

# MAINTENANCE & OPERATION MANUAL

Monarch Sanctuary - Los Angeles, CA



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## DESCRIPTION & SUMMARY - MONARCH SANCTUARY

This is the list of specific flowers, ivy, and moss for the butterfly biodiversity wall installation in LA. It includes details of care, water use, soil, sun, and maintenance over an extended period of time.

The double skin system is a protected semi-closed and operable design, which is very different from a typical exposed green wall. It provides more control of temperature, wind, moisture, erosion, leaf litter, organism nesting, and less prone to storms and etc. Some of the elements on the inner wall are artificial plants that serve as all-season feeders / nectar augmentation. They will be natural in coloration and texture and look like plants.

The moss and ivy are integrated into the vertical panel elements are highly resilient. Most of the other garden elements are on horizontal shelves for ease of maintenance and proper growth cycles (not a vertical green wall with complicated pockets).

One part-time employee will serve as a steward approx. twice a week. Hourly cost may vary depending on the location of the installation.

Also included here are three local architectural case studies with drought-tolerant gardens on the roofs.

Lastly, we are working with entomologists and local experts on the best care practices of these insects. These micro-gardens are specially designed to attract them all year.



## FEEDING & NESTING PLANTS FOR THE MONARCH BUTTERFLY



### Blue Flax

Lifespan: Annual or short-lived, semi-evergreen perennial forb, sometimes semi-woody at base.

Soil (type/ quality/ amount): Well-drained, infertile, disturbed soils.

Water: 6 to 8 inches of water over the growing season, constant moisture (0" - 3"/ month). Water 2x a week.

Sun: Usually found in open areas with full sun, but will tolerate semi-shaded conditions.

### California Fuchsia

Lifespan: Flowering occurs in mid to late summer and continues into fall, which is an important season to provide nectar for hummingbirds.

Soil (type/ quality/ amount): Can tolerate low moisture and prefers nutrient poor soils.

Water: Grow well with very little and infrequent summer water (0"-2"/ month). Water 1x a week (max.).

Sun: Grows best in full sun.

### **Common Yarrow**

Lifespan: To prolong the life of the plant, divide the plant every other year and plant 12-18 inches apart.

Soil (type/ quality/ amount): Frequently found in the mildly disturbed soil of grasslands and open forests. Plant 2 to 15 inches deep, then mix in a 2- to 4-inch layer of compost.

Water: Less than 1 inch of rain a week in the summer. Water 1x a week.

Sun: Plant in an area that receives full sun to encourage compact growth and many flowers. In partial sun, yarrow will grow leggy.

### **Bush Anemone**

Lifespan: The bush anemone grows into a medium size evergreen shrub commonly reaching 5-6 ft. tall, 6-8 ft. wide. The leaves are 2-3 in. long, dark green on top and white below. Showy clusters of white flowers with yellow centers occur in early spring.

Soil (type/ quality/ amount): They thrive in light to medium shade, but full sun is not an issue in soils that stay moist.

Water: First year (2+ deep waterings per month), Spring/Summer (once a week), after fully grown, cut back and let top of soil dry for a bit (0"- 3"/ month). Water 1x - 2x a week.

Sun: They thrive in light to medium shade, but full sun is not an issue in soils that stay moist. Too much shade can result in leggy plants that flop over more readily.

### **California Buckwheat**

Lifespan: A densely branched shrub growing 2-3 ft. high and wide and flowers occur in late spring. The seed's heads mature to deep brown by late fall and persist into winter.

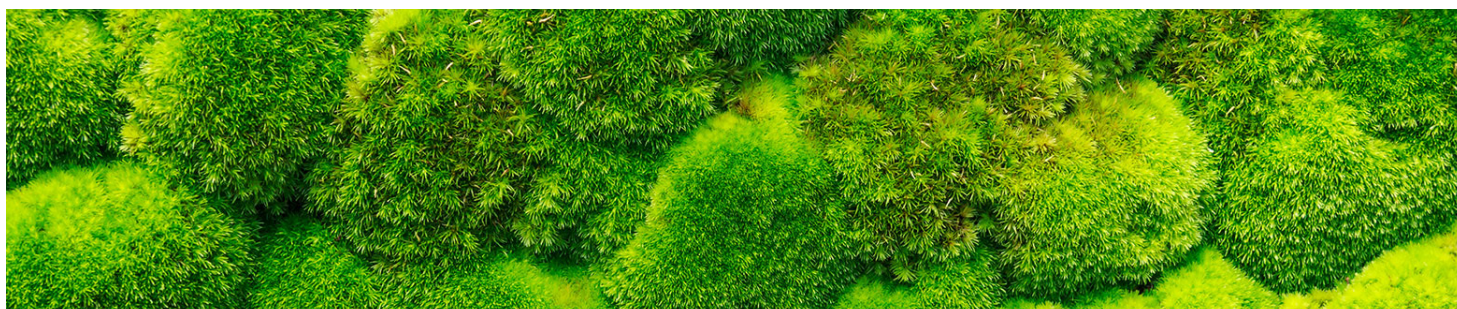
Soil (type/ quality/ amount): Has shown excellent performance as a conservation plant on critical areas and problem soils, such as Serpentine, decomposed granites, and high pH soils, sandy to clay loam, moderately to well-drained soils.

Water: Normal rainfall and low amounts of summer water (0"-2"/ month). Water every second week.

Sun: Grows best in full sun.



## SUPPLEMENTAL PLANTS - IVY & MOSS



### **Creeping Wire Vine (Muehlenbeckia Wire Vine)**

Lifespan: Perennial, moderate grower to 2 to 4 in. tall, spreading to 30 in. To completely cover an area, plant four to six plants per square yard. Pruning is optional. Space plants 18 to 24 inches (46-61 cm.) apart.

Soil (type/ quality/ amount): It will grow in sandy soils, as well as rocky or clay soils - it just needs to be well drained.

Water: Average water needs. Water regularly, but don't overwater. Water 1x a week.

Sun: The plant may be grown in full sunlight, partial sunlight or dappled shade. Fast growing and can be grown as a ground cover in areas too shady for other plants.

### **Wallowa Mountain' Desert Moss (Arenaria Wallowa Mountain)**

Lifespan: Evergreen perennial spreading groundcover that grows 6 inches tall and 8 to 12 inches wide all year round.

Soil (type/ quality/ amount): Moderate to sandy soil.

Water: It grows under moderate to dry conditions. Water 1x a week (max.).

Sun: Grows best in part shade.

## MAINTENANCE TABLE

Organism	Water	Sun
Blue flax	2x / week	Full sun
California Fuchsia	1x / week (max.)	Full sun
Common Yarrow	1x / week	Full sun
Bush Anemone	1x - 2x / week	Partial shade
California Buckwheat	Biweekly	Full sun
Creeping Wire Vine	1x / week	Full sun or partial shade
Wallowa Mountain' Desert Moss	1x / week (max.)	Partial shade

### Legend:

Full sun: Approx. 6 hours a day. These plants grow best in full sun, but will also thrive with less.  
 Partial shade: 3 - 6 hours a day.

### Man Hours:

One part-time employee will serve as a steward approx. twice a week.  
 Hourly cost may vary depending on the location of the installation.



## CASE STUDIES - LOCAL EXAMPLES



### Vista Hermosa Park

Downtown Los Angeles at 100 N. Toluca Street

Architect: JOHN FRIEDMAN, ALICE KIMM ARCHITECTS, INC.

Contains drip irrigation, waterproofing membranes, planted with *Carex testacea*, *Carex pansa*, *Sedum reflexum*, and *Iphieon uniform bulb*. Also a drought-tolerant, naturalizing bulb from Argentina that grows almost flat along the ground and bears flowers in many shades of blue as well as white.



### The Council District 9 Neighborhood City Hall

South Central Los Angeles

Architect: Paul Murdoch

Ground cover plants, stormwater collection, rainwater cistern and drought-tolerant species selection.





## Premier Automotive Group HQ

Irvine, CA

Architect: LPA + SWA GROUP

More than 30 categories of vegetation that help save on energy costs due to added insulation. The cover system has a 5" depth and weighs no more than 35 pounds per square foot when fully saturated. The plant palette was selected for the Southern California climate and is dominated by Sedum, Echeveria, Lampranthus, and Delosperma, with accents provided by Agave and Aloe.