

Building a Pitcherplant Bog

Full Description

Jennifer Ceska/Anne Shenk

Introduction to Pitcherplant Bogs

Pitcherplant bogs require full sun, sand and peat soil, and flow-through water. Despite what many people think, bogs are not stagnant sitting wet areas. In the wild, they are often supplied with water by spring heads or seeps, and the water is flowing very slowly. If possible, choose a site away from excessive chemical run-off. You will be digging a trench or moat to protect your bog from run-off, but the less exposure to chemicals, the better for the health of your bog. Chemicals of concern include fertilizers, fungicides, herbicides, pesticides, silt, and run-off from parking lots. Pitcherplant bogs are acidic, low nutrient, saturated soils. Run-off not only potentially poisons your bog species, but can introduce fertile sediment allowing other non-bog species to move into your bog. - This is a problem in the wild where sediment due to construction has washed into the bog, introducing nutrients, and encouraging growth of woody species.

Pitcherplants (the genus *Sarracenia*) are carnivorous plants found only in the Southeast. Pitcherplants capture prey with modified leaves through passive means (as opposed to active capture like the grasping “hands” of Venus’ flytrap). Patiently they wait for innocent insects. (Que the eerie laugh!) Nectar glands line the opening of the pitcher, luring insects within the lip. Once inside, stiff, downward pointing hairs force the insect deeper and deeper within. The more the insect struggles, the further it descends. The inside surface is glaucous (smooth and slippery). At the bottom of the pitcher, hairs exude digestive enzymes, and a pool of enzyme rainwater waits to digest the prey. Fortunately for we field botanists, pitcherplants eat only insects, but I am told that bones from small frogs have been found in the belly of pitcherplants.

Pitcherplants lurk in bogs, a spooky name which conjures up haunted visions of Grimm’s swamps. In reality, pitcherplant bogs are acidic, nutrient poor seeps with slowly moving (stalking?!) water which usually comes from a spring head. Bogs, most notably Coastal Plain bogs, are wildflower meadows teeming with color and life, probably one of Georgia’s most beautiful habitats. Pitcherplant trumpets raise above a great diversity of wildflowers, orchids, grasses, and sedges.

Georgia has different kinds of bogs: Coastal Plain, Piedmont, and Mountain bogs. You say you’ve never seen a bog in the Piedmont? Charlie Wharton’s book, *The Natural Environments of Georgia* (1978, p. 96) reads “most if not all Piedmont bogs were eliminated by bulldozer or drainage between 1945-1960.” Coastal Plain bogs are a threatened habitat, once covering thousands of acres. Now they have been reduced to tiny pockets because of suppression of fire, drainage of habitat, and chemical runoff from agriculture. Mountain bogs are Georgia’s rarest habitat. Once abundant, few are known, and location

information is guarded to protect Georgia's last sites. Bogs differ in the types of pitcherplant species. Georgia's bogs are unique in that they are the only bogs where you will find more than one pitcherplant species in a single bog. Our bogs and the species within are botanical rarities.

All pitcherplant species in Georgia are protected by the state because they are collected from the wild by unscrupulous (troll-like?) nurserymen and gardeners. Digging pitcherplants from the wild is inexcusable, because they can be propagated easily from seed. Perhaps it is too bad that pitcherplants aren't more aggressive in their carnivory.

This technique was designed and perfected by the Atlanta Botanical Garden.

Materials

Pond liner or roofing liner, at least 12' x 14'

River sand

Peat moss (milled sphagnum moss)

Soaker hose

Shovels

Small rocks (pebbles)

Large rocks or logs

Measuring tape or yard stick

Choosing the Site

- Pitcherplant bogs require full sun. Western sunlight, the more intense of the day, is especially important for good growth.
- Choose a site with the slightest slope if possible (one inch slope per three feet or less is ideal). If your land is flat, you can create an artificial slope when you dig the hole. Do not choose a site that has a steep slope, we are looking for slight gradation.
- Locate your bog near a water source. You may need to run a connecting hose from your water source to your bog. You need to be able to turn the water on and off again as needed. Connect your water source to the soaker hose to water your bog.

Digging the Hole

- Dig a hole five feet by seven feet wide and 18" deep. You can design the shape as you like. Peanut shapes work well. Simple shapes are usually better. The sides should be nearly vertical, with just a slight slant for laying the liner (see illustration). Carry the excess dirt away from the bog for use elsewhere on your school site.

- Identify the high end and low end of your bog and hole. The high end is called the source. That is where the soaker hose is buried. The low end is the sink. That is where the run-off will go. If your land slopes naturally, this will be determined for you. If your land is flat, let the source be nearest to your water source. Water will flow through your bog, watering from one end and running off the other.
- The bog should be 18" deep with steeply sloping sides. Shape the bottom according to your source and sink directions. You want to create the slight slope of the bog along the bottom. Step back a few feet, kneeling to get a good view of the whole scene. You want the source end to be ever so slightly higher than the sink end. Yes, the water may pool a bit at the sink end, but this will create microhabitat for wet loving plants.
- Remove all rock, sticks, or any other sharp objects from the hole. Make the bottom and floors as smooth as possible.

Laying the Liner

- Now that you have a big hole in the ground, you can lay the liner in it. Keep it folded or rolled and lay it across the hole. Unfold the liner, centering in the bottom of the bog.
- Push the liner down flat on the ground, contacting the earth all around. The liner should lay flat against the bottom and all the sides. Lay the liner as flat and smooth as possible. Some folds are inevitable, just smooth them or lay them as neatly.
- There should be a lot of extra liner laying around the top of the bog. You want to maintain at least a 12 inch lip around the top of the bog (see illustration). This can be cut and removed later, but *do not* cut it now. This is your very last step. The extra material is needed for securing your liner with rocks and sand.

Filling the Bog - Sand

- Fill the bog with 12" of river sand. Do not use granite sand or playbox sand. Granite sand can only be used if it has sat out in the rain for a year leaching the chemicals in it. Playbox sand is too fine. You want a coarse sand.
- Water in the sand. Soak it, but do not make a swimming pool out of it. The water will settle the sand and will show you where your source and sink are. Note where the water flows as this will be where you install your well.
- Smooth the sand creating the slight slope of the bog once again (from source to sink or high to low). Remember, this is a slight slope, one inch every three feet.

Filling the Bog - Peat

- On a tarp next to the bog or on a cement surface nearby, mix peat (which is really milled sphagnum moss) with sand in the ratio 3:1 (peat:sand). This is the

material your bog plants will actually grow in. Dampen the mix slightly with water. The peat will hold a lot of water, but do not soak it at this point.

- Load your peat:sand mix into the bog. You should fill it to the top, even with the edge of your bog.
- Water in your peat:sand. It should settle, and you may need to add more to bring the surface even with the edge of your bog. You should also see the water flow from the source region to the sink. It is OK if water pools at the sink end.
- Once you have the bog well watered, let the bog settle.

Dancing on the Bog - Packing it down

- The peat and sand need to be firm in your bog. Pitcherplants and other bog species like to be secure in their bog and need to be able to get a tight hold. Get some people together who do not mind getting their shoes wet (rubber boots come in handy here) and have them stomp on the bog all over, packing it in. Water should be coming to the surface where you stomp.
- After the entire bog has been packed down, get out of the bog, lean over and smooth the surface with your hands so that it is even again.

Securing the Liner

- Line the bog around the upper lip with sand. No liner should be exposed to the sun as it will deteriorate rapidly.
- Lay stones or logs around the top of the bog. This will hold the liner down and will define a boundary for the bog so people won't walk in it. Rocks and logs also give people a place to kneel or sit near the bog.

Watering the Bog

- Cut a four foot length of soaker hose. One end will need a stop o block (prevents water from flowing out the end), and the other end will need a hose connection. We recommend a "quick connect" that allows you to click a regular hose into your soaker hose quickly without sprays or leaks.
- Lay the soaker hose around the source end of your bog (upper end). Lay it in an arch or half circle at the top of the bog. When it is turned on, water will trickle out of the soaker and will wick through your bog following the slope to the well end where excess water will drain out.
- Bury the soaker hose about 2" down into the sand covering it completely so it is not exposed to the sun. Leave the plug end (the end that connects to your water source) sticking out so you can get to it easily.

Building the Well

- At the sink end of your bog, you may want to build a well for your runoff water to flow into. In the summer when you are watering a lot, or when it rains, excess water will flow over the lower end of your bog. Some people will just let this water flow. Depending on what other landscaping you are doing, you may need to catch this water.
- Since you have watered in your bog by now, you can see where it is flowing and where the runoff water is heading. Beyond the edge of your plastic liner, dig a hole at least two feet deep and 1 1/2 feet in diameter. You can make it deeper than this but it does not need to be wider. This is your well.
- Fill the well with gravel or small rocks. You can cover the very top with sand.
- Do not place logs or large rocks on the pond liner in front of your well because you will block the flow of excess water into the well and will cause the excess water to pool. Cover the pond liner in this area with sand. The weight of the sand and the neighboring logs or rocks should be sufficient to secure the liner here.

Building the Trench

- You will need to build a moat or trench around the top half of your bog to protect it from any runoff. Fertilizers, pesticides, clay, sediment, and rain runoff are very bad for the health of your bog. They can carry anything from poisons to aggressive weedy seeds into your bog. Dig a trench one foot deep and one foot wide about nine feet long around the top and upper sides of your bog. The trench should be outside the pondliner. Basically, you want to look at the surrounding topography and any place where water from the surrounding area can get into your bog, you want the trench to stop and catch that water flow.
- Fill the trench entirely with sand.
- Make sure the pond liner lip does not go into your trench. The trench should catch any runoff and filter it below the bog. The pondliner must be separate from this. Lift the edge of the pondliner up a bit filling it with sand below to ensure the water collected by the trench will not get into the bog.

Planting the Bog

- Once you have your bog built, leave the water on for about an hour and make certain everything is ok. Water should flow from the top through the bog and out the bottom. The peat and sand should be even with the top of your bog and be mushy. The top of the bog has been packed down to secure the plants. Ok, you are ready to plant your bog.

- Bog species can be planted the same way as the pitcherplants. Remove the plant from the tray or pot and gently loosen the roots so they extend their full length. The length of the extended roots equals the depth of the hole to plant them in.
- Dig a hole the length of the roots and suspend the plant within this hole. Make certain that the roots are able to spread out their hole length. This will help them to establish quickly in their new home. The crown of the roots should be even the surface of the bog. You do not want to bury the crown way below the surface where it can rot or have it sticking up above the surface where it will dry out.
- Press the soil all around the roots with your fingers, planting it firmly.
- Once you are through planting the bog, immediately turn on the soaker hose and water the bog well. Until your plants are established, you will need to water the bog frequently (perhaps every other day for an hour depending on the amount of rain). The pitcherplants may not elongate or grow tall right away. First they will establish their roots. Then, they will grow more pitchers. Do not fertilize your bog. Be patient, they will grow and bloom for you soon. Then you can collect seed for more studies and conservation work!