ENCELIA 'CADIZ REVEILLE': A NATURAL HYBRID SELECTED FOR XERIC SOUTHERN CALIFORNIA GARDENS.

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ABSTRACT: A selection from a natural hybrid swarm between *Encelia farinosa* and *E. frutescens* (Asteraceae) is formally provided with the cultivar name 'Cadiz Reveille'. The former species bears capitula with both disk and ray flowers, usually on branched peduncles, while the latter bears capitula that are strictly discoid and solitary on the ends of the peduncles. The hybrid selection described here was encountered in the southern Mojave Desert and normally has more than one capitulum per peduncle, each bearing an outer ring of florets which are intermediate in morphology between ray and disk flowers, thus providing a unique and interesting effect. Recommendations are made in regard to culture and propagation.

KEY WORDS: Asteraceae, Compositae, cultivar, *Encelia*, horticulture, natural hybridization.

In the process of fieldwork, one gets an opportunity to observe not only the morphological variation within and among our native species in varying environments, but also the occasional arrays of fascinating variation in natural hybrid swarms. Unfortunately, this diversity often goes unseen by Californians who huddle in their air-conditioned homes and look out their windows onto local seas of *Agapanthus, Gazania, Rosmarinus*, and so forth. The California flora has yielded a diversity of ornamental plants to the horticultural trade, some of which (*Fremontodendron californicum, Romneya coulteri, Eschscholzia californica, Phacelia campanularia, Nemophila menziesii*, etc.) are appreciated by gardeners as far away as Great Britain, but are seldom used by Southern Californians in their own gardens. Many Californians try to maintain a brilliant green lawn and a display of gaudy, water-guzzling annuals, and when they *do* become aware of drought-tolerant plants, all too often remain oblivious to the plants native to their area and instead acquire plants from Australia and South Africa.

Although it is a slow, up-hill battle (one that in my opinion isn't being fought very hard, if it's being fought at all), Californians need to be made aware of the rich palette of ornamental plants native to California which may be used in their home landscapes. One of the best ways to promote our plants in the horticultural trade is to select particularly noteworthy clones or strains and provide them with cultivar names. Strangely enough, some people will *not* cultivate native plants *unless* these have cultivar names [a psychological perversion, I believe]; the false assumption seems to be made that a clone or species is worth cultivating *only if* it has a cultivar name. Of the several-score cultivars derived from native Californian plants, only a very small percentage have been the result of controlled crosses (very likely fewer than 10%). Most have been the result of selections made "in the wild," or selections of spontaneous hybrids which have arisen in a garden setting between species that would normally not occur together in their native habitats. There are several genera in the California flora which will undoubtedly yield interesting and worthwhile hybrids *if and when* competent hybridizing projects are undertaken with them. In the meantime, in keeping with the tradition of simply selecting noteworthy clones "from the wild," the following cultivar is named and briefly described.

***ENCELIA* 'CADIZ REVEILLE'** [A selection of *Encelia farinosa* A. Gray × *E. frutescens* (A. Gray) A. Gray; Centerfold **Plates II & III**.]

Somewhat rounded, or mounding *shrub*; drought-tolerant once established. Mature plant size approximately 9–12 dm tall (36–46 inches) with an ultimate spread of about 18 dm broad (72 in). *Stems and branches* erect to spreading, gray-green, becoming light gray with age. *Leaves* gray-green, rhomboid-ovate with 3 prominent veins from the base, ca. 40 mm long by 25 mm wide, entire or subentire and bearing up to 4 subtle pairs of marginal teeth. *Peduncles* ca. 6.5–15.0 cm long (2.5–6 in), borne terminally on the branches. *Involucre* ca. 12 mm diameter; 8–10 mm high; *disk florets* golden yellow; *ray florets* clear, saturated yellow, ca. (7–) 9–12 (–13), these mostly tubular, the tube ± 5 mm, but with a zygomorphic limb which spreads outward ± 2 mm. The flower-heads, then, measure about 24–26 mm across. Morphologically, this cultivar is intermediate between the two putative parents; however, in overall growth form the plant seems to more closely approximate *E. frutescens*. **[Plate III.]**

Named for the Cadiz Valley, SE San Bernardino County, California, where the clone was collected; as well as for the somewhat bugle-like outer ring of florets.

As with most discoveries, that of *Encelia* 'Cadiz Reveille' was quite serendipitous. In March of 1993, Steve Boyd, Walter Appleby, and I made a trip to Death Valley to collect material of *Sibara deserti* (M.E. Jones) Rollins and *S. rosulata* Rollins for use in comparative molecular studies related to research on the proper generic placement of *Sibaropsis hammittii* S. Boyd & T.S. Ross (*Madroño* 44(1): 29–47, 1997). On our trip back, during which we made occasional stops in the eastern Mojave Desert for general plant collecting purposes, we also made a quick stop in the southern Cadiz Valley. When I opened my door at this stop, I was greeted by this *Encelia* with its intriguing flower heads. Approximately two dozen cuttings were collected from this unique hybrid, and these were turned over to the Rancho Santa Ana Botanic Garden (RSABG) in Claremont, with the understanding that I would receive one rooted cutting in return. Of these cuttings, two rooted: the most vigorous was retained by the RSABG; the second, feebler specimen was planted in my yard in Ontario, San Bernardino County.

The individual acquired by the author was planted in full sun on the top of a rock garden composed of rounded granitic boulders with the intervening spaces built up with decomposed granite. Once introduced into an amenable habitat, the specimen flourished and put on excellent growth. Based on its subsequent performance, I would say that it is an excellent specimen for the xeric home landscape. It blooms sporadically through-out much of the year, but tends to produce the largest flush of flowers in the spring and early summer.

Cultural recommendations — In horticultural lingo, I would have to say that this is a very *hardy* plant: —this relates to its tolerance of abuse, *not* the temperature range within which it can survive [our garden is in Zone 18 of the Sunset Western Garden Book]. Within a few months of planting out the *Encelia* 'Cadiz Reveille,' we acquired two dogs who had access to the back yard and the rock garden on which it was planted. Of the perhaps two dozen species of plants in the rock garden, the *Encelia* was the only one to survive the canid activity, including a noble effort by one of the dogs to dig up its roots.

Despite the poor propagation record with the original cuttings, in my own experience this cultivar is *easily* propagated by stem tip cuttings. Some cuttings will actually produce a capitulum within a few weeks of being planted. Resulting plants should be planted in the cool, wet weather of winter or early spring, with *excellent drainage*, and watered occasionally during establishment in the cool season if the natural rains are substandard. If the plant indeed has excellent drainage, then it can be watered in a cursory manner once a month during the warm season, and given a good soaking once in late summer. Besides excellent drainage, the plants should have a full day of hot sun. As a result, I believe that this selection will be an excellent cultivar for the hot inland valleys of Southern California.

This cultivar should be available from the Rancho Santa Ana Botanic Garden, and will probably also be offered on occasion at SCB plant sales. Enquiries can be addressed to the RSABG Plant Propagator.

CAVEAT — This cultivar should **not** be planted or cultivated within a mile of undeveloped areas where locally native *Encelia* species occur. The ensuing hybridization will dilute the genetic integrity of the *Encelia* species native to your area. [For the Los Angeles Basin and adjacent low hills, this means *E. californica*; for the northern San Fernando Valley, Liebre Mountains, and Antelope Valley, this means *E. actoni*; for Riverside County and eastern San Diego County this largely means *E. farinosa*.] Please do your part to maintain the species native to your local area.

BOOK REVIEW

Plant Identification Terminology: An Illustrated Glossary. By JAMES G. HARRIS AND MELINDA WOOLF HARRIS. 1994. Spring Lake Publishing, P.O. Box 266, Payson, Utah 84651. x + 198 pp.; illus. [B & W]. Softcover $15.95 postpaid. ISBN 0-9640221-5-X.

One of the biggest challenges to the beginning student of botany is the necessary acquisition of the descriptive terminology found in botanical literature. Building this vocabulary may be a slow, frustrating process, particularly for the individual who does not have a natural facility with languages, yet it is crucial to understanding plant descriptions and also to being able to accurately describe one's own observations.

Apart from the slow initial climb up the learning curve, a major difficulty in learning the terminology is that it has often been difficult for students to find a highly inclusive glossary of terms to which they can make reference. Many floras, for example, include a glossary for the basic terminology used therein. Such glossaries, however, contain a relatively small subset of the terms which may be encountered in botanical literature, and tracking down the definition of a newly encountered term may require a search through several different references. For example, one may go to Radford's systematics textbook (A.E. Radford *et al.*, 1974, *Vascular plant systematics*, "Chapter 6: Phytography–morphological evidence," Harper & Row, New York), or Stearn's *Botanical Latin* (William T. Stearn, 1992, *Botanical Latin: history, grammar, syntax, terminology and vocabulary, 4th ed.*, Timber Press, Portland, Oregon). A very precise technical term may lead one off to a specialized article such as Willard W. Payne's "A glossary of plant hair terminology" (1978, *Brittonia* 30: 239–255), or Leo J. Hickey's "Classification of the architecture of dicotyledonous leaves" (1973, *American Journal of Botany* 60: 17–33). An attempt to understand the term based on its etymology might lead one to Donald J. Borror's still nifty little book *Dictionary of word roots and combining forms* (1971, Mayfield Publishing Co., Palo Alto, California).

Harris and Harris recognized this difficulty and set out to compile a more extensive glossary that would be of benefit both to students and professional botanists. As indicated in their preface to the work, they also believed that the use of simple illustrations would greatly improve the conveyance of meaning for many of the concepts and terms. The result in *Plant Identification Terminology* is a reference to "more than twenty-four hundred terms commonly used in plant description and identification." Heavily scattered throughout the text are *numerous* line drawings (*zillions perhaps?*) designed to clarify the definitions of terms or affirm their application. What they have accomplished is an excellent reference at a very reasonable price.

While the work cannot be considered exhaustive (–it was not meant to be–), the wealth of terms and the clarity of presentation definitely fulfill the need that was perceived by its authors. The book is divided into two parts: the first (pp. 1–118) being devoted to an

LEGENDS FOR **PLATES I – IV.**

– (CENTERFOLD PAGES) –

PLATE I. — *Arenaria macradenia* var. *kuschei* (Caryophyllaceae), re-collection of an obscure Californian taxon [see pp. 65–71]. — UPPER PHOTO) One of the specimens which forms part of Kusche's original collection; part of the holotype housed at CAS. Unfortunately the photographs included here are too general to illustrate the densely stipitate-glandular peduncles, pedicels, and calyces; however, note the congested inflorescences. Also note that the stems are leafy throughout, with the longest internodes occuring below the inflorescences. LOWER PHOTO) One of the plants occurring in the recently discovered population on Liebre Mountain. Note the dense overall aspect of the taxon. For convenient comparison with another variety see the photo of *A. macradenia* var. *parishiorum* on Plate IV.

PLATE II. — *Encelia* 'Cadiz Reveille' (Asteraceae), a natural hybrid selected for xeric Southern California gardens [see pp. 72–74]. — The putative parent species of 'Cadiz Reveille,' photographed on the same trip during which the cultivar was found. UPPER PHOTO) *Encelia farinosa*, typically with very gray leaves, branched inflorescences, and capitula bearing both disk and ray florets. LOWER PHOTO) *Encelia frutescens*, which has fairly green leaves, peduncles bearing solitary capitula, and capitula which bear only disk flowers.

PLATE III. — *Encelia* 'Cadiz Reveille' (Asteraceae), a natural hybrid selected for xeric Southern California gardens [see pp. 72–74]. — UPPER PHOTO) A partial view photograph of the original clone in the southern Cadiz Valley, shortly before cuttings were taken and before deliberation began on a seemingly appropriate cultivar name. LOWER PHOTOS) Two flower heads on the author's plant in Ontario, selected to show the range of variation in number of "bugle-florets." LOWER LEFT) A capitulum with few "bugles" being happily visited by one of our native bees. LOWER RIGHT) A well-developed capitulum with a large number of outer florets. Note the informal variation in these semi-tubular/semi-ray flowers.

PLATE IV. — Additions to the flora of mainland Los Angeles County, California [see pp. 77–94]. — I would like to have illustrated many more of the additions to the county flora, but have limited myself here to two of the additions from Adobe Mountain, which straddles the Los Angeles/San Bernardino county line, in the Mojavean portion of L.A. County. UPPER PHOTO) *Arenaria macradenia* var. *parishiorum*, a distinctive, very gracile variety of this wide-ranging species. The plants are mostly herbaceous above ground, with narrow, acicular leaves; the primary stems often produce non-flowering leafy shoots (proliferations); and the flowering stems produce few leaf-pairs below the inflorescence. Note also that the longest internodes are in the inflorescence, where the leaves have been reduced to bracts, providing a very open and "airy" appearance. LOWER PHOTO) *Echinocactus polycephalus*; an old, "many-headed" clump on the south slope of the mountain which illustrates the specific epithet. This photograph is oriented NNE, toward the summit of Adobe Mountain.

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