dunes and wetlands occurring in a roughly parallel pattern. St. Martin Bay Wetland LTA is shallow wet till over limestone bedrock.

DESCRIPTION OF VALUES

Flora

The following general plant communities (defined by Michigan Natural Features Inventory) are found within the RNA (Albert 1988): A number of Federal and State of Michigan listed rare plant species are known to occur within the RNA and are shown in Table 4. Given the lack of an intensive floristic inventory of the RNA, additional rare species may also occur. (Species names are cited from one or more of the following: Voss 1972, Voss 1985, Gleason and Cronquist 1991).

Northern Fen

The community is characterized by sedges (*Carex* spp.) and spike rushes (*Eleocharis* spp.). *Parnassia glauca* (grass of Parnassus), *Gentiana procura* (fringed gentian) and *Potentilla fruticosa* (shrubby cinquefoil) are common. Scattered *Thuja occidentalis* (northern white cedar) is typically present.

Eleocharis rostellata (spike rush) forms a carpet on marly pools. The limey mud also supports *Pinguicula vulgaris* and colonies of three state-threatened species: *Empetrum nigrum* (black crowberry); *Erigeron hyssopifolius* (hyssop-leaved fleabane); and *Carex scirpoidea* (bulrush sedge). Table 4 lists plants occurring in northern fens of the RNA.

Table 4. Plant species of northern fen communities in Horseshoe Bay RNA.

Trees

Larix laricina
Picea mariana
Pinus strobus
Thuja occidentalis

Shrubs

Andromeda glaucophylla
Aronia melanocarpa
Chamaedaphne calyculata
Cornus canadensis
Cornus stolonifera
Empetrum nigrum
Epigea repens
Gaultheria procumbens
Gaultheria hispidula
Gaylussacia baccata
Juniperus horizontalis
Kalmia polifolia
Ledum groenlandicum
Linnaea borealis
Myrica gale
Potentilla fruticosa
Rhamnus alnifolia
Rubus pubescens
Salix candida
Salix pedicellaris
Vaccinium macrocarpon
Vaccinium myrtilloides
Vaccinium oxycoccos

Forbs

Asclepias incarnata
Aster lowrieanus
Aster ptarmicoides
Calopogon tuberosus
Campanula aparinoides
Comandra umbellata
Cypripedium calceolus
Drosera rotundifolia
Erigeron hyssopifolius
Galium trifidum
Gentiana procera
Geocaulon lividum
Hypericum virginicum
Iris versicolor
Lilium philadelphicum
Lobelia kalmii
Lycopus americanus

Lysimachia terrestris
Maianthimum canadense
Menyanthes trifoliata
Mitchella repens
Parnassia glauca
Petasites palmatus
Pinguicula vulgaris
Potentilla palustris
Primula mistassinica
Prunella vulgaris
Sarracenia purpurea
Senecio pauperculus
Solidago houghtonii
Solidago uliginosa
Spiranthes romanzoffiana
Tofieldia glutinosa
Trientalis borealis
Triglochin maritimum
Triglochin palustre
Utricularia cornuta
Utricularia intermedia
Valeriana uliginosa
Zigadenus glaucus

Grass & Grasslike Plants

Andropogon scoparius
Calamagrostis spp.
Carex buxbaumii
Carex capillaris
Carex flava
Carex gynocrates
Carex lasiocarpa
Carex leptalea
Carex limosa
Carex scirpoidea
Carex ciridula
Cladium mariscoides
Dulichium arundinaceum
Eleocharis elliptica
Eleocharis rostellata
Eleocharis acicularis
Juncus balticus
Muhlenbergia glomerata
Phragmites australis
Rhynchospora alba
Scirpus cespitosus
Scirpus hudsonianus

Ferns & Fern Allies

Equisetum arvense
Osmunda regalis
Selaginella selaginoides

Bryophytes

Polytricum juniperinum var. *alpinum*
Sphagnum capillifolium
Sphagnum fuscum
Sphagnum magellanicum

Interdunal Wetland
The plant species of this community type are similar to those of northern fens, particularly in the RNA where the substrate is calcareous.

Rich Conifer Swamp
This community type is dominated by *Thuja occidentalis* (northern white cedar), much of which is stunted due to the high water table. As ground elevation rises, northern white cedar attains a larger size. Plant communities such as open, rich conifer swamp occur on most of the marly lake beds. The accumulation of organic matter has formed muck soils over the underlying marl. Many undergrowth species are the same as found in the northern fen type. Table 5 lists representative plant species of this community type.

Table 5. Plant species of rich conifer swamps in Horseshoe Bay RNA.

Trees

Abies balsamea
Acer rubrum
Betula papyrifera

Larix laricina
Picea glauca
Picea mariana
Pinus strobus
Populus tremuloides
Thuja occidentalis

Shrubs

Alnus rugosa
Arctostaphylos uva-ursi
Chamaedaphne calyculata
Cornus canadensis
Cornus rugosa
Dievilla lonicera
Gaultheria hispidula
Gaultheria procumbens
Juniperus communis
Juniperus horizontalis
Kalmia polifolia
Ledum groenlandicum
Linnaea borealis
Lonicera villosa
Nemopanthus mucronatus
Rhamnus alnifolia
Ribes triste
Rubus pubescens
Shepherdia canadensis
Vaccinium angustifolium
Vaccinium myrtilloides

Forbs

Aralia nudicaulis
Aster macrophyllus
Clintonia borealis
Coptis trifolia
Cypripedium acaule
Cypripedium reginae
Listera convallarioides
Maianthemum candensis
Mitella nuda
Oxalis montana
Petasites palmatus
Potentilla palustris
Scutellaria galericulata
Smilacina trifolia
Trientalis borealis

Grass & Grasslike Plants

Carex disperma
Carex leptalea
Carex pedunculata
Carex trisperma

Ferns & Fern Allies

Dryopteris cristata
Lycopodium annotinum
Onoclea sensibilis
Osmunda cinnamonea
Osmunda regalis

Hardwood-Conifer Swamp

This predominantly forested community with a grass and sedge groundcover makes up most of the north unit of the RNA. The trees present include: *Abies balsamea* (balsam fir); *Picea glauca* (white spruce); *Populus tremuloides* (trembling aspen) and *Populus balsamea* (balsam poplar) in wet interdunal swales. *Pinus resinosa* (red pine) and *Populus grandidentata* (bigtoothed aspen) dominate on the beach ridges.

Near the Lake Huron shore, the swamp becomes more open and the plant community includes *Larix laricina* (tamarack), with an undergrowth of grasses and sedges (Table 6).

Table 6. Plant species of hardwood-conifer swamps in Horseshoe Bay RNA.

Trees

Abies balsamea
Acer rubrum
Betula papyrifera
Fraxinus nigra
Larix laricina
Picea glauca
Picea mariana
Pinus strobus
Populus balsamea
Populus tremuloides
Thuja occidentalis

Shrubs

Alnus rugosa
Cornus canadensis
Epigea repens
Ilex verticillata
Linnaea borealis
Myrica gale
Salix pedicellaris
Spiraea alba
Vaccinium angustifolium

Forbs

Aster junciformis
Aster macrophyllus
Aster umbellatus
Clematis virginiana
Coptis trifolia
Drosera rotundifolia
Lemna minor
Lysimachia terrestris
Lysimachia thyrsiflora
Ranunculus scleratus
Senecio aureus
Solidago rugosa
Typha latifolia

Grass & Grasslike Plants

Calamagrostis canadensis
Carex disperma
Carex intumescens
Carex oligosperma
Carex trisperma
Glyceria striata
Juncus effusus

Ferns & Fern Allies

Lycopodium annotinum
Onoclea sensibilis

Bryophytes

Polytrichum juniperinum var. *alpinum*
Sphagnum fuscum

Cobble Beach

The species composition of this community type is similar to that of the northern fen. *Carex scirpoidea* (bulrush sedge) is often associated with this community type although no plants were found in this community type in this RNA. *Pinguicula vulgaris* (butterwort) is common in the wet pools of the cobble beach. Typical species of this ecosystem are listed in Table 7.

Table 7. Plant species of open cobble beaches in Horseshoe Bay RNA.

Trees

Thuja occidentalis

Shrubs

Alnus rugosa
Arctostaphylos uva-ursi
Potentilla fruticosa

Forbs

Agalinis purpurea
Eupatorium perfoliatum
Gentiana procera
Habenaria hyperborea
Lobelia kalmii
Parnassia glauca
Pinguicula vulgaris
Potamogeton gramineus
Sagittaria spp.
Sarracenia purpurea
Solidago houghtonii
Solidago ohioensis
Tofieldia glutinosa
Triglochin maritimum
Triglochin palustre

Grass & Grasslike Plants

Calamagrostis canadensis
Carex aquatilis
Cladium mariscoides
Eleocharis acicularis
Eleocharis tenuis
Juncus arcticus
Juncus canadensis
Juncus pelocarpus

Phragmites australis
Rhychospora alba
Scirpus validus

Great Lakes Marsh
This community type occurs along the coastline of the north unit. Wet Meadow and Emergent Marsh subtypes are both present. Marshy areas are dynamic, with community types shifting in response to erosion, deposition and changes in water level. Species present in this community include *Eleocharis smallii* (Small's spikerush); *Calamagrostis canadensis* (bluejoint grass); *Carex stricta* (tussock sedge); and *Carex aquatilis* (water sedge).

The bryophyte (moss and liverwort) flora has been studied at Summerby Swamp by Howard Crum (Univ. of Michigan, Table 8). Summerby Swamp is located two miles (3 km) west of the south unit and features many of the same physiographic and vegetation characteristics of Horseshoe Bay RNA (Weitzman 1983).

Table 8. Bryophytes known from Summerby Swamp and likely to occur at Horseshoe Bay RNA.

Anastrophyllum hellerianum
Aneura pinguis
Aulacomnium palustre
Blepharospoma trichophyllum
Bryum pseudotriquetrum
Calliergon giganteum
Calliergonella cuspidata
Calypogeia integristipula
Campylium chrysophyllum
Campylium stellatum
Catescopium nigritum
Caphalozia lunulifolia
Ceratodon purpureus
Cheiloscyphus fragilis
Chiloscyphus pallescens
Cinclidium stygium
Dicranum bonjeani
Dicranum flagellare
Dicranum fuscescens
Dicranum montanum
Dicranum polysetum
Dicranum scoparium
Distichium capillaceum
Distichium inclinatum
Drepanocladus aduncus
Drepanocladus revolvens var. *intermedius*
Fissidens osmundioides
Geocalyx graveolens
Gymnostomum recurvirostrum
Hylocomnium splendens
Jamesoniella autumnalis
Jungermannia leiantha
Kurzia setacea
Lepidozia reptans
Lophozia gilmanii
Mnium pseudopunctatum
Moerckia hibernica
Mylia anomalum
Myurella julaecea
Nowellia curvifolia
Odontoschisma denudatum
Oncophorous wahlenbergii
Pellia megaspora
Plagiochila porelloides
Polytrichum strictum
Pressia quadrata
Ptilidium pulcherrimum
Radula complanata
Riccaria latifrons
Scapania nemorea
Sphagnum capillifolium
Sphagnum fuscum
Sphagnum recurvum
Sphagnum russowii
Sphagnum warnstorfii
Thuidium recognitum
Tomenthypnum nitens
Tortella fragilis
Tortella tortuosa
Trichocolea tomentella