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AN INTERSPECIFIC HYBRID IN FREMONTIA

LEE W. LENZ

The genus *Fremontia* contains two species which are certainly among the most attractive of the native California shrubs. *Fremontia mexicana* and *F. californica* are both popular garden subjects and are frequently encountered in any garden where native plants are used.

Fremontia mexicana grows to be a rather large shrub reaching as much as 20 feet or more in height. The plant branches freely from the base and may be nearly as broad as tall. The alternate leaves vary considerably in size and shape but they are usually 3-5-lobed and from 1-3 inches long, dark green above and strongly pubescent below. The more or less bowl-shaped flowers are borne singly along the branches and are frequently quite large, sometimes being as much as 3.5 inches in diameter. The inside of the flower is a golden yellow while the outside is usually stained reddish-orange. In California *Fremontia mexicana* is found only in extreme southern San Diego County and from there it extends south into Baja California.

Fremontia californica, although a highly variable species, differs from *mexicana* in several respects. The leaves tend to be smaller and are usually somewhat different in shape. The gland at the base of the flower is usually hairy while in *mexicana* it is usually smooth. In *californica* the flowers tend to be borne on short spur branches and these are usually absent in *mexicana*. The seeds of *californica* are somewhat larger than those of *mexicana* and are usually brown in color and sometimes covered with short hairs. In *mexicana* the seeds are black and rather shiny. *Fremontia californica* is found at middle elevations in many places throughout much of central and southern California, extending south to the western edge of the Colorado Desert and the slopes of the San Bernardino Mts. In its distribution it does not in any place approach *F. mexicana*.

Several years ago it was noted that in one of the plantings of *mexicana* growing at the Rancho Santa Ana Botanic Garden, then located in Orange County, there was considerable variation, more so than is usually found in that species. In some respects these plants appeared to be hybrids between *F. mexicana* and *F. californica*. Upon checking the source of the seed from which the plants had been grown it was discovered that that particular lot of seed had been collected from plants of *mexicana* then growing in the Botanic Garden. Since *californica* was also growing at the Garden, a hybrid origin for that particular lot of plants therefore seemed possible.

In the spring of 1950 the author made controlled pollinations between *F. mexicana* and *F. californica*. Attempts were also made to self the plants, however, in no instance was seed obtained from flowers fertilized with their own pollen and it would therefore appear that Fremontias are self-incompatible.

Plump and healthy looking seed was obtained from the cross *E. mexicana* ♀ × *F. californica* ♂. The reciprocal cross was not attempted. Seventeen seedlings were obtained from 44 seeds and sixteen of these plants have been grown to flowering.

In 1953 when the plants first bloomed it was obvious that they were of hybrid origin and in most respects they were intermediate between the parents. It was also possible to match certain of the plants still remaining at the old garden site with plants from the controlled cross. It seems probable then that the assumption of a hybrid origin for the earlier lot was correct.



Fig. 1. Left—*F. californica*. Center—*F. mexicana* × *F. californica*. Right—*F. mexicana*.

Horticulturally, the F_1 hybrid appears to be a more desirable plant than either of the parents with the most striking differences being seen in the flowers. The large flowers of *mexicana* tend to be bowl-shaped while the smaller flowers of *californica* usually open almost flat. The hybrid combines much of the size of *mexicana* with the more open shape of *californica*, consequently the flowers show off to better advantage than they do in *mexicana*. The glands in the flower vary from having no hairs to slightly hairy. The plants also vary in the matter of the presence or absence of spur branches and on a single branch some flowers may be borne directly from the main stem while others will be found on short side branches.

Examination of the pollen of the hybrid showed almost no aborted grains and the plants set a considerable amount of seed. The seed is black as it is in *mexicana* but it is not shiny.

During the blooming season of 1953 various plantings of *Fremontia* in southern California were examined and in a number of instances plants were found which would appear to be hybrids between these two species. This is to be expected when nurserymen grow plants from seed harvested in botanic gardens or other areas where the two species are growing together.

Unfortunately *Fremontias* are extremely difficult to propagate vegetatively and consequently it would be nearly impossible to establish and maintain clonal selections of any of the finer forms arising from this cross. For that reason, and also because there is little or no likelihood that this hybrid could occur in nature, no formal taxonomic recognition will be given to it.