GRASSLANDS

The Newsletter of the California Native Grass Association Volume 3, No. 2 May 1993

HYBRIDIZATION OF SELECTED CALIFORNIA NATIVE GRASSES

KITREN G. WEIS, PH.D.

Family Poaceae

Grass classification in the U.S. from 1935 to the recent past followed that of A.S. Hitchcock (1935, 1951). This scheme was primarily based on morphological characteristics of inflorescence and spikelet structure and did not follow phylogenetic relationships in many genera. It has since been replaced with that of Gould (1968), a modification of the system advanced by Stebbins and Crampton (1961). Many of the taxonomic characteristics used to distinguish taxa are inappropriate for field identification with a hand lens. The current system of classification is still imperfect, as it is largely based on anatomical, physiological and cytological characteristics which may not always reflect phylogenetic traits. Much confusion exists in separation of certain species and genera and attempts on the part of researchers to clarify taxonomic relationships are ongoing.

The incident of natural hybrids in Poaceae is consistent with the large stands found wherever grasses occur; two or more related species are frequently closely associated. Further, wind pollination greatly increases the chances of cross pollination, both intra- and interspecies. "Intergeneric" hybrids occur frequently and the ease with which many can be artificially produced suggests that genomic relationships must be reassessed (Stebbins et al. 1946). Phylogenically and evolutionarily, hybrids may serve as ancestors of new species and as indicators of the speciation process which has most likely resulted in many of the species already represented. The practical importance of hybridization in grasses focuses on the potentially large number of genetic combinations that may be used to select for traits of vigor and adaptation used in revegetation. Indeed, naturally occurring sterile hybrids may be found growing alongside their parent species, often in large numbers and with greater vigor than their fertile parents (Stebbins et al. 1946).

Tribe Poaceae: *Bromus carinatus* California Brome

Bromus is a highly polymorphic taxon which may be represented by several varieties or different species names based largely on awn morphology. *Bromus carinatus* is often separated into the following three species based on morphological differences of plant height, awn length and pubescence: *B. carinatus, B. marginatus*, and *B..polyanthus*. All three taxa are frequently found in the same population and may simply be different morphotypes of a single species. *B. carinatus* Hook. and Arn. and closely related species are facultatively cleistogamous—flowers do not open and are self-pollinated as a result of environmental conditions at the time of flower development (Harlan 1945). Among 10 races of *B. carinatus* cleistogamy and/or chasmogamy are expressed differently depending on the race and the conditions of stress: growth in disturbed areas; reduced moisture; crowding; shading; poor nutrition; unfavorable day length; or unseasonable flowering with, in some cases, both flower forms appearing on the same panicle when growth conditions varied with the developmental time of the plant. Since chasmogamous flowers do occur, interplant isolation is not complete and these races are not closed systems. They do, however, express fairly stable genotypes as evidenced by their different flowering behavior under differing stress conditions.

Tribe Triticeae: *Hordeum brachyantherum* Meadow Barley and *Elymus glaucus* Blue Wildrye

Hybridization among the "genera" of this group has been produced under controlled conditions to test suspected naturally-occurring crosses. While outcrossing occurs among certain genera of tribe Triticeae these should not necessarily be placed in one genus (Runemark and Heneen 1968) as genome analyses of interspecific and intergeneric hybrids suggest phylogenetic differences. The separation of *Elymus, Agropyron* and *Sitanion,* based on. glume width, number of spikelets per node and rachis structure is spurious. Certain *Elymus* species (including *E. glaucus*) are more phylogenetically similar to *Sitanion* and *Agropyron*; these are all self-fertile, small-anthered, awned and caespitose (growing closely together in tufts). Other *Elymus* species are distinct from the first group and all are cross-pollinated, long-anthered, awnless and frequently rhizomatous (Dewey 1972). Dewey (1974) suggests a reorganization of this tribe on the generic level; this depends on further substantiation of genomic differences.

Some biotypic *E. glaucus* forms outcross readily with *Sitanion hystrix* while others do not; x*Elysitanion hansenii* (Scribn.) Bowden is a sterile hybrid of *Elymus glaucus* and *Sitanion hystrix* (Cronquist et al. 1977). *E. glaucus* x*A. pauciflorum* is an artificially

In This Issue:

obtained, infertile hybrid. Variants of *E. glaucus* which may be ecotypes include *E. glaucus* var. *jepsonii* Davy and var. *glaucus*. *Elymus* appears to be of polyphyletic origin and *Sitanion* may have resulted from hybridization between *Elymus* and *Agropyron*.

Hordeum brachyantherum, as are other perennial *Hordeum* species, is interfertile with species of *Elymus* and *Agropyron* (Bowden 1958) and *Psathyrostachys fragilis* (Linde-Laursen and Von Bothmer 1984). *H. brachyantherum* is a parent in two recognized intergeneric hybrids: **x** *Agrohordum macounii* nm. *valencianum* Bowden (by *Agropyron trachcaulum* (Link) Malte) and **x***Elyhordeum stebbinsianum* (Bowden) Bowden (by *Elymus glaucus*).

H. caespitosum Scribn, has been identified as a partially fertile interspecific hybrid of *H. brachyantherum* and *H. jubatum*. These two species may be one and the same (conspecific), as they are freely interfertile (Bowden 1967). F hybrids are only partially fertile, however, and the two species are morphologically distinct. Baum (1980) redefined these species based on exhaustive morphometric observations of spikelets. He concluded that *H. jubatum* L., *H. brachyantherum* Nevski. and *H. caespitosum* Scribn. are distinct species and that a hybrid *H. jubatum* **x** *brachyantherum* occurs naturally. *H. brachyantherum* has been crossed with *H. vulgare* L. for the purpose of developing certain desirable traits in cultivated barley, and while the F_1 plants are self-sterile with some chromosome elimination, subsequent generations have been produced through colchicine-induced doubling and controlled breeding to obtain fertile, stable F_2 individuals (Schooler and Anderson, 1979). Other interspecific crosses involving *H. brachyantherum* have obtained F_1 haploids (Adamski 1979; Subrahmanyam 1979). Progeny of hybridization between *H. brachyantherum* and *H. bogdanii* or *H. vulgare* are also self-sterile and exhibit some chromosomal elimination; subsequent generations produced through colchicine doubling are fertile and have stable F_2 progeny (Schooler and Anderson 1979).

Tribe Stipeae: *Stipa pulchra* Purple Needlegrass

The sterile intergeneric hybrid **x** *Stiporyzopsis bloomeri* Johnson & Rogler has been reported to result from a natural cross between*Orysopsis hymenoides* and *Stipa* spp. (Johnson 1945). A putative interspecific hybrid *Stipa nelsonii* **x** *S. richardsonii* has been reported growing intermixed with the two parent species (Scagel and Maze 1984). The hybrid was intermediate with regard to panicle form. However, statistical analysis of spikelet morphology suggests that the intermediate is most likely a subspecies or form of *S. nelsonii.* It is not possible from this study to determine unequivocally the genotype of the intermediate or its precise relationship to either of the named species. Several species of *Stipa* are known to produce interspecific crosses naturally and the chromosome number within the genus varies widely through euploidy and aneuploidy.

Where ranges of *Stipa pulchra* Hitchcock, *S. cernua* Stebbins and Love, and *S. lepida* Hitchcock overlap, these species hybridize readily; artificial hybrids of all three species have also been made. When chromosomal preparations and spikelet characteristics (length of first and second glumes, lemma length and awn length, and awn vs. glume length) of hybrids and parents belonging to 2 ecotype areas and an artificial hybrid (*cernua* **x** *lepida*) are compared, *S. lepida* is found to share portions of its genome with both *S. cernua* and *S. pulchra*, but is more closely related to *S. pulchra* as a greater number of chromosomes and morphological characteristics are shared by this pair than between *lepida* and *cernua*. This paper did not examine fertility of the F_1 progeny.

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PRESIDENT'S MESSAGE

Ted Adams

The last issue of Grasslands included preliminary suggested Genetic Guidelines for collection and transfer of native grass seed used in restoration projects. These Guidelines were promulgated by Connie Millar, USFS Pacific Southwest Research Station, to encourage consideration of the genetic aspects of restoration. In the same issue, the President' s Message suggested that restoration guidelines should encompass the range of activity included under restoration as represented by CNGA.

On February 23, CNGA convened a meeting to discuss the Guidelines. This meeting, hosted by the Pacific Southwest Research Station, included representatives from public and private agencies, commercial seed suppliers, and the University of California.

The following is a tentative summary of the situation and concerns outlined at the meeting. (It will be reviewed by the participants.) Together with specific issues identified during the meeting, the summary will be used in subsequent discussions to develop a comprehensive protocol for revegetation and restoration.

Situation and Concerns: Summary

Restoration is a term used loosely to include a range of activity from revegetation of highly disturbed sites to maintenance of wilderness areas. Genetic perspectives include a range from concerns for site specificity to ignoring the significance of genotypes and ecotypes.

Despite the ubiquity of native grasses, there is a lack of information on historic genetic architecture. Decisions on how closely to approach a theoretical architecture when designing restoration/revegetation projects must be made when objectives are established. Planning must include recognition that movement of plants affects genetic architecture.

There is a growing public interest in and demand for maintenance of biological diversity. Restoration to achieve this requires use of the best knowledge now available for guidance of planting programs. Development of policy must recognize this. We must do now what we can with what knowledge we have and recognize that application will influence later policy decisions. It may be necessary to limit use of some "aggressive" species that we suspect could restrict development of a desired architecture and impact ecosystem processes. Agencies, such as CalTrans, desire to move now using existing knowledge while cooperating in the development of needed knowledge.

The knowledge gap (inadequate information on performance and genetic composition of natives) can be narrowed by extrapolating from research in other environments. Research to develop needed information must be incorporated in planned restoration activity.

The purpose or objective of a project must be well defined so that

the composition of the planting can be tailored to the site. A native grass may not always be the appropriate choice, especially for revegetation of some drastically disturbed or modified sites. Adoption of a decision tree (based on intensity of use, taxonomic categories, breeding systems, or other) would permit inclusion of a range of objectives from revegetation to restoration. Planting with an objective assumes management for projects is defined. It is necessary to recognize that germplasm selected may not fit management imposed, e.g., grazing, fire, no use, etc.

Maintenance of a broad gene pool should be an objective. This may be especially important in highly modified environments or environments that are changing.

Some type of zonation will be necessary to support recommendations and choices. Conifer seed zones are an example. The adoption by The Jepson Manual of Sunset's Western Garden Book system of climate zones suggests an appropriate model. The model selected should help insure maintenance of diversity so that projects do not focus on germplasm that currently may be best adapted; the exclusion of genetic variation may be critical to long-term survival of a population. Use of the model must also consider management goals given existing fragmentation, isolation and habitat reduction.

Problems associated with production and marketing of seed to support projects also must be considered. The species characteristics affect the amount of seed produced and the difficulty of harvest. Thus, the yield per unit area together with scale of production affect grower costs. Narrowly defined projects requiring relatively small amounts of difficult- to- produce material are more expensive to pursue than those with a broader geographic dimension.

Adding to grower costs is the need to maintain an inventory to meet market demand. To keep prices reasonable, this inventory is usually maintained through infrequent production of relatively large amounts of seed. Seed viability can be affected by length of storage, and this needs to be considered when designing projects.

Seed production is often a protracted process in the wild. Potentially important genetic components are lost if seed is not collected throughout the period of production. In commercial production, the indeterminatenature of many native grasses often precludes harvest of the full genetic spectrum, and this problem is aggravated when seed from a cultivated crop is used to produce stands for future harvests. This often unavoidable loss needs to be considered in restoration and revegetation projects.

Producers need lead time to meet consumer demand. While industry gears up, restoration and revegetation may require interim measures. Restoration projects may need to consider the use of nonpersistent, noninvasive exotics; and some revegetation projects designed as erosion control measures may need to consider use of both noninvasive exotics and mechanical measures.

Current labeling laws are inadequate to guarantee the source and quality of native grass seed. Contracts between consumers and producers is the only way to ensure that the source is "native." Arrangements worked out in the marketplace will define any future regulations. CNGA may play a role by facilitating communication and representing interests to government.

IN APPRECIATION

CNGA wishes to thank Jones & Stokes for their Company Membersshp and Scott Stewart of ConservaSeed for his Life Membership

CREEPING WILDRYE: NOTES & QUERIES

Elymus triticoides: a vigorous, colonial grass; creeping wildrye thrives on heavy soils where there is adequate moisture through the the growing season. It is valuable as forage (at middle to higher elevations and transmontane Sierra) and as a soil binder (particularly along river banks and levees), resists trampling and recovers well following close grazing.

It has been observed for sometime now that this species has a pronounced tendency toward increasing sterility with time. In fact, this poises a problem for restorationists. It is a lot easier, quicker andless expensive to broadcast--or, even, drill--seed; than to cut and transplant rhizome sections (which is often the only technique with promise of success in propagating this species). Of course, in constrast, we could choose to ignore (for now!), the genome source guidelines proposed by Craig Dremann and Connie Millar (among others); and, just plant whatever seed that we can find or purchase - however, such a decision should certainly be based on the need for expediency and/or immediate personal financial gain; obviating the desire or hope for success in ecological restoration.

Creeping wildrye appears to require a periodic infusion (infiltration) of genetic material from other populations of its kind; in order to remain sexually fertile. Over the past several years, I have often induced fertility in a given population; through the expedient of incorporating seed from a currently sexually viable source into an existing stand of the same species with apparently decreasing vigor. In redefining the scope of my research to include public environmental education; I installed several demonstration beds of native grasses to better inform people of their attributes and potentials. In the last few years, I have mowed selected beds to show the effects of grazing versus non-grazing; and, hopefully, to encourage denser growth in the "mowed" section. The result has been to induce flowering in the cut section! Now, I must ask you - is this a unique event; or, can it be replicated elsewhere? The answer to this question is very significant to restoration attempts throughout its natural range. I eagerly await your response ....

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COMMITTEE ACTIVITIES

***RESEARCH AND DEVELOPMENT COMMITTEE*:**

MEMBERSHIP IN-PUT NEEDED!!!!

The Research and Development Committee is in the process of compiling a "Research Needs" List for California Native Grasses. Each of us in CNGA is working on various uses of native grasses (e.g., to enhance biodiversity, to improve rangelands for livestock and wildlife, to stabilize cut-slopes, etc.) However, few of us have any idea of the full-scope of research needs that must be answered before we can manage native grasses with confidence. The R&D Committee would like to address this need by compiling a comprehensive list of all the different ways that native grasses can be utilized and what research is needed to better accomplish these various uses. With this list in-hand, ALL CNGA members would then be aware of what the other members are thinking about. The list would also allow CNGA to prioritize its research efforts.

We need your suggestions.

Format: 1. Each "need" should apply to most, if not all, species of grasses. 2. Describe the need in an abstract of 100 words.

Example:

NEED: Adaptability Table for all native grasses. Abstract: We need to know the range of environmental adaptability (climate, soils, hydrology) for different accessions of the same species. The research would involve the planting of reciprocal transplant gardens throughout the state in as many different climate regions as feasible. Comparing the performance of the same accession at the different gardens should give us valuable information on where we can expect success with a given accession.

Other research issues involving native grasses may include:

- Reciprocal transplant gardens, giving rise to an adaptability table
- Evaluation of chemical vs. non-chemical control of weeds and native grass establishment with different weed communities (or different regions of the state)
- Evaluation of grass mixtures with other grasses and/or forbs
- Establishment of woody species (oaks) in native grasslands vs. annual grasslands
- Influence of disturbance regime (fire, grazing) upon stand or species persistence on a site

Non-biological uses:

- Use for soil stabilization on steep slopes
- Evaluation of different 'tacifiers' for slope/soil stabilization upon different species of native grasses
- Roadside maintenance
- Landscaping or horticultural uses

Mail your list and abstract to R&D Committee Chair, Tom Griggs.

An evaluation of the Common Gardens is underway, with the development of an evaluation table and planned visits by various R&D Committee members. We are looking into the most feasible way to label species/accessions at each of the Common Gardens; when this is done, the Gardens will be opened to the public on specific days, depending on the site and person(s) maintaining the Garden. Once the labels are in place, locations, dates of entry and contact persons/phone numbers will be published in *Grasslands*.

***PUBLIC INFORMATION AND EDUCATION COMMITTEE*:**

CNGA was invited to attend the Sacramento District Army Corps of Engineers' Earth Day 1993 celebration on April 22. Our new display system and photos (thanks to John Anderson and the contributors to our film library) did a good job of representing CNGA interests. **ANYONE WILLING OR ABLE TO REPRESENT CNGA AT SIMILAR MEETINGS OR SHOWS IS MOST WELCOME TO VOLUNTEER FOR HIS OR HER GEOGRAPHIC REGION!!** This is where the volunteer strength of our organization needs to be built up. There are many of these opportunities which we have had to turn down simply due to lack of local people. Do not hesitate to contact the Chair, Kitren Weis if you are willing to help out. We have exhibited our display at 4 meetings/shows since the last issue of *Grasslands* and this is the best way to reach the uninformed public.

An announcement for the Plant ID Workshop in July is on a subsequent page. This is an event not to be missed!

THE SOCIETY FOR ECOLOGICAL RESTORATION
11 TH ANNUAL CONFERENCE

June 15-20, Irvine, California

The Society for Ecological Restoration, an international organization devoted to advancing the science and practice of ecological restoration, is currently planning its 5th annual conference, to be held in Irvine, California. This will primarily be a technical conference to be attended by a wide range of professionals and educators, including biologists, foresters, engineers, planners, horticulturists, landscape architects, landowners, as well as interested individuals.

Topics for the conference include:

- arid and semi-arid land restoration
- integrated ecological restoration planning
- wetlands restoration
- coastal sage scrub restoration
- grassland restoration
- exotic species control
- island restoration
- wildlife re-introductions
- environmental education

Three days of the 7-day conference will be devoted to guided field trips to restoration projects throughout Southern California. Several evening activities are planned, including a beach party barbecue in Surf City, U.S.A. and a "Restoration Rendezvous" - an informal gathering of conference attendees with local groups involved in ecological restoration who will share information, slide programs and promotional materials.

SERCAL
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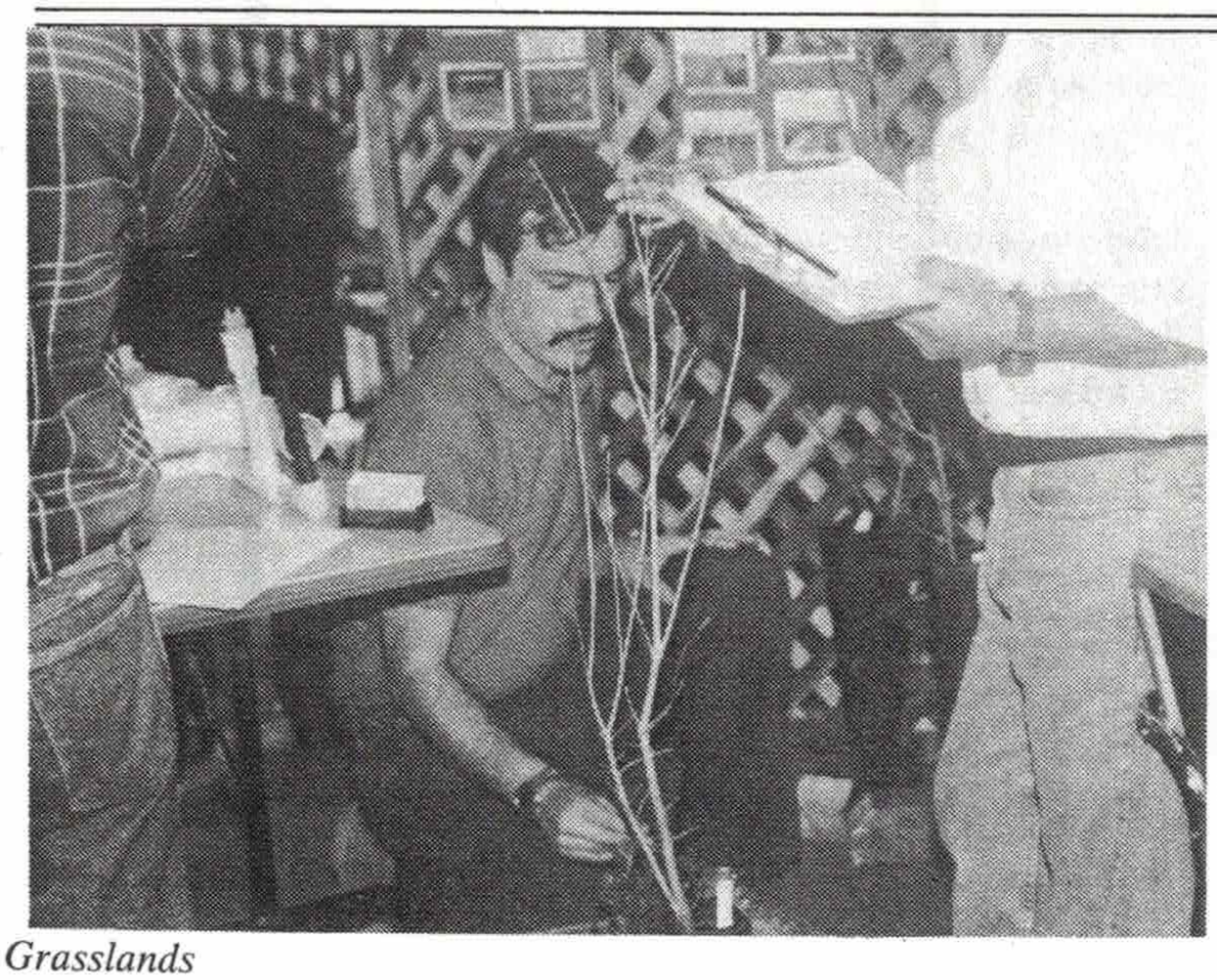
THE LAND INSTITUTE

The Land Institute, a non-profit educational and research organization devoted to sustainable agriculture, is looking for a DIRECTOR OF EDUCATION. The traditional duties of the Director of Education are to manage the intern program, coordinate public education activities, and prepare The Land Report. The Director of Education will coordinate the year's curriculum with the staff for the ten college graduates who study the fundamentals of a sustainable agriculture and society at The Land Institute. The Director will also organize a new visiting scholars program, and lead classroom discussions of the sustainable society readings. In the past, the Director of Education has edited The Land Institute's principal publication and organized such major public education activities as the Prairie Festival and educational experiences for visitors.

Profile: We are seeking an individual who is a dynamic teacher and capable editor. Candidates should have a post graduate degree, a strong interest in agricultural and environmental issues, and a commitment to responsible citizenship. We prefer a candidate with a background in the arts and humanities.

Terms: The Land Institute will make a one year appointment which could lead to a permanent position. Starting salary will be similar to that of other professional positions at The Land Institute. Duties may be modified depending upon an applicant's interest and expertise and The Land's hiring of additional staff.

We invite interested candidates to send a resume and list of references to: Director of Education Position; The Land Institute; 2440 East Water Well Road; Salina, KS 67401.



Grasslands

MARCH 13 HABITAT WORKSHOP

The 6th Annual Habitat Workshop, cosponsored by CNGA and the Yolo County Resource Conservation District was a resounding success with almost 200 attendees!! The only complaints heard were that the program was not long enough and that concurrent sessions forced some participants to make unwelcome choices. The program, which highlighted wetlands issues, covered tailwater ponds, riparian habitat preservation and restoration, hedgerow and wildlife corridors, beneficial insect/plant relationships and other subjects presented by invited speakers and in practical field demonstrations. John Anderson organized the event, but much credit is also due Kitty Schlosser (Yolo RCD), and all the other helpers and speakers. Watch for a possible 2-day event next year.

APRIL 16 TECHNICAL MEETING

THANKS to ConservaSeed for hosting our Spring 1993 Technical meeting: *Bringing Grasses to Market.* The speakers were excellent, as was the field tour and for those of you able to enjoy both the lunch and ConservaSeed's complimentary BBQ, it was a long but full-filling day.

MAY 13 ROADSIDE MEETING AT HEDGEROW FARMS

The Roadside Management Committee, chaired by John Anderson, put on an excellent meeting, bringing together CalTrans officials, CNGA members, and the general public (60+ people total) to hear about the co-operative research trials at Hedgerow Farms near Winters. Bob Bugg and Cini Brown, (Sustainable Agriculture, UCD) and John were able to give a thorough perspective on results to date, with possible avenues of future investigation. This work serves as a model in California; CalTrans, several county Departments of Transportation, and citizens concerned with alternatives to mechanical and chemical means of maintaining "weed-free" roadsides are showing great interest in this pioneering project.

Editorial

The California Native Grass Association is a nonprofit, largely volunteer organization devoted to increasing the use of our native grasses to help maintain biodiversity. An elected Board of Directors guides the efforts of CNGA.

Serving on the Board is both a challenge and a reward; dedication and a sense of mission are needed to insure that the organization functions to meet its objectives, and there is satisfaction in knowing that service to CNGA promotes environmental quality. However, service to the organization and its members requires some sacrifice; the Board must meet periodically to conduct CNGA business. The commitment of time is not great, a few days each year; and this sacrifice acknowledges the responsibility assumed upon election to the Board.

Members are urged to consider service on the Board; CNGA will not function without an effective Board. Annually-elected officers include President-elect, Secretary and Treasurer. In addition, three Members-at-Large are elected for two-year terms each year. You can express your interest and concern by contacting the CNGA office or any current member of the Board and placing your name in nomination for one of the six positions.

Anonymous

California Native Grass Association General Membership Meeting

November 12, 1993

NATIVE GRASSES & RESTORATION

The next annual meeting, to be held at the **HOLIDAY INN-NORTHEAST, SACRAMENTO**, will consist of a Vendors Program, Business Meeting, and Technical Program.

Invited speakers include: Frank Chan (PG&E), John Haynes (CalTrans), John Anderson (Roadside Management), Ray Griffiths (Ecosystem Restoration), and David Kaplow (Pacific Open Space). Differing perspectives will be presented by these, as well as other speakers, in talks and panel format.

Topics will include:

a history of native grasses in restoration

significant grassland restoration projects

practical problems and potential solutions

REQUEST FOR NOMINATIONS

Nominations are requested for:

President-elect

Secretary

Treasurer

Members of the Board of Directors

A short biography should accompany all nominations, describing candidate's qualifications. Include nominee's name, title (if any), affiliations, address and telephone number and mail to:

CNGA (nominations)

P.O. BOX 566

DIXON, CA 95620

CNGA Plant ID Workshop

July 24-25, 1993
Meadow Valley Forest Service Camp,
Plumas County, near Quincy
Head Instructors:
Jim Bartolome, UCB
Travis Columbus, UCB (leading California grass taxonomist and contributor to

The Jepson Manual: Higher Plants of California, 1993

Pre-registration only, space limited to 45 participants

THE CALIFORNIA NATIVE GRASS ASSOCIATION

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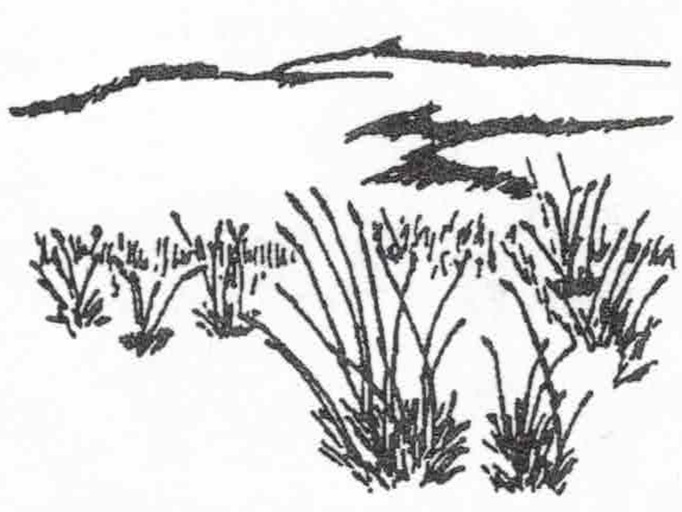

PLANT ID WORKSHOP

We are pleased to invite you to our 1993 Plant ID Workshop, to be held in Plumas at the Meadow Valley Forest Service Camp near Quincy, Plumas County. Due to time, space, and quality of instruction considerations, we must limit the class to the first 45 participants to send in their fees. The Camp will be able to accommodate some of us, around 30 plus our 4 instructors. Lodging is in rustic dorms or cabins, with communal dining hall and restroom facilities. Sleeping bags must be provided by you. If you do not wish to stay at the Camp, or aren't able to be accommodated (first-come, first-served), there are numerous campgrounds nearby, as well as motels in Quincy. Dining hall meals will be available for all.

Check-in will be around dinner-time Friday, July 23rd, as dinner and that night's lodging will be included for those staying at the Camp. Also, we will start Saturday's class bright and early, with all day techniques instruction in-class. Taxonomic identification of grasses will be taught hands-on with dissecting microscopes, dissecting tools, and The Jepson Manual. Sunday's class will be in the field at various locations in the Meadow Valley area, finding montane species for practice in the previous day's techniques. A hand lens will be useful for Sunday.

Costs: $100 2 day class
$ 70 food and lodging at Meadow Valley Camp.
July 23 dinner-lunch Sunday, July 25
$ 18/day for 3 meals at Camp dining hall for participants not staying at Camp
$ 58.99, including tax for Hickman's Jepson Manual, 1993, Univ. CA. Press
$ 12.32, including tax for Doublet 16x Loupe
$ 10.71, including tax for dissecting kit (forceps, probes, scalpel, ruller, scissors, slides)

Easily reached from I-80

The class requires the above items; if you wish to order them through CNGA, we will supply them prepaid.

Suggested contacts for alternative lodging:
Oroville Ranger Station 916-534-6500 (Grizzly Creek Cmpgrd, Lower Bucks Cmpgrd, Mill Creek Cmpgrd , Sundew Cmpgrd)
Quincy Ranger Station 916-283-1131 (Deanes Valley Cmpgrd, Hallsted Campgrd, Silver Lake Cmpgrd, Snake Lake Cmpgrd)
PG&E Campgrounds 916-896-4687 (Haskins Valley Cmpgrd)
Bucks Lake Lodge 916-283-2262, Bucks Lakeshore Resort 916-283-2333, Evergreen Trailer Park 916-283-1765
Plumas County Chamber of Commerce, Quincy 800-326-2247

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707-462-3873

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Dues are for the current calendar year.

Detach and mail to:
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Dixon, CA 95620

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