

Wooded Dune and Swale Complexes in the Bufka Farm Area

A significant portion of the 4.25 mile Segment 9 Heritage Trail, located in the Bufka Farm area between Traverse Lake Road and CR 651, is proposed to be routed 1.5 miles through a sensitive ecosystem known as wooded dune and swale complex, made up of alternating upland dune ridges and wetland swales. These are globally rare, vulnerable ecosystems of State Concern that are identified for protection from intrusion and fragmentation. This is an area that currently has very little human traffic, other than deer hunters, and is currently unfragmented and in its natural state. The wetlands are in a pristine state with no invasive species.

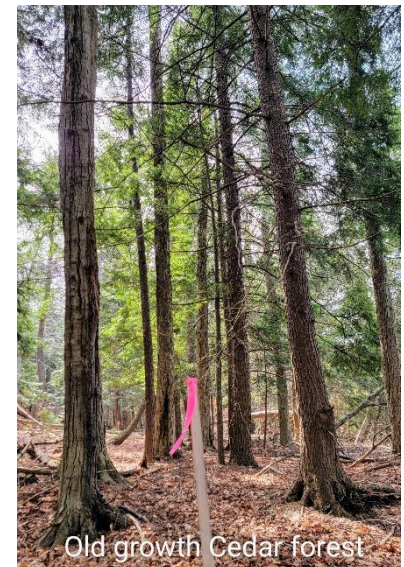


The independent [botanical survey](#) completed by Borealis Consulting stated:

“Wooded dune and swale complex is the second largest community impacted by the Pathway to Good Harbor ... Wooded dune and swale complex is made up of parallel, alternating wetland swales and upland dune ridges formed by receding water levels post-glaciation, and is considered a dune formation. Section 4 of the Pathway to Good Harbor route follows the edge of the Critical Dune Area as mapped (see Fig. 3), however, during field surveys Section 4 was found to be entirely within the wooded dune and swale complex natural community and the trail follows dune swales in part”.

Wooded dune and swale complexes are typically rich in biodiversity. This particular wooded dune and swale complex in the Bufka area features majestic old growth white-cedar trees and eastern hemlock with each comprising 19% of the tree species. They provide habitat for a variety of plant and animal species, some of which may be specially adapted to the specific conditions of these environments. The Borealis report cites the significance of this sensitive ecosystem:

“Wooded dune and swale complex is ranked as Vulnerable at the State and Global level due to a restricted range, relatively few occurrences (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation (Faber-Langendoen et. al. 2012). Wooded dune and swale communities are declining in size and condition due to residential and recreational development and accompanying road building, causing disrupted hydrological conditions, wetland destruction, nutrient loading, and the introduction of invasive species (Cohen et. al. 2020).”



Michigan State University, which manages Michigan’s Natural Heritage Database, recommends the following biodiversity management principles when describing the significance of [wooded dune and swale complex](#):

“Residential and recreational development and accompanying road building in and around wooded dune and swale complexes has resulted in disrupted hydrological conditions, wetland destruction, nutrient loading, and the introduction of invasive species. Conservation efforts should focus on protecting wooded dune and swale complexes from development and fragmentation, preserving natural hydrology, and controlling invasive species. Because of the wide diversity of habitats provided by wooded dune and swale

complexes, invasive species that threaten the diversity and community structure include species from all ends of the moisture and light continuums.”

Michigan Department of Natural Resources identifies wooded dune and swale complex as a priority for protection and the avoidance of fragmentation. In an effort to protect these complexes in the Upper Peninsula, MDNR stated in the [Lake Michigan Wooded Dune and Swale ERA Plan](#):

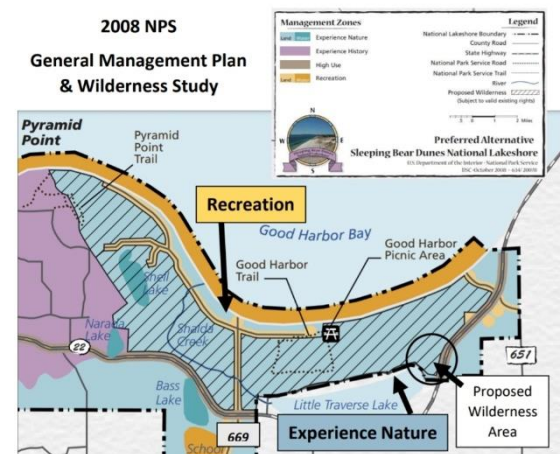
“Wooded dune and swale complexes are threatened in various ways. Habitat fragmentation, hydrologic disruption, wetland filling, nutrient loading and invasive species introductions occur from roads, rail grades, utilities, and shoreline development. In some locations, there is intense recreational use including excessive foot traffic, mountain bike trails and ATV use. Because of the wide diversity of habitats provided by wooded dune and swale complexes, invasive plants {that} threaten the diversity and community structure include species from all ends of the moisture and light continuums.



Many wooded dune and swale complexes harbor rare and endangered species that are specially adapted to the coastal environment. Protecting these habitats is crucial for the survival of these species, contributing to global biodiversity, conservation efforts, and overall ecosystem health. The Borealis botanical survey notes:

“State Threatened pine-drops are known to occur in the wooded dune and swale complex and forested dunes along Good Harbor Bay (Section 3 and 4; MNFI 2023, Michigan Flora Online 2011). No observations of pine drops were made during the survey. Pine-drops are protected under the Endangered and Threatened Species Act of Michigan, Part 365. This rules that “a person shall not take, possess, transport, import, export, process, sell, offer for sale, buy, or offer to buy, and a common or contract carrier shall not transport or receive for shipment, any species of fish, plants, or wildlife appearing on the Threatened and Endangered Species List.” Destruction of a plant or its habitat constitutes a taking. Permits may be issued to remove, capture, or destroy a threatened or endangered species to alleviate damage to property or to protect human health.”

The vulnerable dune and swale complex between Traverse Lake Road and Bufka Farm, and the adjoining rich conifer swamp extending towards M-22, is prime wildlife habitat with the mixture of upland dunes and lower wetlands. This area was originally planned to be included in the proposed Wilderness Area and identified as such in the 2008 General Management Plan for Sleeping Bear Dunes National Lakeshore. The proposed Wilderness Area boundary was changed prior to passage of the legislation in 2014 to accommodate the routing of Segment 9 of the Heritage Trail as proposed in 2009. The trail should have been routed around the proposed wilderness area, not the wilderness area boundary altered to match the Segment 9 trail route. This area is identified as an environmental priority, low recreational impact area in the 2008 NPS General Management Plan. These globally rare wooded dune and swale complexes that are of State concern but were not identified in the 2009 NPS Trailway Plan and Environmental Assessment, nor was the fact that 85% of the trail length was in the State Critical Dune Area.



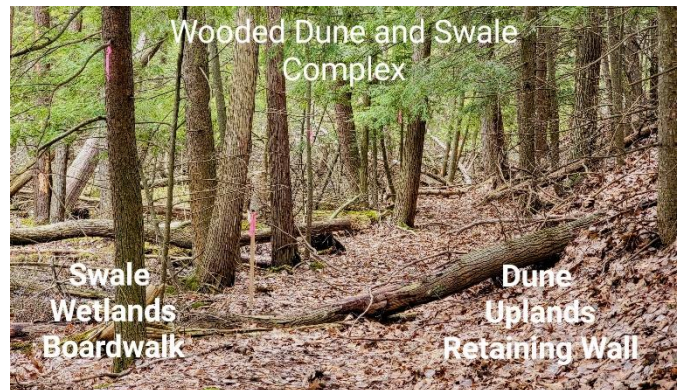
Nearly 20% of Segment 9 requires elevated boardwalks to be built through regulated wetlands, including those that are part of wooded dune and swale complexes. Trail construction requires clearing of trees, brush and vegetation that is in the way of building boardwalks. Much of the wetland areas in the Bufka Farm area are wooded and significant tree removal is required, creating an open corridor without the natural tree canopy. The proposed boardwalk sections are intrusions into natural areas that are currently untouched by human traffic. The boardwalk also creates a barrier to wildlife movement and fragments the vulnerable ecosystem. The open corridor can remove shade protection and open the wetlands up to invasive species.



Construction of boardwalks through wetlands requires using heavy duty equipment to drill piers into mucky wet soil for many feet, even as much as 20' based on soil composition and depth, with heavy-duty drilling equipment. It is a significant challenge getting heavy construction equipment into the wooded dune and swale complex due to the remote wilderness location with the only access being from Traverse Lake Road, Good Harbor Trail or Bufka Farmstead due to steep topography and extensive wetlands in this area.

The construction process creates a long-lasting impact and cannot be restored to its pristine condition. During the March 23, 2024 Cleveland Township Annual Meeting, Krista Phillips, MDOT project manager for Heritage Trail design, commented about the construction designs in the wooded dune and swale complexes in the Bufka Farm area:

“Back in the undeveloped land that is hard to construct, we are still figuring out how to construct the trail. A lot of area it’s a choice between wetland and dune. Are we going to put more retaining walls to hold back the dune or are we going to board walk over the wetlands? It’s so beautiful back there. A lot of areas it’s a challenge to figure out how to get a paver back there. How are we going to get a large excavator to drive the piles in to build the boardwalk? So we still have to answer some of those questions. Even though the plan is to restore wetlands back to its original condition, we are disturbing wetlands. The type of disturbance and restoration, even though its a boardwalk and the wetland can restore, we are still going to plan to mitigate it and buy wetland credits elsewhere because of the disturbance in the wetland area.”



It is not acceptable to significantly impact and alter wetlands in this globally rare and State Concern wooded dune and swale complex by simply buying wetland credits to expand wetlands in another state. This vulnerable ecosystem is beautiful and should be fully experienced and appreciated in their undisturbed natural state. Just because it can be designed on paper, doesn't mean it should be built in nature. There are trail routing options to avoid intrusion into natural areas, especially into the sensitive and vulnerable wooded dune and swale complex. Those alternatives are feasible, low impact and less expensive, allowing globally rare and State Concern wooded dune and swales to remain unfragmented and experienced in its natural condition.