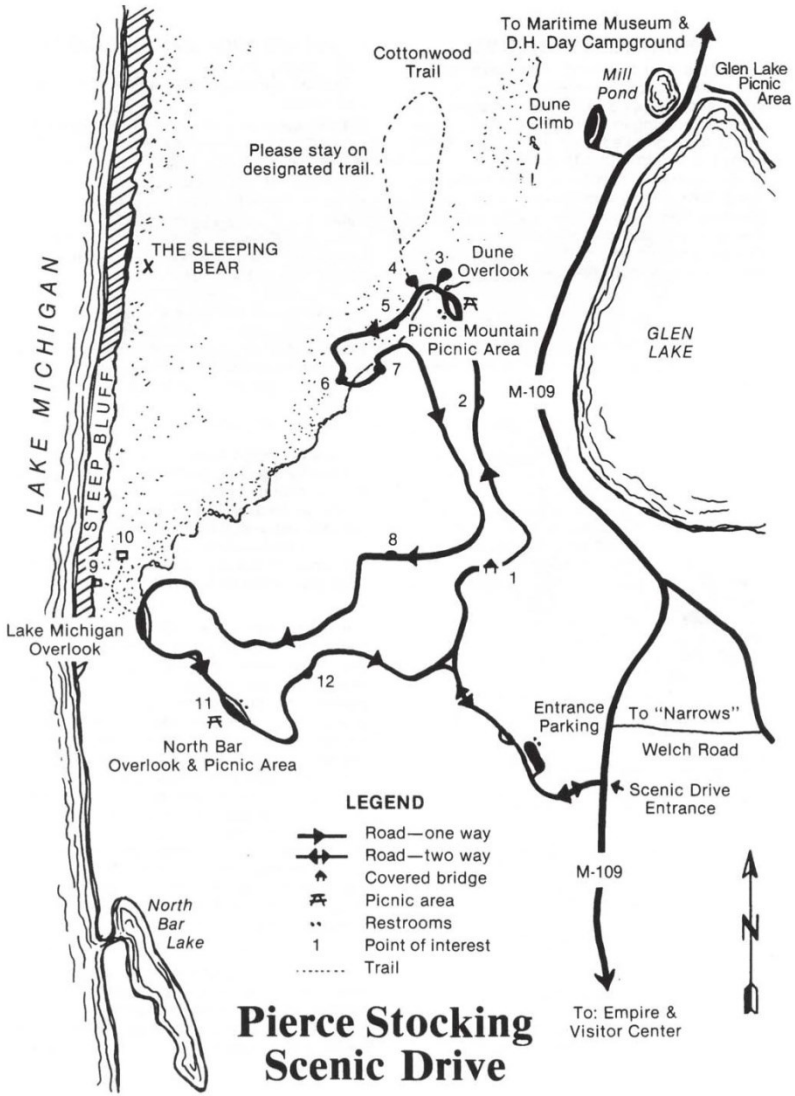


Pierce Stocking Drive

Sleeping Bear Dunes
National Lakeshore
Michigan



A Publication of
Friends of Sleeping Bear Dunes



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Welcome to the **Pierce Stocking Scenic Drive**. You will get a good overview of the Sleeping Bear Dunes National Lakeshore as we drive this 7.4 mile route. We will experience forest and dune ecosystems and drive to dramatic and inspirational vistas of Glen Lake, Lake Michigan, and the dunes. As we drive along, we will pause at each of the 12 numbered stops and learn about the area or get out of the car and walk to the overlooks to experience the beauty of the park. We will only see a small part of the Sleeping Bear Dunes National Lakeshore, so when we get done, you will want to take some time to climb the dunes, walk the Lake Michigan beaches, take a hike, or visit some of the museums before you head for home.

The Sleeping Bear Dunes National Lakeshore is operated by the National Park Service, so a National Parks Pass is required for entrance to the Scenic Drive, the Dune Climb, and for parking elsewhere in the Park. If you are planning a picnic lunch while on the Scenic Drive, you'll find two picnic areas (Picnic Mountain between Stops 2 & 3; and North Bar Lake Overlook at Stop 11).



Fee Booth at the entrance of the Drive

In 2017, the Park Service installed new interpretive signs at stops along the Scenic Drive. Oliver Uberti was commissioned to design the art for these panels. He is a former senior design editor for National Geographic and is well known throughout the world for his educational art. Friends of Sleeping Bear Dunes provided funding for this project. The location and content of these signs will be pointed out as you go through the Scenic Drive.

Who was Pierce Stocking?

The Scenic Drive was named after Pierce Stocking, who spent his youth working as a lumberman in the northern Michigan forests. He loved the woods and spent most of his spare time there developing a self-taught knowledge of nature. He used to walk the bluffs above Lake Michigan, awed by the views of the dunes, Lake Michigan and the Manitou Islands. He wanted to share this beauty with others and developed a road to the top of the dunes. The road, then known as Sleeping Bear Park, was opened to the public in 1967. Stocking continued to operate the Scenic Drive until his death in 1976, and the following year the road became part of Sleeping Bear Dunes National Lakeshore. Several years later it was named **Pierce Stocking Scenic Drive**.

Let's get started! Fasten your seatbelts & let's drive to our first stop.

#1 Covered Bridge

We are driving through a deciduous forest made up mostly of maple and beech trees. In spring (April through June), you will be treated to a bouquet of wildflowers which line the roadway and in some areas carpet the forest floor. In summer, you will see some scattered wildflowers, but you'll have to look carefully, because the flowers are harder to spot. In the fall, you will be surrounded by the vibrant reds and yellows of the leaves that frame the road and carpet the forest floor. Let's enjoy the undulating terrain as we drive through the steep hills and valleys left here by the melting glaciers about 11,000 years ago.

Hey, check out this covered bridge! It is one of the picturesque details that Pierce Stocking built into the Scenic Drive. Covered bridges were developed to protect wooden bridges from rain and snow, which can cause rotting of the timbers. It was cheaper to repair the roof than to replace the structural components of the bridge. The sides of the original bridge were severely damaged by porcupines, so it was replaced by this present bridge which also provides a higher vehicle clearance (13'6").



Let's stop at the pull-off just past the bridge so you can view and photograph the bridge. The first new interpretive sign is located on the right side of the road just past the bridge. This sign introduces you to Pierce Stocking and shows the original map of the Scenic Drive before it became part of the National Park. There are also photos of Pierce Stocking and his dog as well as some of the original buildings that were part of the original Scenic Drive.

Our next stop offers an outstanding view of Little Glen Lake and the "Narrows" where M-22 separates Little Glen from Big Glen Lake. Let's go!

#2 Glen Lake Overlook

If you're in luck, there will be a parking place at the turn-out. This is a popular stop, and it is often full... But don't worry – you can get a similar view of Glen Lake from our next stop! Grab your camera and jump out of the car. The view from here is framed by the trees on the side of the road making it a perfect spot for photos.

As you look at Glen Lake, the forested hill on the left is called Alligator Hill because it looks like the snout of an alligator. The hill is made up of the sand

and gravel carried along by the glacier, and when the glacier melted the run-off streams deposited great piles of sediment to form the hill. Imagine a sheet of ice about one mile thick filled with sand, gravel, and rocks that left this hill of debris several hundred feet high. The “snout” of the alligator is a wave-cut terrace of a lake that occupied this basin briefly during glacial melting.

After we get done with the Scenic Drive, you can see this area up-close by hiking the Alligator Hill Hiking Trail. It has about 9 miles of trails with some of the best views of Lake Michigan and the Manitou Islands. Pierce Stocking’s old sawmill was located across the road from the trailhead, and you can explore the ruins of the old kiln used to make charcoal from the waste wood from the mill. By the way, there are 13 hiking trails in the park, and there are trail maps at each trailhead. Trails are open all year long, and Alligator Hill is a favorite for cross country skiing and snowshoeing in the winter.



View from the Glen Lake Overlook

Glen Lake is famous for its beauty due to the many hues of blue and aqua which show up best on a sunny day. The colors are caused by the varying depth of the crystal-clear water above the light-colored sand. You will see the same effect when you get to the Lake Michigan Overlook. The lake was once connected to ancestral Lake Michigan. Glacial erosion carved out the lake during the last Ice Age. In

post-glacial times, a sandbar developed to the north separating it from Lake Michigan. Glen Arbor, Glen Haven, and the D. H. Day Campground are on that sandbar.

Glen Lake is one of over 20 inland lakes within the boundaries of Sleeping Bear Dunes National Lakeshore popular for fishing and paddling. Stop at the Philip A. Hart Visitor Center in Empire to get more information.

There are two new educational signs at this stop. One sign describes the geology of Glen Lake and that in earlier times what is now Glen Lake was actually part of Lake Michigan. The other sign introduces you to D.H. Day, who was a local entrepreneur who was developing Alligator Hill, the area adjacent to Glen Lake, into a resort development.



O.K. Back in the car and off to our next stop! If you brought a picnic lunch, we can stop at Picnic Mountain. It is located next to the Dune Overlook, so after your picnic you can take a short walk to see the Dunes before getting back into your car. You will find a modern restroom with flush toilets and running water here also.

You'll want to get out of the car again at the Dune Overlook for a panoramic view of the dunes and Lake Michigan. It's only a short walk to the overlook platform. Take your camera!

#3 Dune Overlook

Look north from the overlook platform and you will see the perched dunes and the plant life that flourishes on this harsh landscape. The sand dunes here are called "perched" because they are sitting on top of glacial moraine bluffs made of sand and gravel. They are formed by the prevailing westerly winds blowing the sand out of the moraine and depositing it on top of the bluff. The overlook is on the eastern edge of the dunes about 200 feet high. In some places the dune fronts advance a few feet per year, while in other places the dunes are stabilized by plants and show no movement at all.



Now look further out and enjoy the panoramic view of the area. As you look from left to right, you will see Lake Michigan, South Manitou Island, North Manitou Island, Pyramid Point, Alligator Hill, and Glen Lake. Can you see the historic D. H. Day farm? It's the one with the large white barn. The farm is privately owned, so please don't trespass, but it makes a great photo, so stop along M-109 on your way to Glen Haven and snap a picture.

Just in front of you is a big sandy area that has no vegetation. These areas are called "blow-outs" because the sand has been blown out by the wind and the dune grass and bushes have not been able to grow back to stabilize the dunes. The sand in these areas is dished out by the wind forming these sandy depressions that you see here.

This stop has two new interpretive signs also. You will see the first one on your way to the overlook. It describes the night sky, which is great for viewing in the Park because there is so little light pollution. The sign shows how constellations were used to tell stories and how they change position through the seasons. The second sign tells about the people who first settled in this place – Native Americans – and then the progression of fur traders, loggers, farmers, and tourists impacted the land we enjoy today.

Back to the car! Please stay off the dunes in this area. The dunes are a fragile environment, and hikers can quickly produce paths that take years before the plants will grow back and recover the current stable dune. At the next stop, you will have a chance to walk through the dunes on the Cottonwood Trail.

#4 Cottonwood Trail

The trail loops about 1.5 miles through the sand dunes to the top of the Dune Climb and back. Be sure to take your camera to capture the beautiful vistas and unique wildflowers. Your hike will take you through the dune ecosystem where you will see areas stabilized with native vegetation like dune grass, bearberry, and buffaloberry. You will also see the endangered pitcher's thistle and a variety of blooming wildflowers

depending on the time of year you are hiking. There are also cottonwood and birch trees in the dunes. These trees can be engulfed in sand and then many years later, when the sand blows away a ghost forest appears. You will also get a close-up of some large blow-out areas of pure wind-blown sand. Keep your eyes open for animal tracks in the sand revealing the elusive wildlife of the dunes.



Dune Blow-out with wildflowers in foreground and Lake Michigan in the background.



Top of the Dune Climb from Cottonwood Trail

The hike can be strenuous in places because you will be walking through loose sand. Be sure to wear good shoes and carry some drinking water. Watch out for poison ivy, a common native dune plant that can cause skin irritation if touched. Some of our visitors like to hike the Cottonwood Trail to the top of the Dune Climb and have a driver pick them up there. Please stay on the designated trail.

The interpretive sign at this location is at the edge of the parking lot just before you begin your hike. This sign describes the Dunesmobile rides and the 14-mile route they took visitors from Glen Haven through the Sleeping Bear Plateau. The Park Service stopped the Dunesmobile rides in 1978 to protect the fragile dune ecosystem.

You're probably tired after that hike, so take a drink of water and jump back in the car. You can stay in your car for the next couple of stops and rest up.

#5 Dune Ecology

The conditions in the sand dunes are harsh – intense sunlight, low fertility, limited moisture, and wind that can expose the roots or bury the plant. It's amazing that anything can survive. Yet, there are a number of plants that thrive in this environment. The cottonwood tree is the only common tree of the dunes. Its fast rate of growth allows it to keep pace with burial by sand. Notice that the trees grow in a cluster. They can reproduce by cloning, sprouting new trunks from the roots. The network of roots helps to hold the sand in place and the tree itself acts as a windbreak helping to stabilize the dunes.

The dense root networks of various grasses also hold the sand in place. Once the dune is stabilized, new plants can begin growing on it – plants that are not able to survive on an active dune. Common juniper, the evergreen shrub growing among the grasses, is one of the typical plants of stabilized dunes.



Cottonwood trees, grasses, and other dune stabilization plants.

A new educational sign is located at this stop. You can pull over and read it from the car. It describes how dunes are formed, how they move over time and create ghost forests and finally stabilized dunes and forests.

#6 Leaving the Dunes

Now we leave the dunes area and enter the shady, moist environment of the maple-beech forest. The active dune zone extends 1 to 2 miles from Lake Michigan, because the dunes require the strong winds off the lake to move the sand. Further inland the wind loses some of its strength and can no longer build dunes. As you leave this stop, notice the old basswood tree on the left. Its exposed roots indicate the ongoing contest between plants and shifting sand.

#7 Maple-Beech Forest

What a contrast between the sunny, dry, open environment of the dunes and the shaded, sheltered, and moist world of the maple-beech forest. You are now in one of the best examples of northern Michigan deciduous forest, which is common throughout the park. After we finish the Scenic Drive, we should really take a hike through the forest, so you can see some of the wildflowers, mosses, and bushes up close. There are 13 designated trails throughout the park. The Shauger Hill trailhead is in the parking lot at the base of the Scenic Drive, and the Windy Moraine trailhead is just across M-109 as you leave the Scenic Drive. You can locate the other trails on your park map.

In the forest, plants must compete for a limited amount of sunlight. The dominant trees are sugar maple and American beech. Both are able to survive in the shade of taller trees. If by chance a young tree gets enough sunlight, it experiences a burst of growth. By growing tall, it can reach the opening in the canopy of leaves. These openings in the canopy are usually created by a tree falling because of wind damage, lightning strikes, or disease.



Maple-beech forest

In addition to maple and beech, you will see black cherry, hemlock, and basswood trees here. This is the climax forest in this area. Other plant communities, given enough time, tend to phase into this type of forest. Once established, this forest will remain stable unless it experiences a set-back like a forest fire or logging.

If you stay still for a while and tune your senses, you may see some of the wildlife typical of this habitat. Maybe you will catch a glimpse of a squirrel, porcupine, coyote, or deer. If you are quiet, you might hear a flute-like call of a wood thrush or one of the many other birds that live in the forest.



Large-flowered Trillium

Forest wildflowers are especially numerous in the early spring before the leaves are out on the trees blocking the sun. Some varieties of plants and flowers thrive in shady conditions and are evident in the summer and fall. No matter what time of year you hike through the forest, you will be greeted with the quiet beauty of this natural setting.

#8 Glacier Moraine

As we drive through the forested hills, imagine what it must have looked like just after the glacier melted about 11,000 years ago. Take out all the trees and bushes, and replace them with barren sand and gravel stretching as far as you can see in all directions. From this bleak beginning, plants, by their living, dying, and decaying slowly created a layer of topsoil covering these sandy hills. Living communities of plants and animals have transformed this once-sterile ground into the productive forest that now surrounds you.

#9 Lake Michigan Overlook

STOP THE CAR! You don't want to miss this.

Take the short walk to the overlook platform for one of the most spectacular views in the park. As you walk along the boardwalk, notice the sand blowing up the bluff and to the east. This is the process that created these "perched" dunes about 450 feet above Lake Michigan. The wind blows the sand out of the sand/gravel mix that was deposited by the melting glacier and forms the dunes on top of the bluff.

CAUTION – DO NOT CLIMB

Look at that beautiful sand and the sparkling water of Lake Michigan. What a drop-off to the shore! I know you're tempted to take off your shoes and run down to the beach... but you'll be sorry! Guess what you have to do when you get to the bottom? Yep, you'll look back up the bluff and be wishing you had never left the top. That's quite a climb back up to your car! Not only that, but when you're standing at the top, the hill looks like it's made of pure sand, but when you get started down, you find out that there are lots of rocks and gravel mixed in, and because of the steep bluff, those rocks get rolling pretty fast when they get kicked loose. All the climbing here over the years has also eroded the bluff, and we're all trying to reduce the environmental impact that we have on this beautiful area, so it will still be here for us to enjoy next time we come back.

Let's just head over to the observation deck. Now, look down at Lake Michigan 450 feet below. Look how small people on the beach and boats in the lake appear. From here you can see that the bluff is made of a mixture of sand, gravel, and rocks. That dark line on the bluff is topsoil created by decayed plants and represents the top of the bluff before the sand was blown up to cover it with a "perched" dune.



Lake Michigan Overlook Observation Deck with South Manitou Island in the background.

Look at Lake Michigan. Notice the shades of blue caused by the varying depth of the lake along the shoreline. On a windy day, the blues of the lake are accented by the white lines of waves as they roll in and the whitecaps out in the lake. On a clear day, you can see about half of the park from

this location. Starting from your left (south), you can see the Empire Bluffs 4 miles away and beyond that Platte Point about 9 miles away. Still further south is Point Betsie, the farthest point of land about 15 miles away. Looking to the north, you can see South Manitou Island about 10 miles away. Wisconsin is 54 miles west of here.

Lake Michigan was formed during the last Ice Age when a huge lobe of glacial ice advanced down the continent digging out the basin and then melting. It is the largest lake completely within the United States and is the fourth largest freshwater lake in the world. It has a profound influence on the region, including the formation of the sand dunes.

In recent times, the bluff has been eroding at a rate of about 1 foot per year. Waves wear away at the base of the bluff and sand and rocks slide down to the beach. This process has gone on for many years, so we can infer that this hill extended much further out into the lake. The shallow waters offshore also indicate that a peninsula once extended from here about 2 miles out into the lake. This means that the site of this overlook used to be inland protected from the strong winds off the lake. Plants took hold, and through decay, produced the thin layer of soil that we see here. As the waves and wind wore back the old peninsula, this site got closer to the lake, and the resulting wind exposure produced the active dune environment you see today.



There are three new interpretive signs on the observation deck. One sign tells the legend of the Mother Bear and her two cubs fleeing a forest fire in Wisconsin and swimming to Michigan. They become the two Manitou Islands and the Mother Bear Dune on the mainland. The story is dramatic and memorable, so stop and read the details.

Another sign describes how the Mother Bear dune is moving and changing over time. One day, the Mother Bear will be gone completely. The last sign describes the Manitou Passage between the mainland and the Manitou Islands. This was (and still is) a busy shipping channel. Rapidly changing weather, shallow shoals, and a large number of ships resulted in many shipwrecks in this passage.

As you leave the observation deck, follow the boardwalk to your left to the Sleeping Bear Dune Overlook. The short walk gives you another beautiful view of Glen Lake on your right. You will also see good examples of dune grasses and sand cherry bushes on your left as you walk to #10. Take a moment to sit on the bench to enjoy the view.



#10 Sleeping Bear Dune Overlook

The Sleeping Bear Dune is the large dune about 1 mile north of the observation deck along the edge of the bluff. It hardly looks like a bear now, because it has been eroding rapidly in recent years. Around 1900, it was a round knob completely covered with trees and shrubs. You can still see some of the thick vegetation that gave it a dark shaggy appearance.



The Sleeping Bear Dune is estimated to be about two thousand years old and has a fascinating history. It is classified as a “perched” dune because it is perched on

top of a plateau, high above the lake. When the dune was forming, it was somewhat inland – not at the edge of the bluff, as it is today. Wind carried sand from the upper portion of the bluff and deposited it to form the dune. Over time, the bluff eroded away and the dune is now on the edge of the bluff and is beginning to erode away itself. For many years, Sleeping Bear Dune was about 234 feet high with dense plant cover, but by 1961 it was only 132 feet high and it continues to erode away. The major cause of its erosion is wave action wearing away at the base of the bluff on which the dune rests. As the west side of the dune loses its support, it cascades down the hill to the beach. The wind is also a major factor in removing sand and destroying the dune’s plant cover. It is only a matter of time until the “Bear” disappears completely.

Head back to your car and drive the short distance to Stop #11.

#11 North Bar Lake Overlook

You don’t want to leave the Scenic Drive without stopping at the North Bar Lake Overlook. This vantage point puts you high above Lake Michigan, Empire Beach, and North Bar Lake for another spectacular view. This is especially beautiful when the Fall colors are on display because of the expansive view over the top of the maple-beech forest. There is a nice picnic area with vault toilets at this stop as well.



Walk over to the observation deck and look at the small lake below. It was formed behind a sand bar at the edge of Lake Michigan. At times the wave action builds up the sand bar and separates North Bar Lake from Lake Michigan. At other times, a small connecting channel exists between the two lakes. This little lake occupies part of an ancient bay on Lake Michigan flanked by Empire Bluffs on the south and Sleeping Bear Bluffs on the north. Shorelines have a natural tendency to become straighter with time. Wave action focuses on the headlands and wears them back while shoreline currents carry sediment to the quiet bays and fill them in. Deeper parts of the bay are often left as lakes when sand fills the shallower parts. The same process that formed North Bar Lake also

formed many of the other lakes in northern Michigan: Glen, Crystal, Elk, and Torch Lakes for example.

North Bar Lake is ideal for swimming in the summer. It is warmer than Lake Michigan because it is smaller and the sun can warm it up more quickly, and it is surrounded by pure sandy beaches. Children like to play in the small creek that flows from North Bar Lake to Lake Michigan, and the older kids can enjoy the Lake Michigan wave action. You will find a parking lot and vault toilets at the lake. To get there, drive back to Empire and follow LaCore street north to Voice Rd. and Bar Lake Rd. (gravel) to the North Bar Lake Parking Lot.



The last of the new interpretive signs is located at this stop. It shows how people, their activities, and the dunes have changed over the past many years. These lands have been a source of prosperity and enjoyment for generations. Take a few moments to browse the photos on this sign showing some of these activities and the people who lived and played here.

Now we're almost done. We have one last stop.

#12 Pine Plantation

The pine trees at the side of the road are planted in rows, are all about the same size, and are not mixed with other kinds of trees. This is a “pine plantation”. You can estimate the age of the trees by counting the whorls of branches. These trees were planted before the land became part of Sleeping Bear Dunes National Lakeshore.



Pine Plantation

Logging and farming played an important role in Michigan’s history, but many tracts of land were left depleted. Property owners planted pine trees in an effort to improve their land. As you drive through northern Michigan, you will see many pine plantations along roadsides and edges of fields. Pine trees serve a number of purposes: they prevent soil erosion, provide a windbreak, yield a timber crop, and provide some wildlife habitat. Yet, for all their benefits, pine plantations are out of place in Sleeping Bear Dunes National Lakeshore. The park was set aside to preserve the natural environment. Therefore, native forest growth is more desirable here than pine plantations. These pine trees are crowded too close together and effectively keep any other vegetation from growing. In some parts of the park, portions of pine plantations have been cut selectively to encourage a mingling of natural forest growth among the pine trees.

What Else Can I Do?

Now you have a good introduction to Sleeping Bear Dunes National Lakeshore. As you leave the Scenic Drive, head north on M-109 to the Dune Climb and walk along the base of the dune. You will find modern restroom facilities and a bookstore as well as picnic tables and an accessible interpretive trail on the north side of the picnic area that follows the edge of the dune.

Visit the historic village of Glen Haven on the shore of Lake Michigan where you will find several museums and the original D.H. Day General Store.

Stop by the Philip A. Hart Visitor Center in Empire, MI to browse the Natural Resources Exhibit to learn more about the ecology and natural history of this area, or talk to one of the friendly rangers or volunteers to get more information about Sleeping Bear Dunes National Lakeshore.