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# GRASSLANDS

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## *ROADSIDE PLANTINGS OF PERENNIAL GRASSES*


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There is generally a great deal of dissatisfaction with standard rural roadside management. Current schemes emphasize herbicides and blading, which many consider costly and environmentally unsound. To address these concerns, we have established several trials which we hope will aid the development of economically and environmentally acceptable alternatives to conventional rural roadside vegetation management. This article summarizes the general purposes, methods and results of two of the trials.

### GENERAL DESCRIPTION

In January 1992, two trials using native perennial grasses were established in Yolo County on Class I and II clay loams, near the intersection of County Roads 27 and 88. The experiments were randomized block design with five replications. A grader was used to prepare the seedbed. Seed was broadcast and incorporated with a tractor-drawn spike tooth harrow. Other establishment techniques used included the application of glyphosate before and two weeks after seeding (before emergence of perennial grass seedlings) and the use of broadleaf herbicides and wicking or spot application of glyphosate during the growing season as needed. Pre-emergent herbicide was applied in the fall of the second growing season. The general methods used have been described by John Anderson in his article in Grasslands, Volume III, No. 1, and will not be discussed further here. Height, vegetational cover and reproductive status of perennial grasses were evaluated. Data for height and percent vegetational cover were assessed statistically by analysis of variance (ANOVA) with mean separation by Fisher's protected least significant difference.

### EXPERIMENT I

#### DESCRIPTION

In Experiment I (polycultural trial), three prairie complexes were tested, one non-native and two native. This first trial was intended to (1) compare the success of native and introduced prairie complexes, (2) evaluate the performance of species in topographic niches to which they were assigned based on their ecological tolerances, and (3) compare the performances of diverse and simple native prairie complexes. The grasses were planted in plots 30 feet by approximately 25 feet. Species were assigned to the topographic niches of the roadside (pavement edge, fore berm, foreslope, ditch bed, backslope, back berm and field edge) based on their suitability to the niche microenvironment. Short statured species were seeded into the pavement edge and fore berm niches. Medium statured species were seeded into the foreslope, ditch, and backslope. Species assigned to the ditch were expected to be flood tolerant (e.g. meadow barley). Tall statured species were seeded into the back berm and field edge. Field edge species were chosen to be tolerant of disturbance such as periodic discing and herbicide drift (e.g. creeping wild rye).

Several species were included in each prairie complex. The introduced prairie complex included: sheep fescue on the pavement edge, pubescent wheatgrass and 'Berber' orchardgrass on the fore berm, foreslope, ditch bed, and backslope; and pubescent wheatgrass on the field edge. The diverse native prairie complex was as follows: pine bluegrass, Idaho fescue and California barley on the pavement edge; pine bluegrass, Idaho fescue, purple needlegrass, nodding stipa and squirreltail on the roadside berm and foreslope; meadow barley and blue wildrye in the ditch bed; blue wildrye, California brome, purple needlegrass, squirreltail, California oniongrass and slender wheatgrass on the backslope and back berm; and blue wildrye, creeping wildrye, and slender wheatgrass on the back berm and field edge. The simple native prairie complex included: pine bluegrass on the pavement edge; pine bluegrass, red fescue and meadow barley on the fore berm and foreslope; meadow barley in the ditch bed, blue wildrye, slender wheatgrass and California brome on the backslope and back berm; and blue wildrye and creeping wildrye on the field edge. There were two levels of control included, conventional roadside weed management and no weed control measures after the first year.

#### RESULTS

Evaluation of height in the spring of 1992 showed that the two native prairie complexes were significantly taller than the non-native prairie complex. Heights of the native mixtures were not significantly different from one another (Fig. 1). We believe the difference in heights between the introduced and native prairie complexes was primarily due the later growing season of the tallest non-native species. Supporting this, the pattern disappeared in the second growing season, the heights of all three complexes being comparable (data remains to be analyzed). As planned, the shortest

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statured species were in the fore berm, medium statured species in the foreslope niche, ditch and backslope niches and the tallest species in the back berm niche (Fig. 2).

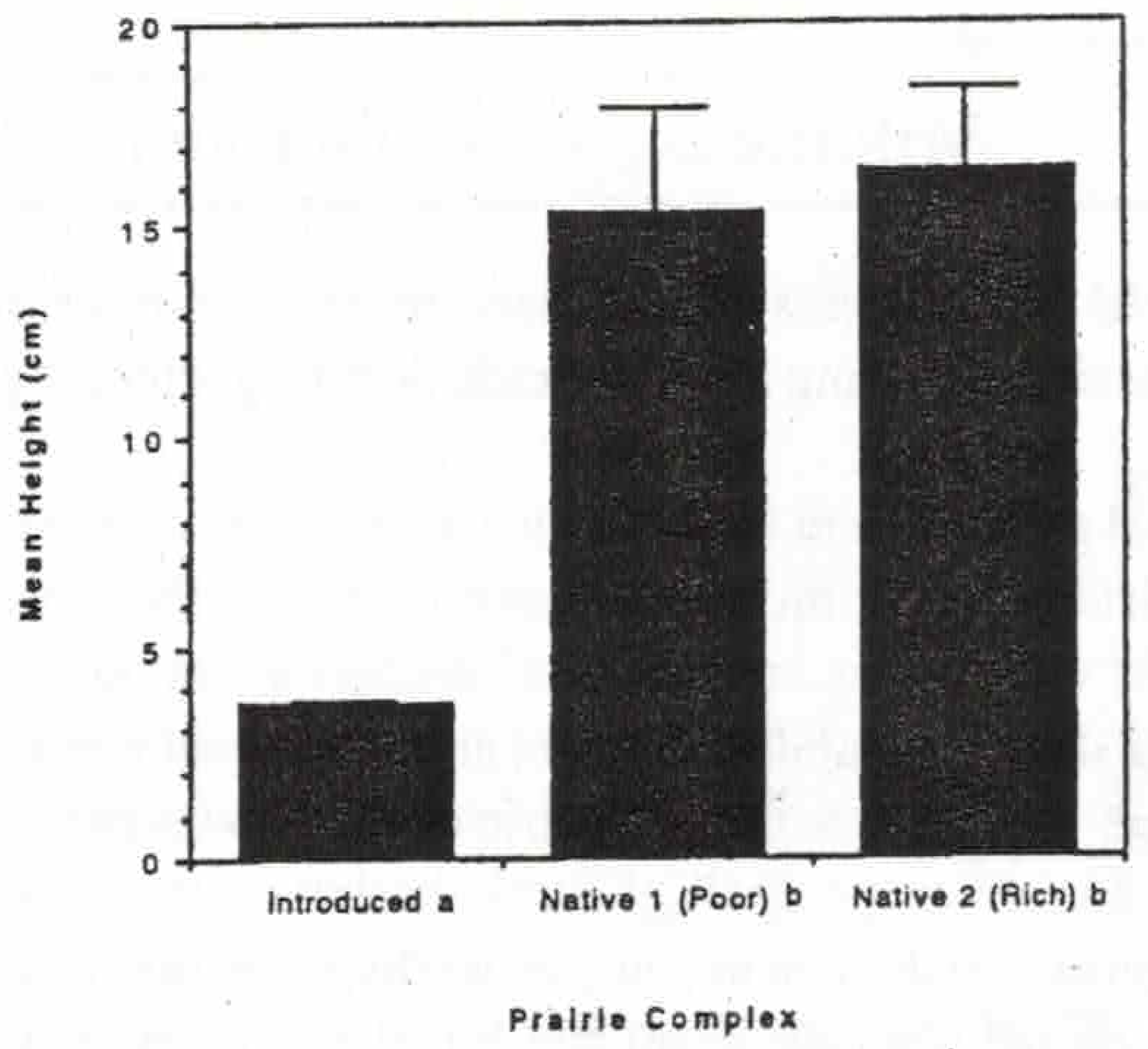


Fig. 1. Mean heights (+/- std. error of means) of roadside prairie complexes, Hedgerow farms, 1992.
p= 0.01%; regimes followed by the same letter are not significantly different

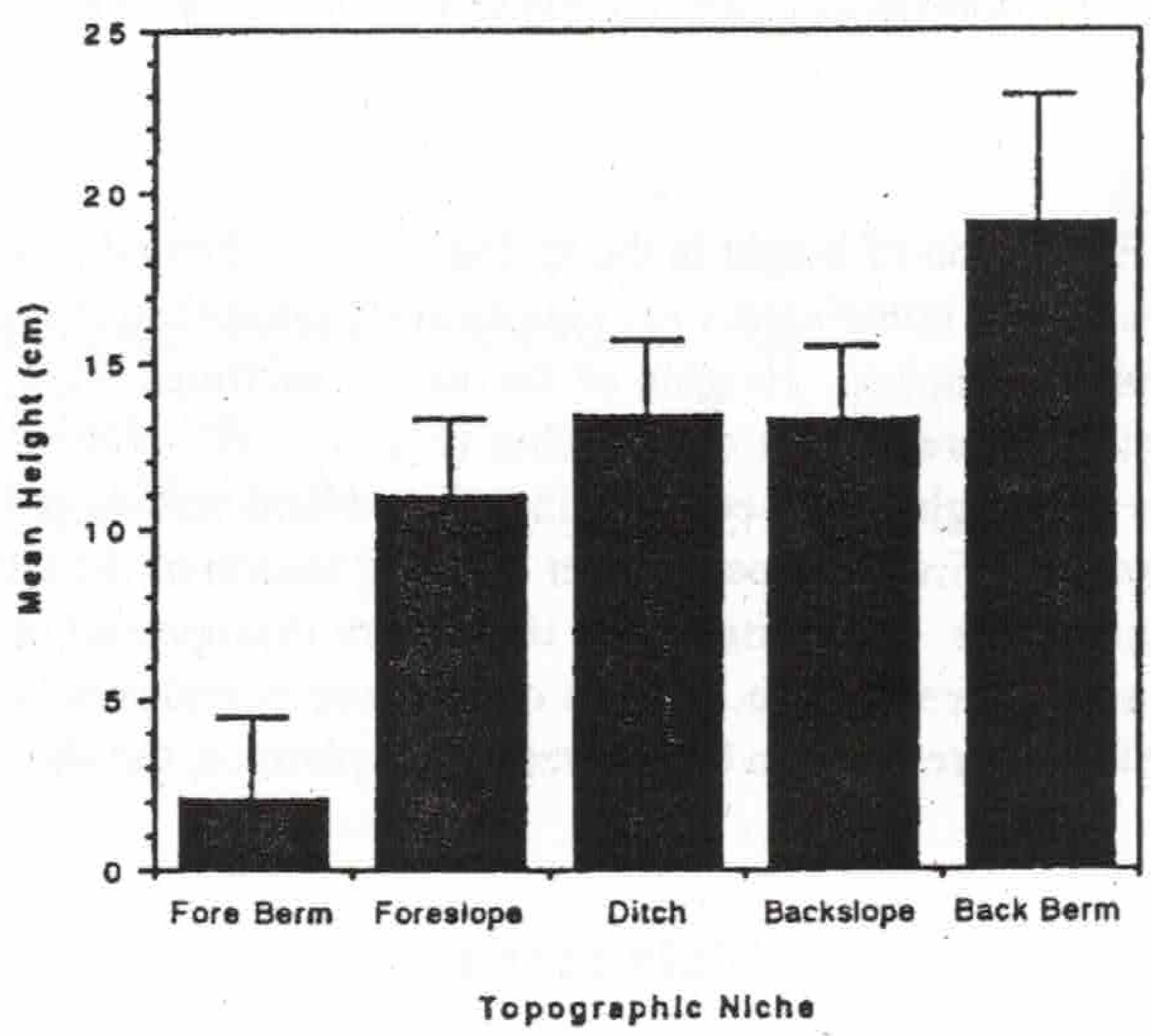


Fig. 2. Mean heights (+/- std. error of means) for topographic niches of roadside prairie complexes, Hedgerow Farms, 1992.
p=0.01%, but pairwise mean separation is inappropriate

In addition to height, percent vegetational cover of the prairie complexes was evaluated. There was no significant difference in cover between the three prairie complexes and weedy controls in the first spring after seeding.

**EXPERIMENT II**

DESCRIPTION

Experiment II, also established in January 1992, included monocultural seedings of twenty-one accessions of native and introduced perennial grasses. The purpose of this experiment was compare establishment and performance of species and accessio.. across all roadside topographic niches. Species were seeded in plots 10 feet by approximately 25 feet across the roadside ditch.

RESULTS

Results for the first year indicated efficient establishment of several of the seeded grasses. During 1992, reproduction occurred for slender wheatgrass, blue wildrye, California brome, California barley, all meadow barley accessions, and squirreltail. The tallest species were purple needlegrass, slender wheatgrass, and blue wildrye, and the shortest were pine bluegrass, creeping red fescue, and sheep fescue. High proportions of vegetational cover were attained by slender wheatgrass, blue wildrye, California brome, pubescent wheatgrass, California barley, and several accessions of meadow barley. Low-statured grasses that showed good establishment were the prostrate form of California barley, 'Covar' sheep fescue, pine bluegrass, and squirreltail. Intermediately-statured entries that showed good establishment included the accession of California barley and various accessions of meadow barley. Tall-statured grasses that performed well included blue wildrye, California brome, slender wheatgrass, intermediate wheatgrass, and various accessions of purple needlegrass. The data for heights and percent vegetational cover for the monocultural plots are summarized in Fig. 3-6.

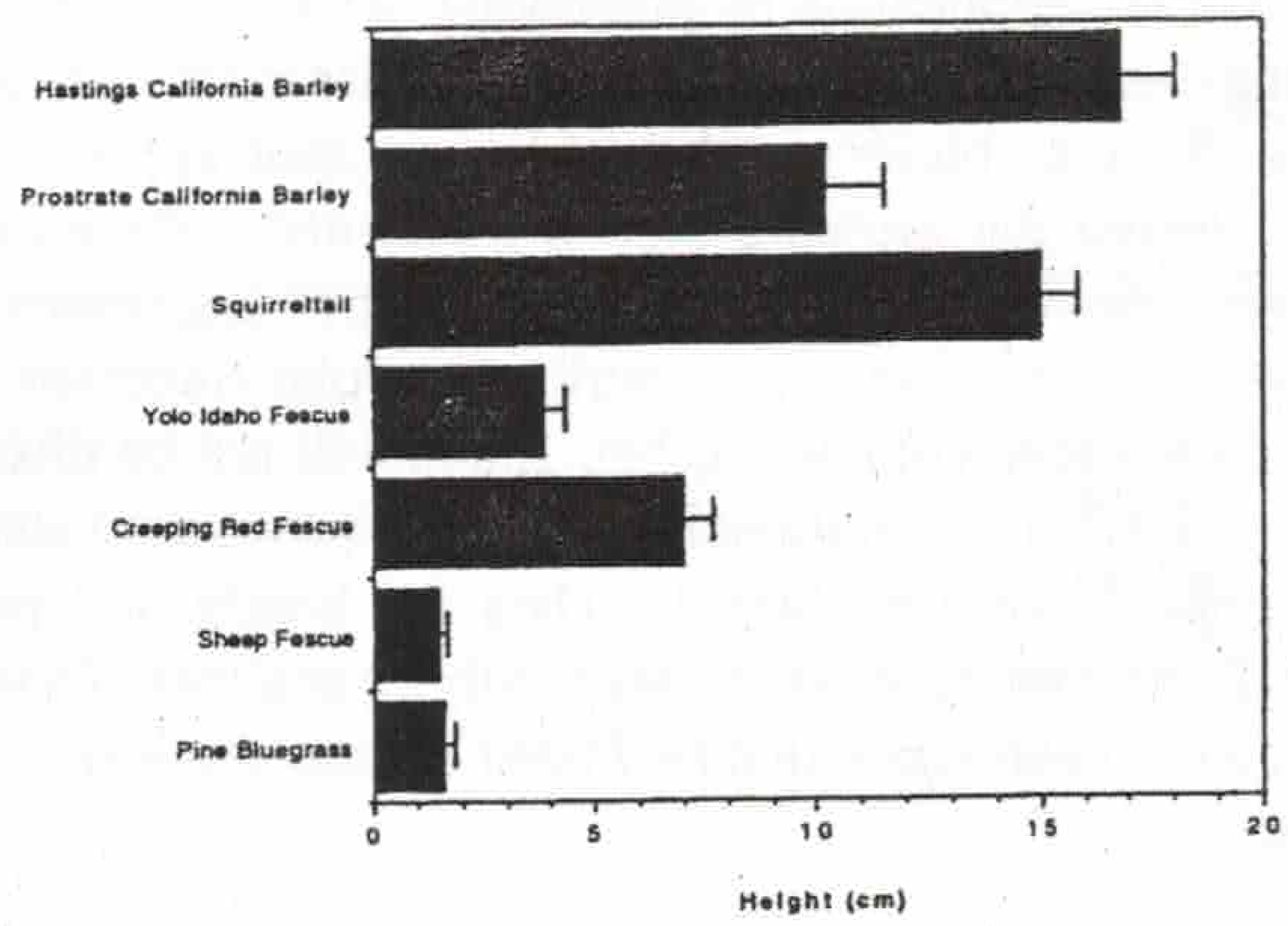


Fig. 3. Mean heights (+/- std. error of means) of short-statured grasses, roadside monocultures, Hedgerow Farms, 1992

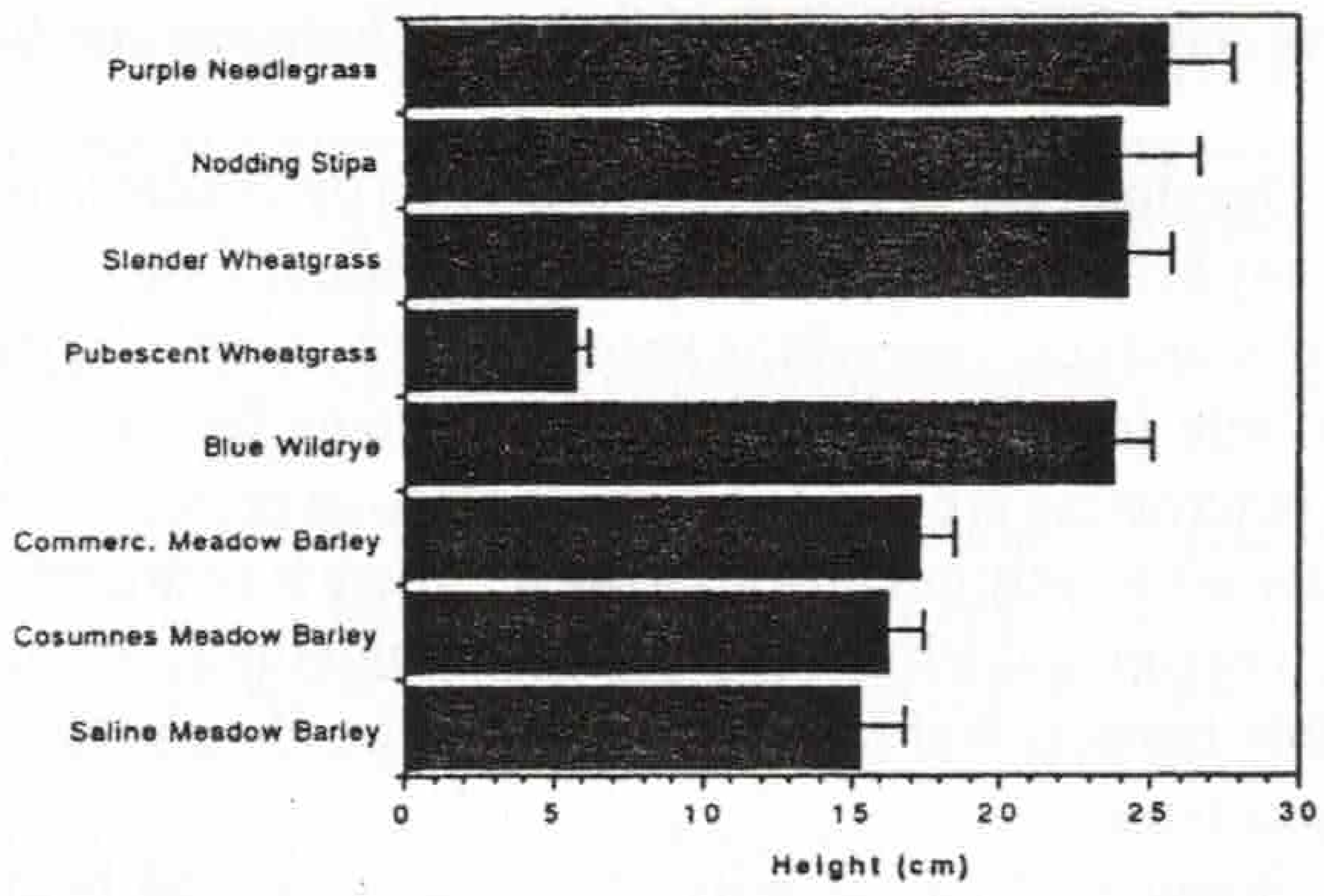


Fig. 4. Mean height (+/- std. error of means) of tall-statured grasses, roadside monocultures, Hedgerow Farms, 1992

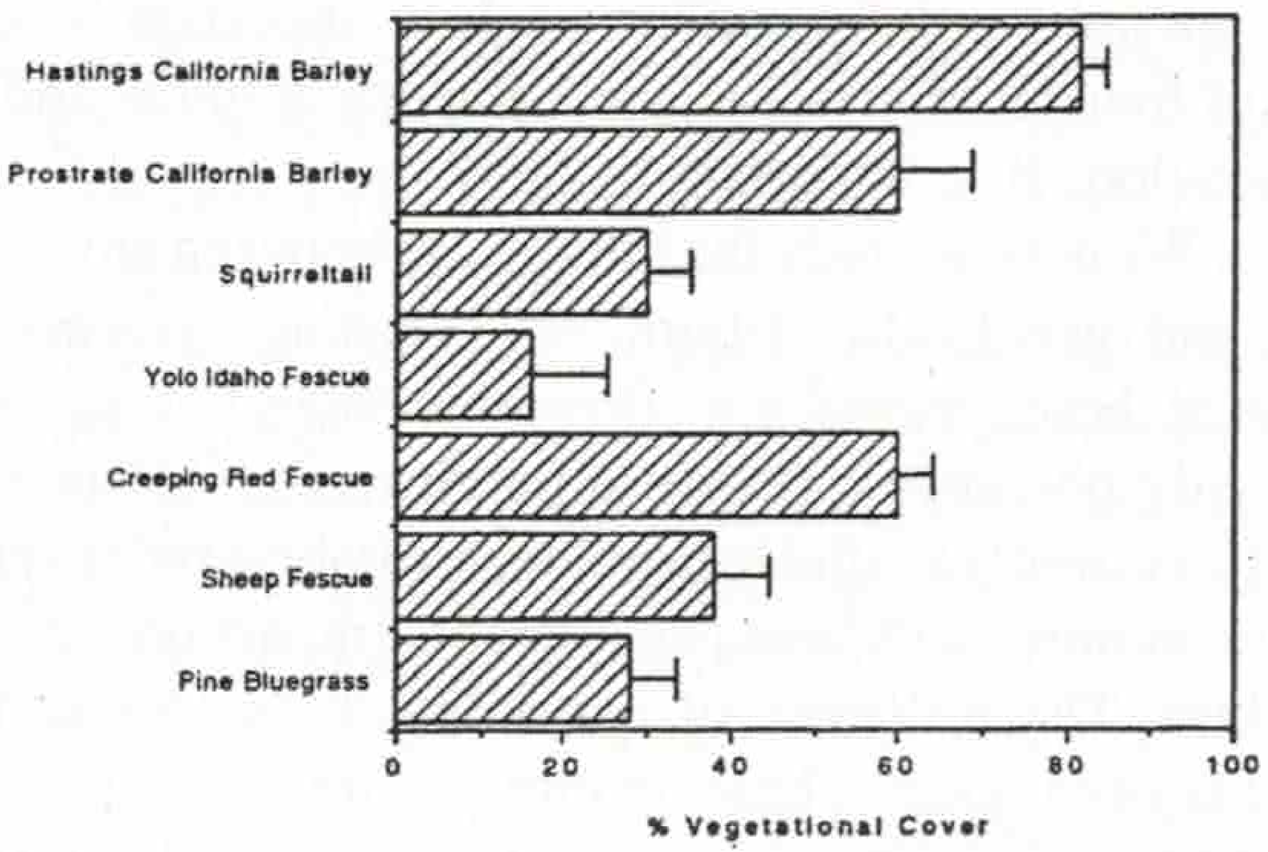


Fig. 5. Mean % vegetational cover (+/- std. error of means) of short-statured grasses, roadside monocultures, Hedgerow Farms, 1992.

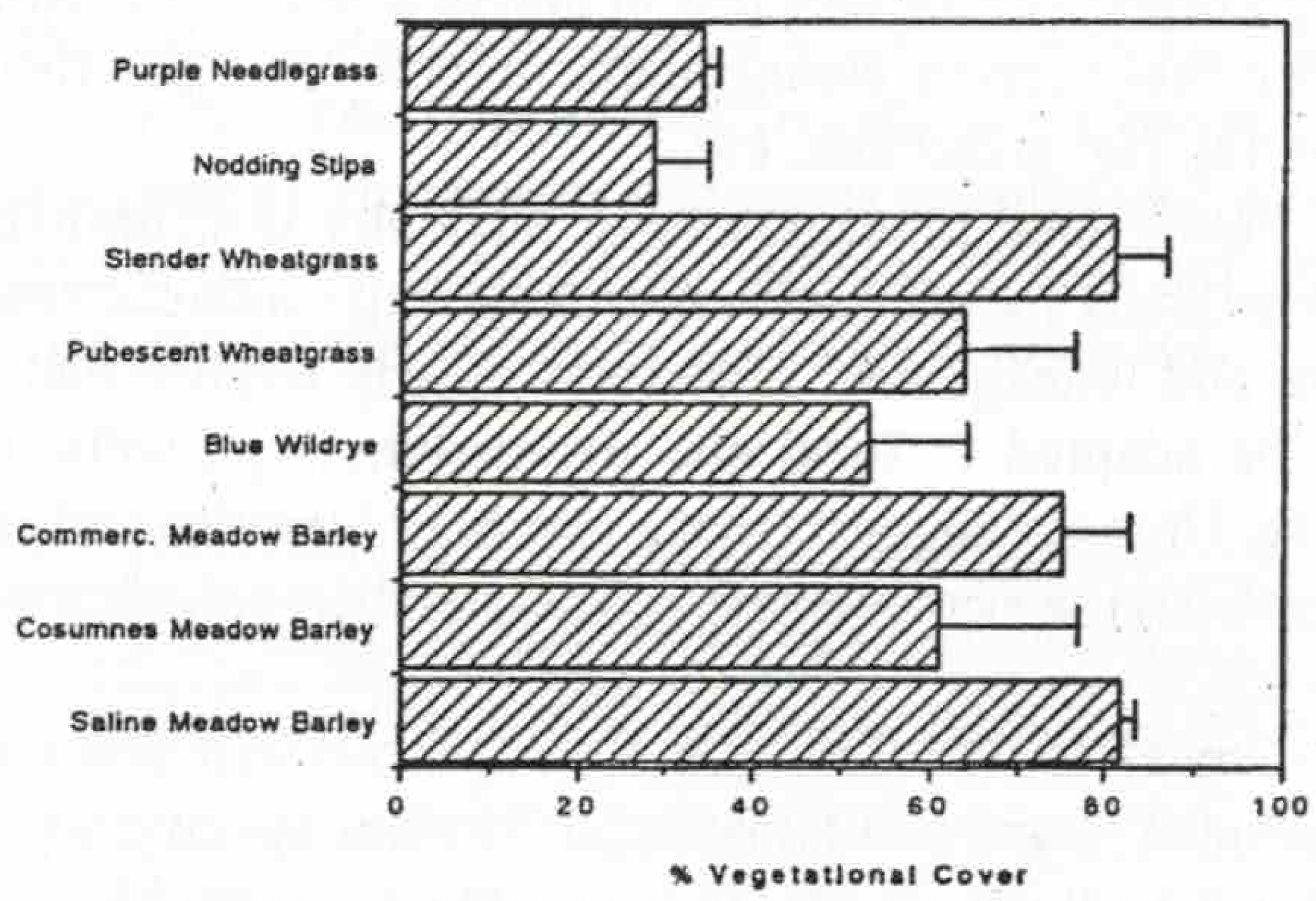


Fig. 6. Mean % vegetational cover (+/- std. error of means) of tall-statured grasses, roadside monocultures, Hedgerow Farms, 1992.

Overall, the experiments have shown that native perennial grasses can be used effectively in roadside management to create more attractive, less weedy and less costly to maintain landscapes. Though the first two years have required fairly intensive management, the full plot use of herbicides will be discontinued this year and we will be able to see whether the perennial grasses are able to hold their own with only the help of spot herbicide use and mowing.

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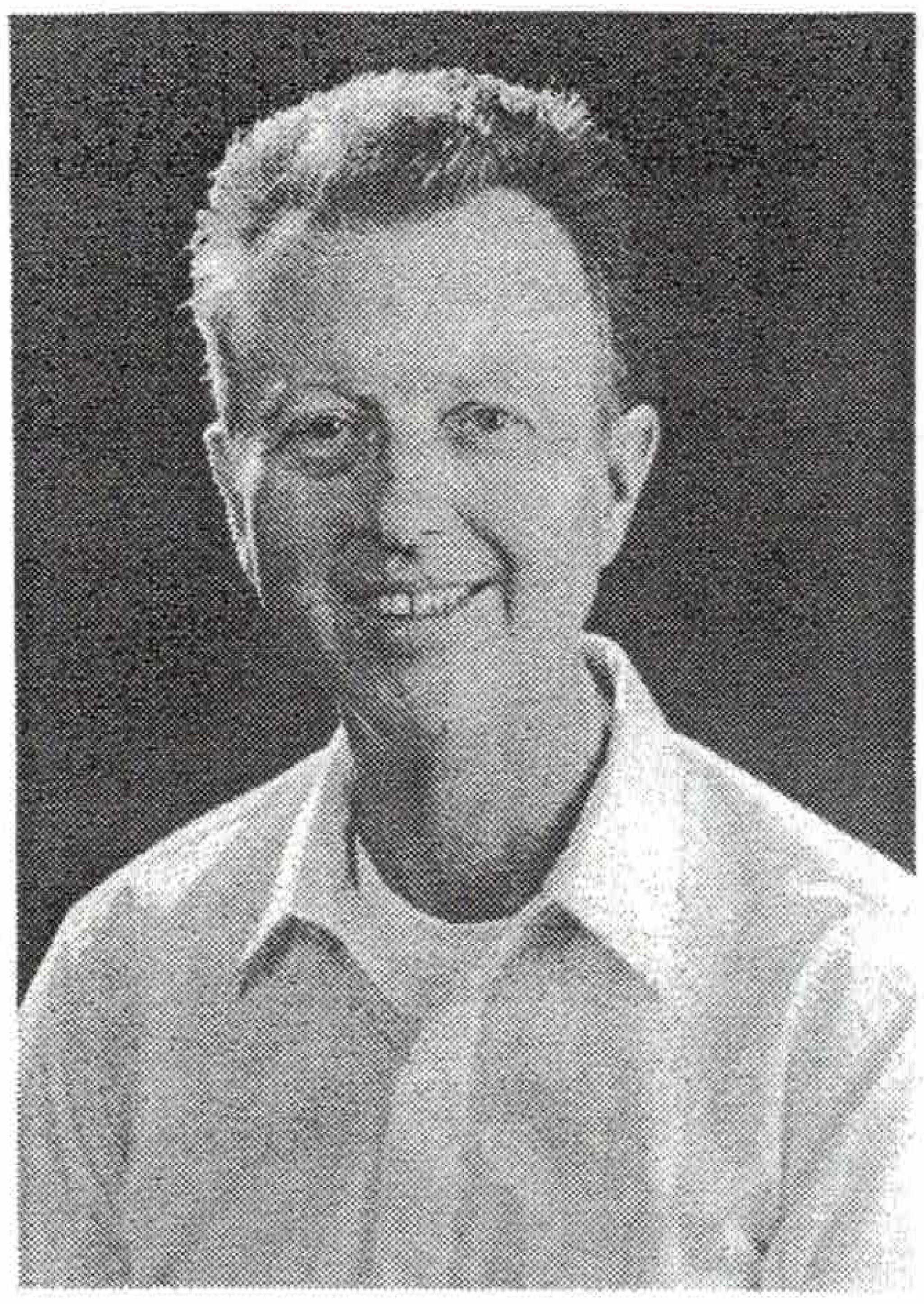

## PRESIDENT'S MESSAGE

*Ted Adams*

Since March, several CNGA members and public agency representatives have been developing Interim Restoration and Revegetation Guidelines for Collection and Use of Native Perennial Grasses. These are based on suggested genetic guidelines for collection and transfer of native grass seed developed by Dr. Connie Millar, USFS, Pacific Southwest Research Station, and Craig Dremann, Redwood City Seed Company, and reprinted in the February issue of *Grasslands.*

In the May issue of *Grasslands*, I presented a summary of the current situation relative to the use of native perennial grasses and listed concerns identified by the group working on Interim Guidelines. These have made consensus difficult and compromise necessary in development of the Guidelines. Individual and agency interests and perspectives have had influence as has lack of information on the grasses. Perhaps the key issue is the need for operational information (guidelines) now; use of grasses is not waiting and will not wait for "science."

The CNGA Interim Guidelines are presented for your review in this issue. My comments above suggest they will not receive universal acclaim. To help you understand the environment in which they were developed, a summary of the principal discussion points is included below. Remember, the emphasis is on INTERIM; with better information, refinement will follow.

Summary of Discussion Points

The health of ecosystems is maintained by biodiversity; this is understood. However, the value of native grasses as an element of ecosystems and for use in restoration/revegetation programs may be viewed differently by different groups of people. One group strongly favors their use under all conditions, even those where site parameters may limit success. Another group considers them of little value because of perceived management problems or because of the need to change management practices to accommodate the needs of native grasses. A third group, perhaps more removed from biological science than the first two, is concerned that mandated use of native grasses for revegetation and mitigation will have negative economic impacts on management programs.

The purpose of any set of native grass restoration/revegetation guidelines addressing multiple interests and concerns is to provide a structured approach to evaluation of restoration potential and objective selection of species to achieve defined objectives. The guidelines will help to define relic populations to be preserved as keys to natural complexes. They will help identify genetically limited ecotypes that could be eliminated through introduction of more aggressive ecotypes better adapted to current, transient conditions of climate.

Development of guidelines is limited by available information. For any given species, the range of variation among individuals, populations, and ecotypes is little known as is the range of adaptation. There is little information on breeding systems for most species. Rates of outcrossing are poorly known. Selection pressures and rates of selection are mostly unknown. However, there is an urgent need for a set of interim guidelines (operational guidelines) to minimize irreversible impacts that may result from expanding programs and current practices.

Because of the quantity of commercial seed being used, there is a very real potential to negatively impact native plant communities about which little is known. This influence may distort information about these communities that is being gathered. It is important to understand genetic architecture of native plant colonies, and development of this knowledge may be compromised if seeding programs are not carefully conducted. It is important to know the influence of founder effects, i.e., the influence of initial and secondary colonization. It is important to know how spatial variation is partitioned. We need to study the interaction between environmental pressures and genetically determined breeding systems and the expression of these systems, e.g., flowering dates. Our knowledge is poor and only phenotypic response (environment interacting with genotype) is currently available to guide restoration and revegetation.

Economics will have considerable impact on development of guidelines. The influence of expanding programs and current practices has been noted. These, in turn, are influencing and will be influenced by availability of plant material. Careful use (scale) current seeding recommendations is needed because of the ineffectiveness of sweeping application and the potential impact on local gene pools. Recommendations should not be influenced by commercial interests or government policy.

Agency policy currently emphasizes use of native grasses. Guidelines need to encourage this in practical ways. Adapted plants are needed that support management objectives, e.g., erosion and weed control, fire protection, etc.

Public land managers have difficulty discriminating between genetically induced and environmentally induced responses. Mandates and management objectives clearly require that species selected be adapted to local site parameters, e.g., soils, rainfall, aspect, etc. Urgency suggests that a number of species and ecotypes (key accessions) be evaluated in the field and their genetic limitations defined.

Guidelines should be simple and direct with few qualifications. Included recommendations should be as specific as possible with respect to types of planting programs. Desirable would be information on cost effectiveness, but development of this information may be the responsibility of clientele users as guidelines are refined.

Information on performance of cultivars of certain species is available. This has developed because of interest in these species and the ability to produce seed at acceptable prices. This reality will influence application and refinement of any set of guidelines.

Some situations suggest the use of non-invasive grasses or sterile hybrids (or exotics) would be appropriate. There is need for generic, non-invasive accessions for use in unusual situations. However, if these grasses are short-lived, the problem of replacement is created. How and with what is this problem addressed?

In revegetation, the selection of accessions and proximity of projects to native populations may generate management conflicts. Flexibility and accommodation (as between agencies) are needed to promote use of native grasses. The need for a conservative approach is recognized (driven by a lack of data), but inflexible guidelines will restrict use of natives and limit development of knowledge that will permit refinement. Restrictive policies that implement mandates may result in stalemates.

An extremely useful adjunct to restoration and revegetation guidelines would be a "decision tree" or expert system based on current knowledge that would help determine what to plant under a variety of conditions. This would provide the practical element to implement guideline recommendations. Such an expert system would follow the format developed by P.G.& E. to guide the selection of shade trees in California. This existing, computerized system narrows user options based on inputs defining site parameters and objectives.

The expert system data base for native grasses would include information on species adaptation (hierarchical delineation beginning with zones and ending with specific site conditions), planting methods, availability and cost. The system would permit quick response to developing emergency situations in specific areas that often are defined by erosion potential, areas where the need for cover is acute in the first year.

The Interim Restoration/Revegetation Guidelines presented here are the product of a cooperative effort sponsored by CNGA. Included in this effort were representatives from: the seed industry, private, nonprofit organizations, public agencies, and scientists from these agencies and the University of California.

These Guidelines are presented as a public service. They are intended for initial guidance in restoration/revegetation. Comments on their use and value and on changes needed are encouraged.

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## *Interim Restoration/Revegetation Guidelines*

### Introduction

Restoration and revegetation can be confusing terms. Restoration usually means encouraging growth of native plants in natural areas or planting natives in these areas to enhance existing stands or create native plant communities. Revegetation most often refers to planting on or replanting disturbed areas such as roadsides and construction sites. However, these two activities represent extremes in a continuum; often they cannot be easily distinguished. For example, seeding wildfire burns in natural areas to protect against erosion is not clearly restoration or revegetation. Project goals and constraints and the standards ~sed for judgement of success will define the objective.

In emergency revegetation of disturbed sites for reduction of accelerated erosion, use of natives is possible. Seeding can be supplemented with mechanical measures to obtain initial soil protection. A combination of such measures might include proper grading, water diversion structures and use of mulch mats made from either natural or synthetic materials. Site evaluation will determine the supplemental measures necessary, and using the Interim Guidelines, grasses appropriate to the site can be identified. This combination of techniques has been called bioengineering.

An often overlooked reservoir of native grass seed for use in revegetating disturbed sites is topsoil. Stockpiled at the time of disturbance, this soil, when spread back over the site, may help reestablish natives. Site assessment before disturbance will determine whether a useful seed reservoir may be present.

Spreading stockpiled topsoil over disturbed sites is always a good idea; topsoil provides a much better medium for growth than subsoil. This practice may be necessary for growth and survival of many seeded native grasses. However, it carries a price; the reservoir of seed of exotic annuals present in topsoil represents a source of competition, and control of annual competition is usually necessary for successful establishment of perennial grasses.

Procedures

1. To the extent possible, inventory each site to be restored or revegetated and determine the vegetation composition, both the herbaceous and woody components, and its pattern and distribution over the site. Document site specifics including plant characteristics. If there is natural regeneration potential, it should be encouraged and enhanced; this is the first priority. Soil condition is a key to determining potential for natural regeneration. Highly degraded sites, those that have lost significant top soil through accelerated erosion or have been extensively modified by construction activity or other disturbance, are unlikely to provide a satisfactory substrate for natural revegetation by native grasses. In addition, these degraded sites may not support satisfactory stands of many seeded native grasses. In these situations, use of pioneer nitrogen-fixing species may be appropriate.

2. Planting situations and program demands will vary, but always plan to use native grasses for revegetation. This is an obvious objective for restoration. Avoid use of exotics. However, if adapted germ plasm of natives is unavailable, use non-persistent, non-invasive exotics.

3. Collection and use of native grasses should be systematic. Two

maps of California presented in The Jepson Manual (1993), one based on plant climate zones (adapted for the Manual from the Sunset Publishing Corporation's Western Garden Book) and the other on geographic subdivisions of the state, provide basic information to help define zones for collectio ~ and use. Other sources of information, such as soil surveys and geographic information systems, should be used to refine these zones. Seed collected in zones so described should not be used outside the zone of collection.

Using these zones, define the vegetation types, e.g., open grassland, oak-grass woodland, mixed conifer, etc. This can be done during the inventory identified ealier as the first step in restoration and revegetation. Within zones, seeding in each vegetation type should be accomplished using seed from that type.

Discontinuous ecological or physical conditions within vegetation types need to be identified. Environmental uniformity is rare, and small but important differences in conditions may exist within sites that a superficial examination might suggest are uniform. It is important to match ecotypes to these differences.

The process of site identification and description, beginning with the zone in which a particular site is included, will lead to delineation of the plant communities in which work will take place. When completed, this process will include descriptions of the various layers in the communities and the successional stage of each. This hierarchical approach is necessary to objective evaluation of restoration and revegetation projects and, based on level of disturbance identified, the selection and collection of species to be used.

When collecting seed from a particular site, attempt to insure the greatest possible genetic diversity by including a large and diverse set of parents. Randomly collect from plants within a population. Collect at different times during the period of seed ripening and from all populations found within a particular site. But do not emphasize "unique" characteristics; most of the seed in a balanced collection will represent plants with characteristics common to the majority. Remember, that plant performance represents an interaction between genotype and environmental conditions and that survival of plants developing from collected material will depend on the possession of traits carried by the seed.

Recognize that some sites are unique and narrowly defined. As an example, unusual soil conditions may be present: serpentine, pygmy forest podsols, mine tailings, etc. Plants developing from collections made on such sites may be the best adapted to these unique soil conditions. Plants from seed collected elsewhere may not grow at all in these extreme soils.

4. Seed of natives used in all revegetation and restoration should represent collections made from sites with environments similar to the environment found at the site of use ,i.e., same soil, rainfall, elevation, slope aspect, temperature pattern, etc. This will increase the chance that plants developing from seedings will be adapted to site conditions and will persist and evolve.

Adaptation represents an interaction between the genetic constitution of a grass and its environment. Soils are one of the critical environmental influences. Seed of candidate grasses should represent collections made from parents growing on soil similar to that at the site of use, i.e., the same series or association.

5. Do not use grasses sold as natives if you do not know their origin, percent purity and percent germination. For reasons cited above and to avoid possible gene pollution (elimination of genetically limite ecotypes through introduction of more aggressive ecotypes bette adapted to current, transient conditions of climate), do not use commercial stocks representing non-local collections or produced in zones not found in California when planting into native grass populations. The caution about collections produced outside California's zones is based on the fact that the conditions of seed production (soils, climate, cultural practices, harvesting methods, etc.) can affect and distort the genetic balance (induce genetic drift) by favoring growth and reproduction of plants best adapted to the site of production. There is a greater potential for genetic drift the more conditions at the site of production differ from those at the site of collection. Contracts between consumers and producers are the best way to insure both the sources and quality of native grass seed.

6. Not strictly an element of the Guidelines but necessary to their full implementation is the creation of seed banks. Availability of seed in quantity would permit taking advantage of opportunities of scale to restore and revegetate. (Reseeding after wildfires is an example.) Program planning and project initiation by agencies would be greatly facilitated by maintaining seed banks, and public access to seed at lower cost would be an added benefit. Public agencies are in the best position to sponser large scale production, but maintenance of such a program at public expense is difficult because of constraints on how public funds can be obligated.

### *HERBICIDE TRIALS ON SELECTED NATIVE GRASSES*

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A study was recently conducted to evaluate pre-emergence herbicides for native grass tolerance and weed control. The herbicides were applied at 25 gal/A (acre) to native grass stands that were 2 to 3 years old, in the fall of 1992. Native grass injury and weed control were evaluated the following spring. The herbicides and rates [ai/A, (active ingredient/acre)] evaluated included: Telar 75WP 1.0 oz, Surflan 4EC 2.0 lb, Telar 75WP 0.5 oz plus Surflan 4EC 1.0 lb, Karmex 80WP 1.0 lb and 2.0 lb, Ronstar 50WP 2.0 lb, and Simazine 90G 1.0 lb. Physical injury was evaluated on the following native grass species: *Fescue* sp.; *Stipa cernua, Poa scabrella, Hordeum brachyantherum* (Salty and Hastings), *Elymus glaucus, Bromus* sp., *Melica imperfecta,* and *Melica californica.*

The principal broadleaf weeds were knotweed (*Polygonum* sp.), sowthistle (*Sonchus* sp.), chickweed (*Stellaria* sp.), shepardspurse (*Capsella* sp.), cheeseweed (*Malva* sp.), clover (*Trifolium* sp.), redmaids (*Calandrinia* sp.), and groundsel (*Senecio* sp.). The principal grass weeds were annual bluegrass (*Poa* sp.), ryegrass (*Lolium* sp.), orchardgrass (*Dactylis* sp.), dallisgrass (*Paspalum* sp.), and zorro fescue (*Festuca* sp.).

Surflan provided excellent weed control overall. Native grass injury was noted on *Fescue, Stipa, Poa, Elymus,* and *Bromus* (25% to 40% stunting of plants compared to untreated plants). Telar provided good control of broadleaves, but only fair control of annual grasses. Injury was noted on *Stipa, Poa, Hordeum,* and *Bromus* (20% to 40% stunting). Telar + Surflan provided excellent weed control, but was injurious to all native grasses (25% to 60% stunting). Karmex at the high rate gave fair to good weed control overall. Native grass injury (20% stunting) was noted on *Hordeum* (Hastings) . Ronstar gave fair to good weed control. Native grass injury was noted on *Elymus* and *Bromus* (15% stunting). Simazine gave fair to good weed control. Native grass injury was noted on *Hordeum* (Salty) and *Bromus* (20% to 25% stunting).

We believe that Telar plus Surflan will be a good combination for native grass establishment in the future as Telar controls most broadleaves and Surflan gets the annual grasses; but we need to experiment with different rates, before a recommendation can be formulated. Use of both pre- and post emergence herbicides for native grass establishment will be the focus of further work during the 1993-1994 season.

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### *THE ECOLOGICAL RESTORATION OF NATIVE GRASSLANDS*

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Ecological restoration is the creation of a landscape native to a specific project site. The term "native" describes the affinity of a target species to the specific ecology of the site as well as its historic location. Ecological restoration, therefore, connotes a recognition of the relationship between the target species and the project site; the way in which site elements (soil, hydrology, vegetation, etc.) interact within an ecosystem and the ways in which this ecosystem changes over time. Ecological restoration also implicitly anticipates the continued existence of the target species on the project site without human maintenance after an establishment period.

This definition necessarily results in a two part test for ecological restoration projects. The first test is a exercise in history; generally, we now count species which arrived after the European invasion as non-natives in California while those present prior to that invasion are natives. The second test is a practical one: the target species should not require human assistance to flourish after the establishment period. This test also implies that the project be monitored for a period of time and that it meet certain performance standards before it is deemed successful.

In the late-1970's, wetland restorationists often ignored this second test. A series of articles by Dr. Margaret Race (Race, 1982; Race and Christie, 1983) and others then questioned the "success" of wetland restoration. While these articles provoked a storm of protest, Margaret's basic point, that not enough data had been generated to accurately define any of the early wetland restoration projects as successful, was never refuted. The credibility of wetland restoration has been in question ever since.

The field of grassland restoration is in a similar position to that of wetland restoration a decade ago: many projects have been attempted; few appear to have consistent performance standards or monitoring; and good studies of the results are rare. Several projects have also been described as "successful" within a very short time after construction. Based on these successes, prescriptions for native grassland restoration are being made, specifically including the use of meadow barley *(Hordeum brachyantherum)*, blue wild rye *(Elymus glaucus)*, California brome *(Bromus carinatus)*, and purple needle grass *(Stipa pulchra)* in a wide range of situations.

An example is the Cherry Island golf course project. The site is on xeric San Joaquin terrace soils in northern Sacramento County. A native grass consultant proposed the use of the species cited above for the golf course roughs although none of these species are native to the site with the possible exception of purple needle grass. The County spent a considerable sum implementing the consultant's recommendations. The project was described as "successful" in Grasslands within a few months of planting. Today, the extent of these species on-site is extremely limited and those plants that occur are found only in those areas receiving irrigation. More recently, a Grasslands article claimed that plug planting of Idaho fescue *(Festuca idahoensis)* was successfully used to restore an eroded trail on Mount Tamalpais in Marin County (Amme, 1992). The project had been in the ground about 2 months when this statement was published and the winter rains had not yet arrived. The article went on to claim that plug planting of this species is an "important restoration technique for areas that are compacted, shady, or vernally wet."

The credibility of this field will be harmed if we do not develop and enforce standards and guidelines such as those learned at some cost in wetland restoration, *e.g.* the use of small, experimental projects prior to a larger commitment of funds (Zedler, 1987); and clear goals tied to specific performance standards and consistent monitoring parameters (Sorenson, 1982). Kentula *et al.* (1992) analyzed almost a decade of wetland restoration projects and recommended that we, "consider the landscape setting of the wetlands when defining the populations to be compared" and "use the characteristics of natural wetlands and wetland projects to define the [performance] standard". In short: (1) consider the ecology of the site when developing restoration goals; (2) devise performance standards that reflect these goals; and (3) use replicable monitoring techniques derived from these standards.

There are good arguments for prescribing California natives that are not native to a site in the ecological sense. These plants expose the public to the aesthetic value and lower maintenance requirements of natives, and promote the sale of seed or stock which, in turn, keeps native plant growers in business. However, we should not define these types of projects as native grassland restoration and to further describe these acts as "successful" restoration invites at least polite skepticism.

There is a further point to consider. What lessons have we learned from projects like Cherry Island? When we do not prescribe natives, the opportunity to augment our understanding of grassland ecology is lost. I do not believe that our knowledge of grassland restoration is so great that we can afford many such projects. And when we do use natives, whether our project succeeds or fails, we will at least have begun to understand the native landscape and our abilities to restore that landscape.

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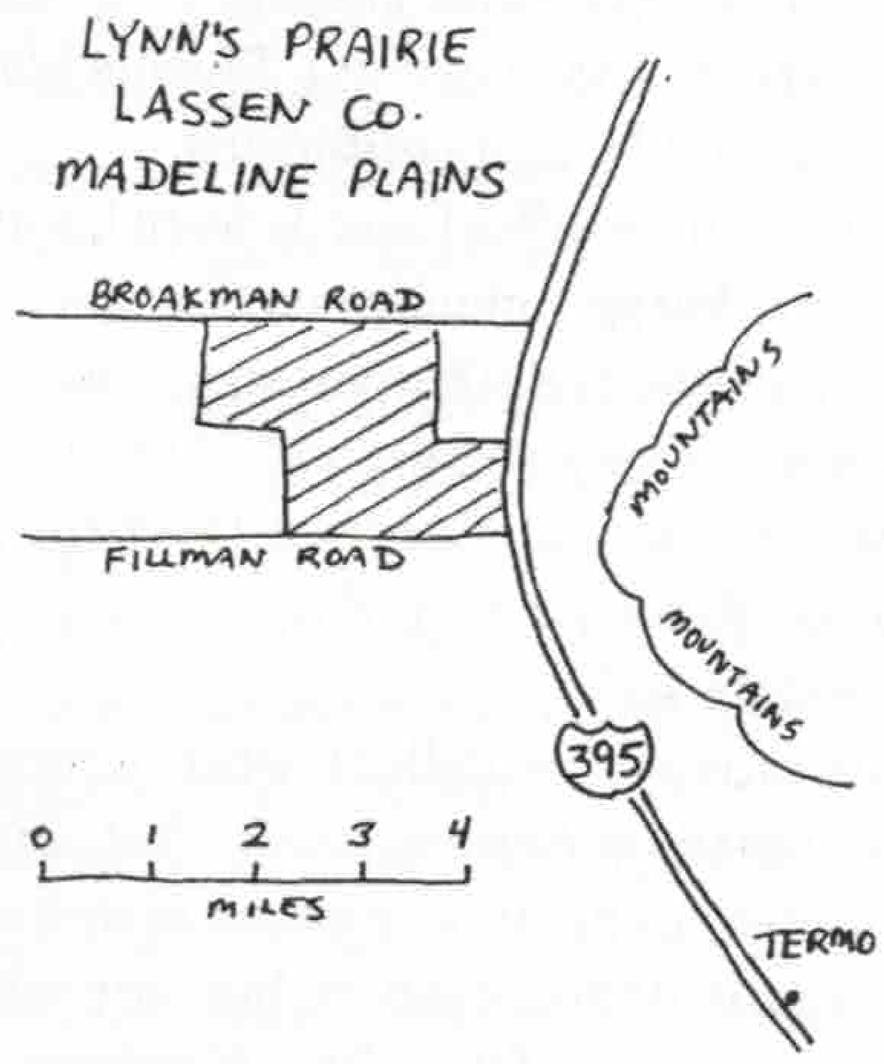
## RELIC PRAIRIE FINDER

*This section is for readers to describe relic prairies that have been found so that other Grasslands readers can go visit them and enjoy them. A relic prairie is defined as a contiguous grassland of any size of one species of native grass, and also includes at least one other native grassland member and is greater than 50% pure natives as measured by canopy coverage. Other members of this relic community can be species of other native grasses or species from other native grassland families (sunflower, mint, lily, etc.).*

Name: Lynn's Prairie (pronounced pray-ree')
County: Lassen
Discoverers: Lynn Hosley (CH2MHill, Oakland), Gary Schoolcraft (BLM, District Botanist, Susanville District), and Craig Dremann (Redwood City Seed Co). It was discovered September, 1993 by checking an unusual pattern that was seen on an aerial photo of the area. It was named Lynn's prairie after Lynn Hosley who won a bet—she believed that the aerial photo may be a native prairie.
Location: Madeline Plains 1-3 miles west of US Hwy 395 and either 5 miles north of Termo or 6 miles south of the town of Madeline (see map). Prairie covers T36N, R12E, Sec. 13, 14, 24 & T36N, R13E, Sec. 19.
Size: 2,500 acres (about 4 sq. miles)
Quality: Pristine, no evidence of grazing.
Species: Scattered Silver sage (*Artemisia*) with most of the prairie covered with *Poa* and *Sitanion*. *Elymus triticoides* occurs in the moist southern end.
Soil: Deep volcanic ash, which when irrigated becomes productive alfalfa fields.
Elevation: 5,280 ft.
Ownership: T36N, R12E, NW 1/4 of Sec. 14 may be BLM land, Susanville district, Alturas Resource area, Madeline Planning Unit. The remainder of the area is privately owned. The whole prairie is surrounded by alfalfa fields and the prairie may be endangered as it has a great potential to be grazed or converted into alfalfa growing if water is available because of its good soil.
Access: Broakman and Fillman Roads are the north and south boundaries of Lynn's Prairie and are public roads from which people can drive by and view the prairie. It is not recommended to cross the barbed wire fences until you have contacted the owners. Ownership can be determined at the County Tax Assessor's or from local inquiries. NO SMOKING around the prairie!
Further info: Craig Dremann, Redwood City Seed Co., Box 361, Redwood City, Cal. 94064 (415) 325-7333 (he can send you a photo of the prairie for $1 plus a SASE). Other contacts are Lynn Hosley, CH2MHill (510) 251-2888 x2103 or Gary Schoolcraft at the BLM Susanville Eagle Lake Resource Office.



## ANNUAL MEETING, November 12

**There's still time to get your reservation in**

**Your receipt will be in your packet -- AT THE MEETING**

*VENDORS NEEDED!*

## VACANCIES IN CNGA

CNGA has several officer positions still to fill, as well as the I&E Committee Chair. Victor Schaff, S&S Seeds, has had to resign as President Elect for personal reasons. No nominations have been made for President or Vice President. Any vacancies still unfilled by the November 12 Annual Meeting will be open for nomination from the floor.

The I&E Committee is an invaluable one in that it serves the primary function of CNGA, to inform and educate the public on all aspects of California native grasses, to answer requests for information, to prepare and man displays at various meetings, and to organizeworkshops. Unfortunately, this, like most committees in CNGA, is often a committee of one. Many have good intentions to serve, but when push comes to shove, it is hard to find the time or other commitments take precedence. This job is usually a few minutes a week one, responding to letters of request. At certain times it is much more demanding, requiring organization of a workshop or display material/date. However, we now have much that we did not have before--a display system put together this year, an informational packet largely assembled, waiting on a specific project to be completed, a library of slide material for various uses. The I&E Chair has help from many qualified consulting experts in different areas already in CNGA, always ready with information or a suggestion as where to find it. This is a demanding job in some ways, but the job can be somewhat tailored to the time constraints of the individual.

CNGA will not be able to function as a viable organization without volunteers willing to serve for short periods of time in these important roles. There are a few who have continued to occupy certain posts for the lack of anyone else willing, and because they are dedicated service individuals. But the almost 500 members of CNGA continue to be represented and served by these few. CNGA has reached a juncture point. Without a critical mass of people willing to do more than passively absorb, the organization will fold. That would be a loss for all.

HOW ABOUT IT FOLKS?

**California Native Plant Society**

CNPS is proud to announce the Oct. 20, 1993 publication of **CALIFORNIA'S CHANGING LANDSCAPES: Diversity and Conservation of California Vegetaion** by Michael Barbour, Bruce Pavlik, Frank Drysdale and Susan Lindstrom (CNPS, $24.95, softcover).

**CALIFORNIA'S CHANGING LANDSCAPES** is the first guide to California vegetation for the general public. A layperson's book that shows historical relationships of Californians with their environment, interaction of plants within communities, and a possible landscape of California's future, with attainable solutions to present day environmental conflicts.

For a review copy, or to schedule an interview with the authors, **contact Tom White, (510) 540-0678, FAX (510) 848-4841.**

California Native Plant Society, 1722 J. Street, Suite 17, Sacramento, CA 95814
(916) 447-2727

*Dedicated to the preservation of California native flora*

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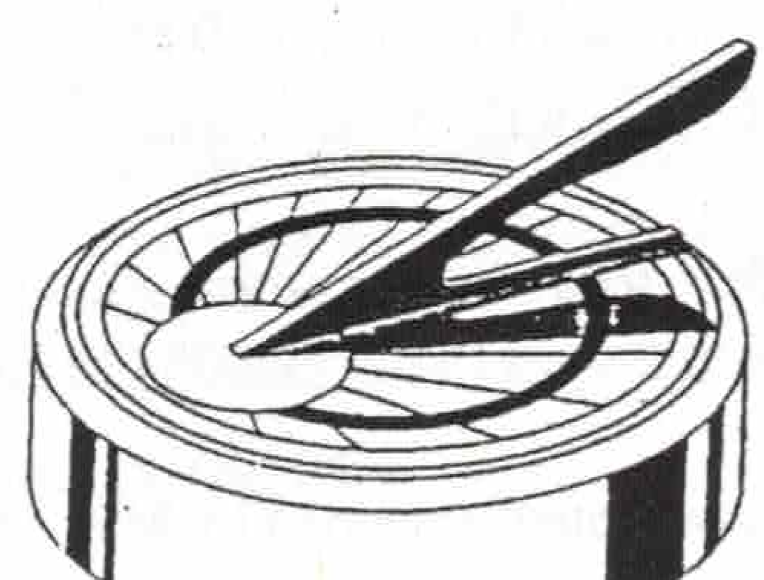
**THE PERENNIAL PLANT CLUB OF SACRAMENTO**
announces their Third Spring Symposium
on Saturday, February 26, 1994
**Guest Lecturers will include:**
Fred Boutin, botanist and rosarian of Tuolomne
Gerald Bol of Bamboo Sourcery, Sebastopol
Roger Gossler of Gossler Farms Nursery, Springfield, OR
Margo Partridge, landscape architect, Oakland
for more information, contact:

**The Perennial Plant Club**
**P.O. Box 278081**
**Sacramento, CA 95827**
**(916) 443-2146 or (916) 446-1768**



*1993 Board of Directors*

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Bob Delzell
(on leave 1/93-9/93)

**Public Information and Education**
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Capay, CA 95607-9705

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## ATTENTION COMMERCIAL MEMBERS!!

Do you want to be included in the CNGA Products and Services Directory?
Company____________________
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Phone/FAX____________________
Contact____________________
Area Served____________________
Description____________________
____________________

## Join The Native Grass Association

Date__________
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Title____________________
Organization____________________
Address____________________
City/State/Zip____________________
Phone/FAX____________________
*Membership Satus*

| | |
|---|---|
| Regular | $35.00/year |
| Family | $50.00/year |
| Student | $20.00/year |
| Retired (65yr+) | $20.00/yr |
| Life | $350.00 |
| Commercial | $500.00/year (large business) |
| Associate | $100.00/year (small business) |

*Benefits:* Regular, Student/Retired, or a business on a Regular Membership--1 person at member rates at functions; Family, Commercial or Associate--all members of group at member rates.
**Dues are for the current calendar year. ANNUAL DUES TO BE PAID BY NOVEMBER 1 OF 1993 FOR 1994.**
**Student, state school and year of graduation**____________________

*Detach and mail to:*
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