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A CHAPARRAL FAMILY SHRUB— A GENEALOGY OF CHAPARRAL ECOLOGISTS

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This is a brief history of those persons who have contributed to our understanding of chaparral ecology. Contributions have come from several fields and from scientists working at academic institutions and government agencies throughout California (Fig. 1). The number of contributions from different fields has changed over the last 50 years (Fig. 2). In the early part of this century most studies related to the systematic and evolutionary relationships of both herbaceous and shrubby members of this community. Starting in the 1950's there was a shift towards investigations into the fire ecology and demography of chaparral, and this interest has accelerated in recent years. In the 1970's the study of shrub structure and function was an important focus, brought on in large part by the IBP California-Chile Convergent Evolution Project. These areas continue to capture much of the research attention in chaparral today.

Of course behind all of this there are faces, and an attempt has been made to call attention to the large number of scientists who have contributed publications dealing with chaparral biology (Fig. 3). In general, the earliest contributors are arranged on the outer edges of Figure 3 and more contemporary authors are positioned on inner portions of the figure. Names of biologists are arranged by subject area in a pattern similar to that shown in Figure 1. For example, animal ecologists are grouped in the upper left corner and plant population, community, and ecosystem ecologists are arranged from left to right. On the bottom of Figure 3, beginning in the lower left are systematic and evolutionary biologists and from left to right are persons who have made contributions in structural and physiological fields.

Unlike a genealogical family tree, which has a clear basis for illustrating relationships, this chap-

arral family shrub must be more loosely interpreted. Where clear academic lineages are evident, these have been illustrated. For example, at the University of California at Santa Barbara, Cornelius and Walter Muller (upper left) have had an impact on our understanding of plant-plant interactions; over a period of 10 years, they and their students published more than 50 papers in this field. Dwight Billings (lower right) trained a number of students who have played major roles in the study of chaparral. One such student, Harold Mooney, initially at the University of California at Los Angeles and now at Stanford, has had more influence than most. The number of students, postdocs, and others trained or influenced by him is impressive and not restricted to the field of physiological ecology. In other areas individuals have made significant contributions, rather than influencing large numbers of students. In systematic botany, for example, Willis Jepson and Alice Eastwood are two early colorful characters who largely worked alone. Some areas that have produced substantial numbers of studies are more associated with state and federal agencies, e.g., United States Department of Agriculture Forest Service, California Division of Forestry, and United States Department of the Interior, National Park Service. These agencies have attracted personnel from a diversity of academic backgrounds (although the University of California, Berkeley, is one important farm team)—their affiliation is more reasonably portrayed by the agency through which they have made their major contributions, largely in the areas of *community and ecosystem ecology*. Noteworthy is the large research staff of the Pacific Southwest Forest and Range Experiment Station, both in northern California and at the San Dimas Experiment Station in southern California.

One theme that is seen repeatedly in this family

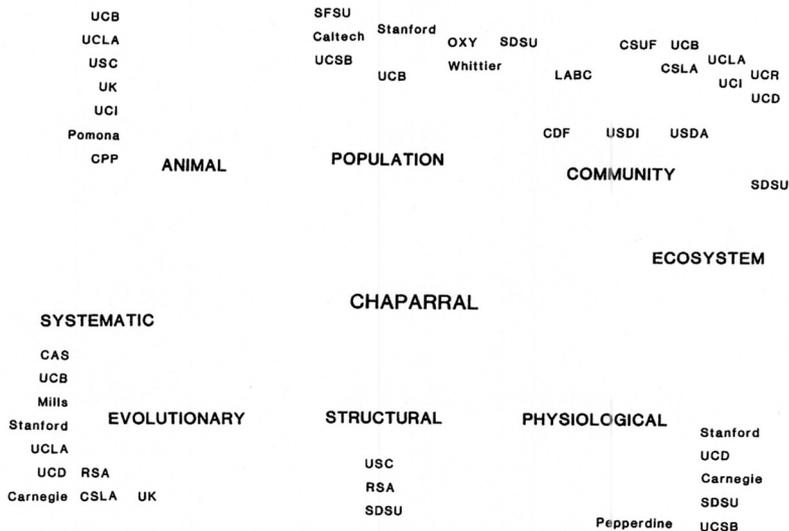


Figure 1. Major fields and institutions contributing to our knowledge of chaparral. Animal studies have largely focused on population and community studies. Plant research has attracted the vast majority of interest with major contributions from many fields. Institutional abbreviations for investigators' affiliations are as follows: Caltech = California Institute of Technology; Carnegie = Carnegie Institution of Washington; CAS = California Academy of Sciences; CDF = California Division of Forestry; CSLA = California State University at Los Angeles; CSUF = California State University at Fullerton; LABC = Los Angeles Baptist College; Mills = Mills College; OXY = Occidental College; Pepperdine = Pepperdine University; Pomona = Pomona College; RSA = Rancho Santa Ana Botanical Garden; SDSU = San Diego State University; SFSU = San Francisco State University; Stanford = Stanford University; UCB = University of California at Berkeley (other UC campuses are, D = Davis, I = Irvine, LA = Los Angeles, R = Riverside, SB = Santa Barbara); UK = University of Kansas; USC = University of Southern California; USDA = U.S. Department of Agriculture, Forest Service; USDI = U.S. Department of the Interior, National Park Service; Whittier = Whittier College.

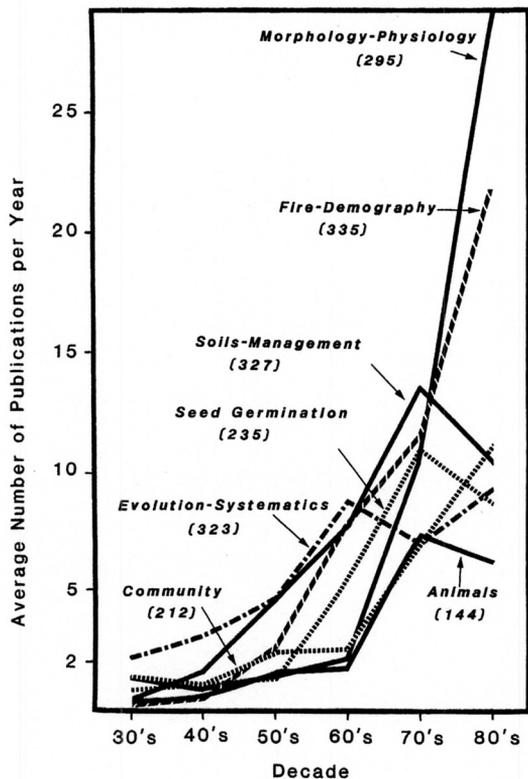


Figure 2. Average number of publications per year for different areas of research. In parentheses are the total number of publications. Data taken from Bibliographies on chaparral and the fire ecology of other Mediterranean systems, by J.E. Keeley. California Water Resources Center, University of California, Davis, 1984. Report No. 58.

Figure 3. Persons contributing research papers on chaparral biology. Included are those investigators with two or more significant contributions, arranged more or less by fields as illustrated in Figure 1. My apologies for any oversights.

shrub of chaparral biologists, is that this ecosystem has attracted expertise from a diversity of backgrounds and other areas of interest. Some of these persons have made major contributions beyond chaparral, e.g., Joseph Grinnell, animal ecologist noted for his coining the term 'ecological niche,' Theodosius Dobzhansky, eminent population geneticist attracted to the study of manzanita hybrids, Frits Went, discoverer of the plant hormone auxin who started some early studies on post-fire seed germination, G. Ledyard Stebbins, legendary plant evolutionist, long interested in chaparral taxa. Many major contributors to chaparral research also have

had a history of contributions to other systems, e.g., Phil Miller and Walt Oechel with their long-standing interest in arctic ecosystems is but one example. Chaparral is an ecological and evolutionary system which undoubtedly will continue to attract attention and we are far from thoroughly understanding its mysteries.

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