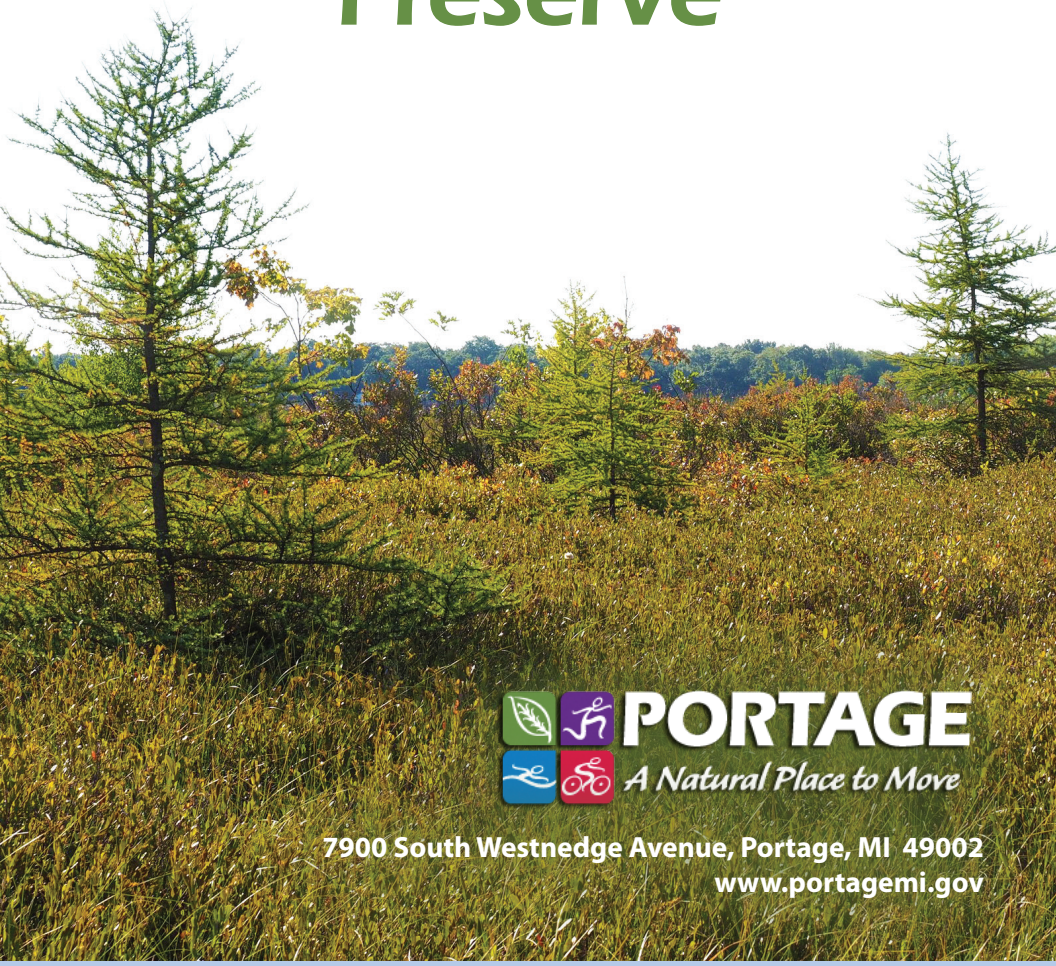
Wander the Wetland with the Habitat Gourmet

West Lake Nature Preserve



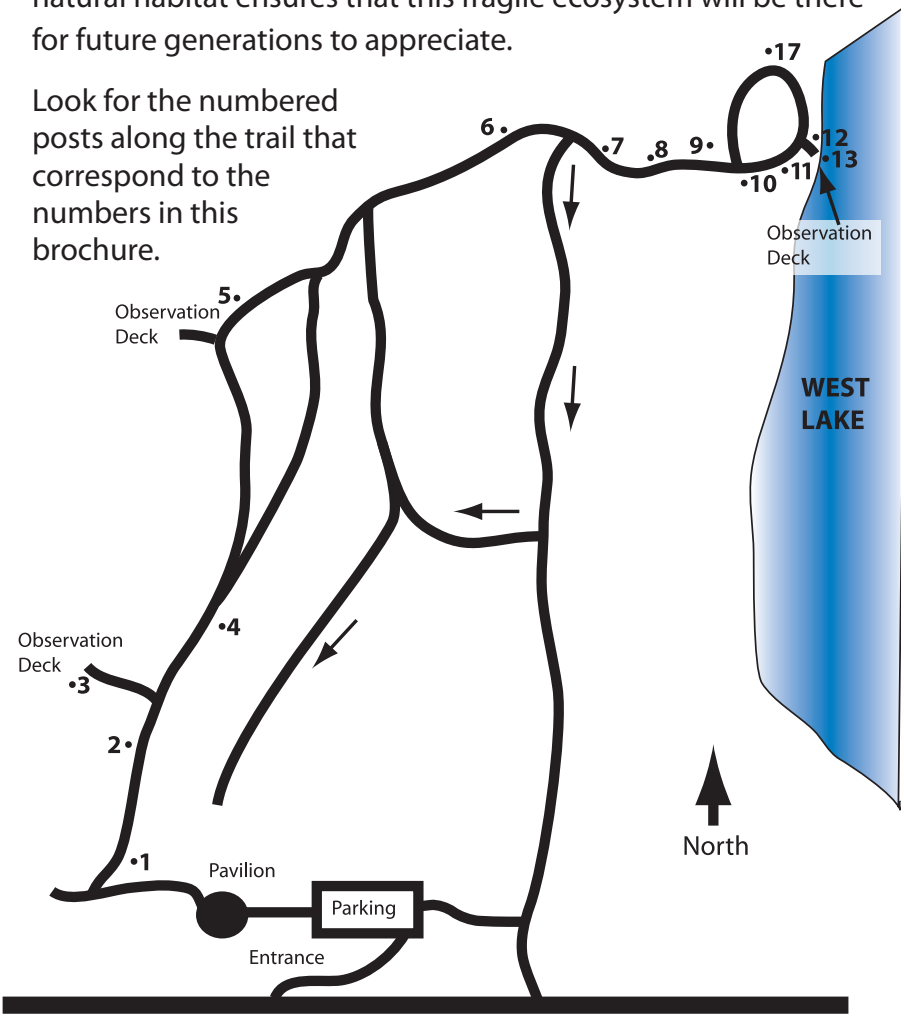
PORTAGE
A Natural Place to Move

7900 South Westnedge Avenue, Portage, MI 49002
www.portagemi.gov

Welcome to West Lake Nature Preserve!

West Lake Nature Preserve is a 110-acre wetland bog with 1,400 feet of frontage along West Lake and within close proximity to the City Centre. This beautiful park features a bark trail that winds through a shaded lowland forest and ends with an observation deck overlooking West Lake. Providing recreational opportunities while preserving this natural habitat ensures that this fragile ecosystem will be there for future generations to appreciate.

Look for the numbered posts along the trail that correspond to the numbers in this brochure.



1 As the Habitat Gourmet, you know that you can create all sorts of wetlands by adding just a pinch more of this or a dash more of that.

Whether you're making a marsh, swamp, pond, bog, or fen depends on which ingredients are in the mix — and top quality ingredients are a must!

There are enough ingredients here at West Lake Nature Preserve to make a couple of different kinds of wetlands. Let's look in the pantry and see what we've got . . .

Basic Wetlands Recipe
from the Kitchen of the Habitat Chef

Habitat chefs often start with a basic recipe, then add different things to it to make the various kinds of environments.

The three key ingredients in the Basic Wetland recipe are:

- **Lots of water**
- **Generous amounts of dark brown, rich soil**
- **Bunches and bunches of water-loving plants!**

These three key ingredients are necessary no matter which kind of wetland you're making. As you walk through the park, notice how often you find these three basics, even when the amounts differ.

United States Fish & Wildlife Service (USFWS)

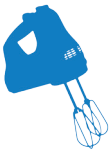
2 Chefs know that in an efficient kitchen, there is a specific tool or gadget that best performs each task. For example, a potato peeler isn't the best tool for beating eggs! High-quality wetlands are the same way; they come with specific 'tools' that perform specific functions that benefit plants, animals, and people. Here are a few examples:

WETLANDS ARE LIKE KITCHEN TOOLS IN THESE WAYS

Wetlands keep the water supply clean by straining out silt and other debris.

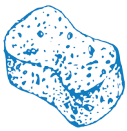
COLANDER
Drains excess water from food

The plants and animals living in wetlands help to mix nutrients and oxygen into water.



HAND MIXER
Mixes ingredients together.

Wetlands help prevent floods by absorbing excess water after heavy rains, and retaining moisture during droughts.

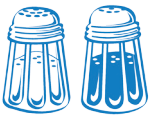


SPONGE
Soaks up moisture.

Wetlands provide resting and nesting places for a wide variety of animals.

CHAFING DISH
A container where food can 'rest' before serving.

The huge diversity of plants and animals that live in wetlands are like herbs and spices that jazz up a recipe.



SPICES
Make food tasty!

Wetlands act like environmental antacids by neutralizing some water-borne toxins.

ANTACIDS
Soothe an upset stomach.

3 We could make a dandy batch of Marsh Munchies from this standing water!

There's a wide variety of plant species that will provide plenty of food and nesting areas for lots of different kinds of animals. These grass-like plants will make it extra-rich — one of the most biologically diverse ecosystems in Michigan.

Marsh Munchies – *from the Kitchen of the Habitat Chef*

Buttonbush • Amelia Hansen

INGREDIENTS:

- Lots of water
- Tons of dark thick wet soil

Plants

- 40 buttonbushes (very important wetland shrub)
- 20 cups cattails (provide habitat and food for many different animals)
- 40 pints of bulrushes
- 45 pond lilies (mixture of white and yellow blossoms provide nectar for insects; underwater growth makes great fish habitat)
- 4 pints of duckweed

Cattails • Amelia Hansen

American White Waterlily • Cephas

Duckweed • cbgrfx123

Animals

- 2 waders, such as green or great blue herons
- 4 red-winged blackbirds
- 30 Frogs
- 20 crayfish
- 40 small fish, such as mud minnows
- 30 dragonflies

Great Blue Heron • USFWS

Red-winged Blackbird • USFWS

Seasonings

- Large handfuls of aquatic invertebrates

Central Mudminnow • Ellen Edmonson & Hugh Chrisp

Directions:

In a lowland area, whisk together the water, soil, and all of the plants and animals. Let settle for many years and allow ingredients to marinate. Keep mixture moist. Add seasonings and seeds to taste.

4 Chefs don't always follow a recipe to the letter. Sometimes they like to mix things up for different results. Here are two habitat recipes, that are quite similar except for the differing amounts of moisture.

Sarah Reding

One dish (the wetland) has lots of moisture and is rich in plants and animals.

The other one (the upland) has grainy, sandy soil and fewer plants and animals.

Neither one is better or worse: they're just different.

Looking along both sides of the trail, can you see where the wetlands end and the uplands begin?

Look to see if the soil is sandy or muddy.

Are the plants standing in water or floating on it?

Are they growing in mud or on dry land?

Sarah Reding

5 It's true that not all recipes turn out, like when you forget to put the sugar in the cookie dough ... *what a flop!*

Something like that may have happened here.

These dead trees may not have had enough sun or nutrients, or they may have gotten too much water. But nature never throws its mistakes in the trash! These dead trees will break down into nutritious soil that will help future tree seedlings to grow.

Sarah Reding

Sarah Reding

6 Let's whip up a swamp! We will need water — but not too much — and trees that like to have their feet wet all the time.

Swamp Soup – from the Kitchen of the Habitat Chef

INGREDIENTS:

Conditions

- 1 medium to large low-lying area
- Lots of water (choose standing water that rises seasonally and floods)
- Piles of high nutrient organic matter
- Sprinkling of silt

UFORA

Plants

- 300+ trees (red or silver maples, basswoods, sycamores, black or green ashes, or any combination of water-loving trees)
- 100 shrubs (willows, alders, poison sumac, or buttonbush are good choices)

Silver Maple • Muffi

Green Ash

Sycamore

Basswood
Friends of the Louisiana State Arboretum

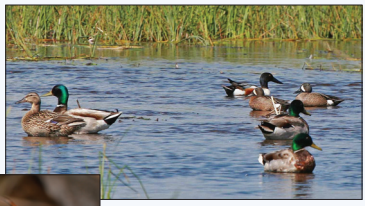
Poison Sumac • Sarah Reding

Buttonbush • Bob Peterson

White Willow • Wikimedia Commons

Animals

- 200 + frogs (try a combination of spring peepers, wood, chorus, leopard, green, and bull frogs.)
- 25 + songbirds (choose both migratory and resident species: wrens, warblers, sparrows, cardinals, chickadees, and woodpeckers work well in this recipe).
- 3 pairs of waterfowl (geese or ducks)
- 35 + small mammals (any combination of shrews, voles, moles, muskrats, and rabbits; add a few opossums and minks)
- 3 raccoons
- 2 deer



Mallard, Shoveler & Blue-winged Teal Ducks • USFWS

Marsh Wren • Steve Arena, USFWS

Wood Frog • Ryan Hodnett

Raccoon • Mwanner

Mink • USFWS Mountain-Prairie

Salamander Eggs • Thompsma

Seasonings

- 20,000 + amphibian eggs to taste (use both salamander and frog eggs)

Directions:

Beat together the high nutrients which will be exchanged between land and water. Add seasonal flooding, organic matter, plants, and animals. Serve in a flood zone. Enjoy!

7 Look across the bridge and see how the habitat recipe has changed.

This habitat, called a 'bog', has been like this for the last 10,000 years, ever since the glaciers melted and left behind this low, wet area. It's an acidic, nutrient-poor habitat and the unique plants that live here have adapted to the lean conditions. Can you find any of these interesting bog plants? Their flavor is what makes a Bog Brownie . . . . a Bog Brownie!

Bog Brownies - from the Kitchen of the Habitat Chef

Sarah Reding

INGREDIENTS:

Conditions

- Low-lying area
- Lots of acidic water

Plants

- Giant bunches of Sphagnum Moss
- 50 Trees (choose acid-loving evergreens such as tamarack or black spruce)
- 100 Shrubs (acid-lovers are best, such as blueberries, cranberries, and leather-leaf)
- 200 Grasses (use unique bog species, such as cotton grass)
- 40 - 50 Carnivorous plants, such as pitcher plants and sundews. These plants eat insects to supplement the lack of nutrients in their acidic habitat.

Cottongrass • Amelia Hansen

Leatherleaf • Amelia Hansen

Tamarack Tree • Bisnicks

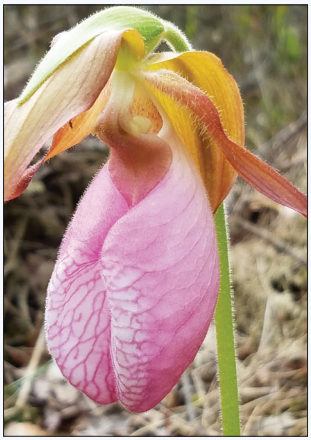
Animals

- The bog's acidity inhibits the development of insect larvae, which in turn reduces the number of insect-eating birds that live there. (Substitute with short-tailed shrews, and a sprinkling of spotted turtles.)

Spotted Turtle • Todd Pierson

Short-tailed Shrew • Gilles Gonthier

Halloween Pennant Dragonfly • John Flannery



Pink Lady's Slipper • Sarah Reding

Seasonings

- 1 Tbsp each: showy lady's slipper, grass-pink, and other flowers associated with bogs
- 5 tsps: Assorted dragonflies

Directions:

In a shallow depression, blend together the sphagnum moss and acidic water. Allow to marinate for 10,000 years until a mat of sphagnum moss forms. Then, whip in the grasses and carnivorous plants. Garnish with a dollop of trees, shrubs, and wildflowers.

Round-leaved Sundew • Amelia Hansen

8 Take a look at the yellow-green mat of sphagnum moss on which the other plants are growing.

It has taken 10,000 years for this thick layer of sphagnum moss (also called peat moss) to develop!

The moss traps so much water in its cells that 25% of its weight may be liquid. It's almost like a biscuit soaking up juice in strawberry shortcake! Sink your hands into it and feel how it gets colder the deeper you go down.

Sphagnum Moss • Amelia Hansen

9 Depending on what time of year you are visiting, these tamarack trees may be covered in soft green needles or dry golden ones.

Or the trees may have already shed their needles, creating a golden mat on the ground. Tamaracks are 'deciduous conifers', meaning that they are evergreen trees that shed their "leaves" (needles).

Tamarack Needles • Mike Gifford

Tamarack Needles • Sarah Reding

Hmm . . . those golden needles would sure make great sprinkles on the Bog Brownies!

10 You can make any recipe more nutritious by adding healthy ingredients. Berries boost the nutritional value of the bog for birds and other animals, including people.

Wild Blueberries • Sarah Reding

Wild blueberries are usually smaller than those that are commercially grown but – remember -- the smaller the berry, the sweeter the juice! That's because there's a higher ratio of sweet skin to bland pulp on a little berry.

Wild Blueberry Flowers • Sarah Reding

Wild Blueberries • Sarah Reding

Cranberries ripen in the fall. Birds like them and so do we, in cranberry sauce or jelly.

Wild Cranberries • Max Pixel

These shrubs are called leatherleaf and they are the dominate plant on the sphagnum moss mat. Their flowers provide early-spring nectar for native bees and other insects, who in turn pollinate the blueberries and cranberries – along with hundreds of other plants that provide food items that we eat. Did you know that one out of every three bites of food that we eat are pollinated by bees? That's why these leatherleaf plants are so important, both for our bog recipes and others!

Leatherleaf Flowers • Amelia Hansen

11 Protein is a very important part of a balanced diet, but the nutrient-poor bog doesn't offer much of it. These carnivorous pitcher plants solve the problem by consuming protein-rich insects. How do they do it?

Pitcher Plant • Creative Commons

Pitcher Plants • Amelia Hansen

Look closely inside the "pitcher" and you will see lots of hairs on the side and some watery liquid at the bottom. This liquid contains digestive enzymes, kind of like the ones inside your stomach. Insects are attracted to the plant's reddish-purple color, then fall from the pitcher's slippery rim into the liquid. The downward pointing hairs make it hard for the insect to get out and it ends up being dissolved in the liquid. The plant lives by absorbing this "insect gravy" through its cells.

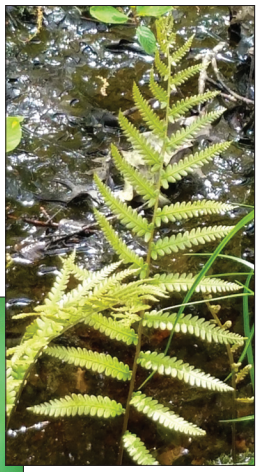
Pretty gross, but only if you're an insect. Pretty cool if you're a human!

Pitcher Plant • Aaron Carlson

12 &13 It sure has gotten hot inside the kitchen after cooking up all these Wetland Recipes! Good thing we've arrived at the lake with its nice, cooling effect. It's almost as if someone switched on the kitchen fan!

Now that we've come to the end of the path, think back on the different habitats you've walked through and the three distinct Wetland Recipes that you've cooked up: Marsh Munchies, Swamp Soup, and Bog Brownies.

Great Blue Heron • Frank Schulenberg



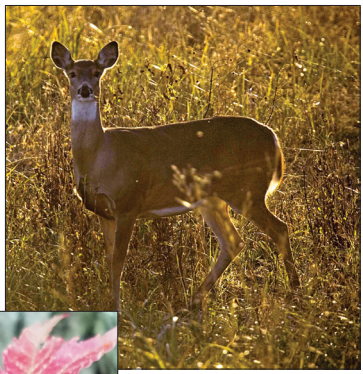
Sarah Reding

These three habitat recipes shared many of the same ingredients, such as water and plants, but in different proportions. Varying the proportions is what makes each of these Habitat Recipes different, and successful.

Eastern Cottontail • Jim the Photographer

Yellow Warbler • Rodney Campbell

Tamarack • Sarah Reding



White-tailed Deer • Steve Hillebrand, USFWS

Grass Pink Orchid • Scott Hereford, USFWS, Southeast Region

Young Red Maple Leaves • Sarah Reding

Spotted Salamander • Fyn Kynd Photography

Sarah Reding

Bog Birch • Sarah Reding

Sarah Reding

Now, as you head back, take a closer look and enjoy the beauty that you and the Habitat Chef have created.

To visit the unique bog wetland at Bishop's Bog Preserve, follow the signs and cross South Westnedge Avenue.

First edition 2017
Produced by Kalamazoo Nature Center
Written by Sarah Reding and Amelia Hansen
Design by Amelia Hansen Illustration & Design

Front & back cover photos by Sarah Reding