

Lake County Serpentine Landscape Demonstration Garden



A Joint Project of

**Lake County Air Quality
Management District**

and

**University of California
Cooperative Extension
Master Gardeners
of Lake County**



The **Lake County Serpentine Landscape Demonstration Garden** was developed to teach residents and visitors about the unique plants that grow in serpentine soils, one of Lake County's most prominent soil types. These soils are derived from Serpentine, California's State rock. Outcroppings of this shiny greenish-gray rock, along with associated plants such as gray pine, toyon, Clarkia wildflowers and others, may be seen along major highways and roads throughout the county.

The Demonstration Garden displays local plants that commonly grow in serpentine soils, as well as others that tolerate the unique physical and chemical make-up of serpentine soils. The garden also features gardening practices that will reduce exposure to asbestos, one of serpentine soils' natural occurring components.

Thank you for your interest in the Lake County Serpentine Landscape Demonstration Garden. Please come visit its ever-changing landscape.



Clarkia also known as "Farewell to Spring"

Plants of the Demonstration Garden
Each plant is labeled with a corresponding number to the following plant list.

- 1) **McNab Cypress**, *Cupressus macnabiana*
- 2) **Bay Laurel**, *Umbellularia californica*
- 3) **Canyon Live Oak**, *Quercus chrysolepis*
- 4) **Oracle Oak**, *Quercus morehus*
- 5) **Toyon**, *Heteromeles arbutifolia*
- 6) **Styrax**, *officinalis* var. *californica*
- 7) **Coulter Pine**, *Pinus coulteri*
- 8) **Gray Pine**, *Pinus sabiniana*
- 9) **Holodiscus**, *Holodiscus* sp. (*shangra la*)
- 10) **Sargent Cypress**, *Cupressus sargentii*
- 11) **Flannel Bush**, *Fremontia californica*
- 12) **Buckeye**, *Aesculus californica*
- 13) **Coffee berry**, *Rhamnus californica*
- 14) **Holly-leaved Cherry**, *Prunus ilicifolia*
- 15) **Serpentine Columbine**, *Aquilegia eximia*
- 16) **California Fuschia**, *Zauschneria epilobium*
- 17) **Buckwheat**, *Eriogonum nudum*
- 18) **Shrubby penstemon**, *Keckiella* sp.
- 19) **California Buckwheat**, *Eriogonum fasciculatum*
- 20) **Deer grass**, *Muhlenbergia rigens*
- 21) **Pitcher sage**, *Lepechinia calycina*
- 22) **Fuschia**, *Epilobium canum*
- 23) **Leather Oak**, *Quercus durata*
- 24) **Coyote-mint**, *Monardella villosa*
- 25) **Western Redbud**, *Cercis occidentalis*

What Is Serpentine?

Serpentine is a metamorphic rock that forms along fault lines under extreme pressure while under the earth's crust. Serpentine outcroppings can be recognized by their sparse vegetation and barren appearance. Serpentine rock has a distinctive waxy greenish-gray appearance. It often contains white streaks of minerals, also known as *asbestos*. Asbestos fibers are a known human health risk.

Soil Characteristics

Serpentine soils are unusually high in magnesium, as well as some heavy metals such as chromium, cobalt, iron, lead and nickel. These soils tend to be neutral to alkaline in pH. Many essential plant nutrients are unavailable or limited to plants, especially calcium, nitrogen, phosphorous, and potassium.

Serpentine-Hardy Plants are Unique

Plants growing in serpentine soils must tolerate drought, poor quality soils, exposure to heavy metals, and full sun. These conditions often result in the plants having a stunted or "bonsai" appearance. Plant growth is also limited due to the lack of vital nutrients. Plants that tolerate these stark conditions are predominately low-growing shrubs and a few varieties of trees. Their leaves are tough, silver or gray in color, and designed to reflect the hot afternoon sun. Some species have adapted to these harsh conditions so well they grow exclusively in serpentine.

What are the Health Concerns?

People may inhale or swallow dust containing asbestos fibers. The fibers can remain in the lungs or travel to the lining of the lungs and

abdominal cavity and may cause cancer and other diseases. It may be twenty or more years before disease caused by asbestos develops. Smokers have an increased risk of lung cancer when exposed to asbestos.

Recommended Gardening Practices To Reduce Exposure

- Avoid areas where it is dusty or windy.
- If digging in dry soil, minimize dust by thoroughly watering the area.
- Remove shoes before entering the house.
- Wash clothing that may have been exposed to asbestos dust separately from other clothes.

Tips and Pointers for Planting

- To reduce natural erosion and dust, cover gardens and yards with serpentine-tolerant plants and a 3- to 6-inch layer of organic mulch or asbestos-free soil.
- Water plants often in the first few years or until plants are well established.

Living with Serpentine Soils

Serpentine soils are an important natural resource of Lake County. They support a wide range of unique and rare plant and animal life. Taking simple and common sense precautions will ensure that residents and soils can safely exist and flourish together. Serpentine soils or rock should be left undisturbed and stabilized to reduce exposure or release of fibers to the environment. As long as fibers remain undisturbed in rock or soil, they pose very little health threat.

For more information on asbestos in soils and landscapes, contact or visit:

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Plant Resources

Oracle Hill Nursery, Clearlake Oaks, California
Mendocino College Agriculture Department
Ukiah, California
North Coast Native Nursery, Petaluma
California Conservation Corp., Sacramento
Sparetime Nursery, Willits

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