Terrarium Care Guide

Background

Terraria are mini ecosystems that contain plants and sometimes small animals. These mini ecosystems are ideal in a classroom as a visual reference when studying ecosystems, the water cycle, nutrient cycles, life cycles, and plants. The bog and insectivorous ecosystems are very different from the woodland and desert ecosystems.

Bog and Insectivorous Plant Terraria

Bogs are freshwater wetlands. The ground is typically spongy and very moist. Water in the bog drains away very slowly, causing plant matter to take years to completely decompose. Because of the types of decomposers and the decomposition of plant tissue, bogs are acidic. Most of the water within the bog comes from precipitation, not streams or groundwater, so the water is low in nutrients. Plants adapted to the bog ecosystem have evolved to survive within these limitations. The bog terrarium must mimic these features in order for these specialized plants to thrive. This includes the use of special planting medium, the use of distilled or deionized water, high humidity levels, and a moderate light level. Insectivorous plants also have evolved to survive in low nutrient soils. Many of them are bog plants.

To prepare the bog terrarium, place a 2-inch layer of aquarium or pea gravel into the bottom of the container. On top of the gravel add a thin layer of activated charcoal. These two layers are collectively called the drainage layer. Place a piece of nylon window screen or netting on top of the *drainage layer* to keep the soil substrate out of the drainage layer. Next, add the provided soil substrate to the container so that a sloping surface is created. Each plant has different water requirements and must be planted at a different level. Plant sundews in the upper layers of the medium. They require less water than other plants. Plant the flowering plants (typically cranberry) deep enough so the roots can grow into the water. Cover the terrarium with a lid.

Mist the plants with distilled or deionized water once a month or when no more condensation appears on the sides of the container. Bog plants require high humidity but the lid should be set aside for a couple of hours each month to allow for air exchange. Do not let the bog terrarium dry out. Never use fertilizer with bog or insectivorous plants.

The bog terrarium should be maintained in moderate light at temperatures from 55 °F to 75 °F. Provide strong daylight for a few hours each day, such as morning light from an east window. Monitor the temperature inside the terrarium to ensure the sunlight does not raise the temperature above 85 °F inside the closed terrarium. Turn the terrarium every couple of weeks to keep the plants from bending toward the light. Leggy plants need more light. A full spectrum grow light on a timer for 8–12 hours a day is appropriate for bog and insectivorous plants.

Insectivorous plants can be fed small insects such as vestigial or apterous fruit flies no more than once a week. Do not feed carnivorous plants hamburger meat. It is too fatty.

Woodland Terrarium

Woodland terraria replicate the understory habitat within a forest. This ecosystem is typically shady and moist, making it an ideal ecosystem to replicate in a terrarium. In addition to immature trees, the understory is home to ferns, liverwort, small shrubs, and mosses.

To prepare the woodland terrarium, place a 2-inch layer of aquarium or pea gravel into the bottom of the container. On top of the gravel add a thin layer of activated charcoal. These two layers are collectively called the drainage layer. Place a piece of nylon window screen or netting on top of the drainage layer to keep the soil substrate out of the drainage layer. Add the soil on top of the netting, then gently place the plants into the soil. Arrange the plants as desired but lichens and mosses should be placed on top of the soil, not in the soil layer. Cover with provided lid to retain moisture.

Place the woodland terrarium in bright, indirect light such as an east- or west-facing window. The woodland plants provided do well at room temperature, 65–75 °F—avoid temperature extremes. Monitor the temperature inside the terrarium to ensure the sunlight does not raise the temperature above 85 °F inside the closed terrarium. Turn the terrarium every

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couple of weeks to keep the plants from bending toward the light. Leggy plants need more light. A full spectrum grow light on a timer for 8–12 hours a day is appropriate for these plants.

Woodland plants require high humidity. The soil should be kept slightly moist; never let the terrarium dry out. Mist the terrarium with water once minimal condensation appears on the sides of the terrarium. If condensation on the sides of the terrarium becomes excessive, remove the lid until the condensation evaporates. Fertilize sparingly using a fertilizer solution watered down to 10% of that directed on the dilution instructions.

Desert Terrarium

Desert terrariums typically only contain different species of cacti and succulents, which store water for long periods. Not all succulents are desert plants but those included in this terrarium are suited to cohabitation with the included cacti.

To prepare the desert terrarium, add several inches of sandy substrate to the bottom of the terrarium. Place the plants in the sandy soil deep enough so the roots can reach the water source. Water the sandy soil but do not oversaturate. Do not use the lid. These terraria can be top dressed with layers of colored sand. Wash the colored sand thoroughly before adding it to the terrarium.

Cacti and succulents require indirect but high-light such as south windows or full spectrum grow lights placed no more than 12 inches above the plants for 12–16 hours a day. Cacti do not need to be exposed to extremely high or low temperatures like those found in the desert. The plants will do well at typical room temperatures. Monitor the temperature inside the terrarium to ensure the sunlight does not raise the temperature above 95 °F inside the terrarium.

Once the plants are established, water only after the sand's surface becomes dry. Use very dilute balanced fertilizer during the spring, summer and fall. Succulents and cacti go through dormancy in the winter months and the fertilizer may build up to toxic levels as the plant reduces its water intake. If remembering to water the succulents might be a problem, try misting them with a spray bottle every day instead of waiting for the sand to dry out. This method works especially well in arid areas. Succulents and cacti absorb moisture from the air around them as well as through their roots. Humid areas may not need daily misting. Watch the plants for clues that they are being over- or under-watered and adjust from there.

Safety Precautions

Always treat live organisms with respect and proper care. Some cacti may have spines. Handle with care. Wash hands thoroughly before leaving the lab. Follow all laboratory safety guidelines.

Tips

- If the terrarium is overwatered, use a turkey baster or disposable pipet to remove excess water from the drainage layer.
- Algae and condensation covering more than 25% of the sides of the terrarium are both signs of too much moisture. Leave the lid off of the terrarium for an hour or so, or until the side wall condensation clears. Do not let the soil dry out in the bog, insectivorous, and woodland terrariums.
- Hard water should be avoided since it will leave solids on the terrarium walls and in the sand. Salt-softened water replaces the hard water's calcium with sodium, which is detrimental to plants. Use rain-water, spring water or non-fluoridated bottled water instead.
- Leggy plants need more light. Gradually increase the light over the course of several days to prevent leaf damage.
- Pale plants and dead leaf ends may be signs of too much light. Move the terrarium to an area with less light or reduce the amount of time the grow lights remain on.
- Remove dead and diseased plants and leaves immediately to prevent further damage to the other plants in the terrarium.
- Repot the terrarium as needed using the correct soil mixture. For bog and insectivorous plants use 3 parts peat moss, 2 parts potting soil, 1 part charcoal, and 1 part horticultural sand. For woodland plants use 2 parts light soil, 1 part peat moss, and 1 part perlite. For succulents and cactus use 2 parts light soil, 1 part pumice and 1 part horticultural sand.

Disposal

Classroom plants should not be transplanted outdoors. Plants may be disposed of according to Flinn suggested Biological Waste Disposal Method Type I. Please consult your current *Flinn Scientific Catalog/Reference Manual* for general guidelines and specific procedures, and review all federal, state and local regulations that may apply, before proceeding.

Materials for *Terrarium Care Guide* are available from Flinn Scientific, Inc.

Catalog No.	Description
LM1143	Woodland terrarium set, small with terrarium
LM1144	Bog terrarium set, small with terrarium
LM1145	Desert cactus terrarium set, small with terrarium
LM1146	Insectivorous plant terrarium set, small with terrarium
LM1213	Bog terrarium set, large
LM1214	Desert terrarium set, large
LM1215	Insectivorous terrarium set, large
LM1216	Woodland terrarium set, large
FB0548	Terrarium, heavy-duty
FB0585	Peat moss
AB1460	Planting mix
FB0550	Light and water meter
FB0258	Activated charcoal
FB0261	Aquarium gravel

Consult your *Flinn Scientific Catalog/Reference Manual* for current prices.