

Clark, Curtis, Donald W. Kyhos, and Wm. C. Thompson. 1980. Evidence for the origin of diploid species in *Encelia* (Compositae: Heliantheae) by hybridization. Second International Congress of Systematic and Evolutionary Biology, Abstracts.

Contributed Papers

EVIDENCE FOR THE ORIGIN OF DIPLOID SPECIES IN ENCELIA
(COMPOSITAE: HELIANTHEAE) BY HYBRIDIZATION.

Curtis Clark, Donald W. Kyhos, and Wm. C. Thompson
(Botany, University of California, Davis CA 95616, USA)

All species of *Encelia* are interfertile. When species come in contact in the natural environment, F₁ hybrids are often found in the zone of contact, but recombinant individuals occur only in areas of human or natural disturbance. Progeny tests of hybrids at undisturbed sites shows a range of backcrosses and F₂'s that are rarely expressed in the population; this indicates strong selection in favor of the F₁'s.

Two well-defined species resemble in many characters (leaf shape, leaf trichomes, vegetative branching, incapitulescence branching, ray shape and color, disc color, phyllaries, etc.) F₁ hybrids between other species: *E. virginensis* resembles hybrids between *E. actoni* and *E. frutescens*, and *E. asperifolia* resembles hybrids between *E. frutescens* and *E. californica*. We suggest that these species arose in the past by genetic stabilization of hybrids which more successfully invaded newly created environments than their parent species. Palaeobotanical and palaeoclimatological evidence indicates that the environments inhabited by the derived species have a more recent origin than those inhabited by the parents. In each case, artificially created hybrid combinations are nearly indistinguishable from the putative stabilized derivatives. Furthermore, hybridization more easily accounts for the observed characters in these species than does a bifurcating evolutionary tree.

SUBDIVISION ANALYSIS OF NATURAL POPULATIONS OF
LOLIUM MULTIFLORUM.

P.C. Coleman (Department of Biology, Rollins College, Winter
Park, Florida 32789, U.S.A.)

The genetic structure of three natural populations of *Lolium multiflorum*, an annual colonizer, was investigated using electrophoretically detectable isozyme markers. Adult frequencies and outcrossing rates were estimated using a joint maximum likelihood method (Brown and Allard, 1970). The structure revealed significant spatial heterogeneity. In addition, heterogeneity exists among seed, paternal, and maternal gene pools. Random migration, high outcrossing rates, and local selection are suggested as probable factors responsible for the observed structure.