Palm fronds provide shade cover for the outdoor classroom.

Growing a Meadow, Mending Broken Ground

by MATTHEW GELDIN

"Scorched earth," that's how I affectionately referred to the area in front of the new Children's Education Classroom built for scholastic programming and Summer Nature Camp at the Arboretum. As the former Plant Introduction Greenhouse, the site had been collecting fertilizer runoff in the soil for years. The space had become unsuitable for gardening but needed to become a productive garden to support an outdoor classroom and improve the aesthetic value of the area. Testing showed that the soil was severely compacted, with a phosphorous and potassium load that exceeded optimal levels by seven times, and only a 4% concentration of organic matter.

Though the ultimate purpose of the space is to facilitate outdoor education, it was clear that every component of the design also needed to support soil remediation in order to develop a successful garden. Instead of excavating and filling with new soil or heavy tilling-in of amendments, I designed the garden to leverage nature's own soil healing processes. The space will be filled with plants that fix usable nitrogen from the air into the soil, have large roots that break up compacted soil, and attract beneficial insects to promote the on-going health of the space. Before planting, we did bring in some additional garden soil, but significantly less than if we were using conventional techniques. Though this is a longer-term strategy, it has the additional benefit of providing unique learning opportunities as the soil improves over time.

There are four elements to this garden: a soil remediation meadow, butterfly planters, bug hotels and an outdoor classroom. The meadow will be planted with a custom seed blend (see box right) on 3 inches of added soil mix. The soil mix acts as an organic amendment and protective mulch for the existing soil. Once the meadow plants mature, they will be cut and layered on the ground to increase organic matter in the soil.

The Children's Education Classroom, above, bamboo bug hotels, left

The butterfly planters are constructed with compressed mulch, sourced from the Arboretum's own green waste, which will break down into more organic matter to feed into the soil. The beds are being planted with *Asclepias, Achillea, Monardella* and other pollen-rich plants to support native butterflies like swallowtails, checkerspots, and the increasingly threatened monarch.

Bug hotels provide habitat for spiders, beetles, predatory wasps, and other garden insects. I made our hotels from Arboretum bamboo and bits of twigs, feathers, and rope. The insects build their homes in the openings and crevices. Bug hotels are a great home project and many designs are even easier to build than making a birdhouse. There are many tutorials and inspiration images online.

The outdoor classroom was also constructed from bamboo sourced within the Arboretum. It was built by hand using bamboo staves set with bamboo pins and lashed with rope. It is loosely covered with palm fronds for shade. The classroom provides an engaging learning environment within the garden to explore the life cycles of plants and bugs and the development of healthy soil.

In designing and constructing this garden I came to realize that it not only suits the specific needs of the space, but that it is also a reflection of my own background. The garden incorporates elements of my education and experiences in studying landscape architecture at Cal Poly Pomona, materials foraging and environmental construction in Thailand, and pioneering (wood and rope lashing) projects in Boy Scouts. It has been an honor to participate in progressive garden design here at the Arboretum.

Meadow Plants

Nitrogen fixers:
Clover, alfalfa
Soil busters:
Daikon radish, carrot
Good bug attractors:
Calendula, fennel, yarrow
Native bug attractors:
Gilia, lupines, poppies

PHOTOS BY MATTHEW GELDIN, FRANK MCDONOUGH, DOLLY PAUL