



GRASSLANDS

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Native Grass Restoration in Flood Zones: Preliminary Observations and Cautions

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We performed a subjective evaluation of a grassland restoration site in a area to determine survivorship of the species planted. The site is in the Northern Yolk Bypass in Yolo County. This area was subjected to extended and repeated water inundation during the 1995 winter and spring rainy season. Detailed information of the site will not be given at this time pending in depth evaluation and permission of the land owners and agencies involved, but we believe it is important to provide preliminary information to alert native grass project planners of the risks in seeding flood zones which may have extended periods (2-3 months) of water inundation.

The site was 250 acre sediment removal project planted in December of 1991. The native grass species used for revegetation included *Elymus glaucus*, *Elymus trachycaulus*, *Bromus carinatus*, and *Hordeum brachyantherum*. Prior to sediment removal, *Elymus glaucus* and *Hordeum brachyantherum* were documented on undisturbed areas. The ecotypes of *Elymus glaucus* and *Elymus trachycaulus* were from Yolo County but not from flood prone areas. The ecotypes of the *Hordeum brachyantherum* and *Bromus carinatus* were probably from the S.F. Bay area. Objective site evaluation in July of 92 showed that all species planted were represented. A subjective evaluation during the summer of 93 again showed all species of grasses present and typical of a young perennial grassland. No evaluation was performed in 1994.

Our recent evaluation could find only a few scattered plants of *Hordeum brachyantherum* in the seeded areas and it is unknown if these are from local accessions or the accession planted. *Elymus glaucus* was found on some of the higher areas where it existed prior to seeding. These stands were probably not a result of the seeding. No *Elymus trachycaulus* or *Bromus carinatus* were found. Native perennial species beginning to show up naturally in the area are *Leymus triticoides*, *Distichlis spicata*, and several *Carex* and *Juncus* species.

The water inundation in '95 was almost a

record length of time, but the lesson learned is that careful selection of species and probably ecotypes is important when planting in flood zones. *Elymus glaucus* and *Hordeum brachyantherum* are found naturally in the area, but site specific ecotypes were not available at the time of this project. Perhaps even site specific plants would have dropped out in this past record flooding year. In defense of using them again if site specific or known flood zone specific seed is available, a mature stand may have theoretically been able to reseed itself if the parent plants succumbed due to prolonged inundation, assuming this phenomenon occurs very intermittently. Clearly additional testing and evaluation need to be performed.

THROUGH THE EYES OF A GRAZIER

by George Work, Southern Monterey County

I have made many of the same observations described by Craig Dremann (*Grasslands* Vol. V, No. 2 June 1995). However, we have two noted differences. First, Needlegrass seeds have not caused problems with our cattle. Ripgut and foxtail account for our "sticker" problems because of the barbs on the seed. Second, if animal traffic causes Purple needlegrass crowns to be broken and uprooted, I would suspect a problem with weak plants rather than a traffic problem.

In order to move toward the CNGA goals, the people that have control and use of the grasslands in this state must become aware of the value of our native species and learn how to utilize them in a way that is ecologically, financially and socially sound thus benefiting all involved.

Total lbs. of production is important, but quality and timing of production are also key factors. A big motivator for us is the fact that if we can grow 3 oz. more forage per square yard and utilize

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if properly, we could double our production. The right healthy perennial grass plant per square yard would provide that!

This past week I clipped and weighed some forage and found that our native annual Lotus trefoil had provided more than 3 oz./square yard dry matter and had done this since June, after most of the exotic annuals had stopped growing. *Muhlenbergia rigens* also provided similar amounts. The value, however, is not just the dry matter volume, but the fact that it is a source of green feed in August and was produced after our "normal production" was over.

The past several years we have measured *Sitanion jubatum* and found that often during our cold winters, *Sitanion* will grow 4 to 6 inches tall. It can be eaten off and regrow 4 to 6 inches tall again before any of the annual grasses are tall enough to be eaten the first time. That is a very significant difference in production in favor of the perennial.

We who utilize forage to make our livings must first see the value in native perennial grass production, otherwise we will not make the additional effort to change our management to propagate them. I am also very disappointed when I see grazing plans written by people who should recognize the value of our native plants. Most of these plans assure the land will continue to degrade but it will be done in an acceptable way.

The key factor ignored in most of our grazing practices is Time. This time element was well researched by Andre Voisin in the 1950's, yet continues to be largely disregarded by lay person and professional alike. We talk about stocking rate and numbers as if they were the solution to stopping overgrazing. I assure you they are not.

I would like to introduce a new term to this readership and get your response. let's call removing too much soil cover what it is—"overbaring" the land, not overgrazing it. After all, you can't really overgraze a dead plant, can you?

PROBLEM AT THE NATIVE GRASS RESTORATION SITE: THE OAK HABITAT RESTORATION PROJECT

sponsored by the Walnut Creek Open Space Foundation and the Open Space Division of the City of Walnut Creek; reprinted from *Oak News*, No. 51 510-933-5732

An unexpected problem has surfaced. Quite a few of the grass clumps have been completely or partly sheared off smoothly right at ground level. The damaged clumps are most common around the edges of the plot. Cut stems can be found stuffed in cracks in the soil or just lying on the ground. We assume ground squirrels are the culprits since they are so common, but some other rodent might possibly be responsible. We don't recall seeing this sort of damage in the natural stands of native grass. Is this life threatening or will the clumps recover in the winter after summer dormancy?

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BUNCHGRASS OBSERVATIONS

California's bunchgrass has been the least known or studied plant community in North America, and this section allows you to share your observations with others so that our grass-roots knowledge can spread.

BROMUS CARINATUS & ELYMUS GLAUCUS STORAGE, LONGEVITY, GENETIC CHANGES and ECOTYPICAL VARIATIONS.

Copyright © 1995 by Craig Dremann, Redwood City SeedCo., P.O. Box 361, Redwood City, Cal. 94064 Phone (415) 325-7333

STORAGE & LONGEVITY

In the autumn of 1988 I purchased two samples of native grass seeds that were collected in May and June 1988 from the mountains of California, *Bromus carinatus* and *Elymus glaucus*. These two species were chosen for longevity tests because their seed storage ability has been notoriously short lived when kept at room temperature, as evidenced by earlier tests I conducted, shown in Table 1.

Table 1

<i>Bromus carinatus</i> seed stored at room temperature, percent germination from tests conducted 1984-1991				
Fresh seed	one year	two years	three years	four years
70-100%	40-100%	15-80%	0-12%	0
<i>Elymus glaucus</i> seed stored at room temperature, percent germination from tests conducted 1984-1991				
Fresh seed	one year	two years	three years	four years
80-100%	50-100%	0-60%	0-100%	0

The seed I used for my storage tests had already been kept at room temperature from the time of harvest in 1988 until they were tested in February 1990 for germination and found to still have 100% germination.

On March 26, 1990, I put seeds of each of these species in a dozen eight-ounce mason jars having screw-down canning lids, placing two to three ounces of seed in each jar. In six of these jars, I only put seed in the jars. In each of the remaining six jars, I added one paper manila #1 coin envelope containing 1/2 oz. of loose indicator silica gel with the seed.

The indicator silica gel was purchased from Silica Gel Desiccant Products Co., 734 E. Hyde Park Blvd., Inglewood, Cal. 90302, phone (800) 426-1529. The type used was part No. S5112, 6-12 mesh granular Indicating Silica gel and available in 1-1/2 lb. or 5 lb. cans. The silica gel is colored cobalt blue when it is dry and turns pink when it is fully saturated with moisture. When put with seed in a sealed jar, the gel turns an in-between lilac shade when it reaches an equilibrium, when the seed's moisture is stable and fully dried. The lilac color indicates that the gel still can absorb moisture until it turns pink, but in the

lilac stage the gel has dried the seed down as far as it can go.

Jars of each of the two species of native grass seed were placed in the following storage conditions:

- 1.) Room temperature (55-85°F), relative humidity 35-45%
- 2.) Refrigerated (33-42°F)
- 3.) Frozen (20°F)

Periodically the jars of seed would be taken out of storage and samples removed to be tested for germination. The color of the silica gel would be checked and replaced if it had become saturated. The frozen and refrigerated jars were allowed to stand for 24 hours after removal from storage to allow the seeds to come up to room temperature before opening the jars. Otherwise, moisture from the air can condense on cold seed and shorten future longevity.

The germination tests were conducted on an aluminum tray which can be purchased in the households section of a hardware store, measuring 11" x 15" with a one inch tall rim around the edge, called a "Danish tray." Sterile roll cotton in a one pound box was purchased from a pharmacy and was rolled out and cut to size to fit the bottom of the tray. Distilled water was added to saturate the cotton and the excess poured off. Seeds were then placed on the cotton spacing them about 1/4" apart in each direction, and toothpicks put between the different lots to keep them separated. A plate of single thickness window glass cut to size and with edges taped with masking tape was laid over the top of the tray to keep moisture in and let light into the tests.

Germination tests were conducted for 35 days, with periods of 3-4 days cold (33-41°F) stratification each week and then warmed from room temperature to 85°F for 3-4 days each week. The first count of germinating seedlings occurred when they were about 1-2" tall and that began as early as the fourth day. Viable seeds of *Bromus* and *Elymus* would germinate between the sixth and seventeenth day of the test, but occasionally some would germinate as late as the 25th day of testing for *Bromus* and the 35th day for *Elymus*.

The tables two and three below give the results of the germination tests conducted between 1990 and 1994. The following abbreviations found in the tables are as follows:

- Rm N/S = Room temperature, No silica gel.
- Rm Y/S = Room temperature, with silica gel.
- Ref N/S = Refrigerated, No silica gel.
- Ref Y/S = Refrigerated, with silica gel
- Froz N/S = Frozen, No silica gel
- Froz Y/S = Frozen, with silica gel.

Table 2
BROMUS CARINATUS (5/88 crop)

Storage	2/90	5/90	10/90	3/91	8/91	9/92	5/93	5/94	11/94
Rm N/S	100	70	90	55	55	36	0	0	0
Rm Y/S	100	70	90	75	90	76	15	75	55
Ref N/S	100	90	100	70	80	58	60	55	55
Ref Y/S	100	60	90	70	95	85	65	85	75
Froz N/S	100	90	90	70	100	76	70	75	50
Froz Y/S	100	70	70	90	95	88	50	55	85

Table 3
ELYMUS GLAUCUS (6/88 crop)

Storage	2/90	5/90	10/90	3/91	8/91	9/92	5/93	5/94	11/94
Rm N/S	100	65	50	30	35	0	0	0	0
Rm Y/S	100	80	76	70	60	15	0	0	0
Ref N/S	100	75	72	80	90	76	55	72	85
Ref Y/S	100	70	76	65	80	64	45	76	70
Froz N/S	100	85	80	90	100	79	40	68	60
Froz Y/S	100	60	56	70	60	76	45	88	70

You may notice the fluctuations in refrigerated and frozen germination rates. That is partially due to the official germination test counting rules. We are only allowed to count "normal" seedlings as a germinated seed, which means that the seedling has to have a well developed root system and green leaves. Deformed seedlings are not counted and we are not allowed to count dormant seeds that may be present at the end of the test period. Therefore, dormant seeds present in one test could then germinate and be counted as germinated seedlings in the next test, and then go dormant again in future tests.

My conclusion from the data is that silica gel can extend the longevity of seed stored at room temperature. Refrigerated and frozen seed do not seem to be affected by the presence or absence of silica gel. I will probably continue to test these lots every six months until they all "zero-out" probably around the year 2000 and will write a final article at that time.

Genetic Changes

November 24, 1994 I took samples from the remaining viable seeds of the 1988 crop *Bromus carinatus* and *Elymus glaucus* and planted seed in potting soil in 7"x8"x5" deep planting containers. The height of the tallest plants in each container were measured as they grew through spring and their developmental stages are noted in table four.

Abbreviations used in table 4:

- S = Seedlings.
- Sh = Shooting up seedhead.
- F = Flagging. In *Elymus*, a single horizontal leaf at the end of the stem appears that precedes the seedhead.
- H = Heading, seedhead present.
- * = *Elymus glaucus* seed stored at room temperature had lost all viability so could not be included in this test.

Table 4
1988 seeds stored using various methods and planted Nov. 1994 and resultant plants measured during the spring of 1995

dates	<i>Bromus carinatus</i>			<i>Elymus glaucus</i> *	
	Room	Refrig.	Frozen	Refrig.	Frozen
3/12	4"-S	5"-S	3"-S	9"-Sh	9"-Sh
3/21	4"-S	5"-S	3"-S	10"-Sh	9"-Sh
3/31	5"-S	7"-S	4"-S	11"-Sh	10"-Sh
4/8	6"-S	7"-S	5"-S	12"-Sh	12"-Sh
4/14	6"-S	8"-S	6"-S	12"-Sh	12"-Sh
4/23	9"-Sh	9"-Sh	9"-Sh	16"-Sh	12"-Sh
5/4	15"-Sh	16"-Sh	9"-Sh	18"-Sh	16"-Sh
5/11	24"-Sh/H	24"-Sh/H	14"-Sh	18"-F	16"-F
5/20	32"-H	29"-H	21"-H	27"-H	22"-H
5/28	36"-H	35"-H	26"-H	36"-H	30"-H
6/7	40"-H	39"-H	33"-H	40"-H	34"-H

My conclusion from this test is that there is some sort of change in the native grass seed in storage which affects the height of the plants. Measuring the plants on June seventh, both the *Bromus carinatus* and *Elymus glaucus* frozen seed produced plants which grew 85% shorter than room temperature or refrigerated seed.

An important set of questions arise from this experiment: if we put native grass seed in long term storage, will we be create new genotypes, different at least in height from the original populations we put into storage? Will these altered traits be fixed?

Aside from the differences in plant height, there did not appear to be other variations in the grass plants that we grew from the stored seed.

Ecotypical Variations—The Fog Populations

In 1991, my wife Sue and I traveled through the nine counties of the San Francisco Bay area and covered 5,000 square miles to systematically collect seed samples of *Bromus carinatus* and *Elymus glaucus*. Using our G.R.I.D.TM (Grass Relic Identification) protocol, we divided the nine county area into 16 by 16 mile grids (250 square mile squares) and collected seed samples from at least one *Bromus* and one *Elymus* population from each grid square.

We collected over 70 populations of *Bromus* and *Elymus* seed samples, dried the seeds and stored them in low humidity (35-40%) and at room temperature (50-85°F) from 1991 to 1994. In February 1994 I withdrew samples of 34 populations and tested them for germination on top of cotton. The results of those tests are shown in tables 5, 6, 7 and 8. Where a test was not conducted, a dash appears in that column.

In October, 1994 I planted a common garden study of 65 populations of the *Bromus* and *Elymus* that we had collected in 1991. I sowed them in wood flats 1 ft.x2 ft.x4 inches deep in Supersoil® potting mix (Supersoil® is a registered trademark of Rod McLellan Company). An equal measured amount of seed was sown in each flat and a month after sowing I estimated the percentage of seed that had germinated, and these results are shown in Tables 5, 6, 7, and 8.

Table 5

Bromus carinatus of the San Francisco Bay area, populations retaining good viability after four years stored at room temperature and low humidity with greater than 25% germination, sown Oct. 1994,

Lot	County	Locale	germination 2/94 test	garden 11/94
430	Alameda	Anthony Chabot	65%	60%
441	Alameda	Calaveras Res.	65%	70%
419	Alameda	Dublin Canyon	—	45%
440	Alameda	Sunol	100%	40%
416	Contra Costa	Mt. Diablo	100%	65%
402	Marin	Forest Knolls chert	50%	68%
453	Napa	Mt. Veeter Rd.	50%	58%
436	San Benito	La Gloria Rd.	25%	69%
374	San Mateo	Half Moon Bay Rd.	—	38%
388	San Mateo	King's Mtn. Rd.	75%	25%
446	Santa Clara	Hecker Pass	—	35%
391	Santa Clara	Page Mill Rd.	—	39%
393	Santa Clara	Page Mill/Alpine	75%	40%

Table 6

Elymus glaucus of the San Francisco Bay area, populations retaining good viability after four years stored at room temperature and low humidity with greater than 25% germination, sown Oct. 1994,

Lot	County	Locale	germination 2/94 test	garden 11/94
442	Alameda	Calaveras Res.	75%	55%
429	Alameda	Chabot	75%	40%
414	Contra Costa	Mt. Diablo	25%	33%
452	Napa	Mt. Veeter glaucus	75%	45%
451	Napa	Mt. Veeter jepsonii	100%	90%
443	San Benito	Cienega Rd.	50%	60%
445	Santa Clara	Hecker Pass	75%	100%
390	Santa Clara	Page Mill Rd.	100%	60%
394	Santa Clara	Page Mill/Alpine	—	75%
370A	Santa Clara	Stanford full shade	—	40%
370B	Santa Clara	Stanford part shade	—	75%
307C	Santa Clara	Stanford full sun	—	75%
444	Santa Clara	Uvas Creek	75%	38%
449	Santa Cruz	Eureka Cyn. Rd.	50%	45%

Table 7

Bromus carinatus of the San Francisco Bay area, populations retaining good viability after four years stored at room temperature and low humidity, with less than 24% germination, sown Oct. 1994,

Lot	County	Locale	germination 2/94 test	garden 11/94
369A	Alameda	Berkeley	50%	0
369B	Alameda	Hwy 84	25%	0
422	Alameda	Lake Chabot	0	0
428	Alameda	Pinehurst	—	21%
426	Alameda	Skyline	0	0
425	Alameda	Skyline	50%	0
407	Marin	Forest Knolls	—	0
405	Marin	Forest Knolls serp.	—	15%
433	San Benito	Cienega Rd.	—	0
359	San Francisco	Portrero Hts.	50%	15%
354	San Francisco	Presidio	25%	7%
356	San Francisco	Presidio	0	11%
353	San Francisco	Presidio	0	0
455	San Francisco	Sutro Heights park	0	0
357	San Francisco	Twin Peaks	0	3%
379	San Mateo	Higgins Rd.	—	0
386B	San Mateo	Lobitos Creek	—	0
386A	San Mateo	Lobitos Creek	—	0
381	San Mateo	Purisima Rd.	0	0
420	San Mateo	San Bruno Mtn.	0	0
396	San Mateo	Stage Rd.	25%	0
383	San Mateo	Verde Rd.	—	0
395	Santa Clara	Alpine/Page Mill	50%	0
364	Santa Clara	Palo Alto	—	0
366	Santa Clara	Palo Alto	50%	0
447	Santa Cruz	Corralitos	25%	0

Table 8

Elymus glaucus of the San Francisco Bay area, populations retaining good viability after four years stored at room temperature and low humidity with less than 25% germination, sown Oct. 1994,

Lot	County	Locale	germination 2/94 test	garden 11/94
424	Alameda	Skyline Dr.	—	0
438	Alameda	Sunol	75%	0
404	Marin	Forest Knolls serp.	100%	0
409	Marin	Tiburon serpentine	75%	0
460	San Mateo	San Bruno Mt.	0	0
435	San Benito	Hwy. 25	0	0
456	San Mateo	Butano State Park	25%	0
377	San Mateo	Hwy 92	—	0
384	San Mateo	Verde Rd.	—	0
443	Santa Clara	San Felipe Rd.	50%	0
457	Santa Cruz	Empire Grade	100%	10%
458	Santa Cruz	Jamisson Creek Rd.	75%	0

Results show that *Bromus carinatus* and *Elymus glaucus* populations which occur in the fog belt have shorter longevity than inland populations. This is clearly illustrated in the maps (figures 1 and 2) which divide the populations precisely along the summer fog zone into viable and marginally / non-viable populations, after the seeds have been stored for four years at room temperature.

This lack of longevity in the fog populations makes sense for the survival of those grasses. If seeds are constantly in a moist environment, why develop a hard seedcoat to keep out moisture, thereby increasing longevity? It would be a better survival strategy to germinate readily and sacrifice longevity.

ECOTYPICAL VARIATIONS IN FOG VS. INLAND POPULATIONS AS EXPRESSED IN THE VIABILITY OF SEED AFTER FOUR YEARS ROOM TEMPERATURE STORAGE.



Figure 1
BROMUS CARINATUS
Seed stored for four years at room temperature, and the populations with viable or marginally/non-viable seed, divide along the fog belt line.

Shaded areas = seed germination marginal to non-viable (0-24%)
Sample point data from Tables 5-8 Copyright © 1995 Craig Dremann

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ELECTION RESULTS

1995-1996 BOARD OF DIRECTORS

The election of officers and members-at-large by the membership of the California Native Grass Association was completed on July 31, 1995. The following individuals were elected and will begin serving their terms on the CNGA Board of Directors on January 1, 1996.

President-Elect (1996): John Menke

Secretary (1996): Phil Hogan (re-elected)

Treasurer (1996): Andrew Dyer (re-elected)

Members-at-Large (1996-7): John Anderson, Glen Holstein, Sally Walters

Amendment of Bylaws: Approved

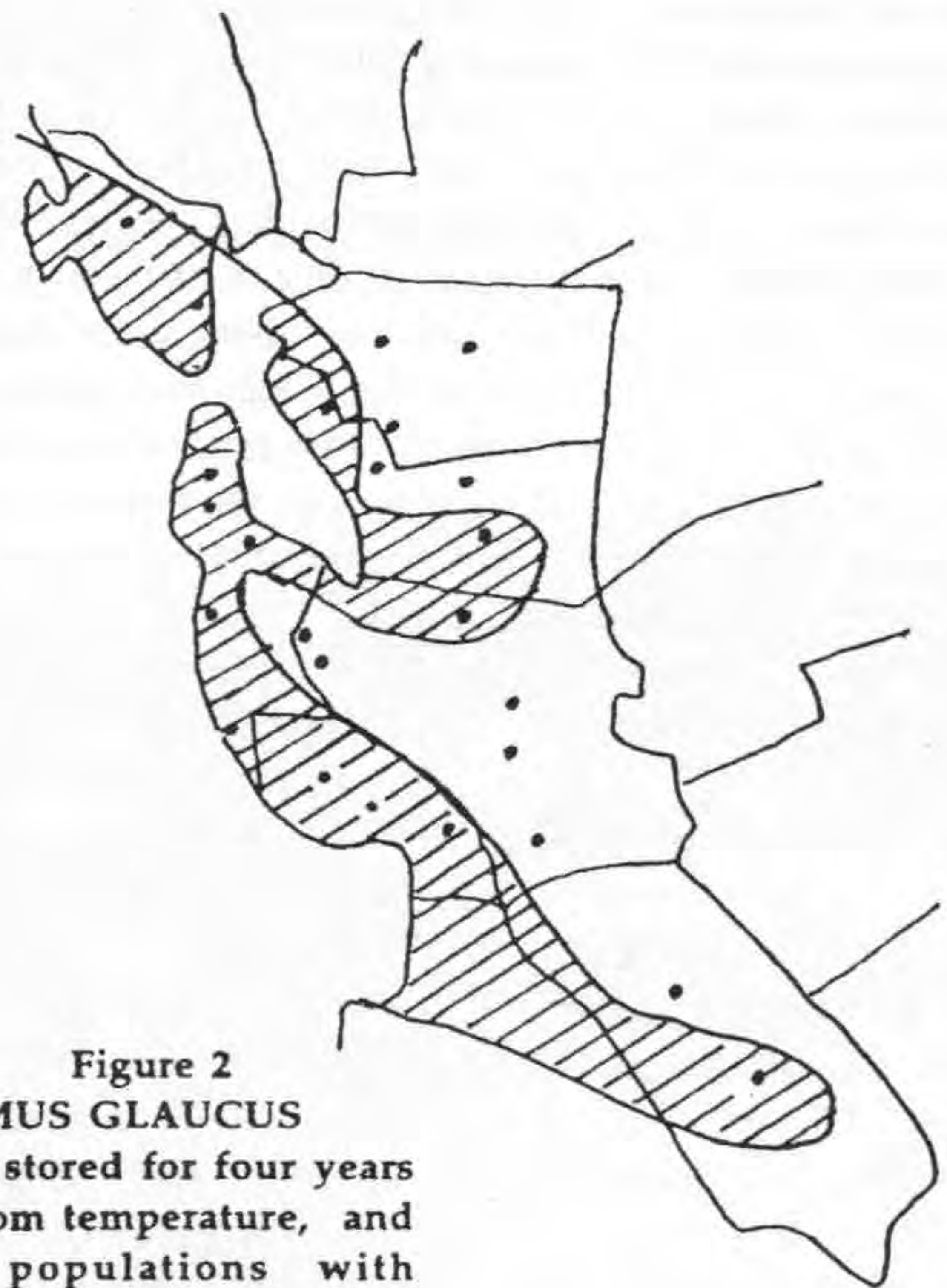


Figure 2
ELYMUS GLAUCUS
Seed stored for four years at room temperature, and the populations with viable or marginally/non-viable seed, divide along fog belt line.

Shaded areas = seed germination marginal to non-viable (0-24%)

Sample point data from Tables 5-8 Copyright © 1995 Craig Dremann

President's Address

Dan Strait

As I write this message, we are busy arranging speakers for the California Native Grass Association 1995 Annual Meeting to be held Friday, November 3rd at the Beverly Garland Hotel in Sacramento. You can read more about the details of this meeting and how to register for it elsewhere in this issue of *Grasslands*. I thought I would spend most of this column discussing the meeting and some of the objectives we hope to accomplish by holding the meeting in a manner that is somewhat different from previous years.

The most notable difference from past Annual Meetings is that we are going to hold the meeting jointly with the Society for Range Management (SRM). We are going to try this and see how it works. Our decision to hold a joint meeting is a result of input I received from several of our members who feel that CNGA needs to do a better job of networking with other groups with which we share common goals and visions. There are four or five such organizations, one of which is SRM. As indicated by the theme of last spring's Field Day when we focused on the use of livestock to benefit native grasses many of us in CNGA are spending a considerable amount of time thinking of native grasslands as rangelands. If we are to see the restoration of large contiguous stands of native grasses, then there are going to be times when we have to think of native grasslands in terms of its value as rangeland. I think a joint meeting with SRM will be a good forum in which to explore that concept.

The overall theme of the Annual Meeting is "Statewide Policies and Trends in the Restoration and Management of Native Vegetation". We will address different aspects of that theme in three sessions. In the first Session we will examine what policies have been established by agencies regarding the use of native grasses and other native plant products. Have agencies established policies favoring the use of native species? If so, or "if not", have there been any notable trends in the direction of emphasizing native plant species? What are some of the economic concerns when it comes to the use of natives vs non natives? In Session II we will hear about some current topics of research in the area of native vegetation, restoration and management. And because most native grass restoration is being done on private lands, Session III will focus on the types of restoration and management that is being done by private land owners. To close out the day we will present a "plant materials producers/marketers roundtable". Our approach will be to organize a panel of some of the State's major producers and marketers of native plant materials and explore how far we have come in the last decade in terms of availability, price, etc. What have been the major trends in the native plant products industry? Has the price of native grass seed, transplants, etc. improved appreciably in recent years? What are the new technologies? What problems and obstacles remain? We'll hear a brief statement from each member of the roundtable, then let the discussion take its course with an opportunity for questions from the audience. Certainly there will be disagreements among the panel members on some points, but this is an opportunity that shouldn't be missed. I encourage each of you to attend what is sure to be a very interesting and informative meeting, and one that will be very different from past meetings.

Elsewhere in this issue of *Grasslands* you will find the results from our July elections. Let me take this opportunity to congratulate John

Menke, our President-Elect for 1996, and John Anderson, Glen Holstein, and Sally Walters as new Members-at-Large to the Board of Directors for 1996-97. We had a very impressive slate of candidates this year, and I am looking forward to working with the new Board Members in 1996. I would like to thank Charlice Danielsen, Richard Reiner, and Kevin Rice whose terms as Members-at-Large will end in 1995, for their support and participation... it has been greatly appreciated.



VACANCIES IN CNGA

CNGA has to a position to fill-- the I&E Committee Chair. 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, and Caroline Shoulders has done a wonderful job for us for almost two years now. It is now time for this job to pass to another CNGA volunteer. The job usually requires a few minutes a week, responding to letters of request. At certain times it is much more demanding, requiring organization of a workshop or display materials. 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. The ID Workshops and Field Days have been of immense value to this organization and we need someone to rise to the challenge--if you are interested, please contact Dan Strait (his office phone number is on the Board page).



Landscape Maintenance Manager: Full-time, hands-on manager wanted to manage and coordinate maintenance of corporate grounds consisting of 5 acre manicured garden and lawn area, 110 acre native grass/oak woodland meadow and 600 tree persimmon orchard. Four year degree and minimum five years work experience in horticulture or related field is required. Applicant must have practical knowledge of native plant horticulture, management, restoration and revegetation in addition to integrated pest management techniques, entomology, soils, turf care, ornamental plant care, orchard care, fertilization, pesticide application, herbicide application and operation of farm equipment. Experience in administering contracts, supervising maintenance personnel and working with landscape architects' construction documents is also required. Salary will be based on experience. Send letter and resume including salary requirements and availability to Lee W. Salter, President & CEO, The McConnell Foundation, P. O. Box 991870, Redding, CA 96099-1870.

The California Native Grass Association Holds its Yearly Grass Identification Workshop

On Saturday, May 6 and 7, 1995, the California Native Grass Association held its yearly Grass Identification Workshop. This year the workshop was held at the Rancho Santa Ana Botanic Garden in Claremont. The Garden was an excellent place to hold the workshop because of the excellent facility and because the Garden was able to provide the necessary equipment, particularly the dissecting scopes and laboratory supplies.

As in previous years, the workshop began on Saturday morning by concentrating on the taxonomy and identification of grasses using informational handouts and the Jepson Manual of the Higher Plants of California. Travis Columbus of the Santa Ana Botanic Garden was the instructor for the taxonomy section. Travis knows the grasses of California extremely well and was able to guide the workshop attendees through the dichotomous keys of the Jepson Manual using fresh materials from a number of common genera of grasses. After a full day of taxonomy and review, Tom Griggs of The Nature Conservancy closed out the day with a slide presentation focusing on the grasses and other plant communities of the Conservancy's Santa Rosa Plateau Natural Area. On Sunday morning Travis provided some additional taxonomic training and information before the class headed out to the Santa Rosa Plateau. Tom Griggs was our guide for the field trip. The *Nassella pulchra* was in full bloom on the Plateau as were other species of grass and other plants. The overcast weather was a bit of a surprise, but it kept the day pleasantly cool. After a full day of walking the Plateau, most workshop attendees were ready to head home, with most feeling that they got more than their money's worth over the two days. The CNGA would like to thank Travis Columbus, Tom Griggs, Lorrae Fuentes, and the Rancho Santa Ana Botanic Garden for their participation and support of CNGA.

BUNCHGRASS OBSERVATIONS

California's bunchgrass has been the least known or studied plant community in North America, and this section allows you to share your observations with others so that our grass-roots knowledge can spread.

Grasses of European Origin and their Impact upon California Bunchgrass (California)

Craig C. Dremann, Redwood City Seed Company, Box 361,
Redwood City, CA 94064, 415/325-7333, FAX 415/321-8333

California's original grass cover of perennial bunchgrass prairies and the bunchgrass understory in the oak woodland areas has been replaced by introduced annual grasses, principally of European origin. A review of literature to date gives few clues how this replacement occurred so rapidly and so thoroughly over an area as huge as the entire state of California.

Plowing and cultivation of the land immediately destroyed the bunchgrasses, and grazing the unplowed land has undoubtedly been an important factor in exterminating the former prairies. The sheer numbers of cattle introduced into the state put back onto the land a level of grass-eating animal biomass that has not been seen since before the end of the last Ice Age, about 10,600 years ago. Currently cattle make up 48% of California's animal biomass and their associated humans and their other domesticated animals make up another 48%!

Grasslands

However, could the introduced European grasses themselves also have a direct genocidal effect on the California prairie? That was the purpose of the following experiment.

Seeds of needlegrass (*Nassella/Stipa pulchra*) seedlings were grown and transplanted into four-inch deep redwood flats measuring one by two feet and filled with a weed-free potting soil. Eight needlegrass seedlings were planted per flat, spaced six inches apart in each direction. In the same flats as the seedlings, I sowed needlegrass seeds at the rate of 50 seeds per square foot (=50 pounds per acre).

One flat planted with needlegrass plants and viable seed was set aside as the control, and seven other flats were each sown with a different European grass found naturalized in the state or used in commercial mixes: 'Blando' brome (*Bromus hordeaceus/mollis*), 'Zorro' fescue (*Vulpia myuros*), Foxtails (*Hordeum hystrix*), White or Cultivated oats (*Avena sativa*), Annual ryegrass (*Lolium multiflorum*), perennial ryegrass (*Lolium perenne*), and 'Escort' wheat sterile hybrid (*Triticum x*).

Flats were sown in mid-March and measured in mid-July. The measurement of the effect of the European grasses upon the needlegrass plants was done by first removing all the European grass seedlings from the flats and photographing the remaining needlegrass plants. The vertical silhouettes of the plants were then measured from the photographs in square centimeters, with only the opaque centers of the plants measured. Dead or extraneous single leaves were not measured. The control needlegrass plant average measurement was 172 square centimeters per plant. All other needlegrass plants were measured against this control average, and the resultant negative effect is listed as a surviving percentage of the control.

New needlegrass seedlings were counted from the 50 seeds that had been planted per square foot in each flat. The control flat yielded seven new seedlings per square foot. The European grass sowing rates are in the equivalent of pounds per acre or seeds per square foot.

CONTROL: NEEDLEGRASS (*Nassella/Stipa*)

50#/a needlegrass survival: 100%

'BLANDO' BROME (*Bromus hordeaceus/mollis*)

10#/a needlegrass survival: 7%

20#/a needlegrass survival: 0

30#/a needlegrass survival: 0

50#/a needlegrass survival: 0

'ZORRO' FESCUE (*Vulpia myuros*)

2.5#/a needlegrass survival: 21%

5#/a needlegrass survival: 24%

10#/a needlegrass survival: 12%

20#/a needlegrass survival: 16%

FOXTAILS (*Hordeum hystrix*)

140/sq.ft needlegrass survival: 7%

280/sq.ft needlegrass survival: 1-5%

WHITE OATS (*Avena sativa*)

20#/a needlegrass survival: 8%

50#/a needlegrass survival: 11%

100#/a needlegrass survival: 7%

250#/a needlegrass survival: 19%

Article continued on page 10

California Native Grass Association/Society for Range Management Joint Annual General Membership Meeting November 3, 1995 Beverly Garland Hotel, Sacramento

Statewide Policies and Trends in the Management and Restoration of Native Vegetation

At this year's meeting CNGA will be joined by the Society for Range Management in an exploration of policies that have been established and trends that have occurred among agencies, researchers, and private landowners who are using native plant materials in revegetation and restoration efforts. Agencies have established policies on the use of native plant materials. What are those policies, why were they established, and how are they being implemented? What type of research is taking place regarding the restoration and management of native vegetation? What are private landowners doing to restore and manage native vegetation on their lands, and what do the plant communities look like as a result? We will also explore how the native plant products industry has developed over the last 5 to 10 years. What has been the trend in the price of native grass seed, and in its availability? What are the new technologies? What obstacles remain to the large scale restoration of native grasslands? These and other topics will be explored during the course of the meeting.

Agenda

Morning

7:30 - 8:30 Check in

8:30 - 8:45 Welcome: Daniel Strait, President - California Native Grass Association
Lynn Huntsinger, President - Society for Range Management

Session I - Policies and Trends in Native Vegetation Restoration and Management

8:45 - 9:05 Recently Enacted USFS and BLM Policies Regarding the Use of Native Plants
David Diaz, US Forest Service

9:05 - 9:25 Reestablishing Native Environmental Complexes in California State Parks
Rick Rayburn, California State Department of Parks and Recreation

9:25 - 9:45 CalTrans Policies, Practices, and Procedures in the Use of Native Plants
John Haynes, California Department of Transportation

9:45 - 10:05 The CRP in San Luis Obispo County - A Report on the Status of the Land and the Program
Margy Lindquist, USDA-NRCS

10:15 - 10:45 Break

Session II - Research Trends in the Restoration and Management of Native Vegetation

10:45 - 11:05 Grassland Restoration and Management — Research Trends Past to Present

John Menke, UC Davis

11:05 - 11:25 A Research Overview of Revegetation after Fire

Emily Roberson, California Native Plant Society

11:25 - 11:45 The Problem of Non-Indigenous Plants and Animals in the Management and Restoration of Protected Wetlands

Tom Dudley, UC Berkeley

11:50 - 1:45 **Lunch** - Separate Business Meetings for CNGA and SRM

Afternoon

Session III - Private Landowner Perspectives in Native Vegetation Restoration and Management

1:45 - 2:05 Holistic Resource Management (speaker to be announced)

2:05 - 2:25 Cattle Grazing Suitability: A Function of Environmental Impacts/Policy Consistency and Resource Enhancement

Orrin Sage, Sage Associates

2:25 - 2:45 Changing Attitudes: Ecological Restoration in Ranching in Coastal California

Liza Prunuske, Prunuske-Chatham, Inc.

2:45 - 3:05 The Nature Conservancy's Approach to the Restoration and Management of Native Plant Communities

Robin Wills, The Nature Conservancy

3:15 - 3:45 **Break**

3:45 - 5:00 **Native Plant Producer/Marketer Roundtable**

Featuring representatives from: Conservaseed, Cornflower Farms, Hedgerow Farms, Pacific Coast Seed/S & S Seeds, Pacific Open Space, Redwood City Seed

Again this year, the Annual Meeting will include a vendor's program as a concurrent part of the meeting, including educational posters and commercial displays of plant materials and products. For information on commercial displays contact Bruce Berlin, c/o S & S Seeds, P.O. Box 1275, Carpinteria, CA 93013 or call (805) 684-0436. For information on poster presentations contact Dan Strait at P.O. Box 254882, Sacramento, CA 95865-4882 or call (916) 979-2085.

The lunch period and the morning and afternoon breaks are intended to provide opportunities to visit the vendor's displays and educational posters. To encourage this activity, beverages will be served in the display area.

Early registration is encouraged. This helps the program committee and planning efforts, and saves money. Registration after October 27 will cost an additional \$10 (see separately enclosed registration form).

A buffet luncheon will be served at noon. The price for this delicious assortment of comestibles, which includes a variety of salads, beverages, desert, and one hot entrée (vegetarian available) is \$15. We encourage everyone to join us for lunch. It provides an excellent opportunity to visit with your fellow CNGA members, and the sale of food is what helps pay for the meeting rooms.

A block of 20 rooms has been reserved for registrants staying overnight. The rates are \$60 (single and double) plus tax. For reservations call 1-800-972-EXPO. Tell Reservations that you are attending the CNGA meeting on November 3. A complimentary airport shuttle is available to the hotel.

RYEGRASS ANNUAL (*Lolium multiflorum*)

10#/a	needlegrass survival: 10%
20#/a	needlegrass survival: 3%
30#/a	needlegrass survival: 1.7%
50#/a	needlegrass survival: 1%

RYEGRASS PERENNIAL (*Lolium perenne*)

10#/a	needlegrass survival: 5%
20#/a	needlegrass survival: 5%
30#/a	needlegrass survival: 5%
50#/a	needlegrass survival: 5%

WHEAT HYBRID 'ESCORT' (*Triticum x*)

50#/a	needlegrass survival: 13%
150#/a	needlegrass survival: 2%
300#/a	needlegrass survival: 1%
600#/a	needlegrass survival: 1%

References

Dremann, Craig C. 1989. Grasses of European Origin and their Impact upon California Bunchgrass (*Stipa pulchra*). 6 pages. Redwood City Seed Company, Redwood City, California.

Star Thistle control with Grasses (California)

Craig C. Dremann, Redwood City Seed Company, Box 361, Redwood City, CA 94064, 415/325-7333, FAX 415/321-8333

Yellow star-thistle (*Centaurea solstitialis*) has exploded as a naturalized weed in California and parts of the West. Could observations in the field between the interactions between yellow star-thistle and grasses give us clues what condition may inhibit the spread of star-thistle? Observations were made in May of the grass/star-thistle interactions:

Where no grass was present, star-thistle occurred in nearly pure stands, with a maximum density of one plant per square inch (130 per square foot), and plants were four to five inches tall. The ground has no mulch cover and measurement with a light meter showed the reflected light from the soil around the plants at F2 to be 1/1000th of a second when set at ASA 25.

Perennial ryegrass (*Lolium perenne*) and 'Zorro' fescue (*Vulpia myuros*) inhibited star-thistle so that there were only 12 seedlings per square foot, and the amount of shade had doubled to measure at F2, 1/500th second at ASA 25.

Wild oats (*Avena fatua*) nearly eliminated star-thistle plants, with only one plant per square foot present. Even at low densities of oats, with wide gaps of 4-5 inches between plants, star-thistle can be controlled. The shade produced by the wild oats appeared to be the key inhibitor, with four times as much shade under the oats compared to bare ground, measuring at F2 to be 1/250th second at ASA 25.

Conclusion is that re-establishing a healthy grass cover can shade the ground during star-thistle growth and reduce or eliminate the weed. Ranchers and land managers trying to eradicate star-thistle should not graze infected areas, but if you desire to utilize the forage, cut and bale the grass, leaving a minimum of five inches of stubble in May or June, and do not cut before mid-May or the shade of the stubble may not be adequate to inhibit the star-thistle.

A faster method of elimination of small stands is by using wheatstraw mulch to smother young star-thistle seedlings. I tested

this theory in November when the star-thistle seedlings were about an inch tall and applied six different rates of wheatstraw mulch, onto a pure stand of seedlings, and the results were measured in June of the next year. Measurements show bales of wheatstraw per acre, the depth of the mulch in inches, and the percentage of star-thistle cover in June:

No bales/a	CONTROL:	96%
50 bales/a	1/2" deep mulch	90%
100 bales/a	1" deep mulch	90%
180 bales/a	1.8" deep mulch	22%
250 bales/a	2.5" deep mulch	12%
350 bales/a	3.5" deep mulch	2%
500 bales/a	5" deep mulch	0%

References

Dremann, Craig C. 1992. Star Thistle control with Grasses. 4 pages. Redwood City Seed Company, Redwood City, California.

RELIC PRAIRIE FINDER

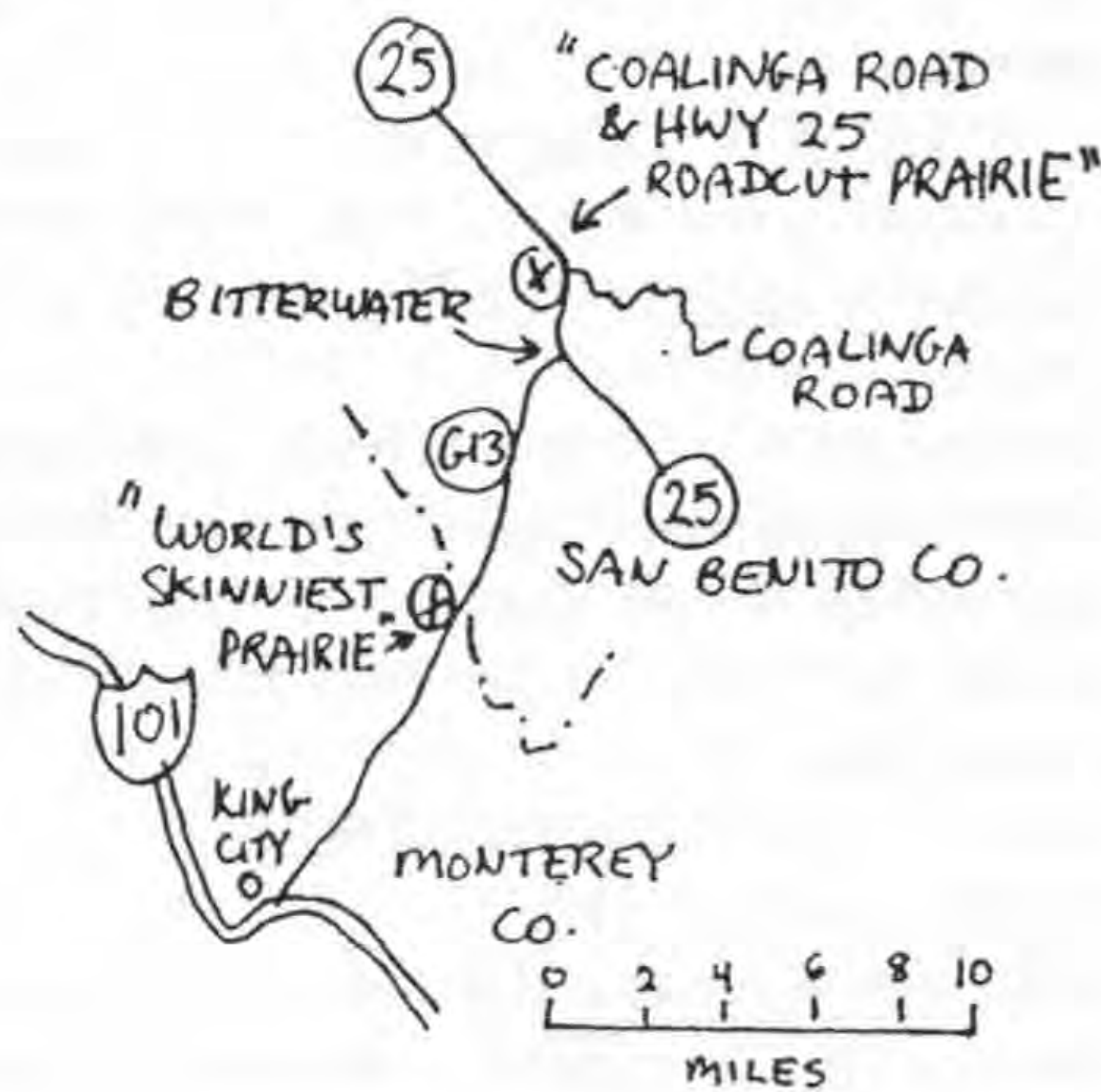
This section is for readers to describe relic prairies that have been found so that other Grasslands readers can go visit them and enjoy them. A relic prairie is defined as a contiguous grassland of any size of one species of native grass, and also includes at least one other native grassland member 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: "The World's Skinniest Prairie"
- County: border of Monterey and San Benito Counties
- Discoverers: Craig & Sue Dremann of the Redwood City Seed Co., while out surveying for relic prairies, June, 1995.
- Location: County Road G-13 also called the Bitterwater-King City Road., 7.1 miles west of the intersection of Cal. Hwy 25 at the town of Bitterwater, a few feet west of the Monterey/San Benito county line.
- Size: one mile long along roadside.
- Quality: Pristine, no evidence of grazing, almost 100% pure.
- Species: *Stipa (Nassella) cernua*
- Soil: Rock of roadbed.
- Ownership: County Public works probably.
- Why is it so unusual? The Bitterwater-King City Road was repaved recently and a new asphalt drain ditch was put in along the north side of the road edge. There is a 4-6" wide space between the roadbed and the asphalt drain ditch. *Stipa* seed has colonized the space between the roadway and the ditch, creating a pure native

Report on the CNGA Spring Field Day

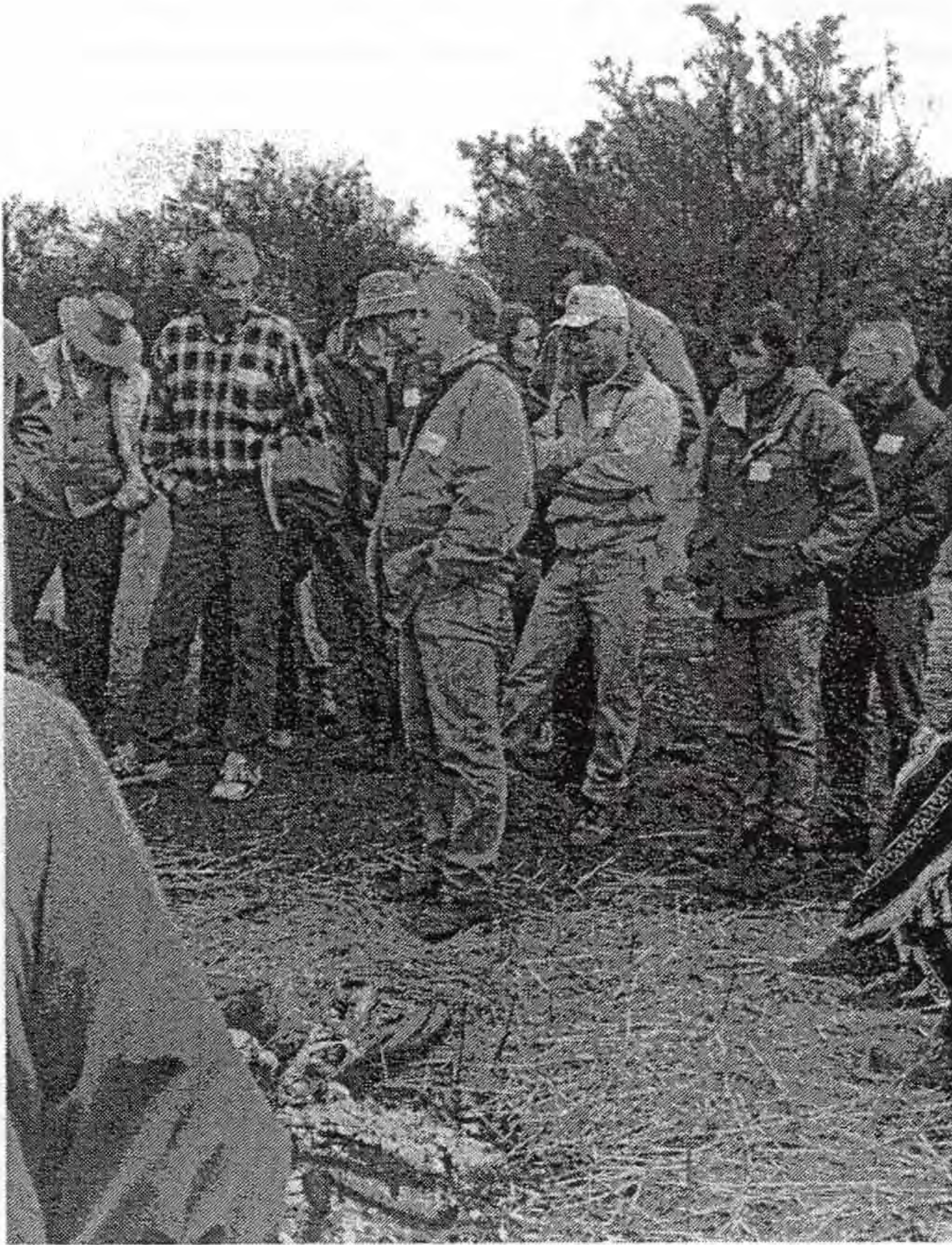
grass stand about one mile long and only 4-6" wide! This could become a fascinating study of watching a prairie develop from scratch. The "Roadcut Prairie": There is a second prairie to see if you are already out looking for the "World's Skinniest Prairie." That's the "Coalinga Rd/Hwy 25 roadcut prairie", about 9 miles further east. *Stipa (nassella) cernua* in all its natural glory at the intersection of Cal. Hwy. 25 and Coalinga Rd., on a roadcut a few feet west of the intersection.

Further info: Craig Dremann, Redwood City Seed Co., P.O. Box 361, Redwood City, Cal. 94064 (415) 325-7333



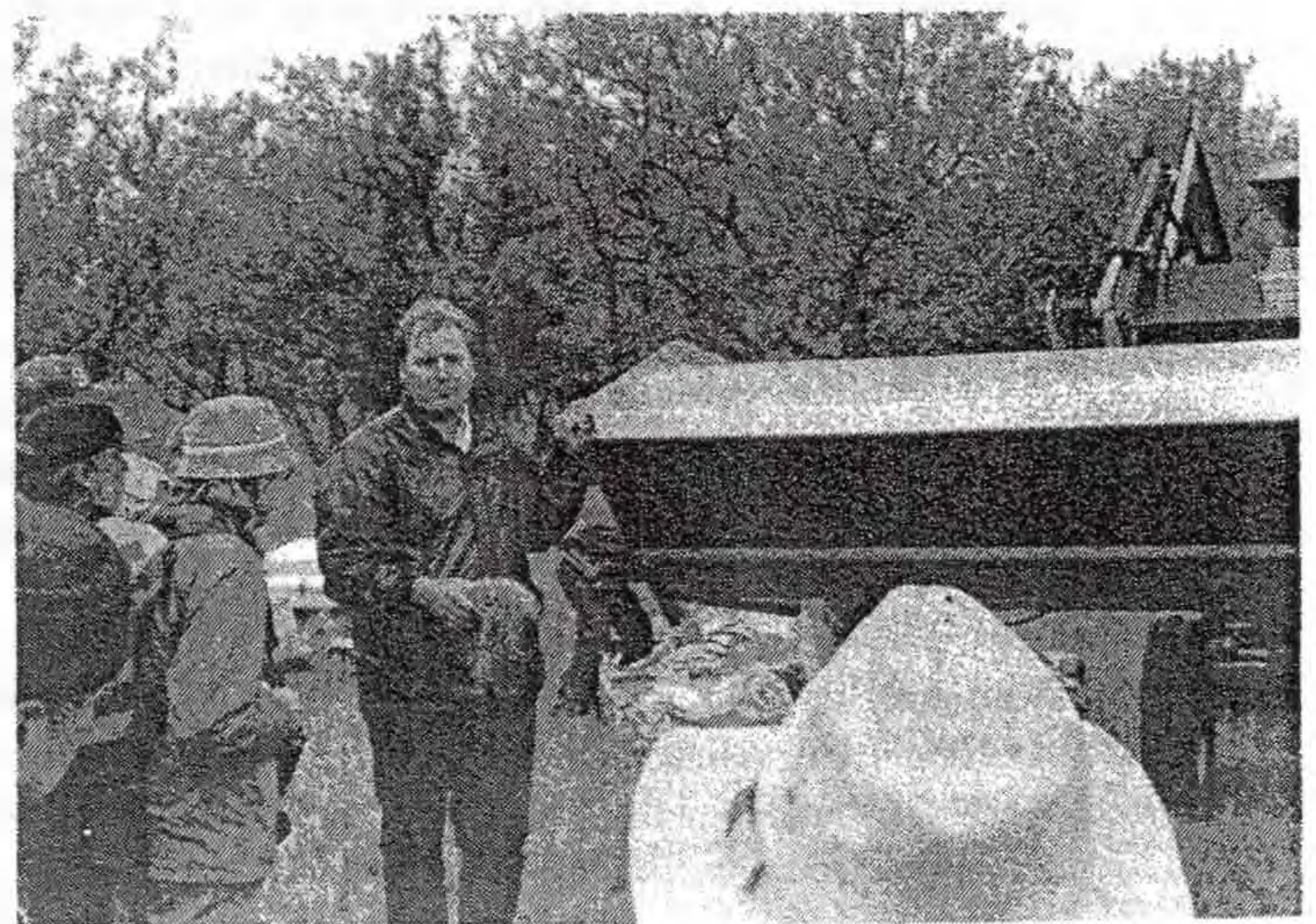
On Saturday, May 13th, the California Native Grass Association held its annual Field Day at John Anderson's Hedgerow Farms in Winters, Yolo County. Approximately 50 members of CNGA and the public turned out on a cold and rainy day to hear several knowledgeable speakers address the theme of the day "Livestock and Native Grass Interactions". Thankfully there was a large tent and a warm fire to keep the conditions more or less comfortable. The keynote speaker of the morning session was Elizabeth Painter, Ph.D., of the Jepson UC Herbarium. Her presentation centered around the question of "Does Grass Need to be Eaten?" Following Elizabeth was a panel discussion in which members of the panel addressed various aspects of the topic of "How to Manage Native and Annual Grasses as part of a Successful Livestock Grazing Operation". Members of the panel included Wendell Gilgert of the GlerLn/Butte County Office of the USDA Natural Resources Conservation Service (NRCS), Richard King of the Sonoma County NRCS, Tony Nelson of The Nature Conservancy's Carrizo Plain Natural Area, David Pratt of the Solano County Coop Extension Service, and George Work, a holistic resource management rancher based in San Miguel. About halfway through the panel discussion everyone moved to the fire pit. With the possible exception of those individuals who ended up standing in the smoke, it was a great way in which to discuss the varying aspects of the use of livestock to manage native grasses.

After lunch, catered by the Buckhorn Restaurant out of Winters, the afternoon was spent exploring the different activities that are ongoing at Hedgerow Farms. The farm had sheep grazing in one of the native grass seed production fields. The results of the grazing trial were impressive. The animals appeared to be selecting the weedy forbs over the bunch grasses. Other afternoon demonstrations included tours of the seed production fields; roadside management and research trials, upland, riparian, and wetland habitat restoration trials, equipment demonstrations; and more. The festivities closed with a barbecue dinner around the fire pit with food again provided by the Buckhorn Restaurant. The weather even turned nice in the afternoon. All in all it was a very educational and satisfying day.



Field Day: Fig. 1. Engaged discussion around the fire was part of the spring field day.

Field Day: Fig. 2. Paul Kephardt explains harvesting needlegrass with the flail vac harvester.



MINUTES, BOARD MEETING, 4/13/95

U.S. FISH AND WILDLIFE SERVICE, SACRAMENTO

President Dan Strait commenced the board meeting at 10:12 a.m. Those present at the meeting were: Dan Strait, Andy Dyer, Phil Hogan, John Anderson, Tony Norris, Kitren Weis, Dave Dyer. A quorum was present.

TREASURER'S REPORT

\$20,955.61: total assets, including the TRUAX® drill; \$14,548.27: cash in bank; \$1,827.48: net income, year to date (3/31/95). Transition from past-treasurer, Joni Janecki, to him is complete. Andy reviewed the CNGA proposed budget for 1995. Weis proposed adding money for upgrading the Macintosh computer hardware and software for better efficiency in producing *Grasslands*. The working budget was adopted by vote, with flexibility for printing costs and other unanticipated needs.

GRASS ID WORKSHOP MAY 5 & 6

Discussion centered on low registration numbers and how to better market the workshop. Weis suggested that *Grasslands* be distributed to University plant science libraries. Discussion on need to send flyers to botanical gardens, local chapters of the Calif. Native Plant Soc., and related organizations. **Follow-up action needed:** Strait, Weis, and Hogan will work on methods to better market the workshop for next year. Strait and Stomberg will get together to build a list of related groups to target.

Weis suggested writing an article for the "Sunset Magazine". Hogan stated that CNGA needs an overall, comprehensive marketing plan. Hogan volunteered to assist Carolyn Shoulders with I&E Committee work. Andy Dyer suggested that CNGA needs to advertise future CNGA workshops at existing ones. While there were 31 registrants at last year's workshop, consensus was that this year's workshop must be held even with very low registration. Strait stated that the Friends of the Jepson Herbarium are sponsoring a similar workshop that has a waiting list. Weis suggested that CNGA obtain a copy of that waiting list and send CNGA's ID Workshop flyer to them. **Follow-up Action Needed:** Strait will obtain a copy of this list and get flyer sent to them. John Anderson suggested sending the flyers to all federal, state, and local agencies dealing with natural resources. Norris suggested that flyers be sent to the host facility as well for local advertising of workshop.

FIELD DAY (MAY 13)

John Anderson presented an update on the CNGA Field Day to be held at his Hedgerow Farms. He is working closely with the Buckhorn Restaurant in Winters on meal arrangements. So far, only 11 people have registered for the workshop. Strait said that registration will have to be monitored to see if we have the minimum needed for price breaks from the Buckhorn. Anderson said that there are 15 people that will have meals paid for them (speakers, local arrangement people, etc.). Strait said that flyers were also sent to the CNGA vendor's list, but no vendors have registered yet. **Follow-up Action Needed:** Strait will work with David Gilpin to follow up on getting more vendor participation.

ANNUAL MEETING

Strait stated that this year's Annual Meeting will be cosponsored with the Society For Range Management (SRM) on November 3 at the Beverly Garland Hotel in Sacramento. He said that there will be a \$1500 facility charge from the Hotel that can either be made in cash or purchased in food. There should be about a total of 220 people attending this joint meeting. SRM will hold a separate lunch for their board meeting and an annual awards banquet on Friday evening. SRM usually has about 60-80 people attend their annual meetings.

Andy Dyer stated that CNGA's annual meeting had about 100 registrants last year.

Strait said that the general theme of the joint Annual Meeting for 1995 will be "Agency Use of Native Grasses." He also said that CNGA needs an annual meeting Chair for 1995. He has laid some of the initial groundwork for this year's meeting. Weis suggested that we need to have enough of this year's Annual Meeting planned to be able to advertise it at the Field Day on May 13. Anderson suggested that we have a Call for Papers as well. **Follow-up Action Needed:** Hogan will work with Strait and Weis on this. The Call for Papers will also be inserted into the "Grasslands" as well. Anderson also suggested that the Annual Meeting be advertised to other agencies through e-mail/Internet. **Follow-up Action Needed:** Strait will forward e-mail addresses to Weis. She will send out Call for Papers through Internet.

GRASSLANDS COMPUTER NEEDS

Weis lead a discussion on the need for the *Grasslands* CNGA computer to upgrade both hardware and software for more efficient publication of this newsletter. She needs more storage space, memory, and compatible software. She also could use a phone line for a fax modem, but this would be a lower priority. **Motion:** Dave Dyer moved, seconded by Norris, to authorize up to \$3,000.00 to either upgrade the current system or purchase a new computer. Motion passed by voice vote.

NEW BUSINESS

MEMBERSHIP COMMITTEE

Strait announced that Bob Slayback has agreed to serve as the new Membership Committee Chair. Strait also said that with the mailings he put out, 19 new members have joined CNGA, 64 delinquent members have renewed, and that there are a total of 284 members.

CNGA Corporate Members

Jones & Stokes Associates

CNGA Life Members

John Anderson
Polly Anderson
Sally Casey
Charlice Danielsen
Jim Dekloe
Bob Delzell
Jim Eagan
David Gilpin
Charlotte Glenn
Paul Kephardt
Rod MacDonald
Eugene Majerowicz
Warren Roberts
Vic Schaff
Jacob Sigg
Scott Stewart
David Yam

GOALS AND OBJECTIVES

Strait lead a discussion on the Goals and Objectives of CNGA. Besides just being a good idea to have such a document, Strait also said a document such as this is needed when looking for grant money. Anderson commented that "experimentation and development" of methods of cultivation, weed, control, propagation, and other establishment techniques is beyond CNGA's capability right now. Norris suggested that "facilitation" of these objectives would be a better word. All agreed. **Follow-up Action Needed:** Strait will continue to solicit input on goals and objectives from the Board and from the membership at large.

CENTRAL VALLEY PROJECT (CVP) REQUEST

Strait described a letter he received from the Bureau of Reclamation regarding the development of a critical needs analysis and implementation plan for the CVP interim contract renewals, with reference to the Endangered Species Act. CNGA was invited to provide input to the plan. Ray Griffiths has expressed interest in facilitating CNGA's participation.

USDA AGRICULTURAL RESEARCH SERVICE (ARS) REQUEST

Strait received a request from Glenn Nader of UC Cooperative Extension regarding the proposed closure of the ARS Conservation Biology of Rangeland Unit in Reno, Nevada. Ted Adams had contacted Glenn asking him if he would contact CNGA to write a letter of support for keeping the office open. **Follow-up Action Needed:** Strait will write this letter of support.

BEYOND PESTICIDES REQUEST

"Beyond Pesticides," a coalition of grassroots groups working on pesticide issues, wrote CNGA asking for endorsement of their "Beyond Pesticides" principles and to have CNGA formally associated with their efforts. There was general consensus that CNGA should not sign the endorsement because it is not appropriate for CNGA to support a political lobbying organization and to do so was not in the spirit of the bylaws. If individuals want to endorse, that's OK. **Motion:** Norris moved, seconded by Dave Dyer, to table this request. Passed by voice vote.

OTHER

Norris reported on a meeting he attended in southern California sponsored by the Council for a Green Environment. The meeting was "Greening the Urban Ecosystem," held February 13 and February 14. **Followup Action Needed:** Strait will put this conference on the next CNGA board meeting agenda for further discussion. Strait will also make copies of the conference attendees mailing list and send ID Workshop and Field Day flyers.

ADJOURNMENT

President Dan Strait adjourned the meeting at 12:20 p.m.


BUNCHGRASS OBSERVATIONS by Craig Dremann

The dried biomass produced was weighed after all the plants had died on August fifteenth. I then extrapolated out the dry biomass to pounds per acre:

	Stipa	W.Oats	P.Rye	Blando	Ripgut	A.Rye
Stipa	4,735	—	—	—	—	—
W.Oats	—	9,471	10,419	7,103	10,892	16,101
P.Rye	—	10,419	9,471	12,312	10,892	10,419
Blando	—	7,103	12,312	9,945	12,786	12,312
Ripgut	—	10,892	10,892	12,786	10,892	8,524
A.Rye	—	16,101	10,419	12,312	8,524	12,786

This table was regrettably omitted from *Grasslands V,2*.

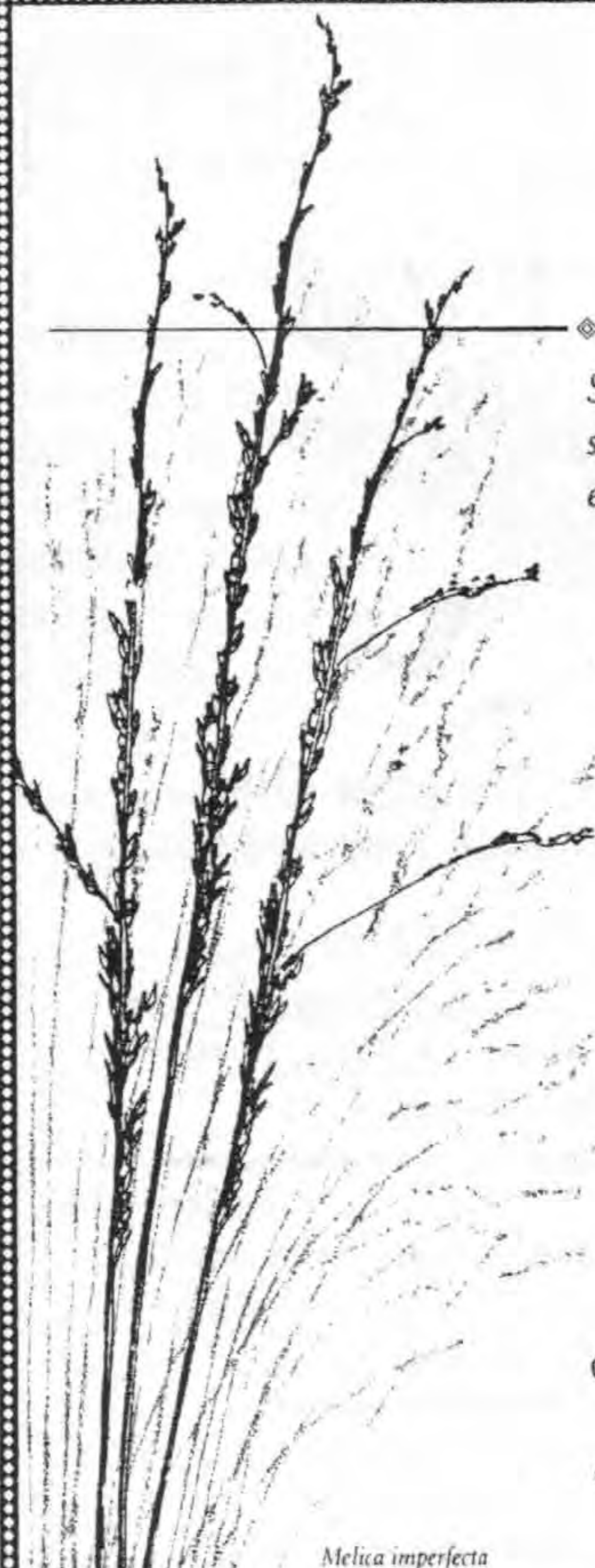
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