

## SDBG Endangered Species

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SDBG web page: <http://www.sdbgarden.org/angered.htm>

**What is an endangered species?** An endangered species is one which has been categorized by the International Union for Conservation of Nature (IUCN) as likely to become extinct. 2655 plants are endangered worldwide. <http://www.iucn.org/>

**What causes a plant species to become endangered?**

**Habitat loss** - human activity including forest and land clearing for crops, grand projects like dams, airports etc., natural disasters, climate change.

**Competition** from introduced invasive species.

Introduction of **grazing animals** into fragile ecosystems.

**Pollinator loss** or even extinction of insect/bat/bird/other pollinators.

**Epidemics**/pandemic attacks or diseases caused by pests or pathogens, perhaps in ages past leaving trace survivors.

**Over collecting** of already rare plants by plant hunters.

**Are all endangered species rare?**

Probably yes in their native habitats. But also no - may be common in horticultural trade and may be found in botanic gardens, especially if easily propagated from seed or cuttings, or special efforts like tissue culture. Think how orchids once rare are now common in garden centers, that was due to tissue culture. *Brighamia insignis* - 'Olulu, Cabbage on a Stick is an example.

**Can a plant be rare but not endangered?** Yes. It may have evolved as a distinct species in isolation from related plants, say on a small island well offshore, but may be doing quite well in the fit environment where it is found. Several plants endemic to the Canary Islands, the Galapagos Islands, even our own Catalina Island (e.g. *Lyonothamnus floribundus ssp. Asplenifolius*, the Catalina ironwood - we have one or more in the SDBG) would fit this description. Visit the Wrigley Botanic Garden when there. [https://www.catalinaconservancy.org/index.php?s=support&p=wrigley\\_memorial\\_and\\_botanic\\_garden](https://www.catalinaconservancy.org/index.php?s=support&p=wrigley_memorial_and_botanic_garden) and [http://www.catalinaconservancy.org/index.php?s=wildlife&p=plant\\_species](http://www.catalinaconservancy.org/index.php?s=wildlife&p=plant_species)

**Have endangered species always had low populations in nature?**

No - in geological or even more recent time they may have even been abundant when climate and geography were fit for the species. *Wollemia nobilis* - Wollemi Pine is an example.

**Is the term "endangered species" used parochially?** Sometimes. Local botanists may refer to a species as endangered in their county, state, nation, whereas it may not be elsewhere in its native range. E.g. *Agave shawii*, Shaw's Agave and *Rosa minutifolia*, Otay Rose are both not so endangered in Baja Mexico as they are in San Diego County.

**What about related species?** There may be very similar closely related species that are much more common than the variety or sub-species declared to be endangered. E.g. *Arctostaphylos ssp. manzanitas* in coastal California other than *Arctostaphylos glandulosa ssp. Crassifolia*, Del Mar manzanita.

**How does a plant species become 'certified' as endangered?** The International Union for Conservation of Nature (IUCN) has already been mentioned. Other International, National (Federal) and Regional (State) agencies get in on the act and create official lists based on research and census taking. Two of our USA federal sources are listed here.

<https://plants.usda.gov/java/aboutThreat> USDA general

<https://plants.usda.gov/threat.html> USDA search tool

<http://www.fws.gov/angered/> Fish and Wildlife

**What is the Red List?**

The International Union for Conservation of Nature maintains a catalog of endangered species at their website <http://www.iucnredlist.org/>. The Union states that it "remains firmly committed to providing the world with the most objective, scientifically-based information on the current status of globally threatened biodiversity". Most articles on endangered species mention or refer to the Red List. It is a rich resource, and includes an updated compendium of links to hundreds of pertinent web sites.

**What is the US Federal Endangered Species Act?** <http://www.endangered.org/campaigns/protecting-the-endangered->

[species-act](#) . The US Endangered Species Act is a successful safety net for protecting wildlife, plants, and fish from extinction. In 1973, Congress showed global leadership by creating the Endangered Species Act. The Act has been successful but is not without those who would try to weaken it and so has become somewhat of a political battleground. No law has been more important in preventing the extinction of wildlife, including bald eagles, gray whales and the peregrine falcon. The Act includes three key elements:

- Prevents listed species from being killed or harmed
- Protects habitat essential to these species' survival
- Creates plans to restore healthy populations

**Does the US Federal Endangered Species Act protect plants as well as it does animals?** The answer seems to be no. Few people realize that the Federal Endangered Species Act (FESA) provides almost no protection to most Federally endangered and threatened plants – which are among the most imperiled species in our nation.

**Where can I get a list of endangered plant species?**

In addition to the Red List try the over 9,000 listed here. [http://www.earthsendangered.com/plant\\_list.asp](http://www.earthsendangered.com/plant_list.asp) .

The US Fish and Wildlife Service site has a US based list at <http://www.fws.gov/endangered/species/us-species.html> .

California specific information is here at <https://www.wildlife.ca.gov/conservation/plants/info> .

Plant species endangered in San Diego County are listed at

[http://interwork.sdsu.edu/fire/resources/overview\\_biodiversity.htm](http://interwork.sdsu.edu/fire/resources/overview_biodiversity.htm)

**How about a smaller number, and make them interesting please?**

Ok try the 15 species on this web page. <http://webcoist.momtastic.com/2008/11/03/strange-rare-bizarre-endangered-flowers-plants-and-trees/>

**What does the prestigious Kew Gardens have in the way of resources?** A lot. Try this link which will search their web site

<http://www.kew.org/search/google/endangered%20species?query=endangered%20species&cx=005110727362767136869%3Avtxb5u62w-m&cof=FORID%3A11&sitesearch=>

**What does the world do to try to prevent trade in endangered species?** This is done through a group called the Convention on International Trade in Endangered Species of flora and fauna (CITES). It was founded in 1975 and now has 180 Parties who accept the legality of the Convention's decrees. Here is their web page - <http://www.cites.org/>

**When is Endangered Species Day?** Endangered Species Day is a calendar event supported by The Endangered Species Coalition. <http://www.endangered.org/campaigns/endangered-species-da> / The next one will be held on May 15/16 (to be confirmed), 2015 and the SDBG is planning to hold events on that day. The SDBG will be reviewing its web content and replacing the signs before this event.

**Should we propagate endangered species and attempt to reintroduce them into suitable ecosystems?** No good answer to this question, really. Even if the answer is no, we are going to do it anyway. We are meddlers on this planet. We did it with *Hazardia orcutii* Orcut's Hazardia at the SDBG.

### Thirteen plants in the SDBG collection that are endangered.

Each is identified by a temporary 1ft square green board which has identifying labels, picture and a QR code which will show an informative web page when scanned. The staff at SDBG are in the process of updating the signs and the web content for the upcoming Endangered Species Day (May 15, 2015). The current information was written by Joe DeWolf and Dave Ehrlinger (copied below) and can be accessed directly on the web at <http://www.sdbgarden.org/endangered.htm>.

Here is link for QR code readers Apps for your smart phones.

<http://www.visualead.com/qr-code-tutorials/what-is-the-best-qr-code-reader>

#### ***Echinocactus grusonii* #1**

Common Name: Golden Barrel Cactus

Origin/Habitat: High elevation deserts in mainland Mexico.

Threats: Habitat loss due to human development, poaching.

Current Status: Endangered

Description: You might look at this plant and think “I’ve seen this cactus before,” or “I have this in my yard!” Well you’re probably right. This attractive clumping barrel cactus is very popular for home and commercial landscapes. It is easily propagated, very drought tolerant, and grows well in a variety of climates. The wild population, however, is actually quite rare and endangered. It is native to Mexico, in the states of Queretaro, Zacatecas and Hidalgo. Its population was severely reduced by construction of the Zimapan Dam and reservoir in Hidalgo, and also by illegal collecting for the horticultural trade.

<http://www.sdbgarden.org/endangered-1.htm>

Where at SDBG: New World Desert Garden

#### ***Encephalartos* sp. #2**

Common Name: African Cycad

Origin/Habitat: These cycads grow throughout Africa in a variety of habitats and climates.

Threats: Poaching, Habitat loss due to human development.

Current Status: Depends on the species.

Description: Encephalartos is a genus of cycad from Africa. Of the 66 species of Encephalartos listed by the IUCN, 10 are endangered, 18 are critically endangered, and 4 are extinct in the wild. The reason for this habitat loss is mostly due to poaching, but also due to forest clearing, residential development, and farming. Of the species which are not endangered, most populations are in decline for the same reasons.

<http://www.sdbgarden.org/endangered-2.htm>

Where at SDBG: African Garden

#### ***Hibiscus brackenridgei* #3**

Common Name: Ma’o hau hele, Hawaiian Hibiscus

Origin/Habitat: Rainforests of the Hawaiian Islands.

Threats: Habitat loss due to human development, competition from invasive plant species.

Current Status: Critically Endangered.

Description: Hibiscus brackenridgei is the state flower of Hawaii. It is a small shrub to a large tree that can grow up to 30 feet in its natural habitat. It grows on all of the Hawaiian Islands except Ni’ihau and Kaho’olawe. However, it is not common on any of the islands. It has a large yellow flower with a maroon center in late spring and early summer. Its numbers have declined in recent decades due to habitat degradation from development and invasion from exotic plant and animal species. Less than 60 plants remain in the wild, however conservation and horticultural interests have led it to be a popular plant for home and botanic gardens.

<http://www.sdbgarden.org/endangered-3.htm>

Where at SDBG: Near Overlook Succulents.

#### ***Brighamia insignis* #4**

Common Name: ‘Olulu, Cabbage on a Stick

Origin/Habitat: Grows on steep, rocky cliffs on the island of Kauai, Hawaiian Islands.

Threats: Lack of pollinators.

Current Status: Critically Endangered.

Description: Brighamia insignis is a critically endangered plant native to the Hawaiian islands of Kauai and formerly Ni’ihau. It grows on steep sea cliffs and coastal bluffs, and has thick succulent stems with white blooms in the late fall. According to the IUCN, as of 2003, the population consists of just seven mature individuals. The reason for its decline in numbers is that it’s only pollinator, a species of hawk moth, is now extinct. Unable to produce seed on its own, the only way

for *Brighamia* to produce seed is from hand pollination by humans. Biologists now climb or repel down cliffs to pollinate these flowers when in bloom. Fortunately, hand pollination is easily done, and this species is widely distributed in botanic gardens and the horticultural trade. The remaining wild population, however, will forever need to be hand pollinated for it to remain in its natural habitat.

<http://www.sdbgarden.org/angered-4.htm>

Where at SDBG: Hawaii Garden near African Bank Garden

#### ***Wollemia nobilis* #5**

Common Name: Wollemi Pine

Origin/Habitat: Wollemi National Park, in the Blue Mountains of Eastern Australia.

Threats: Poaching, disease.

Current Status: Critically endangered.

Description: This tree is not actually a pine, as the common name would suggest. It is a conifer, related to pines, but is more closely related to *Araucarias*. This species was just recently discovered in 1995, in Australia, by an adventurous park ranger who had noticed some unusual trees in the distance in Wollemi National Park. It belongs to a genus of plants that had only been seen in fossil records and thought to be extinct. There are only a few hundred individuals that live in three populations not very distant from each other.

The location of these trees was not made public due to the threat of plant poaching, disturbance of the surrounding ecosystem, and the possible introduction of exotic plant species and diseases. Unfortunately word of mouth has made the location available to some, and as feared, this increase in visitation has introduced an exotic plant pathogen, *Phytophthora cinnamomii*. This soil fungus was spread through infected foreign soils present on the soles of the shoes of trespassing hikers. This is the same soil pathogen that is attacking local avocado groves which can be spread as easily as walking from an infected grove into a non-infected grove. This serves as an example of how sensitive ecosystems and individual species are to human disturbance. Not all is lost however, as this species has been propagated and introduced to Botanic Garden collections and the horticultural trade. The remaining wild population is being closely monitored and access to them is still restricted.

<http://www.sdbgarden.org/angered-5.htm>

Where at SDBG: Lawn Garden

#### ***Aloe pillansii* #6**

Common Name: Bastard Quiver Tree

Origin/Habitat: Arid mountain slopes in Northern South Africa.

Threats: Habitat loss due to human development.

Current Status: Critically endangered.

Description: This beautiful tree aloe is native to the Cape Province of South Africa and can grow up to 10 meters tall. It lives in a very hot and dry climate, and stores water in its succulent leaves and trunk. A mature Bastard Quiver Tree is a very impressive specimen. Unfortunately there are less than 200 individuals left and it is listed as critically endangered.

According to the IUCN website they are not actively reproducing and the older plants are dying. Its main threats are poaching and habitat loss due to mining and other human related activities.

<http://www.sdbgarden.org/angered-6.htm>

Where at SDBG: California Gardenscapes

#### ***Mahonia nevinii* #7**

Common Name: Nevin's Barberry

Origin/Habitat: Inland valleys and foothills of Southern California. Chaparral.

Threats: Habitat loss due to human development.

Current Status: Endangered.

Description: Nevin's Barberry (*Berberis nevinii*) is a federally endangered species native to isolated riparian sites in Los Angeles, Riverside, and San Bernadino Counties with only a couple of reported sites in San Diego County. This large dense evergreen shrub grows up to 10' high x 10' wide and is quite attractive with small prickly, grey compound leaves. Small yellow flowers bloom in late winter to early spring and are followed by small clusters of red fruits in summer. Nursery propagated plants are occasionally available, especially from native plant nurseries.

<http://www.sdbgarden.org/angered-7.htm>

Where at SDBG: California Gardenscapes.

#### ***Baccharis vanessae* #8**

Common Name: Encinitas Baccharis

Origin/Habitat: San Diego County, Chaparral and Coastal Sage Scrub.

Threats: Habitat loss due to human development.

Current Status: Endangered.

Description: This species of *Baccharis* is endemic to Encinitas and the surrounding areas. A rare plant to begin with, its numbers have been drastically reduced due to urban development. Only a few isolated populations exist in fragmented natural areas around the county. San Diego Botanic Garden is attempting to work with the state of California to begin propagation and reestablishment of this species on site and in natural areas around Encinitas.

<http://www.sdbgarden.org/endangered-8.htm>

Where at SDBG: California Gardenscapes.

### ***Agave shawii* #9**

Common Name: Shaw's Agave

Origin/Habitat: Coastal Southern California and Baja, Coastal Sage Scrub. Threats: Habitat loss due to human development.

Current Status: Endangered. Description: Shaw's agave is a small to medium-sized agave with attractive green leaves and reddish brown spines. It forms large clumps over time. After a number of years large, spectacular flower spikes bloom, after which the individual plant dies. Shaw's agave was once common along the coast of San Diego, but only a few small populations survive at Torrey Pines State Park, Cabrillo National Monument in Point Loma, and near the border. Further south this agave grows along the Pacific coast of northern Baja. On both sides of the border, Shaw's agave is threatened due to habitat loss from development.

<http://www.sdbgarden.org/endangered-9.htm>

Where at SDBG: New World Desert Garden, California Gardenscapes.

### ***Hibiscus insularis* #10**

Common Name: Phillip Island Hibiscus

Origin/Habitat: Phillip Island off the Coast of Australia.

Threats: Grazing.

Current Status: Critically Endangered

Description: This rare hibiscus grows only on Phillip Island, off the coast of Australia. It is a large shrub that grows up to 8 feet with beautiful purple flowers. As of 2003, there were less than 50 mature individuals on the island, which is up from only 8 located in 1963. Already a rare plant growing only on Phillip Island, this species was nearly lost from grazing when feral pigs, goats and rabbits were introduced to the island. Those animals have since been eradicated, and seedlings are now seen growing near the parent plants. To aid in the efforts to conserve this plant, this species is also grown in botanic gardens in case there is further habitat loss.

<http://www.sdbgarden.org/endangered-10.htm>

Where at SDBG: New Zealand Garden.

### ***Arctostaphylos glandulosa ssp. crassifolia* #11**

Common Name: Del Mar Manzanita

Origin/Habitat: Coastal San Diego County, Coastal Sage Scrub, Chaparral.

Threats: Habitat loss due to human development.

Current Status: Endangered.

Description: Del Mar Manzanita is a federally endangered subspecies that grows along the coast from Encinitas, California south into Baja California in maritime chaparral. They are found on sandstone terraces within five to ten miles of the coast. Today they often survive on sandstone topography that is too rugged and steep for easy development. This manzanita is adapted to wildfires, regrowing from large basal burls.

<http://www.sdbgarden.org/endangered-11.htm>

Where at SDBG: Native Plants Native People Trail, Overlook Trail

### ***Hazardia orcutii* #12**

Common Name: Orcutt's Hazardia, Goldenbush

Origin/Habitat: San Diego County, Baja. Coastal Sage Scrub and Southern Maritime Chaparral.

Threats: Habitat loss due to human development.

Current Status: Endangered.

Description: Orcutt's hazardia or goldenbush is a subshrub in the Asteraceae or daisy family. The only wild population in the U.S.A. grows on a small hilltop only two miles from the Botanic Garden. There are only a few populations in northern Baja California. This is listed as a state of California threatened species.

The plants generally grow up to three feet tall and have small evergreen leaves. In late summer they produce small yellow blooms. In a reintroduction project by the California Fish and Game Commission several hundred plants were propagated and planted in a reintroduction effort in several local sites. In 1995 thirty plants in five-gallon nursery containers were

planted in the Garden in cooperation with the state and the Center for Natural Lands Management. They were planted in a plot of clay loam soil that had originally come from the same area where the naturally occurring population is found. Most of the plants survived and have since produced several seedlings.

<http://www.sdbgarden.org/endangered-12.htm>

Where at SDBG: Native Plants Native People Trail

***Rosa minutifolia* #13**

Common Name: Otay Rose

Origin/Habitat: Southern San Diego County, Baja. Chaparral. Threats: Habitat loss due to human development.

Current Status: Endangered. Description: This short, thorny rose has attractive, fragrant pink blooms from January to June. It has tiny compound leaves. Only two plants of Otay Mesa rose (*Rosa minutifolia*) remain in the wild in the U.S.A. where they grow on the U.S.-Mexico border. The species ranges further south into northern Baja California.

<http://www.sdbgarden.org/endangered-13.htm>

Where at SDBG: Native Plants Native People Trail, California Gardenscapes.

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