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CHROMOSOME NUMBERS IN SOME CALIFORNIAN COMPOSITAE-ASTEREAE

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The present chromosome counts were made from plants grown from seeds kindly supplied by Rancho Santa Ana Botanic Garden, Claremont, California. Table 1 lists 16 original counts, 11 of which are from taxa here reported for the first time. The vouchers cited in the table are in the Herbarium of the Garden and are specimens collected at the time the seeds were originally obtained. In some cases the plants from which the counts were made were several generations removed from the original collections, but hybridization was not suspected in any of these.

Root tips were collected from potted plants in the greenhouse and pretreated in a saturated solution of paradichlorobenzene for 2-3 hrs at 15° C and fixed in a Carnoy solution (3 parts absolute ethyl alcohol : 1 part glacial acetic acid) for 20 minutes at room temperature. They were then hydrolyzed in N HCl at 60° C for 3-5 minutes and stained with aceto-orcein. The squash technique was employed in making the slides. Slides were dehydrated in a series of absolute ethyl alcohol, absolute ethyl alcohol and xylol 1 : 1, and xylol and made permanent using DPX as the mounting medium. Permanent slides are in the collection of the Department of Botany, Ontario Agricultural College, and unpublished photomicrographs are in the possession of the senior author.

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DISCUSSION

The chromosome counts for *Grindelia camporum*, *Haplopappus arborescens*, *H. venetus* var. *vernonioides*, *Heterotheca grandiflora*, and *Monoptilon bellioides* are in agreement with those reported by Raven et al. (Am. J. Botan. 47: 124-132, 1960) for plants from different localities in California. At the generic level, the counts for *Baccharis*, *Chrysothamnus*, *Corethrogyne*, and *Grindelia* are consistent with the basic chromosome numbers previously reported for these genera (cf. Raven et al., op. cit.). It is interesting that all counts published to date for the predominantly woody genus *Baccharis* are diploid, as are the new counts here reported for *B. sarothroides* and *B. sergiioides*. Our count for *B. pilularis* subsp. *pilularis* agrees with that of Raven et al. (op. cit.) for subsp. *consanguinea*. The chromosome number of the typical variety of *Corethrogyne flaginifolia* is the same as those previously published for other varieties of that species.

The counts for *Haplopappus squarrosus* subsp. *squarrosus* agree with those of Raven et al. for subsp. *grindelioides* from southern California. It is significant that our count of *H. acradenius* subsp. *eremophilus* from near Victorville is diploid ($2n=12$) while these authors reported *H. acradenius* subsp. *acradenius* from a few miles east to be tetraploid ($2n=24$). Judging from the meiotic configurations, Raven (in litt.) considers that his strain of *H. acradenius* subsp. *acradenius* might have been autotetraploid. The new counts for *H. ericoides* and *H. parishii* lend support to the hypothesis of 9 as the basic chromosome number of the shrubby section *Ericameria* which, on morphological grounds, is closely related to the shrubby genus *Chrysothamnus*, which has also $x=9$.

TABLE 1. *Chromosome numbers in Compositae-Astereae.*

NAME	SOMATIC CHROMOSOME NUMBER	LOCALITY AND COLLECTION
<i>Baccharis pilularis</i> DC. subsp. <i>pilularis</i>	18*	4 miles south of Pescadero, San Mateo Co., Wolf 1807
<i>sarothroides</i> Gray	18*	5 miles east of Holtville, Imperial Co., Wolf 9391
<i>sergilioides</i> Gray	18*	Little San Bernardino Mts., Riverside Co., Wolf 4297
<i>Chrysothamnus paniculatus</i> (Gray) Hall	18*	Morongo Valley, San Bernardino Co., Balls & Everett 22802
<i>Corethrogyne flaginifolia</i> (H. & A.) Nutt. var. <i>flaginifolia</i>	10*	1.5 miles south of Pismo Beach, San Luis Obispo Co., Everett & Balls 18701
<i>Grindelia camporum</i> Greene	24	1.3 miles north of Sonora, Tuolumne Co., Balls & Everett 18082
<i>latifolia</i> Kell.	24*	Santa Cruz I., Santa Barbara Co., Balls & Blakley 23743
<i>stricta</i> subsp. <i>venulosa</i> (Jeps.) Keck	24*	Pt. Reyes Lighthouse, Marin Co., Balls 23578
<i>Haplopappus acradenius</i> subsp. <i>eremophilus</i> (Greene) Hall	12*	North of Victorville, San Bernardino Co., Balls 22207
<i>arborescens</i> (Gray) Hall	18	5.3 miles northwest of Sonora, Tuolumne Co., Balls & Everett 18084
<i>ericoides</i> (Less.) H. & A.	18*	Hurricane Pt., Monterey Co., Everett & Balls 18695
<i>parishii</i> (Greene) Blake	18*	Near Julian, San Diego Co., Munz 12250
<i>squarrosus</i> H. & A. subsp. <i>squarrosus</i>	10*	Carmel Highlands, Monterey Co., Everett & Balls 18694
<i>venetus</i> (Kunth) Blake var. <i>vernonioides</i> (Nutt.) Munz	12	2 miles south of Piedras Blancas, San Luis Obispo Co., Everett & Balls 18698
<i>Heterotheca grandiflora</i> Nutt.	18	Santa Cruz I., Santa Barbara Co., Balls & Blakley 23632
<i>Monoptilon bellioides</i> (Gray) Hall	16	U. S. Highway 60-70, 5 miles east of junction with U. S. 99, Riverside Co., Everett & Balls 22959

*The chromosome counts marked with an asterisk are reported for the first time.