A SURVEY OF SPECIES ROSES OF CALIFORNIA

This survey supplements my article in the *RHA Newsletter*, Vol. XLI, no. 3, Fall 2010. Photos are at the end.

Introduction

Forget everything you learned about distinguishing rose cultivars from one another. Forget outdated notions of defining a species by a single fixed set of observable morphological characters. For 125 years California species roses have defied eminent rosarians' attempts at identification, and I can attest to the difficulties.

The unusual geography and geology of the state have isolated populations of widespread western American species, producing specialized and localized subspecies and varieties that confound botanists. At the same time, the ubiquitous *Rosa californica* has been documented in all but five of the state's 58 counties, presenting a dizzying array of botanical characters under a single name. How can one species be everywhere, while the others are all so highly localized?

Philip Munz nicely summarizes how California's climate and geological history may have affected the evolution of the state's plant species.

> By virtue of size alone California should have many plant species, and with its exceedingly diverse topography, it would be expected to maintain a remarkably large and interesting flora…Elevations range from 276 feet below sea level . . . to 14,495 above . . ..
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> California consists of two great series of mountain ranges: an outer, the Coast Ranges, and an inner, the Sierra Nevada plus the southern end of the Cascade Range . . .. Between these two axes lies the Great Central Valley….
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> [M]uch of the vegetation of western North America has come about by climatic changes involving moisture and temperature. With an early Eocene [56 million to 34 million years ago] rainfall of possibly 80 inches or more for much of the West, the change progressed to a Miocene [23 million to 5 million years ago] [rainfall] of about 12 to 25 inches on the western border of the Mojave Desert, and a flora new to the region developed . . . small-leaved drought-resistant and drought-deciduous . . .. By Pliocene [5.3 million to 2.6 million years ago], forest and woodland had to move toward the coast or into the mountains . . ..
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> During the Pleistocene [2.6 million to 12,000 years ago] temperate vegetation showed farther advance southward than during any other period . . ., correlated undoubtedly with the glaciation that left its marks on the California mountains . . .. Southward migrations during such colder and wetter periods, with subsequent and perhaps intermediate northward migrations, have undoubtedly had a great influence on both the evolution and distribution of our present vegetation….Many of our rarer montane species of southern California persist as relicts which have climbed to higher elevations . . ..
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> [A] region so broken up into separate mountain ranges and low-lying valleys, with the many ecological niches often quite isolated from each other, favors endemism. It is not surprising, then, to find in California many exceedingly local species and subspecies….Some follow one pattern in their evolution, others

another, but all have undergone rather rapid and highly polymorphic differentiation. Munz, pp. 1-10.

Nine native species roses and seven subtaxa (excluding autonyms) are recognized in the 163,700 square mile, 770 mile/1240km long state, largely growing within an area designated as the California Floristic Province – everywhere but the highest of the high Sierra Nevada Mountains and the northeastern and southeastern corners of the state that are High and Low Desert. Fortunately, by relying on a key and a distribution map, a rosarian can give most species roses a probable name through the process of elimination, but don't expect it to be a satisfying process. If you want to see California species roses, you won't find them in public rose gardens. You will need to find them growing in the wild. A few species can be bought, while others are very hard to find even in botanical collections.

Notes on the Names of California Species Roses
(Note 1 is a thumbnail explanation of botanical nomenclature.)

***Rosa bridgesii* Crépin ex. Rydb.** (1917) A Ground Rose, probably section Cinnamomeae. Often appears as a solitary plant. Scattered collections occur along the western slope of the Sierra Nevada at moderate to low altitude (up to 6700 ft), from as far south as the mountains east of Porterville north to the mountains east of Red Bluff, with a couple of collections near Mt. Shasta in the southern Cascades. Most observations occur in the low Sierra Nevada around Yosemite Valley. I have never seen it. I found a single nursery in the foothills of the central Sierra Nevada that sells it. Diploid.

Note: *Rosa yainacensis* Greene (1899) Found on the "Yainax Indian Reservation" in Oregon (nonexistent, but probably a reference to the Klamath area) and in Crescent City, California, is the subject of ongoing research because it somewhat resembles *R. bridgesii*. It has been hard to study because living populations cannot be found. Treated as the same species as *R. bridgesii* by *The Jepson Manual* and, subject to qualification, by Barbara Ertter, curator of North American species, University of California, Berkeley, de facto expert on *Rosa* in California. Tetraploid. (See Ertter 2007, pp. 962-964.)

***Rosa californica* Cham. & Schlechtd**. (1827) Thicket-forming, Section Cinnamomeae. Well-documented almost everywhere in the Coastal Ranges and Central Valley, from the Oregon border in the north and to the Mexican border in the south in moist places or bottomlands. Not found above 5000-6000 feet. Remarkably diverse in leaflet surfaces, armature, plant size. Recognizable primarily by three characters that are common but not universal: rather coarse foliage, down-curved falcate prickles somewhere on the plant, and relatively large terminal inflorescences of 10 or more blooms. Dr. Ertter has promised a paper describing a *Rosa californica* Complex. The wide range of the species leads me to speculate that it is one of the later species to populate the state, with its spread facilitated by its variability. Not reliably hardy below USDA Zone 6b. (Erlanson, p. 207) The California Native Plant Network's protocol for propagating *R. californica* calls for collection of seed between July 1 and September 1 and stratification at 40°F for three months. Seed is sown April 1. Tetraploid.

Note: "*Rosa californica plena*" of commerce, if a form or selection of the species, represents one that is morphologically distinct. It does have morphological similarities to *R. nutkana*. The inflorescence is similar (short, stubby flowering laterals; flowers singly or in

small clusters of two or three; hips ripen at the same time, earlier than *R. californica*). Only the leaflet surface and the stout down-curved prickles are characteristic of *R. californica*. One phylogenetic tree produced from genetic sequencing showed that "Rosa californica plena" is as closely related to *R. canina* as to *R. glauca* and *R. rubiginosa*. Those researchers speculate that it was a hybrid of *R. nutkana* and a rose in section Caninae or *R. nutkana* and *R. californica*. (See Matsumotoa, p. 80.) The ploidy of *R. nutkana,* a hexaploid like a few of the Caninae, lends some support to that idea. Another possibility is that the accession was a misidentified rose or a rootstock. The ploidy of "*Rosa californica plena*" remains unclear, despite one published study characterizing it as tetraploid. (See Schulz, p. 7, relying on the ploidy of *R. californica.*)

Rosa gymnocarpa **Nutt. variety (var.) gymnocarpa** (1840). A Ground Rose but modestly suckering, section Cinnamomeae. The most easily identified Ground Rose.

Rosa gymnocarpa **Nutt. var. gymnocarpa** Native to the foothills surrounding the Central Valley south to Sacramento and west to the Pacific coast in the understory of oak woodlands. Extends from Oregon to Mexico in the Coastal Ranges. Like all Ground Roses, it is easy to overlook in the wild where it blends with poison oak, ferns, Pacific blackberry, creeping snowberry, and other understory plants. The lush, green, vibrant plant west of the Cascades in Oregon and into Washington and British Columbia is transformed into a parched, short, 30 inch xerophytic plant farther south. Like *R. californica*, it is so widespread that its distribution may be continuous along the Coastal Ranges. In the Sierra Nevada foothills, its range is comparable to that of *R. bridgesii*. Prefers semi-shade. Blooms singly or in small clusters up to 4. Not reliably hardy below USDA Zone 6b. (See Erlanson 1934, pp. 205, 209 ff.) Diploid.

Rosa gymnocarpa **var. *serpentina* Ertter & W.H. Lewis** (2008) Newly erected name. Presently documented in only three counties of northwestern California in the Siskiyou Mountains, and two counties in southern Oregon. Grows in serpentine soils. Distinguished by leathery leaflets with blunt tips, only scattered prickles, and more elongated hypanthia and hips. (See Ertter, Lewis pp. 174-177.) Ploidy unknown.

Rosa minutifolia **Engelmann**. (1882) Subgenus/section Hesperhodos. (See Wissemann pp. 282-285 for proposal that *Hesperhodos* be demoted to a section of Subgenus *Rosa*) The species is restricted, if it still exists anywhere in the state, to a single population in San Diego County's Otay Plateau. Well-adapted to the desert coastal environment, *R. minutifolia* is unique, unmistakable and endangered. Tiny leaves shorter than a thumbnail, simply and coarsely serrate leaflets, sweetly scented tiny mauve blooms that appear in January or after rain any time. Rhizomatous growth habit. My recently purchased nursery-grown plant arrived with buds in October. Diploid.

Rosa nutkana **Presl.** (1851). Thicket-forming, Section Cinnamomeae. Widely distributed along the western coast of North America from Alaska to Central California and inlands as far as Montana.

Rosa nutkana **Presl. subspecies (subsp.)** ***nutkana*** Scattered populations dot the California coast and Coast Ranges from the Oregon border south to Mendocino County, with even more widely scattered isolated populations reported south on the Central California coast. Tall, stout plants, larger blooms with a distinct mauve tint. Blooms a

month earlier than *R. californica.* The farther south it is found, the more it resembles *R. californica*. Its key distinguishing character is the form of inflorescence, blooming mostly singly or in ones and twos on short pedicels along the length of the cane. Hexaploid.

***R. nutkana* subsp. *macdougalii* (Holzinger) Piper** (1906) Intermontane subspecies from central British Columbia east of the Cascades to extreme northern California, where it is restricted to six specimens in Humboldt and Siskiyou Counties. Also east to Montana and Wyoming, south to Colorado and Utah. Glandular leaflets beneath and on singly serrate margins but sepals smooth, few straight prickles. Many synonyms, including *R. rainierensis, R. spaldingii, R. nutkana* var. *hispida*. Ploidy unknown.

***Rosa pinetorum* A. A. Heller**.(1904) A Ground Rose, probably section Cinnamomeae. Solitary plants. Recent taxonomy by Barbara Ertter geographically restricts the species to the Monterey Peninsula. Seems to be confused with both *R. spithamea* and *R. bridgesii* in the literature. Distribution maps are largely unreliable because of that confusion. Scented foliage. Endangered. Specimens sold by two different botanic gardens could not possibly be the same species. One is bolt upright to three feet, with numerous straight prickles at the base, thinning higher on the cane to one or two infrastipular prickles. Leaflets are glandular, narrow and pointed. The other is a procumbent shrub with delicate, thin leaves with rounded tips, sparsely armed with straight prickles, and a martyr to powdery mildew. Tetraploid.

***Rosa pisocarpa* A. Gray** (1897). Solitary, loosely clustered or sometimes thicket-forming, Section Cinnamomeae. A woodland rose favoring moist locations. Newly described as "the westernmost member of the *Rosa blanda* Aiton complex, typically occurring west of the Cascade Range from southern British Columbia south to northwestern California as far as Elk Mountain, Mendocino County." (Ertter, Lewis, p. 171.) Cluster-flowered, pea-sized and pea-shaped hips. Shade-tolerant. Not reliably hardy below USDA Zone 6b. (Erlanson 1934, pp. 205, 209 ff.) Ploidy varies by subspecies.

Rosa pisocarpa* A. Gray subsp. *pisocarpa is found in three northwestern counties of the state where the Cascades extend into extreme northern California. Diploid.

Rosa pisocarpa subsp. ***ahartii*** Ertter & W. H. Lewis (2008) follows the line of the foothills of the Sierra Nevada along the east side of the great Central Valley south to the middle of the state. Often free of prickles. Few flowers. An unsatisfying batch of mismatched species names have been assigned to this taxon in the past. Possibly a hybrid or intergraded population of *R. californica* or *R. woodsii* ssp. *ultramontana*. Tetraploid. (Ertter, Lewis pp. 171-174.) Note difference in ploidy in this subspecies.

***Rosa spithamea* S.Watson**. (1880) A Ground Rose, probably section Cinnamomeae. Found in the Coastal Range and Siskiyou Mountains but not the Central Valley or High Sierra, a small ground rose, sometimes distinguished by remarkably spiny sepals that remain cupped after they open. Whether and how it is related to *Rosa gymnocarpa, Rosa bridgesii, Rosa yainacensis*, and *Rosa pinetorum* has yet to be determined. A fire-following shrub that blooms sparingly, if at all, until fire clears the understory and generates ash. Almost impossible to acquire from any source other than personal collection in the wild, or native plant nurseries. Tetraploid.

***Rosa woodsii* Lindl. (1820)** Section *Cinnamomeae*. A very diverse and widespread species native to western North America, including California, as part of the *R. blanda-woodsii complex*. Two subspecies and one variety are differentiated in California.

***Rosa woodsii* Lindl. subsp. *ultramontana* (S. Watson) Roy L. Taylor & McBride** (1978). thicket-forming, Section Cinnamomeae. Described as the only subspecies of the widespread North American Woodsii-Blanda complex found within the state (But see Ertter, Lewis, p. 171 describing *R. pisocarpa* as the westernmost member of the the *Rosa blanda* complex.), *R. woodsii* ssp. *ultramontana* is a mid- to high-altitude mountain rose, widespread in the Sierra Nevada, especially near creeks and in meadows. In the northern Sierra Nevada and in Mono County, it is a documented host of the eriophyid mite responsible for Rose Rosette Disease. Cluster-flowered. Shade-tolerant. Diploid.

***Rosa woodsii* subsp. *gratissima* (Greene) W.H. Lewis & Ertter**, restricted to springs and streams around the Mojave Desert and southern Great Basin, as well as the southern Sierra Nevada south of Fresno County. Similar to *ultramontana* but with stout prickles, often varying in size internodally. Ploidy unknown.

***Rosa woodsi* var. glabrata (Parish) D. Cole** (1956) A variety of subspecies *gratissima* with smooth canes. Restricted to the north foot of the San Bernadino Mountains. Ploidy unknown.

California Species Roses Already Used By Hybridizers

The following survey is not comprehensive, but it illustrates how infrequently these species have been used by breeder. Many hybrids are oddities rather than garden plants. The exceptions are *Rosa californica* and *Rosa nutkana*, which have produced promising hybrids.

The Suckering Cinnamomeae

Rosa californica—Many hybrids, primarily derived from ‘Lilac Charm’ and ‘Cardinal Hume.’

Cardinal Hume	Harkness. 1984. Seed: [('Lilac Charm' x 'Sterling Silver') x ('Orangeade' x 'Lilac Charm')] x [('Orange Sensation' x 'Allgold') x *R. californica*] Pollen: 'Frank Naylor'
‘Golden Angel’ x *R. californica nana*	- Ralph Moore. Not in commerce. Suggestions have surfaced that Ralph Moore unknowingly used *R. spithamea* instead of *R. californica nana*.
‘Lilac Charm’	E. B. Le Grice. 1962. From the patent: “The present rose plant was produced originally by the crossing of an unnamed seedling as a seed parent and an unnamed seedling as the pollen parent. The parentage goes back to a generation *raised before World War II. Rosa Californica and Lavender Pinocchio… were introduced into the stream the third and second generation back.* (emphasis added) The contribution of *R. californica* is unclear. I doubt that the blackspot susceptibility of cultivars derived from ‘Lilac Charm’ comes from the species.
“Rosa californica plena”	- Bears little resemblance to native forms of the species I’ve seen. The rose in commerce has conspicuous red-tinted bark, stout down-curved tan prickles, small clusters of double blooms along the canes, not in terminal inflorescences, and a tall bushy habit.

Lineage as a form of the species is suspect. The lack of rebloom in this purported *R. californica* strikes me as further evidence that *"Rosa californica plena"* is not a form of *R. californica*.

R. rugosa x *R. californica* Reported at Sangerhausen, 2006.

R. ×*scharnkeana* Graebner - Unclear whether the parentage is *R. californica* ×*R. nitida* or the reciprocal cross. Also at Sangerhausen.

'Theano' Rudolf Geschwind. 1895. *R. californica* x 'Crimson Rambler.' I grow this rose and do believe it is a hybrid. It leafs out with the foliage and timing of *R. californica* (late), but it blooms with and like the multifloras; small, rather insignificant violet semi-double blooms; lacks the hooked prickles of *R. californica* and has reddish tinted bark of "Rosa californica plena."

R. nutkana Presl. – Fifteen reported hybrids

'Cantab' C. C. Hurst. *R. nutkana* x 'Red Letter Day' (HT, Dickson, 1914).

'Cauldron' Holliger. 1984. *R. glauca* x *R. nutkana.*

Mander's Nutkana # 1 George Mander. 'Shades of Pink' x *R. nutkana.*

Mander No 2 George Mander. 'Shades of Pink' x *R. nutkana.*

Mander No 3 George Mander. Seedling of 'Parkdirektor Riggers'x *R. nutkana.*

R. bracteata x *R. nutkana* Louis Lens.

R. x *nutcathodes* Rolf Sievers. *R. nutkana* x *R. haematodes*, an obscure Caninae from Caucasus that Crépin grouped with *R. oxyodon* Boiss.

R. ×*nutcaversa 1* Rolf Sievers. *R. nutkana* x *R.* ×*reversa.*

R. ×*nutcaversa 2* Same

R. ×*nutcaversa 3* Same

R. ×*nutcayesii* Rolf Sievers. *R. nutkana* x *R. moyesii*; few but very red flowers.

R. ×*recana* Rolf Sievers. *R.* ×*reversa* x *R. nutkana*

R. ×*rubricana* Rolf Sievers. *R. glauca* x *R. nutkana*

R. ×*nutcasissima* Rolf Sievers. *R. nutkana* x *R. spinosissima*

Schoener's Nutkana Fr. George M.A. Schoener. *R. nutkana* x Paul Neyron

Nutneyron Fr. George M.A. Schoener. Paul Neyron x *R. nutkana*

R. pisocarpa – three hybrids.

R. pisocarpa x *R. rugosa* – Louis Lens. ca. 1988.

R. stellata mirifica x *R. pisocarpa* 'Autumn Leaves' - Louis Lens. Cluster-flowered, arching canes weighted to the ground, very floriferous with bright pink, single blooms.

(0-47-19 x 0-47-19) x *R. pisocarpa* - Paul Barden. 2009. Compact, reblooming, single lilac blooms. Paul Barden reports in his blog that he used a dark pink, compact selection of the species.

R. woodsii Lindl. subsp. *ultramontana* and *gratissima*– No hybrids.

Virtually all hybrids of *R. woodsii* are derived from *R. macounii* which was recently demoted to the status of synonym of *R. woodsii* ssp. *woodsii* (not *R. woodsii* ssp. *ultramontana* as stated in the article). (See Lewis, Ertter p. 347.)

The Ground Roses

No reported hybrids. But see 'Golden Angel' x *R. californica nana*, which may be a hybrid of *R. spithamea*.

Section *Hesperhodos*, *Rosa minutifolia*

Little success has been reported with *R. minutifolia* hybrids. Other hybridizers have had more success with the other branch of section *Hesperhodos*, *R. stellata*. A cross with *R. stellata* may produce a hybrid that is more amenable to breeding.

Conclusion

Species roses are the ultimate repository of new germplasm for rose hybridizing. A different mindset is useful for evaluating species roses. Because no two individuals are identical, picking out tiny distinctions is less useful than perceiving common characteristics that express the *gestalt* of the species. In some species, differences among individuals are minimal; in others, extensive. For hybridizers, those differences offer the promise of new genes for the improvement of the rose.

Just as our understanding of the variability within species has expanded, our understanding of the boundaries between species has advanced in the past 50 years. The upcoming *Flora of North America* promises to be the first comprehensive restatement of North American species roses since Arthur Rehder's time. Modern phylogenetic trees are based on a combination of (1) statistical descriptions of morphology paired to eco-geographic ranges and (2) sophisticated, computerized statistical analyses of molecular markers. As a result, our understanding of California species roses is rapidly expanding, and yet, there is much we do not know.

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Note 1. Taxonomy and Botanical Nomenclature.

Botanical nomenclature is a shorthand notation that conveys information in a consistent format. The name of the species, usually shown in italics, is followed by the name of the author(s) who first published a valid description and name for that species. An author name in parentheses means that author coined the name and described the plant, but the rank has been changed. An author name preceded by "ex." means that that author cleaned up a technical deficiency in the original author's description or name. Beneath the rank of species are smaller subdivisions, or subtaxa (pl. of subtaxon): subspecies, variety and form. The name *R. woodsii* Lindl. subsp. *ultramontana* (S.Watson) Roy L. Taylor & McBride indicates that John Lindley first validly described *R. woodsii*, that Sereno Watson first described the type *ultramontana* but gave it a different rank (in this case species rank as *R. ultramontana*), and that Roy T. Taylor and Douglas L. McBride re-ranked *R. ultramontana* as a subspecies of Lindley's *R. woodsii*.

Botanists addressing *Rosa* in North America "have adopted a three-tiered approach to taxonomic rank within North American *Rosa*. The **species** rank is used for the most consistently distinct entities, which have been most commonly recognized. Major ecogeographic components within species are treated as **subspecies**, while unique localized expressions are treated as **varieties**." (Ertter, Lewis p. 171.) Different subspecies occupy substantial ranges of a species in at least two distinct ecogeographic regions in which those populations possess distinct morphological characteristics. The ecogeographic regions may be contiguous (next to each other), permitting limited gene flow through hybridization and backcrossing, or may be separated

by geographic barriers, preventing gene flow. (Lewis, Ertter p. 342.) A subspecies may be subdivided into varieties.

An **autonym** is created automatically when a subtaxon - subspecies or variety- is recognized for the first time. In this case, *Rosa gymnocarpa* var. *gymnocarpa* was created automatically when the name *R. gymnocarpa* var. *serpentina* was published. The species now comprises two varieties: var. *gymnocarpa* and var. *serpentina*.

Note 2. Widely distributed diploid plant species that spread into extreme environments have been known to mutate, evolve, or hybridize into populations with different ploidies than those commonly reported. Lewis and Ertter observe that sagebrush in the Great Basin has been found to have diploid, tetraploid and mixed diploid/tetraploid populations, depending on their ecological zone. Diploids are found in moist soils, and tetraploids in dry soils, while intermediate forms occupy the middle ground with mixed diploid and tetraploid populations. Lewis and Ertter comment, "Undoubtedly, the evolution of these tetraploids is an example of the adaptive advantage of polyploids to survive and expand under the harshest of drought conditions" (p. 342).

Note 3. Unfortunately, modern phylogenetic studies have generally omitted the Ground Roses other than *R. gymnocarpa*. *R. gymnocarpa* was included in studies of the relationships among North American, but its relationship to those species remains unresolved. Using one genetic marker, *R. gymnocarpa* is sister to all other North American species in section *Cinnamomeae*. (See Bruneau et al., p. 371; Joly, Bruneau, p. 627.)

References and Further Reading

Websites

calflora.org – a website operated by a nonprofit dedicated to California native plants.

cnplx.info – California Native Plant Link Exchange, a website providing both Calflora information about native plants, and information about nurseries that sell native plants.

ucjeps.berkeley.edu/ina/roses/roses.html -- Native California Roses, by Barbara Ertter

oregonflora.org – website maintained by Oregon State University with nice photos of both herbarium specimens and live plants. Best pictures of *R. pisocarpa*, *R. nutkana* and *R. spithamea*. Includes a mapping function.

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Fenceline thicket of *R. californica* in the Coast Ranges, Sonoma County, California.

***R. californica's* falcate prickles, Thin straight prickles can appear above and below these hooked prickles. Sonoma County, California.**

A form of *R. californica* with downy leaflet margins and surfaces. Marin County, California.

R. californica **hips from different thickets two miles apart. Sonoma County, California.**

R. gymnocarpa **in the Coastal Ranges, San Pedro Ridge, San Rafael, California.**

Maybe *R. spithamea* late in the summer, Coastal Ranges, Humboldt County.

Rose gall. Regular cane on left. Galled cane on right is hyper-thorny.

***R. nutkana*, Arnold Arboretum, Boston, Massachusetts.**

‘Schoener’s Nutkana’ before it grew to 8 feet x 10 feet in my Sonoma County garden.

Different roses sold as *R. pinetorum* by different botanical gardens.

Leaves from purported *R. pinetorum*.

***R. woodsii* ssp. *ultramontana* thickets in the Sierra Valley, Sierra County, California.**

***R. minutifolia* in January, Santa Barbara Botanic Garden.**