Wisconsin Wildlife Action Plan: Great Lakes Dunes and Beaches

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On the web at http://dnr.wi.gov/org/land/er/wwap/plan/

Great Lakes Dune

Overall, Great Lakes dune flora is an odd mix of geographically restricted habitat specialists and weedy generalists. Among the specialists are a number of endemic plants and animals, some of which occur in no other habitat and in no other region of North America. Others occur wherever dunes occur in eastern North America, including marine environments along the Atlantic Ocean coast.

Among the relatively few plants that are able to successfully colonize active, unvegetated dunes are several drought resistant perennial grasses that produce tough, sand binding rhizomes. Especially important are marram grass, the most prevalent dominant species in Great Lakes dune systems, sand reed, wheatgrass, crinkled hairgrass, and Canada wild rye. Associated vascular plants include beach pea, field sage-wort, common evening-primrose, common milkweed, and a long list of weedy native and exotic species.


Whitefish Dunes State Park, Door County

Table 1. Vertebrate Species of Greatest Conservation Need that are (or historically were) significantly associated with Great Lakes dune communities.

Birds
Piping Plover
Mammals
Franklin's Ground Squirrel


Franklin's ground squirrel


Federally Threatened Pitcher's thistle

Table 2. Vertebrate Species of Greatest Conservation Need that are (or historically were) *significantly* associated with Great Lakes dune communities and their association with Ecological Landscapes that support Great Lakes dune.

Great Lakes Dune

Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Birds (1)*	Mammals (1)
	Piping Plover	Franklin's Ground Squirrel
MAJOR		
Central Lake Michigan Coastal		
Northern Lake Michigan Coastal		
Superior Coastal Plain		
IMPORTANT		
Southern Lake Michigan Coastal		

Color Key
- = HIGH probability the species occurs in this Ecological Landscape
- = MODERATE probability the species occurs in this Ecological Landscape
- = LOW or NO probability the species occurs in this Ecological Landscape

* The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.

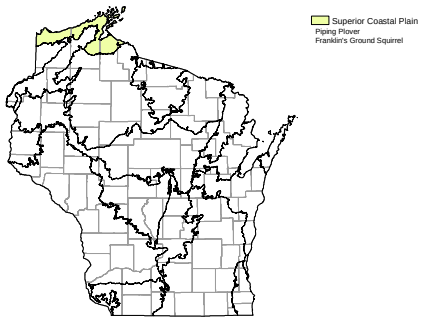

Figure 1. Vertebrate Species of Greatest Conservation Need that have *both* a significant association with Great Lakes dune *and* a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of Great Lakes dune.

Threats and Issues*

- Jetties, seawalls, and rip-rap can stabilize shorelines to the point where the sediments needed to replenish and build the dunes are no longer available.
- The presence of exotic (introduced non-native) plants and animals, especially those that are deemed "invasive" have the ability to spread rapidly and overwhelm populations of native species.
- Some native plants can become "invasive" under altered disturbance regimes, and have similarly negative impacts to more sensitive native biota. The dominance of poison ivy in heavily used dune areas is an example of this.
- Off-road vehicle (ORV) use, pedestrian recreational overuse, residential development, road construction, tree planting, and sand mining or other industrial development can also be problems.
- Removal of native vegetation by any means prevents the accumulation of sand and robs dunes of their potential or existing height.
- Pets, such as dogs, can disrupt nesting, resting and foraging birds, if they are allowed to run loose in sensitive areas.
- Overuse can accelerate erosion, destroy plant life, and damage habitat for specialized animals. Constructing buildings and roads, and using off-road motor vehicles in dune areas are particularly damaging.

Priority Conservation Actions*

- Development of "Critical Dune Area" or "Environmental Area" designations (as currently used in Michigan) could be useful tools to protect dune systems from destructive activities such as sand mining, excessive mowing, uprooting of endangered plant species, and raking live vegetation from dunescaped areas. Such designations would require the passage of state legislation or county ordinances.
- Implement or continue voluntary programs to monitor for and aggressively eliminate invasive species.

**** Please see the Wisconsin Wildlife Action Plan for special considerations that have been developed for Great Lakes Dune and Beach that are specific to individual Ecological Landscapes***


Kohler-Andrae State Park, Sheboygan County

Great Lakes Beach

The Great Lakes Beach community occurs at the interface of land and water along the margins of Lakes Michigan and Superior, often in association with sparsely vegetated, semi-stabilized dune systems. Great Lakes beaches are extremely dynamic features, strongly influenced by water level changes and storm events. The lower beach is continually impacted by waves, the middle beach supports a dynamic plant community affected by wave action only during storms, and the upper beach, affected by wind-blown sand, wave spray, and only the most severe storms, supports a relatively diverse assemblage of plants.

The beach flora is typically sparse due to the scouring action of waves and ice. However, following several years of low water with few major storm events, the vegetation of the upper beach zone can become quite dense. Floristic composition can be an odd mix that includes globally rare endemics, as well as widespread weedy species adapted to quickly colonizing disturbed areas swept bare of competing vegetation. Exposed shorelines may be entirely unvegetated. Plants endemic to the shores of the Great Lakes, such as seaside spurge and American sea-rocket, are characteristic of some of the Lake Michigan beaches, especially during low water periods. Native associates may include silverweed, Baltic rush, and water horehound. The beaches of the Lake Superior region, though they are for the most part unvegetated, are important foraging, resting, and breeding areas for migratory and resident birds.


Long Island, Apostle Islands National Lakeshore

Table 3. Vertebrate Species of Greatest Conservation Need that are (or historically were) significantly associated with Great Lakes beach communities.

Birds
Piping Plover
Whimbrel
Dunlin
Caspian Tern
Common Tern


Piping Plover
Apostle Islands National Lakeshore, July 2006


Caspian Tern, with young
courtesy Tom Erdman


Whimbrel Photo by Ken Papish/USFWS

Table 4. Vertebrate Species of Greatest Conservation Need that are (or historically were) *significantly* associated with Great Lakes beach communities and their association with Ecological Landscapes that support Great Lakes beach.

Great Lakes Beach

Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Birds (5)*				
	Piping Plover	Whimbrel	Dunlin	Caspian Tern	Common Tern
MAJOR					
Central Lake Michigan Coastal					
Northern Lake Michigan Coastal					
Superior Coastal Plain					
PRESENT (MINOR)					
Southern Lake Michigan Coastal					

Color Key
- = HIGH probability the species occurs in this Ecological Landscape
- = MODERATE probability the species occurs in this Ecological Landscape
- = LOW or NO probability the species occurs in this Ecological Landscape

* The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.

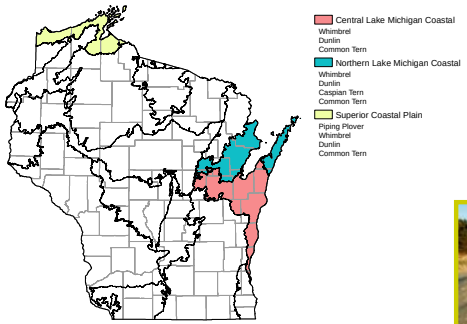

Figure 2. Vertebrate Species of Greatest Conservation Need that have *both* a significant association with Great Lakes beach *and* a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of Great Lakes beach.

Threats and Issues*

- Inadequate management of recreational use, including both motorized and foot traffic, can cause loss of vegetation or undue disturbance to sensitive wildlife species.
- Removal of woody debris, such as driftwood for fires and souvenirs, depletes invertebrate habitat.
- All-terrain vehicle (ATV) use crushes and uproots sensitive vegetation, in turn destroying animal habitat and leaving areas vulnerable to destructive levels of erosion.
- Sand mining can starve beaches and dunes of sand necessary for replenishment of dunes.
- Structures such as solid piers, seawalls, rip-rap, and jetties can interfere with the continual longshore drift needed to move sand along the lakeshore and replenish beaches.
- Artificial shoreline structures and hardening of the shoreline has interrupted the important process of longshore sediment transport that naturally erodes and replenishes sand beaches. Tons of sand must be brought in to artificially replenish beaches each year, primarily for recreational purposes.
- Vegetation removal, including vegetation that existed prior to decreases in lake levels.
- Use of herbicides can destroy populations of rare plants.
- Housing and other development can obliterate areas of this beach community, as well as fragment larger sites.
- Invasive species such as zebra mussel and (formerly) alewife can die by the millions, piling up in windrows several feet high and causing a major nuisance for beach users.
- Invasive plants such as purple loosestrife and common reed can invade beaches but are not generally persistent under normal disturbance regimes.
- High coliform bacteria counts constitute a major health threat.

Priority Conservation Actions*

- Limiting of recreational activities, such as use of off-road vehicles and even hiking, may be necessary to prevent trampling of shallow-rooted vegetation and the introduction of invasive species.
- Lake level management should avoid prolonged periods of unusual, excessively high lake levels.
- Monitor affects of lake levels on the natural community and, in collaboration with other Great Lake states and provinces, develop options to address adverse changes as appropriate.
- Protect beach areas, including Piping Plover nesting areas, using "Environmental Area" (or "Critical Dune Area" if dunes are present) designations (as currently used in Michigan).
- Educate landowners about the adverse affects of activities such as sand mining, excessive mowing, and raking or otherwise uprooting vegetation, including endangered species, from middle-beach and upper-beach areas. Establish conservation incentives and restrictions as needed.
- Implement or continue voluntary programs to monitor for and aggressively eliminate invasive species.
- Work with willing private landowners on agreements to protect relatively undisturbed areas where possible.


Point Beach State Forest, Manitowoc Co.


Kohler-Andrae State Park, Sheboygan Co.