

Developing an On-Campus Environmental Garden

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LIVE ANIMALS AND PLANTS, observed in their natural settings, stimulate student interest. However, because teachers often lack convenient outdoor laboratory facilities, they are unable to give students a first-hand look at biology.

Developing an environmental garden near the classroom is a practical answer to this problem. The garden serves as a source of both indoor and outdoor laboratory materials, including vascular plants, fungi, algae, mosses, zooplankton, and macroscopic invertebrates. Fish, amphibians, reptiles, birds, and mammals could also be available. Having this ready and continuing source of living materials makes it unnecessary to purchase such commodities from commercial vendors and results in a substantial savings over the years. In addition, the garden could serve as a showcase for ecological succession, especially in urban areas where it would also afford many students their first close look at nature. Having the garden easily accessible to students makes it ideal for independent study projects.

We successfully created an environmental garden at Western Illinois University, and this article discusses our experiences, which will be helpful to others who are planning such a project.

A garden similar to ours, which is located adjacent to the Life Sciences Building at WIU, can be constructed anywhere. The area need not be large, and could be considerably smaller than the 350 feet by 200 feet garden area illustrated in figure 1. The area used might be a lawn, as ours was, or (so much the better) an



FIGURE 1. Overall view of the environmental garden on the Western Illinois University Campus.

unimproved lot. After locating a suitable site, you will need to obtain permission for your project. Locating all underground utilities and easements before beginning construction is also important. Walks and trails were laid out over the underground utilities in our case.

Following these initial steps, you should decide how to organize your outdoor classroom. We feel that the success of our garden is due to its organization by ecological zones with emphasis on native species. Our garden includes representatives of the following major United States vegetation zones:

1. Conifer forest
2. Deciduous forest
3. Prairie
4. Sand plateau
5. Aquatic wetland
6. Old field

This system, illustrated in figure 2, permits us to show students examples of these zones as they are discussed in the classroom. If you adopt the zone approach, you should incorporate it in your original plans even if it may be several years before every zone is actually begun.

A brief description of how we established each zone

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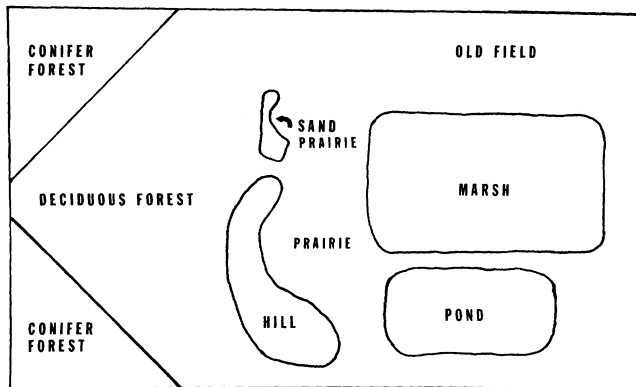


FIGURE 2. Diagram of the environmental garden showing the location of each of the ecological zones.

follows. Plantings generally were hardy native genera, examples of which are given in table 1.

1. The conifer forest requires only plantings of coniferous trees.

2. The deciduous forest also simply requires only the planting of deciduous specimens.

3. The prairie area should be disced, seeds planted, and the area rolled. Planting must be done in the late spring. We obtained some seeds free of charge from the U.S. Soil Conservation Service; others were collected with permission from local sources.

4. A truckload of sand dumped at one edge of the prairie was spread out to form a suitable sand plateau. Plantings of appropriate species completed this zone.

5. Unless you select a naturally damp area, the aquatic wetland zone will probably require the greatest investment of time and money. It was necessary for us to build a small retaining dam to construct the

marsh. We relied on the drains of a nearby greenhouse as the source of water. Next to the marsh we dug a pond approximately 75 by 15 feet across and 4 feet deep. We used the soil from this digging to build a hill behind the pond that separated the deciduous forest from the prairie zone. Fish (carp in the marsh and bluegill in the pond) were added as were native aquatic plants, crayfish, snails, and planaria. Frogs and turtles from our school laboratories were also donated to the pond.

6. The old field was the easiest zone to establish. We simply left the lawn unmowed and allowed succession to proceed. A brushpile of greenhouse clippings and campus trimmings provided good protection for wildlife and an example of saprophyte action.

Cost and Maintenance

Our project did not require a large expenditure of money. Our major source of funding—a small university instructional grant—came late in the establishment years. We think that the necessary money could be raised by a student group such as a science club, or you could add the necessary items to your commodities budget over a period of several years. The cost of labor is a potentially large expense, but we found volunteers willing to do the bulk of the work in our garden. We were also fortunate to have plants and animals donated by people in the community. Government agencies are an excellent source of free or low-cost materials, and their personnel supply information and suggestions for your particular area.

Maintenance of our garden is minimal. With the exception of the prairie that requires spring burning or mowing every couple of years, all of the areas are left unmowed. Obtaining a burning permit is time-consuming, and we have found that mowing is a

TABLE 1. Some Plants of Each Zone Planted and Naturally Occurring

Coniferous Forest	Deciduous Forest	Prairie	Sand Plateau	Aquatic and Wetland		Oil Field (Wildlife)
Spruce	Maple	Big Bluestem	Prickly Pear	Pondweeds	Cattail	Trumpet Creeper
Fir	Ash	Little Bluestem	Cactus	Coontail	Sedges	Bittersweet
Pine	Oak	Indian Grass	Sand Phlox	Water Milfoil	Arrowhead	Dogwood
Hemlock	Linden	Switch Grass	Evening Primrose	Duckweed	Iris	Highbush
Larch	Persimmon	Sunflower		Water Lilies	Barnyard Grass	Cranberry
	Walnut	Cornflower		Water Lotus	Loose Strife	Honeysuckle
	Hickory	Thistle		Water Primrose	Horsetail	
	Sassafras	Black-eyed Susan			Sweet Flag	Lamb's Quarter
	Sweet Gum	Compass Plant			Willow	Foxtail
	Tulip Tree	Milkweed			Sycamore	Thistle
		Goldenrod			Silver Maple	Dandelion
					Cottonwood	Dock
					River Birch	Ragweed

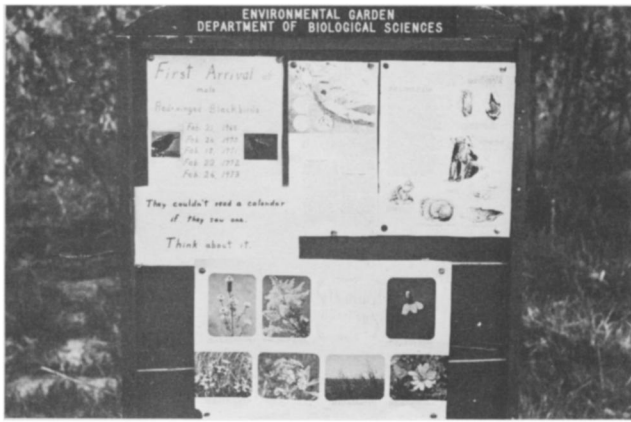


FIGURE 3. Bulletin board at the edge of the environmental garden.

satisfactory substitute. Over several years, silting and dense plant growth may make it necessary to dredge the pond to maintain the proper depth for fish populations.

Like most projects, an environmental garden is not without its difficulties. Every garden will have unique problems, but the following examples from our experience illustrate what can occur. Nonscience faculty members viewed our area as an eyesore because it was not mowed and the pond was “weedy.” We are solving this problem by planting attractive wildflowers and plants along the periphery. Our solution may also demonstrate that beauty is not necessarily confined to formally landscaped areas.

Another objection that we encountered early in our project was that the wet areas might breed too many mosquitoes. In the 13 years that the wet areas have existed, no such problem has arisen, possibly because of the biological control provided by other animals in the area.

Still a third objection we encountered was that the garden would become so dense that it would invite security problems such as rapes or muggings. Fortunately, this possibility has not materialized, but adequate lighting may be necessary in gardens where overgrowth does pose such a threat.

Some plants were damaged by mowing, snowplows, and rabbit overpopulation. The most serious and most disheartening problem we encountered was vandalism, and we can offer no solution to this other than to attempt to educate those who are ignorant of the value of life.

Since its inception in 1964, our garden has been used for a variety of instructional programs. Several college disciplines (Agriculture, Conservation, Biology and others) use it regularly. Many younger students from nearby elementary schools take advantage of the educational opportunities offered by the garden. As the garden matures, biological diversity increases, and opportunities for teaching and learning grow. Our future plans include the use of plant identification markers in conjunction with the bulletin board already in existence (fig. 3). We also want to increase herbaceous

plantings, especially native wildflowers. An herb garden has already been planted on one edge of the environmental garden.

We think it is beneficial to keep a written and slide record of our garden’s yearly progress. In time, the slides will illustrate the occurrence of succession.

In conclusion, we believe that the educational benefits afforded by an on-campus environmental garden far outweigh the minimal effort required for its maintenance and establishment.

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Advice

In promulgating your esoteric cogitations or articulating superficial sentimentalities, and amicable, philosophical or psychological observations, beware of platitudinous ponderosity. Let your conversational communications possess a clarified conciseness, compact comprehensiveness, coalescent consistency, and a concatenated cogency. Sedulously avoid all polysyllabic profundity, pompous prolixity, setaceous vacuity, and premeditated duplicity or prevarication. Eschew all conglomerations of flatulent garrulity, jejune babblement, asinine affectations, and inane profanity, obscurant or apparent.

In other words, talk briefly, plainly, naturally, sensibly, truthfully, purely. Keep from slang. Say what you mean; mean what you say. And, don’t use big words.

Contributed by James L. Mariner