and Misery Bay Road bordered by private land. Within the state ecoregional framework, the park is located in the southern portion of the Cheboygan sub-subsection (Albert 1995). The sub-subsection forms a narrow band of sandy lake plain along Lake Huron. Limestone bedrock is near the surface of almost the entire sub-subsection and exposed bedrock and cobble beach are common. Karst depressions are common in the southern part of the sub-subsection.

The interior of the park is comprised primarily of dry mesic forest, rich conifer swamp, and boreal forest with a few scattered openings and depressions. The shoreline consists of broad to narrow bands of coastal fen (some of these forming significant embayments) and cobble beach bordered by a mosaic of rich conifer swamp and boreal forest. A small pocket of limestone bedrock glade, a rare shoreline community imperiled in Michigan, was found in the southeast corner of the property.

Results

Field surveys resulted in the documentation of a new occurrence of the globally imperiled (G2) coastal fen (known formerly as northern fen) a new occurrence of the state special concern Indian plantain (*Cacalia plantaginea*), and an update of a well known occurrence of federal threatened and globally rare (G3) dwarf lake iris (*Iris lacustris*) (**Table 3.1**). A total of 149 plant species were recorded, composed of 128 native species and 21 non-native taxa, and



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resulting in an overall Floristic Quality Index (FQI) of between 50 and 60 (55.4 with adventives included, 59.8 without adventives), indicating a high degree of natural area quality based on floristic composition (Herman et al. 2001). Of the relatively few exotic species identified, the most potentially problematical was the presence of individuals of glossy-leaved buckthorn (*Rhamnus frangula*) and autumn olive (*Elaeagnus umbellata*).

Table 3.1: Rare plant and natural community occurrences identified during Alpena Township Park surveys, with annotations of global and state element ranks.

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
<i>Iris lacustris</i>	Dwarf lake iris	G3	S3	LT	T
<i>Cacalia plantaginea</i>	Indian plantain	G5	S3		SC
	Coastal fen	G2	S2		

Summary of Ecological Significance

The most significant features within the park are located along or near the Lake Huron shoreline. The coastal fen essentially extends the entire length of the shoreline, and contains the highest number of plant species in the park. Coastal fen is considered to be very rare throughout its range both globally and in Michigan. The portion of coastal fen located in the southernmost bay contains a population of Indian plantain (*Cacalia plantaginea*).

Dwarf Lake Iris (*Iris lacustris*), federally listed as threatened, is common throughout the site, and locally abundant along the majority of shoreline, particularly in areas dominated by northern white cedar (*Thuja occidentalis*).



Some of the more open areas in the coastal forests form a dense carpet of dwarf lake iris. A small pocket of limestone bedrock glade was found in the southeast corner of the property adjacent to coastal fen. Limestone bedrock glade is a very rare natural community in Michigan that is very sensitive to human disturbance. This community type is only found along the northern Lake Huron and Lake Michigan shorelines. Although this occurrence is probably too small to incorporate into the MNFI database, it is still a significant natural feature within the park.

In addition, shallow protected bays, particularly those bays adjacent to conifer forests along northern Lake Huron, can provide critical food sources for migratory songbirds in the form of aquatic midges. Midge adults emerge in early spring when bird migration is at its peak. With very few forage alternatives during that time period, migratory songbirds tend to concentrate along

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these shoreline areas and forage on adult midges found in the coastal conifer forests, particularly northern white cedar trees (Smith, et al. 1998).

Lastly, it is important to note that this study was not intended to be a comprehensive rare plant and animal survey. As a result, there is potential for several rare plant and animal species to occur within the park that were not located during the botanical and natural community surveys (**Table 3.2**).

Table 3.2: Rare plants and animals that could potentially occur in Alpena Township Park

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
<i>Adlumia fungosa</i>	climbing fumitory	G4	S3		SC
<i>Amerorchis rotundifolia</i>	round-leaved orchid	G5	S1		T
<i>Calypso bulbosa</i>	calypso	G5	S2		T
<i>Carex scirpoidea</i>	bulrush sedge	G5	S2		T
<i>Cypripedium arietinum</i>	ram's head orchid	G3	S3		SC
<i>Drosera anglica</i>	English sundew	G5	S3		SC
<i>Gymnocarpium robertianum</i>	limestone oak fern	G5	S2		T
<i>Mimulus michiganensis</i>	Michigan monkey-flower	G5T1	S1	LE	E
<i>Pinguicula vulgaris</i>	butterwort	G5	S3		SC
<i>Pterospora andromedea</i>	pinedrops	G5	S2		T
<i>Sistrurus catenatus catenatus</i>	eastern massasauga	G3G4	S3S4	C	SC
<i>Solidago houghtonii</i>	Houghton's goldenrod	G3	S3	LT	T
<i>Somatochlora hineana</i>	Hine's emerald dragonfly	G2G3	S1	LE	E
<i>Somatochlora incurvata</i>	incurvate emerald	G4	S1S2		SC

Evidence of Artificial Disturbance



All forested communities within the park boundary appear to have been logged at least once within the past 200 years.

Majority of trees on site are relatively small in diameter, and cut tree stumps are scattered throughout the forest patches. White cedar stumps are prevalent in areas where several

trails have been cut through rich conifer swamp. Walking trails and cleared lines are found throughout the site and



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could act as pathways for the introduction and spread of exotic species from peripheral areas into the core of the site. Both glossy-leaved buckthorn and autumn olive were found in the park, and both could become a problem in the future without active management. Several common exotic plant species occur along forest edges, trails, and other openings, the most invasive consisting of such species as spotted knapweed (*Centaurea maculosa*), St. John's-wort (*Hypericum perforatum*), and white sweet clover (*Melilotus alba*), with common but generally less problematical species as wild carrot (*Daucus carota*), blue-grass (*Poa compressa*), and redtop (*Agrostis gigantea*).

Beyond the creation of roads and trails, additional artificial disturbance features include a few areas where construction materials have been deposited in the western region of the park, largely north to northeast of the gated entrance, and evidence of occasional off-road-vehicle (ORV) use along the shoreline. A few ORV tracks were observed during surveys along the south shore of El Cajon Bay, although this use appears to be fairly limited.

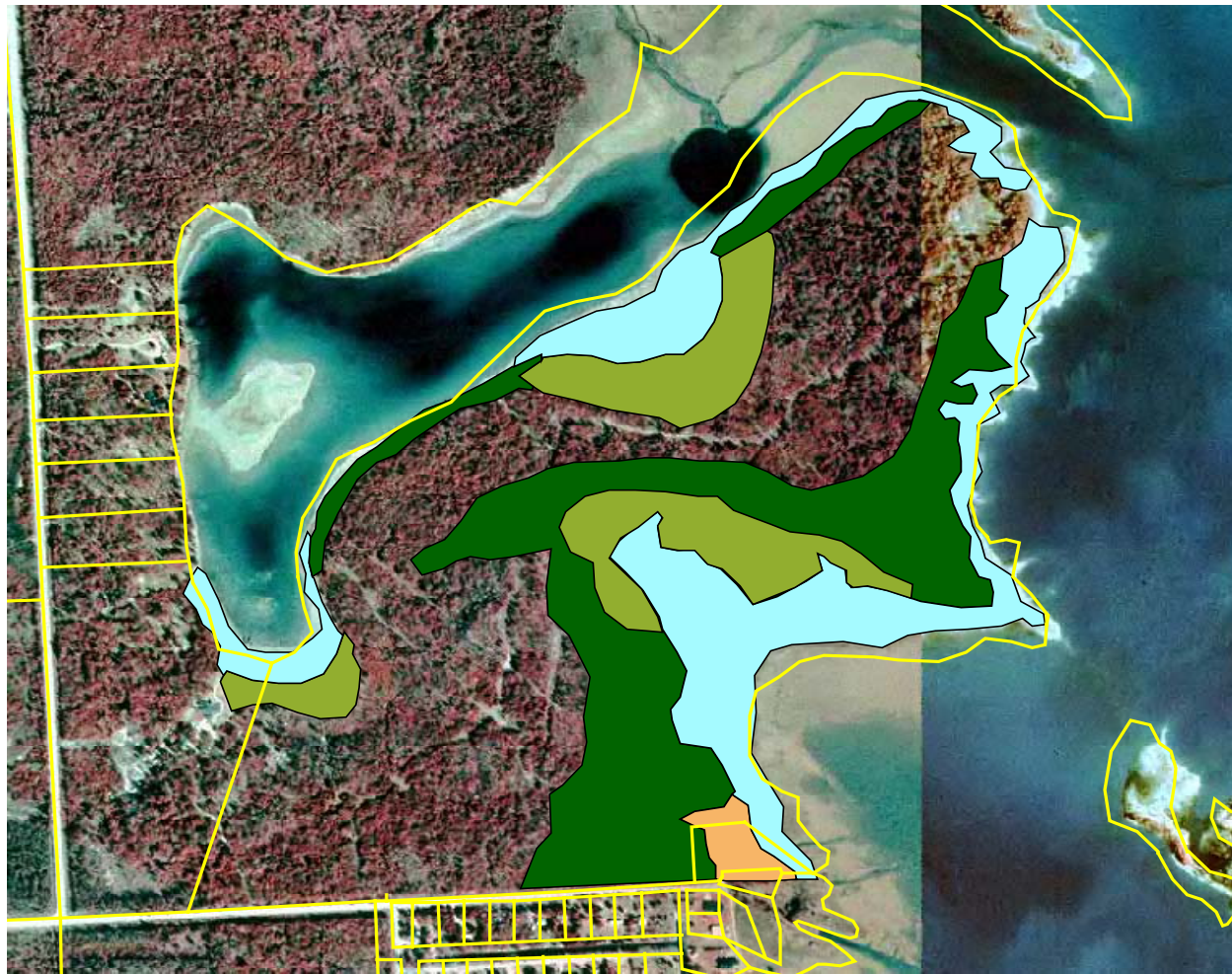
Management Recommendations

As mentioned above, the most significant features within the park are located along or near the Lake Huron shoreline: coastal fen, boreal forest, and rich conifer swamp. We strongly recommend that all shoreline communities, particularly the coastal fen and adjacent boreal and rich conifer forests are maintained as intact mosaics of natural communities. As a result, use of vehicles on beaches and bottomlands should be strictly prohibited. Another suggestion regarding vehicles, is to limit vehicular access beyond the proposed parking area just off the road. If it was decided that vehicles should go beyond the parking area, we suggest that vehicles should not be allowed past the point where the rich conifer swamp crosses the main pathway. Foot and bike traffic should primarily be limited to the existing trail that traverses the center of the park to minimize trampling of the fragile coastal fen environment. This could be accomplished by only maintaining the main trail, and allowing the other linear cut areas to revegetate through natural succession. Lastly, glossy-leaved buckthorn and autumn olive should be removed as quickly as possible, by cutting and herbiciding, before they become a bigger problem.

Literature Citations

- Albert, D. A. 1995. regional landscape ecosystems of Michigan, Minnesota, and Wisconsin; a working map and classification. Gen. Tech. Rep. NC-178. St Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. 250 p.
- Herman, K. D., L. A. Masters, M. R. Penskar, A. A. Reznichuk, G. S. Wilhelm, W. W. Brodovich, and K. P. Gardiner. 2001. Floristic Quality Assessment with Wetland Categories and Examples of Computer Applications for the State of Michigan – Revised, 2nd Edition. Michigan Department of Natural Resources, Wildlife, Natural Heritage Program. Lansing, MI. 19 pp. + Appendices.
- Smith, R. M. Hamas, M. Dallman, D. Ewert. 1998. Spatial variation in Foraging of the Black-Throated Green Warbler along the Shoreline of Northern Lake Huron. The Condor, Vol. 100, No. 3. pp. 478-484.

Alpena Township Park Vegetation Map



Legend

Natural Communities

- coastal fen
- rich conifer swamp
- limestone bedrock glade
- boreal forest

