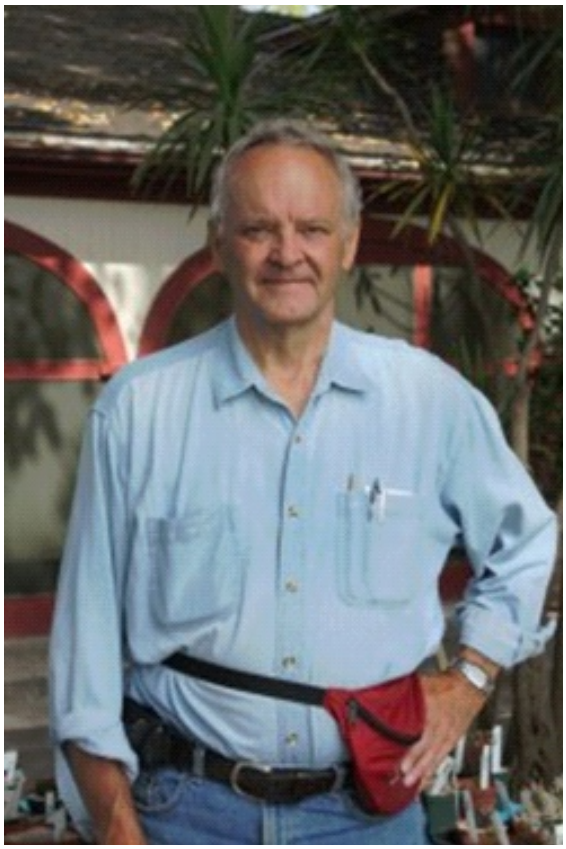
April 2025

Roadrunner News

Newsletter of the Long Beach Cactus Club
Founded 1933; Affiliate of the Cactus and Succulent Society of America, Inc.

Presention: Gary Duke on *Roadside Weeds: TX and NM*



"My wife and I took a road trip to Texas and New Mexico in April 2024. We rented an SUV at the El Paso airport to travel some of the gravelly fire roads. The presentation includes photos of many cacti and succulents along the roadside or within easy walking distance of the road, including many wildflowers and a few scenic wonders. April is prime time to see wildflowers. The route and what is seen is explained so you too can make the trip."

Gary Duke was on the Board of Directors to the Cactus and Succulent Society of America for over 8 years. He has been collecting cacti and succulents for over 50 years. He's an avid collector of cacti and also collects Tylecodons and Dudleyas. He is a retired Air Force officer with a doctoral degree in physics. During his military career, he moved his original and ever expanding collection of less than about 30 plants from Illinois, where he grew up, to Omaha, NE, Dayton, OH (where he started their first C&S Society, which is now defunct), San Pedro, CA, Montgomery, AL and Albuquerque, NM, where he had been show chairman. He has also been President of the South Coast Cactus and Succulent Society and the Long Beach Cactus Society. Following his military career, he worked as a program manager for Boeing for 16 years. He has over 1000 different species in his private collection and enjoys propagating them. One can view some plants in his collection on his Instagram site: garyduke53. He frequently gives slide presentations throughout southern California, including being invited to speak at the Huntington Botanical Gardens and at the Denver Cactus and Succulent Society. He has traveled to Aruba, Peru, Baja Mexico, Bolivia, Argentina and Chile to see cacti and succulents in habitat.

Plants of the Month: Variegated Cacti and Succulents

Variegated cacti and succulents exhibit unique coloration patterns due to a lack of chlorophyll in certain areas of their tissues. This results in striking patterns of yellow, white, pink, red, or even purple mixed with the typical green of the plant. The variegation can appear in different forms, such as marbling, striping, or sectoral (half-and-half) coloration.

Variegation in cacti and succulents can be artificially induced through various methods that alter chlorophyll production or DNA. Ethyl methanesulfonate (EMS) is a chemical mutagen that creates random genetic mutations, sometimes leading to stable variegation, though results are unpredictable and can weaken the plant. Ethylene gas exposure can disrupt chlorophyll synthesis, causing temporary or persistent variegation. Radiation treatments (gamma or X-rays) can alter DNA, leading to pigment changes, though this method is more common in large-scale breeding programs. Introducing plant viruses can interfere with chloroplast function, creating variegation, though this approach is experimental and can harm plant health. Certain antibiotics, such as streptomycin, can selectively suppress chlorophyll development, inducing artificial variegation. While these methods can produce rare and visually striking plants, they often come with risks such as instability, weakened growth, or reversion to green over time.

ROBERT H WEBB[1] & RAYMOND M TURNER[2]

Biodiversity of cacti and other succulent plants in Baja California, México

Biodiversity of cacti and other succulent plants is important for many reasons to scientists, land managers, and succulent-plant enthusiasts. Understanding where high biodiversity occurs is crucial to management plans as well as understanding the conditions under which these interesting species grow. Baja California, México, has long been known as a biodiversity hotspot for succulent plants in North America (Rebman 2001). Joseph (1985) referred to Cerro Colorado, a volcanic mountain east of San Ignacio and adjacent to Mexico Highway 1 (Fig. 1), as "succulent hill," and Dimmitt et al. (2004, 2005) reported that Cerro Colorado represented the highest biodiversity of cacti and other succulent plants in the Sonoran Desert. Their contention is that this site had the highest biodiversity of cacti and other succulent plants in North America.

Many investigators have attempted to quantify plant distributions and biodiversity in the Sonoran Desert of Mexico. Turner et al. (1995) presented dot maps of individual species of perennial vegetation, including cacti and other succulent plants, in the Sonoran Desert, including the desert region of Baja California in the Mexican states of Baja California and Baja California Sur. Adding to Turner's existing geospatial data, Webb et al. (2014) mapped the distribution of *Fouquieria columnaris* (cirio), and Webb and Starr (2015) showed maps of the distribution of agaves in Baja California. Wilder et al. (2008) discussed biodiversity in the islands on the Sonoran side of the Gulf of California and found that 16% of the perennial flora was comprised of succulent plants in the three categories of xerophytic succulents, semi-succulents, and halophytic succulents. Here, we present high-resolution maps of the distribution of cacti and other succulent plants for the peninsula and discuss the reasons where sites with high biodiversity occur.

1. Baja California peninsula showing the locations of points sampled for biodiversity of perennial plant species, including cacti and succulents.

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Number	Site	Latitude	Longitude	Elevation (m)	Succulents	Cacti	Other	Total
B532	Cañón de San Andrés	28.720	-114.260	33	11	14	2	27
2007-223	Sierra de San Francisco	27.507	-113.147	418	13	12	2	27
2007-244	Paso de Oeste de Tres Vírgenes	27.490	-112.624	603	11	14	2	27
2012-39	Este del Marmolito	28.536	-113.902	182	13	11	3	27
2008-1307	Mesa al Sur de San Gregorio Viejo	28.659	-113.669	874	7	16	3	26
2008-292	Al norte de El Arco	28.037	-113.400	286	11	13	2	26
2008-1285	Paso la Palmita	28.340	-113.711	393	9	13	3	25
2008-1286	Arroyo el Torro Monte	28.347	-113.687	440	10	12	3	25
2008-1315	Valle Palo Chino	28.859	-114.029	186	9	13	3	25
2008-316	Cerro las Mulas	27.323	-113.120	132	10	14	1	25

Table 1. Sites in Baja California with the largest biodiversity of cacti and succulents.

Methods Used for Mapping Cacti and other succulent plants

Biodiversity is a numbers game that portrays the density of specific types of organisms. Because it is number of taxa per unit area, it has rules based on the definition of an area for comparison among sites, what taxa are included, and the amount of time expended in the search for those taxa. Biodiversity is expected to increase logarithmically with both increasing area and increasing time expenditure; in other words, the rate of biodiversity increase slows as more area is added and as more time is used searching for species. Dimmitt et al. (2004) reported spending several days over multiple trips scouring all of Cerro Colorado, which they estimated had an area of 11 km^2.

Primarily in the mid-1960s, Raymond M Turner and J. Rodney Hastings traversed the peninsula, which at that time had a system of poorly maintained dirt roads. They stopped about every 5 miles (8 km), made a list of all perennial species at each location, and collected voucher specimens (Turner et al. 1995). Using documented odometer readings on their vehicle, they used 1:250,000 scale maps to produce their geospatial data; because of the low accuracy, they collated their data into blocks of 0.1° of latitude and longitude. We adopted their technique in our studies, which involved all perennial plant species, not just cacti and succulents.

Between 1995 and 2014, we created plant lists at locations with spacings of approximately 3-5 km along major roads, dirt roads, and certain trails in the desert region of the Baja California peninsula. The region we traversed was the same as Turner et al. (1995), although our high-resolution data is more spotty in Baja California Sur (Fig. 1) where the Sonoran Desert transitions into a thorn scrub in the Cape Region. We collected geospatial data using hand-held GPS units that ranged in accuracy from ±10-30 m for the oldest sightings to ±2-5 m for sightings between 2002-2014. At each point, we created a list of all perennial plant species within an idealized 100 m radius circle with an approximate area of 0.03 km^2. The search time ranged from 30-60 minutes per site. Using their original field notes, we revisited most of the localities visited by Hastings and Turner to add to their data, resolve some taxonomic problems, and more accurately determine their geospatial coordinates. The total data set represents 1,573 observation points (Fig. 1). Our data is sparse in certain remote areas of the state of Baja California, and we have not fully characterized the desert areas of Baja California Sur south of San Ignacio.

Categorization of Taxa

Our analysis of biodiversity used rules based on generally accepted taxonomy of species, subspecies, and varieties of cacti and other succulent plants in

Baja California (e.g., Rebman and Roberts 2012). Of 701 total perennial plant taxa that we mapped, 173 taxa (25%) were categorized into cacti, succulents, and other species. Although Wilder et al. (2008) also included halophytes, succulent species within the Chenopodiaceae are negligible away from the coastlines or laguna secas in Baja California. Taxa within the Cactaceae are the easiest group to define. Unlike Dimmitt et al. (2004), we did not attempt to categorize hybrids within the genera *Ferocactus* or *Cylindropuntia* but instead placed any unusual-looking individuals within the species that they most resembled. Our most difficult group was the genus *Mammillaria*; although many species are easily identified (e.g., *M. brandegeei*), several species that resemble the widespread *Mammillaria dioica* can only be separated from that species using floral characters that may not have been present when we found them. We mapped 79 taxa within the Cactaceae.

The definition of succulent plants is more complex. True succulents (e.g., *Euphorbia misera*, *Pedilanthus macrocarpa*) are easily categorized here, but other species, such as *Acalypha californica*, are leaf succulents at best. Species of *Agave*, recently mapped using an enhanced version of the same data set (Webb and Starr 2015), are included here. Species within the genus *Dudleya* were perhaps the most difficult to resolve to species level, in large part because we saw high variability in leaf shape among the seasons we visited and rarely found flowers. We believe we encountered 16 different *Dudleya* at our sites, although never more than 2-3 at any one site. We included trees typically classified as hemisucculents (Turner et al. 1995) or semisucculents (Wilder et al. 2008), including *Bursera* and *Pachycormus*. Unlike Dimmitt et al. (2004), we did not include non-native species, such as *Mesembryanthemum crystallinum*, an invasive species from western South Africa. A total of 72 taxa are included in this category.

What is included within the category of "Other Species" is subject to debate, and we generally followed the definitions within Wilder et al. (2008) and Dimmitt et al. (2004) in establishing this group. For example, *Ficus petiolaris* is included within this group, as are the native palms (*Brahea armata*, *Washingtonia robusta*). The genus *Fouquieria* also is included here, including *F. columnaris* (the iconic cirio), for reasons discussed in Webb et al. (2014). We had a total of 16 taxa in this category.

Locations of High Biodiversity of Cacti and Other Succulent Plants

In our 1,573 survey points within Baja California (Fig. 1), we found *Pachycereus pringlei* (cardón) at 901 sites, the most of any species, followed by *Lophocereus* (*Pachycereus*) *schottii* at 898 sites. In terms of genera, one or more species of *Cylindropuntia* occurred at 1,190 localities (76% of sites), making one or more of the chollas the most commonly observed succulent plant or cacti in Baja California. Among the plants grouped as succulents, the most commonly observed taxon was *Bursera microphylla* (478 sites), followed by *Jatropha cinerea* (392 sites); one or more species of *Bursera* (mostly *B. hindsiana* and *B. microphylla*) were observed at 550 sites (35%).

The sites with the highest biodiversity of cacti and succulents are listed in Table 1. The highest number (27) occurred at four sites in either the southern part of Baja California state (e.g., Cañon de San Andrés north of Santa Rosalillita) or in northern Baja California Sur (e.g., Paso de Oeste de Tres Virgenes, Fig. 2). Jointly, these sites have 49 species and are 55% similar in species composition (Table 2). The only species common to all four sites are *Bursera microphylla*, *Ferocactus peninsulae* subsp. *vizcainensis*, *Lophocereus schottii*, *Mammillaria dioica*, *Pachycereus pringlei*, *Pedilanthus macrocarpus*, *Stenocereus gummosus*, and *S. thurberi* (Table 2).

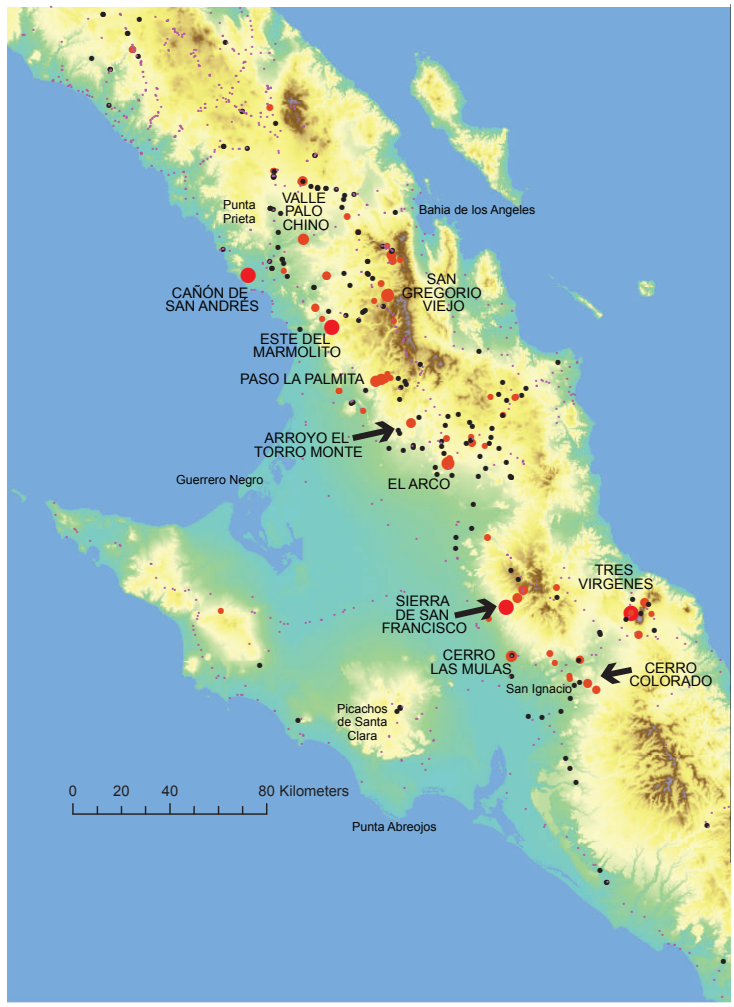
Geographically, the sites with the highest biodiversity of cacti and other succulent plants (≥25, Table 1) occupy roughly an L-shaped area spanning the border between the two states and following the east side of the trans-peninsular ranges (Fig. 2). Using our methods, Cerro Colorado (Fig. 3), which previously was reported to have the highest biodiversity of cacti and other succulent plants with 44 (Dimmitt et al. 2004, 2005), had 22 taxa in our smaller census area and was ranked within a group at numbers 20-32 highest of the 1,573 sites. Sites with higher biodiversity occurred west and north of this mountain, indicating that Cerro Colorado is on the southeastern side of the region of high biodiversity. Most of the sites are within the western foothills of the peninsular ranges at elevations of 100–600 m; the exceptions are Cañón de San Andrés (Fig. 4) and Mesa al Sur de San Gregorio Viejo (Fig. 5) at 33 and 874 m elevation, respectively. Canon de San Andrés is a southwesterly facing canyon within 5 km of the Pacific Ocean, and it appears to funnel low-elevation fog up into the valleys around

***Table 2* (facing).** Species composition of cacti and succulents at four sites with the highest biodiversity of cacti and other succulent plants in Baja California. x – taxon present, xx – two taxa of genus present.

Species	Cañón de San Andrés	Estribaciones de la Sierra de San Francisco	Paso de Oeste de Tres Vírgenes	Mesa al Sur de San Gregorio Viejo
Acalypha californica	x	-	-	-
Agave cerulata subsp. *cerulata*	-	-	x	x
Agave cerulata subsp. *subcerulata*	-	x	x	-
Agave shawii subsp. *goldmaniana*	x	-	-	-
Asclepias subulata	-	x	-	-
Bursera hindsiana	-	x	x	-
Bursera microphylla	x	x	x	x
Cochemiea maritima	x	-	-	-
Cochemiea setispina	-	-	-	x
Cylindropuntia alcahes	-	x	x	x
Cylindropuntia californica var. *delgadilloana*	x	-	-	-
Cylindropuntia cf. *prolifera*	x	-	-	-
Cylindropuntia cholla	-	x	x	x
Cylindropuntia lindsayii	-	-	-	x
Cylindropuntia sp.	x	-	-	-
Cylindropuntia tesajo	-	-	-	x
Cylindropuntia molesta var. *clavellina*	x	-	x	-
Dudleya sp.	xx	xx	-	-
Echinocereus engelmannii	-	-	-	x
Echinocereus brandegeei	-	x	x	-
Echinocereus maritima	x	-	-	-
Euphorbia misera	x	x	-	-
Euphorbia tomentulosa	-	x	x	x
Euphorbia xantii	x	x	x	x
Ferocactus gracilis subsp. *coloratus*	x	-	-	-
Ferocactus peninsulae subsp. *peninsulae*	-	x	-	x
Ferocactus peninsulae subsp. *vizcainensis*	x	x	x	x
Ficus petiolaris subsp. *palmeri*	-	-	x	-
Fouquieria burragei	-	-	-	x
Fouquieria columnaris	x	-	-	x
Fouquieria diguetii	-	x	x	x
Fouquieria splendens	x	-	-	-
Hesperoyucca whipplei	-	-	-	x
Ibervillea sonorae	-	-	x	-
Jatropha cinerea	x	x	x	-
Jatropha cuneata	-	x	x	-
Lophocereus schottii	x	x	x	x
Mammillaria dioica	x	x	x	x
Mammillaria hutchinsoniana	-	x	x	x
Myrtillocactus cochal	x	-	x	x
Opuntia littoralis	-	-	x	-
Opuntia sp.	-	x	x	x
Pachycereus pringlei	x	x	x	x
Pachycormus discolor	x	-	x	x
Pedilanthus macrocarpus	x	x	x	x
Stenocereus gummosus	x	x	x	x
Stenocereus thurberi	x	x	x	x
Tillandsia recurvata	-	x	-	-
Yucca valida	x	x	-	-

Punta Prieta. Mesa al Sur de San Gregorio Viejo is near the summit of the peninsular ranges in the Sierra la Libertad, and this higher elevation setting appears to be fog influenced as well.

All of the sites are in areas of complex geomorphology with mixtures of rocky substrate and bedrock comprising older geomorphic surfaces. The site near Volcán de Las Tres Virgines, west of Cerro el Asufre (Fig. 6), is in a narrow canyon where certain species that appear to prefer rock faces or slopes, such as *Cochemiea poselgeri*, combine with the more common elements of the Vizcaino Desert, including *Pachycereus pringlei* and *Lophocereus schottii*. Sites on the west slope of the Sierra de San Francisco (Fig. 7) are sloping with rocky substrate and bedrock ledges. At Cerro las Mulas, high biodiversity occurs where the toe of a volcanic hill transitions into a sandy plain (Fig. 8). Here, regionally widespread species such as *Agave cerulata* subsp. *subcerulata* and *Fouquieria diguetii* combine with *Corynopuntia invicta* and *C. robertsonii* to create a highly diverse assemblage. However, in a similar but more isolated valley to the south in the Picachos de Santa Clara (Fig. 9), biodiversity declines. Biodiversity also is lower on homogeneous geomorphic surfaces, particularly sand sheets characteristic of the Vizcaino Desert north of Punta Prieta (Fig. 10).



2. The Baja California peninsula showing the locations of sites with 26 or more taxa of succulent plants or cacti (●), 21-25 taxa (●), and less than 20 taxa (• various sizes).

Climate and Succulent Plant Biodiversity

The standard explanation for high biodiversity, and especially high endemism, is geographic isolation over geologic time. This explanation is useful for explaining unique assemblages of endemic plants (e.g., the entire peninsula of Baja California) but is not useful for discussing why certain places in a region have higher biodiversity than other contiguous places. The interaction of climate and geography provides the best clues for spatial variation in biodiversity. The climate of Baja California is extremely variable season-to-season and year-to-year, which severely limits our ability to quantitatively link climatic factors with biodiversity. However, the zone of high biodiversity of cacti and other succulent plants helps to narrow the possible climatic reasons why the zone of high biodiversity spans the two states on the Baja California peninsula.

Reyes et al. (1990) proposed three general climate zones for the Baja California peninsula based on its sparse network of climate stations (Fig. 11). Our zone of high biodiversity of cacti and other succulent plants occurs in the southern part of Zone P2, or the zone of mixed winter and summer precipitation. While generally depicting seasonal rainfall, Zone P2 does not adequately represent the humidity and temperature regimes as modulated by proximity to the Pacific Ocean. Fog, in particular, is an extremely important characteristic of climate in the zone of high biodiversity, and summer fog is uncommon on the eastern side of the trans-peninsular ranges. The interaction of

3. Aerial view of Cerro Colorado, a volcanic hill east of San Ignacio, Baja California Sur, with Mexico Highway 1 crossing from west (right) to east (left). Our sampling locality is just above the highway in the center of the view; Dimmitt et al. (2004, 2005) made a plant list of the entire hill as well as some of the terrain off to the right.

4. Canyon de San Andres north of Santa Rosalillita, Baja California. The slopes of this southwest-facing canyon had 27 species of cacti and other succulents, including *Fouquieria columnaris* and *F. diguetii* (right foreground). A bay in the Pacific Ocean appears in the distance.

5. Mesa above Rancho San Gregorio Viejo southwest of Misión San Borja, Baja California. This site had 27 species of cacti and other succulents, including 4 species of *Cylindropuntia* and 3 species of *Fouquieria* (Table 2). The presence of *Opuntia* at this site suggests a strong fog influence near the peaks of the Sierra la Libertad, which increases biodiversity.

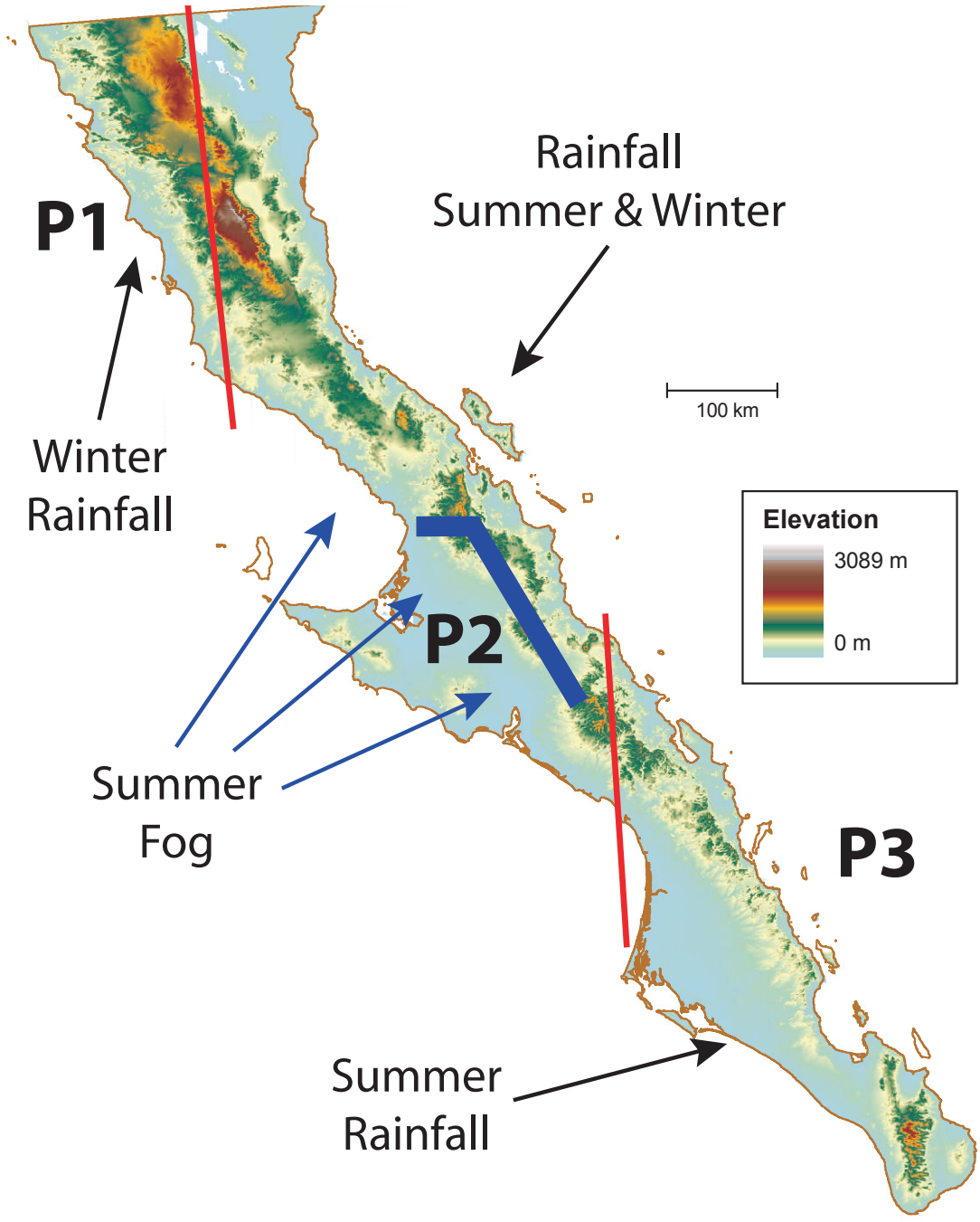
6. A canyon on the west side of Volcán de Las Tres Vírgenes, which has a diverse flora of 27 cacti and other succulent plants. This dormant volcano in the background right is the most southeasterly locality for *Fouquieria columnaris* (Webb et al. 2014). Foreground plants include *Pachycereus pringlei*, *Lophocereus schottii*, *Fouquieria diguetii*, *Bursera microphylla*, and *Jatropha cuneata*.

7. This hillslope on the west side of the Sierra de San Francisco has 27 taxa of cacti and other succulents and is one of the sites with the highest biodiversity of these plants in Baja California. The plants on this slope include *Ferocactus rectispinus* (foreground center), *Agave cerulata* subsp. *subcerulata* (throughout foreground), *Fouquieria columnaris* (background), and *Pachycereus pringlei* (background center). Two species of *Dudleya* are found in rocky crevices, mostly on north-facing slopes.

8. Cerro de las Mulas west of San Ignacio, Baja California Sur, has a highly diverse assemblage of cacti and other succulent plants (25). This locality has *Agave cerulata* subsp. *subcerulata*, *Bursera microphylla*, *Fouquieria diguetii*, *Jatropha cinerea*, *Lophocereus schottii*, and *Pachycereus pringlei* within this assemblage. Cerro Colorado is one of the hills in the background.

9. This view shows Cerro del Gato in the Picachos de Santa Clara on the Vizcaino Peninsula in Baja California Sur. This site is the type locality for *Agave azurea* and sustains an assemblage with 19 species of cacti and other succulent plants, including *Stenocereus gummosus* (foreground), *Pachycormus discolor* subsp. *veatcheana* (red flowered trees throughout), *Ibervillea sonorae*, and *Pachycereus pringlei*, among others. Although this area is subject to frequent fog, its lower elevation, relative isolation by the surrounding sandy plains of the Vizcaino Desert, and relatively low annual precipitation are other reasons for the lower biodiversity of cacti and other succulent plants compared to sites north and east.

10. Although the area between Punta Prieta and El Crucero in Valle de los Cirios appears to be rich in cacti and other succulent plants, the biodiversity here is 17. Although large cacti and other succulent plants are prevalent – for example, *Agave shawii* subsp. *goldmaniana*, *Lophocereus schottii*, *Pachycereus pringlei*, *Fouquieria columnaris*, and *Cylindropuntia ganderi* are all clearly visible in this view – and fog is common here, the lack of dependable summer rainfall is potentially the reason for lower biodiversity than sites to the south.



11. Climate divisions of Baja California, Mexico (after Reyes et al. 1990). The thick blue line represents the approximate zone of high biodiversity of cacti and other succulent plants. Zones P1, P2, and P3, separated by vertical red lines, represent winter-rainfall dominated, mixed summer-winter rainfall, and summer-rainfall dominated climate regimes, respectively (after Reyes et al. 1990). Summer fog occurs in most coastal areas of the Pacific Ocean but is most common in zones P1 and P2.

geography and fog, combined with two seasons of precipitation, determines where high biodiversity is to be expected.

The geography of persistent fog is difficult, perhaps even impossible, to quantify, but in general the top of the maritime clouds in central Baja California appears to be at an elevation of about 500 m along the west coast, and dense fog most regularly occurs at altitudes of about 250-500 m. This elevation range is, of course, fuzzy and likely varies widely along the

peninsula, but generally maritime-influenced species adapted to high humidity, such as lichens and *Tillandsia recurvata*, an epiphytic bromeliad, occur within this elevation band away from the coastline. The upper 500 m limit of maritime fog irregularly courses through the foothills of the trans-peninsular range in Baja California, creating innumerable possible microclimates sustaining high biodiversity. Unlike the coastline, fog in the foothills of the trans-peninsular range tends to burn off early in the day, modulating temperatures and increasing humidity but not reducing sunlight for most of the day.

Although we have found sites with high biodiversity at higher and lower elevations, most sites with high biodiversity are between 300 and 600 m elevation on west- or southwest-facing sites where fog can accumulate in the morning hours on a regular basis. The taxa that comprise succulent plant and cacti biodiversity at the most diverse sites show the influence of fog. *Myrtillocactus cochal* and *Opuntia* sp., which generally occur in areas influenced by summer fog far to the north of the desert regions of Baja California, are notable at the high biodiversity sites (Table 2). The presence of *Cochemiea maritima* and *Echinocereus maritima*, as well as two *Dudleya* taxa, also attests to the maritime influence.

Species strongly affected by maritime influence are joined with other more cosmopolitan desert species, such as *Pachycereus pringlei*, *Lophocereus schottii*, and the *Cylindropuntia* taxa. Dimmitt et al. (2004, 2005) discussed how Cerro Colorado had a mixture of floral elements that represented a narrow local environment with species from both the northern and southern deserts. High biodiversity in essence is chance on either the scale we used or that of Dimmitt et al. (2004, 2005); random occurrences of taxa whose distributional centers lie long distances away aggregate to create highly diverse assemblages of cacti and other succulents.

Tierra Incognita: Have We Found the Highest Biodiversity in Baja California?

Compared with the 1960s, when Hastings and Turner began mapping plant distributions, accessibility to the desert areas of Baja California has greatly increased, allowing acquisition of biodiversity data from regions formerly too remote for ready access. However, certain areas of the Baja California peninsula remain largely inaccessible to all but foot and animal traffic, including areas within our region of high biodiversity, especially on the eastern side of the peninsula north and east of the Sierra de San Francisco (Fig. 2). Succulent plant and cacti occurrence in these regions remains poorly known except for the expeditions of Reid Moran from 1937 to 1993 (http://baja-flora.org/MoranTOC.htm, accessed 30 July 2013). Because of diminished fog influence, these areas are unlikely to have high succulent plant and cacti biodiversity except perhaps in narrow canyons like Paseo de Oeste de Tres Virgines, which could support highly diverse assemblages owing to an abundance of microsites.

The Cape Region of Baja California Sur is another matter. This region, and particularly the foothills of the Sierra la Laguna south of La Paz (Fig. 1), could also have biodiversity hotspots. While searching for Agaves, we found 25 species of cacti and other succulent plants, including four species of *Bursera*, in a small area near Cabo Pulmo on the Gulf of California (Fig. 1). In this region of summer rainfall, particularly from tropical cyclones, the desert transitions into a tropical deciduous forest, and here the potential for high biodiversity switches from the west side of the peninsula to the drier east coast.

Acknowledgments

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LBCC PLANT-OF-THE-MONTHS RULES

At the April, 2003 meeting, the following rules were adopted for the Plant-of the-Month (POM) competition:

- A maximum of three plants may be entered in each category (cactus and succulent).
- There will be three classes for entrants: advanced (blue tag), intermediate (pink tag) and beginner (yellow tag).
- Advanced and intermediate entrants must have had the plant in their possession for at least six months, beginners for three months.
- Entrants will receive 8 points for first place, 6 points for second place, 4 points for third place, 2 points for show/honorable mention (HM) and 1 point for showing a plant that does not place.
- At the discretion of the judges there may be up to three third places in a category. If plants are not deemed to be of sufficient quality, no third place will be awarded.
- For an entrant to receive points, the entry tags must be collected by the person in charge of record keeping for POM.
- At the annual Christmas party, award plants will be presented to the ten highest cumulative point holders regardless of class.

Long Beach Cactus Club 2025 Plants of the Months

MONTH	CACTI	SUCCULENTS
February	Copiapoa / Eriosyc / Islaya	Gasteria / Haworthia
March	Corypantha / Escobaria	Senecio / Othonna
April	Variegated cacti	Variegated succulents
May	CLUB SALE	
June	Hybrids & cultivars	Cultivars & hybrids
July	Melocactus / Discocactus	Fockea / Ficus / Ipomoea
August	Favorites (3)	Favorites (3)
September	Grafted cacti	Grafted succulents
October	AUCTION	
November	Miniatures (3) under 3 inches	Miniatures (3) under 3 inches
December	HOLIDAY PARTY	

2025 POM MINI-SHOW STANDINGS

Advanced		Intermediate		Beginner	
Gary Duke	46	Amy Angulo	51	Raymond Q.	29
Henry Angulo	23	Andrew Lander	6	Dam	25
Richard Salcedo	16	Lemono Lott	4	Gretchen Lewotsky	15
Daniel Zepeda	1			Shirley Kost	14
				Kelly Eddy	9
				Ivan Garibaldo	5
				Dan Papilli	1
				Arianna Gardeazabal	1

The Long Beach Cactus Club

Est. 1933

Meeting Highlights:

- Monthly programs led by plant experts from around the world
- Mini shows each month with different categories of cacti & succulents
- Vendors selling plants, pots, tools, and more
- Monthly raffles
- Advice from members for plant identification and care

Meeting Information:

1st Sunday of each month
1:00 pm
Woman's Club of Bellflower 9402 Oak St, Bellflower, CA

Member Sign Up

$20.00 per year, per membership
$10.00 for engraved name badge (optional)

☐ Cash or ☐ Check - Made out to the Long Beach Cactus Club

Membership year: _____ Amount paid: _____

Name: _____

Email: _____

Address (for mailing purposes): _____

Phone number: _____

SNACK AND REFRESHMENT SCHEDULE

MONTH	LAST NAME STARTS WITH
April	H, I, J
May	Show & Sale
June	K, L, M
July	N, O
August	P. Q, R
September	S, T , U, V
October	Auction
November	W, X, Y, Z
December	Holiday Party

LBCC OFFICERS AND BOARD MEMBERS FOR 2025

PRESIDENT	Nelson Hernandez	SECRETARY	Kelly Eddy
VICE-PRESIDENT	William Ramirez	TREASURER	Henry Angulo
BOARD OF DIRECTORS	Daniel Almanza, Christopher Bucka, Scott Bunell, Lemono Lott, Alfonso Molina		
CSSA LIAISON	M. A. Bjarkman	NEWSLETTER	Andrew Lander
VENDORS	Lupe Casas	PROGRAMS	Nelson Hernandez
MEMBERSHIP	Lawrence Hofman	HISTORIAN	Ken Shaw
INTER-CITY SHOW	Henry Angulo & Scott Bunell	MINI-SHOW	*Open*
LIBRARIAN	William Ramirez	X-MAS PARTY	*Open*
PHOTOGRAPHER	Dereck Diaz	REFRESHMENTS	Erika Villalobos
MAY SALE	Henry Angulo	AUCTION	Gretchen Lewotsky
INSTAGRAM	Scott Bunnell & Nelson Hernandez		
WEBSITE	German Rivera & Scott Bunnell		

NEWSLETTER

IF YOU HAVE ANY STORIES, cultivation tips, information about upcoming events, photos, corrections, or news in general about cacti and succulents that might interest our members, **please send them in**. Comments and suggestions are always welcome. Remember, this is *your* newsletter. Physical address: Andrew Lander, 3041 Roxanne Ave., Long Beach, CA 90808. Cyber address: landruc@gmail.com