



GRASSLANDS

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PLANTING TRIALS FOR NATIVE GRASSES AT LEXINGTON HILLS, FOLSOM, CA, 1990-1995

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Introduction

The Lexington Hills subdivision consists of about 210 ha in the foothills south of Folsom Lake in the City of Folsom. Wetland permits required that about 12 ha of the site be restored to wetlands or left as upland buffer for the wetlands. During construction of the subdivision, the native soils of this area were significantly disturbed or actually excavated to leave exposed subsoil. Native plants soon dominated the wetlands but the upland buffers produced a significant crop of non-native weeds, including large areas dominated by yellow star thistle (*Centaurea solstitialis*). Spring 1990 vegetation surveys found that cover of the thistle ranged from 25% to almost 100% in 8 sample plots randomly located in the uplands¹. Total cover by non-natives averaged 85% in this area. This paper documents our efforts over the 5 years between 1990 and 1995 to develop a native grass cover on these upland areas.

Early Efforts

Mowing has been described as an important tool to control exotics and enhance native grass growth. Flail mowing of the upland areas in the summer of 1990, just after flowering of the thistle, resulted in many species re-flowering below the level of the mower blades. Machine mowing on natural landscapes (as opposed to farm fields) occurs at a relatively high height—typically 10 to 15 cm off the ground—due to surface irregularities. Additionally, mowing on this site appeared to transform yellow star thistle from an annual to a biennial.² Although the upland area was then seeded with a variety of native grasses in the fall of 1990 (*Nasella pulchra*, *Leymus glaucus*, and *Hordeum brachyantherum*) as well as somewhat aggressive native forbs such as yarrow (*Achillea millefolium*), non-native cover in the spring of 1991 remained at the previously recorded levels; the native seeds appeared to be simply “drowned” by the ocean of weed propagules.

Other strategies undertaken in the same period provided more promising results. Test plantings by Dr. Steve Talley and Rod Macdonald of Zentner and Zentner and Everett Butz of Wapunme Nursery in 1990 of plugs³ of creeping wild rye (*Leymus triticoides*) and purple needle grass (*Nasella pulchra*) at Lexington Hills had not resulted in appreciable cover (>5%) but the plantings had relatively high survival (approximately 60%) and growth rates in the midst of the non-natives. We also planted deer grass (*Muhlenbergia rigens*) in 3.8 l (1-gallon) containers along the edges of many seasonal wetlands, inspired by the success of John Anderson with this species at Hedgerow Farms. These also had high survival rates (>80%) and significant new growth. Further, in areas where competition with non-native species was reduced by manual clearing or by fluctuating water levels these grasses appeared to grow quite rapidly (basal diameter increases of 200 to 300% within 3 months, on average).

The First Needle Grass Tests

In July 1992, approximately 0.6 ha of the upland area were mowed and a spray irrigation system installed that would provide full coverage of this “study area”. Irrigation was applied and the resulting growth mowed in late August and treated with a post-emergent herbicide in October. This area was then divided among 8 sample plots, each approximately 750 sq m in extent. Each plot was then treated with a different combination of pre- and

post-emergent herbicides⁴ and irrigation regimes.

Each plot was then planted with almost 2,000 plugs on 0.7 m centers in a 50/50 mix of purple needle grass and nodding needle grass (*Nasella cernua*) in January 1993. Nodding needle grass was added to the planting mix at the suggestion of Dr. Glen Holstein of Zentner and Zentner due to its affinity for rockier soils compared to the relatively heavy clay soils favored by purple needle grass. By late Spring 1993, 6 of the 8 plots had little or no weed growth. However, few native grasses survived due to the affects of the herbicides. The approximately 15% of the plugs that did survive were all nodding needle grass. Additionally, their growth rates were quite high with 100 to 200% increases in basal diameter within 30 to 45 days.

The seventh plot was dominated (80% cover) by weeds. However, the eighth plot had almost no weeds (>5% cover), 50% survival of purple needle grass and almost 100% survival of nodding needle grass. Interestingly, varying irrigation regimes had no significant affect on survival rates for any of the sample plots⁵.

Final Tests

The study area was mowed with weed-eaters in September 1993. In November, the seven plots without significant cover by native grasses were sprayed with a post-emergent herbicide. In December, 20,000 plugs of nodding needle grass were planted by 5 people in 2 days. In March 1994, 25% of the study area was treated with a pre-emergent herbicide and irrigated. No post-emergent was applied.

Vegetation sampling in May 1994 found 50% cover by nodding needle grass and 10% cover by non-native species. Two days of hand weeding by 3 people eliminated almost all weeds. The application of the spring pre-emergent had no significant affect on weed or native grass cover, judging by the similarity of native and weed cover in the treated and untreated areas. By June, the grasses were almost uniformly setting seed with culms reaching 0.7 m in height. As of this writing, (February 1995) the plugs have expanded to cover approximately 75% of the study area and individual plugs now measure approximately 20 cm in basal diameter, a 2000% increase.

Summary

Our work at Lexington Hills is specific to that site. The following summary description of our current methods in native grass restoration is based on this experience and our work at an admittedly limited number of other sites. These steps should not be applied blindly under other conditions but must be continually re-evaluated in light of new evidence and each site's unique

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environment.

1. Disturbance of the soil to the absolute minimum practicable from the start is one of the most effective means of reducing weed growth.
2. Understanding site soil conditions and ecology and developing a target vegetation association specific to the site is crucial.
3. Where practicable, beginning the project a year prior to planting is extremely helpful. We now begin by mowing the existing weed crop in early fall (October) and follow this with a pre- and post-emergent herbicide application timed to occur just before significant rains (pre-emergents almost uniformly need watering after application) to eliminate existing weeds and reduce the weed seed bed. In early spring (February), we apply a second round of pre-emergent. In the fall of year 2, we mow again using the "high" setting on the mower to avoid soil disturbance. After the first rains of year 2 have provided any remaining weeds an opportunity to appear we spot-spray with a post-emergent if needed. We then wait at least 1 week or until mid-November (whichever is longer) and plant the grasses, using plugs. In the spring, we may spot-spray with a broadleaf specific, post-emergent herbicide, although this has not generally been required; hand weeding has been sufficient.

Research Needs

These methods have been used at several sites in central California and each of the sites now contain a good to moderate cover (>60%) of native grasses within 2 years of planting. However, this regime does not allow for the planting of native broadleaved forbs for at least the first 1 to 2 years of the planting cycle, reducing the potential diversity and "naturalness" of the grassland during this initial period. Plug planting of forbs in the second year after grass planting is practicable but our work in this area is too new to provide useful results.

Voluntary grass seedling growth at the planting sites has, to date, been minimal (<5% cover at any site). The reduction in above-ground organic matter through repeated mowing and reduction in weed cover appears to play a significant role. Several small plots (<3 sq m) with 5 to 8 cm of redwood fiber bark had significant seedling growth (>25% cover in 2 years) of purple needle grass at one site with heavy clay soils.

The potential role of irrigation was briefly explored in one experiment at Lexington Hills. Given the cost and soil disturbance associated with a spray system, irrigation should be reviewed further before recommending its use.

The procedures described above use herbicide applications over 1 to 2 years. We use only Class II herbicides (designated as "benign") and came to even their use slowly; however, several years of attempting to eradicate weeds manually convinced us of the futility of this effort for any but the smallest sites. However, we are working to reduce chemical use and further research is important.

Plug planting is labor intensive. Farm equipment that can plant these plugs are adapted for work only within farm conditions, i.e., well-tilled soils without ruts and rocks. Working within native landscapes and seeking minimal soil disturbance has required hand planting to date. Development of an all-terrain planter would be an exceptional benefit.

We would especially like to acknowledge the assistance of the many individuals who have worked with and inspired us over the past half-decade, especially John Anderson of Hedgerow Farms, Rob Metheny of Central Valley Transplant and current and former members of Zentner and Zentner including Dr. Glen Holstein, Scott Volmer, Rod Macdonald, and Dr. Steve Talley. Please visit the study area and enjoy the experience. Contact either of us for guided tours.

¹ Analysis methods and personnel over the course of the study varied. While cover was always measured through visual observation using Braun-Blanquet cover classes at more-or-less randomly selected sample points, the sample points have varied in size and number. In the period 1990 through 1992, sample points were 1 sq m in extent. From 1992 through 1994, 1 sq m to 3m x 3m quadrants were used. From 1994 to the present, 3m x 10m sample quadrants were used.

² On other sites with soils that were less favorable to the thistle,

e.g., heavy clays, we have had better luck with controlling yellow star thistle with mowing. At a site in southern Sacramento County with an old terrace soil of the San Joaquin series, mowing reduced thistle cover from 65% to 25% in one year as measured at 25 plots.

³ "Plugs" as used in this article refers to small (approximately 1 cm x 1 cm x 8 cm) propagules. These may be either bare-root, as in the 1990 plantings, or containerized, as is the case for the later plug plantings described in this article.

⁴ This paper does not specify the trade names or amounts of the herbicides used in this study so as to avoid appearing to prescribe specific treatments.

⁵ This may be a result of the relatively high clay concentrations and buried duripan of the Hicksville soils on this particular site which resulted in high soil moisture levels in the spring.

CALIFORNIA NATIVE GRASS ASSOCIATION NOMINATIONS COMMITTEE

I. PURPOSE—This committee is responsible for developing a list of eligible candidates for each elective office in accordance with the bylaws of the CNGA. (It is essential that the actions of this committee be careful, fair, judicious and timely.)

II. STRUCTURE - The president shall recommend and the board shall elect a nominations committee composed of five members who are knowledgeable about the duties of the positions to be filled and the goals of the California Native Grass Association. The president-elect shall serve as chairman. The nominations committee is elected at the annual fall meeting.

III. FUNCTION-To follow the adopted nominations procedure in developing eligible candidates for ballots (See IV-B).

A. Duties of Committee Members

1. Contact members for obtaining possible nominees for president-elect and board members. Members contacted should represent different geographical areas, professions and interests (BY DECEMBER 1).

2. Contact recommended nominees to determine their willingness to be considered. Those expressing such willingness will be asked to provide a biographical abstract which will contain:

- a) Active participation in the CNGA
- b) Recent interest in activities
- c) Education and training pertaining to the goals of the CNGA
- d) Professional experience (BY JANUARY 1).

3. Screen the abstracts and select three (3) persons for president-elect and six(6) or more for board members (BY FEBRUARY 1).

B. Duties of Committee Chairman

To send a follow-up letter verifying the willingness of the nominees selected to stand for election (BY MARCH 1).

ARTICLE III, Section 3.10, Notice of Meetings

The President or the Board of Directors shall provide not less than 10 nor more than 90 days notice of the place, date, and time of each meeting of the general membership by first class mail, to the last known address of each member. Notice of the regular annual meeting shall also include the names of persons nominated by the Nominating Committee for the offices of President, President-Elect, Secretary, Treasurer, and remaining Board of Directors. In case of a special meeting, the notice shall state the general nature of the business to be transacted.

To provide the abstracts of the nominee selected to the Newsletter Editor for publication, with copy to the president (BY APRIL 1).

Duty of Newsletter Editor

Nominees would be put forth for ballot consideration by the members in good standing of the CNGA (SPRING Newsletter). Ballots will be returned to the secretary who will notify the president of the results in writing (BY SEPTEMBER 15).

E. Duties of President

Notify the board of the election results. Notify the members-at-large attending the annual spring meeting of the

election results.

IV. PERTINENT BYLAWS

The president-elect and three (3) board members shall be elected each year by letter ballot

ARTICLE III, Section 3.15).

B. All Association members in good standing are eligible for office (ARTICLE VII, Section 7.01).

Members shall not be eligible for re-election for one (1) year after the end of their respective terms (ARTICLE IV, Section 4.02).

D. Ballots returned to the secretary no later than September 15 shall be counted by the a member appointed by the president. The candidate receiving the largest number of votes for each office shall be declared elected and the results will be reported to the board. Ballots will be retained by the secretary for one (1) year. Officers and members shall take office at the close of the annual business meeting following their election.

PROBLEM-SOLVING WITH NATIVE GRASSES

These Tough Plants Can Control Erosion, Fight Weeds & Improve the Soil
by Lori Pottinger

For sheer diversity, few plants can compete with California's native grasses. The state is home to more than 300 species of perennial bunch grasses—something for virtually every soil type and microclimate. That diversity, coupled with their native ability to survive in harsh situations, makes native grasses extremely valuable for solving problems around the farm.

Some can grow in soil so compacted that weeds won't even sprout in it. A few species use natural chemicals to inhibit weeds. Others can stay under water for months at a time—a trait that might have come in handy on more than a few farms this winter. And still others can hold more than 10 square yards of soil together with their roots.

"Creeping wild rye is one that is incredibly efficient at holding banks in place," said Grey, a botanist and native grass grower, at a recent meeting of the Lighthouse Farm Network in Hollister. "It's easy to establish from rhizomes, stays green all summer and makes great cattle feed, too." Grey, who goes by his first name only, described ways to incorporate perennial bunch grasses on farms. His company, Central Coast Wilds, grows native grasses for restoration projects and agricultural customers.

Besides being great for holding the soil, native grasses also improve the soil in a number of ways. "They're really productive plants, and 80% of their productivity is underground," Grey said. "They replace their roots every year, so they're constantly pumping organic matter into the soil. It's been said that one plant can have up to 50 miles of roots, if you connect every piece."

The steady output of organic matter helps support increased populations of earthworms. Grey also pointed out that since these grasses evolved in California's soils, they're particularly compatible with the populations of microflora found here. This can't be said for all grasses, he noted: tall fescue, for example, produces a fungus that is toxic to many forms of soil life and animals.

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Using Grasses for Habitat

Bunch grasses can be used at the edges of fields as habitat for beneficial insects. "Beneficial insect counts often go through the roof when you introduce native grasses," Grey said. "Populations of spiders especially go way up. And ladybird beetles use the grasses as a refuge before the crop comes up or when the fields are being disturbed." While habitat areas may also encourage some pest species such as gophers, they also encourage animals like gopher snakes.

Grass swales or buffers around fields can also intercept toxic materials and reduce contamination from runoff. "They can pull out excess nitrogen and other toxins, both above and below ground," he said.

Many of the native grasses are tough enough to drive over, which allows them to be used right down the middle of roadways and in turnarounds. "Grassed roads have fewer problems with erosion and dust. And because water penetration is improved, you can get out on that road earlier during the rainy season," Grey said. "Roads can be soil-building areas when they're growing native plants, instead of soil-losing areas," he said. Purple needlegrass and meadow barley are two good ones for compacted situations like roads, he said.

A growing trend is to plant native grasses between grape vines; some stone fruit growers are also starting to experiment with the grasses. The best species for between rows in vines are generally those that won't compete for water. Those that are "obligate dormant" have a pronounced summer dormancy, but only a few have been positively identified (California Melic and Pine Bluegrass are two). Most native grasses are very drought-tolerant and require no water in summer, but some will take the extra water when it's offered.

"Some are less adapted to being irrigated when the soil is warm, so it's good to experiment and start small," Grey cautioned. Companies that grow grasses in your area can advise on appropriate species for each situation.

Planting Grasses

Bunch grasses can be broadly divided into short-lived and long-lived species. The short-living ones are faster growing and often easier to get established, but may only live 10 years or so. The longer-living ones may live a hundred years or more (such as Purple Needlegrass), and some can even reach 1,000 years (California Oatgrass). Grey recommended planting the two different kinds in succession, rather than both types at once, so that the more vigorous short-lived ones won't outcompete the longer-living species.

Plants can be direct seeded, though since the seed is currently very expensive—ranging from \$15 for the more common species to as much as \$128 for some very rare ones—it's probably safer to start with plugs or even larger plants. Plugs cost from 5¢ to 20¢ each, depending on the variety and quantity ordered. "After that, you can grow your own nursery stock after you decide which ones work best for you," he said. It's very easy to grow plants from seeds in flats in greenhouses, Grey said. Unless you can water them, all species should be planted in fall, just after the rains begin. Space the plants about one foot apart, which will result in a solid, weed-suppressing mass by the third year.

"To reduce problems with weeds initially, I recommend disking the planting area three times before planting, letting weeds come up twice and then planting after the third pass," Grey said. "Afterward, you can control weeds before they set seed by mowing after the grasses have been in one year, and burning after that." An annual mowing is all that is required for native grasses. Burning should take place in late summer when the soil is dry. The grass plants themselves can be burned along with the weeds, which may help rejuvenate them, or just the weeds can be spot-flamed.

Native bunch grasses are being studied and planted on farms in all parts of the state. Growers who use them in hedgerows or along roadsides and ditchbanks often become ardent fans of these unassuming plants. Happily, you can start small by planting grasses in a few weed-catching leftover places. But be prepared: you might get hooked and have to plant a bunch.

GOOD GRASSES FOR BAD GROUND

Of the 300-plus species of native grasses, there are bound to be some that will solve problems on farms in every corner of the state. Space considerations limits us to listing just a few of the more commonly available species.

Elymus glaucus (Blue Wild Rye): Establishes itself rapidly from seed. Good for controlling erosion. Tolerant of clay soils.

Deschampsia cespitosa (Tufted Hairgrass): Tolerates partial shade, salts, heavy clay and wet soils.

Poa scabrella (Pine Bluegrass): Dispersed throughout stat. Summer dormant. Good for tough spots.

Melica californica (California melic): Tolerates full sun or partial shade. Is summer dormant.

Hordeum brachyantherum (California Meadow Barley): Good for roadsides, erosion control. Tolerates winds, salt, compaction.

Stipa pulchra (sic) (Purple Needlegrass): Good for slope stabilization. Tolerates poor soil, wet soils, compaction. Fire retardant and very drought-resistant.

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President's Address

Dan Strait

As I write this we are in the final stages of preparing for our two major field events of the year, the Grass Identification Workshop and the Field Day. In planning events like these you can't avoid getting absorbed in all the logistical details that go into holding a successful outing. It isn't until the day of the event that you get a chance to put down the phone, get out and breathe the fresh air, and realize that the work we are doing with native grasses is important. Decades from now, when large areas throughout California are restored to native plant communities, and native grass mixes are routinely used by agencies in revegetation efforts, we'll look back and realize how important this time was, and how important the work we are doing today really is.

But for now it's a thankless job, as many of you will attest. Many of us who are producing and marketing native grass seed are just barely making it, or continue to operate in the red. Others of us who are consultants or who are employees of agencies or non-governmental organizations are out there recommending the use of natives, only to get responses such as "Native grass seed is too expensive" or "No thanks, it's too much work". It can be frustrating. But I'm optimistic about what we are doing, and I think we should be optimistic. Let me relate to you a couple of events that have happened to me during the last week that I think justify that optimism.

On April 21, the Stone Lakes National Wildlife Refuge in south Sacramento County held its formal dedication. The Refuge will eventually be made up of a 9,000-acre core area, along with another 9,000-acre Cooperative Wildlife Management Area. As I was driving around one of the shuttle vans, several people commented on what great shape the grass was in, and how beautiful the vast expanse of grassland looked. Most were surprised to learn from me that what they were looking at was primarily non-native annuals, not at all like the historic vegetative community of the site. However, I'm happy to report that, once finalized, the Refuge management plan will call for the use and restoration of native grasses. Those involved with the Refuge are committed to managing the Refuge in a way that favors natives, and I'm looking forward to the day when we have an 18,000-acre area with extensive stands of native grasses so close to the Sacramento metropolitan area. It will be a showcase for those of us making the case that native grass restoration on a large scale is practical.

Second, I have been approached by the USDA Natural Resources Conservation Service (formerly the SCS) asking the assistance of CNGA in helping them write-up several handouts on how to establish native perennial grasses. They have handouts for harding grass and a few other perennials, but they aren't comfortable handing them out to people who ask for the NRCS' assistance in establishing natives. I think it's a good sign that the NRCS is willing to work with us, and it's an indication that more and more people are asking about natives.

In closing, I want to announce that we have a new Chair of the Membership Committee. Bob Slayback has agreed to take over the chairmanship from Bob Delzell, who has been spending an increasing amount of time outside of California, and who felt he could no longer continue in the position. Let me take this opportunity to thank Bob Delzell for all his hard work over the years. Bob was CNGA's first President in 1990, and has been an active member ever since. His energy and commitment to the Association are greatly appreciated, and will be missed. Thanks Bob.



The California Native Grass Association with The Society for Range Management will conduct their annual General Membership Meeting at the Beverly Garland Hotel, Sacramento on:

Friday, November 3, 1995

The California Native Grass Association and Society for Range Management request the submission of papers for presentation at this meeting. Presentations are to be approximately 30 minutes in length (20 minute talk, 10 minutes for questions) and will address some aspect of the theme of "Agency Use of Native Grasses". Some suggested topics to be explored within the broader overall theme include:

- Which agencies are using native grasses and why?
- What techniques are being used by agencies for long-term management and maintenance of native grasses?
- Agency policies, experiences, and results of research regarding native grasses.

CALL FOR PAPERS: Persons wanting to present one or more papers at the meeting should submit an abstract of 200 words or less by July 20, 1995 to:

Annual Membership Meeting, Abstracts
California Native Grass Association
P.O. Box 566
Dixon, California 95620

An application for member registration for the meeting will appear in the September issue of *Grasslands*.

Although this announcement did not appear in time for the meeting date, we wish to notify our readership of this organization for future conferences.

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CALIFORNIA EXOTIC PEST PLANT COUNCIL

NOTICE OF SYMPOSIUM

CALIFORNIA EXOTIC PEST PLANT SYMPOSIUM 1995
October 6-8, 1995
Asilomar Conference Center, Pacific Grove California

The California Exotic Pest Plant Council (CalEPPC) announces the fourth annual symposium dealing with a major environmental threat recently attracting nationwide attention. This is the threat to California's natural ecosystems by invasive non-native plant species from around the world.

In California, and throughout the nation, exotic pest plants pose the greatest single threat to the long term integrity of many natural areas and ecosystems. According to one estimate prepared by the Bureau of Land Management, infestations of exotic pest plants are increasing at the rate of approximately 2,000 acres per day on disturbed and undisturbed BLM lands of the west.

The symposium will bring together leading experts, land managers, public and non-profit agency staff, field practitioners, and concerned citizens who are developing solutions to this major ecological problem. A prominent theme of this year's symposium will be biocontrol—the intentional introduction of carefully selected predator species to control invasive plants.

The keynote speaker will be Randy Westbrook who will speak on the current weaknesses of APH15, and how it could be revamped to do a better job. The program and poster sessions will include presentations on the biology of non-native plant invasions, perspectives on biocontrol, and examples of successful control efforts in California and Australia. There will be ample opportunity for participants to exchange ideas and to become involved in CalEPPC projects and programs. A field trip to local habitat restoration sites will cap the symposium on Sunday morning.

For further information contact Ann Howald; California Dept. of Fish and Game; P.O. Box 47; Yountville, CA 94599-0047.

MINUTES, BOARD MEETING, 2/14/95 TILDEN BOTANICAL GARDENS, BERKELEY

President Dan Strait commenced the board meeting at 1:15 p.m.

Those present at the meeting were: Dan Strait, Andy Dyer, Phil Hogan, Mark Stromberg, John Anderson, Joni Janecki, Carolyn Shoulders, Charlice Danielsen, Bob Delzell. A quorum was present.

TREASURER'S REPORT

Dyer informed the Board of the following tax numbers: IRS tax number = 68-023-9825; Corporation ID number = D-1818785; Exempt under 501-C-3. Dyer explained that he and Joni Janecki are working on transitioning between Joni and himself as Treasurer. Janecki and Dyer gave the account balances.

Janecki and Dyer explained that for the 1994 annual meeting, CNGA spent \$3,750 and grossed \$5,400. Janecki explained the importance of keeping separate annual meeting income from registration fees and membership dues. It is a lot of tedious work for Theda Strack to separate this out later. Discussion centered on how CNGA can better coordinate new memberships coming in with member database manager. Stromberg stated that Bob Slayback and Amanda Hughan have both indicated an interest in serving as the Membership Chair.

Follow-up Action Needed: Strait will contact Slayback, Hughan, Delzell, and Strack to get together to come up with a plan

to tighten up new member database maintenance. With Danielsen's suggestion, these four will have a report ready to present at the next Board meeting.

Dyer reviewed his ideas for the 1995 budget. He stated that there are four major budget items: 1) Spring Workshop; 2) Field Days; 3) Newsletter; and 4) Annual Meeting. He stated that the 1994 Workshop cost about \$1,800 and grossed about \$4,100. Danielsen suggested that Dyer review last year's expenses and use as a guideline for the 1995 budget. Stromberg stated that the Board would have to review any proposed expense if it is 10% or more from last year's level.

Dyer said that the Board has to work harder to keep the budget expenses and receipts separated and categorized, especially with the newsletter. Janecki agreed, that postage is especially difficult to keep separate.

Follow-up Action Needed: Danielsen will send to Dyer the California Native Plant Society's breakdown categories. Each committee member will get this list. Danielsen said that this should help track expense categories better.

Motion: Stromberg moved, seconded by Danielsen, that Janecki and Dyer meet and formulate 1995 budget based on 1994 expenses. **Discussion:** Janecki suggested that the budget be put together ASAP so that the Board is not too far into the year and operating without one. **Motion Amendment** CNGA Board Executive Committee will review proposed budget and has the power to approve it before the next Board meeting (Strait). **Vote:** Ayes- 9; Noes- 0

NOMINATIONS COMMITTEE REPORT

Strait reported that he has contacted Frank Chen, Warren Pollock, John Menke, and John Haynes to see if they would want to run for President-Elect for 1996. Strait indicated that Mr. Chan looks the most promising so far. Discussion then took place on Past-President Patricia Gouveia. Strait indicated that she has been inactive, is not paid up in dues, and technically cannot serve as Past-President.

Follow-up Action Needed: Danielsen will make a courtesy call to Gouveia to see what her intentions are.

Both Danielsen and Stromberg stated that they have had no luck in finding potential members-at-large.

GRASS IDENTIFICATION WORKSHOP

Shoulders stated that the Grass Identification Workshop will take place at the Rancho Santa Ana Botanical Gardens in Claremont May 6th and 7th. The workshop format is pretty well firmed up. The field trip will be to the Santa Rosa Plateau. Shoulders said that the workshop should be limited to 30 people. Discussion centered on what other outside groups could be contacted, such as the American Society of Landscape Architects (ASLA). Anderson suggested that the Board should compile a comprehensive list of related organizations that CNGA should be contacting. Stromberg said that these groups should be set up in a separate database from regular CNGA members. However, priority will be given to CNGA members. Delzell reminded the Board that there are 90 CNGA members from Fresno south.

Follow-up Actions Needed: 1) Shoulders will send workshop information to Hogan so that he can design and have the flyers printed; 2) Shoulders will send workshop information to newsletter editor Kitren Weis; 3) Hogan will send list of Resource Conservation Districts in Southern California to Theda Strack; 4) Shoulders will present to Board at next meeting outline of budget for workshop.

FIELD DAY (MAY 13)

Strait explained that Range Ecologist Beth Painter will give the keynote address at the Field Day. Strait also commented that the panel will feature professionals that will appeal to a broad spectrum of interests in the range and native grass disciplines. Further discussion centered on the rest of the program agenda, Field Day budget, and that it will be limited to 150 registrants. Field Day is to take place at John Anderson's Hedgerow Farms. Anderson stated that vendors will be charged like regular registrants. He explained that we cannot charge vendors too much because the audience is relatively small. Price for CNGA members: \$50.00 + \$20.00 for BBQ (subject to challenge until negotiations with Buckhorn Restaurant finalized); CNGA nonmembers: \$85.00, plus BBQ fee. Anderson suggested that we have a raffle.

Follow-up Action Needed: Strait will contact CNGA lawyer Zad Leavy to check on legal obligations with CNGA holding a raffle.

ANNUAL MEETING

Strait suggested that perhaps CNGA could cosponsor Annual Meeting with other groups. It was mentioned that the Society of Range Management will be holding their 1995 Annual Meeting at the same time as CNGA.

Follow-up Action Needed: Strait will check with SRM Oll their annual meeting plans. Further discussion took place on locations, dates. The Board feels that Sacramento is ideal because it is centrally located, and there would be less work involved in organizing the meeting if it was held at the same location (Holiday Inn, NE, Sacramento). The date is set for November 3, 1995.

OTHER BUSINESS

Strait continued with the discussion on the structure of the Nominating Committee. The board discussed whether committees should be voted in by the general membership, or be appointed. Strait said that the CNGA President should annually appoint committee members based on Board approval. The nominations committee no longer is elected at the annual Fall meeting. Duties of the Nominating Committee will be to contact possible nominees for president-elect and board members by January 1. Recommended nominees will submit a biographical sketch by February 1. Up to three persons for president-elect and up to six or more for board members will be screened by March 1. The Committee Chairman will send a follow-up letter by April 1 to the potential nominees asking them to verify their willingness to stand for election. Motion: Danielsen moved, seconded by Stromberg, to approve edited changes in the guidelines for the duties of the Nominations Committee. *Vote: Ayes- 9; Noes- 0.*

Stromberg reviewed the status of the CNGA database. It is being edited now. He estimates a budget of \$600,000, with possible support from the Packard Foundation. The funding will be needed to populate the data fields. The program itself is almost completed. He is checking to see if the database could get on the CompuServe™ Bulletin Board free-of-charge. Discussion continued about the relative merits of an expensive database vs. printed literature. Stromberg commented that a database can be easily updated, whereas printed material goes out of date.

Delzell passed out comments on the membership database. He stated that he has observed a gradual erosion of membership in Southern California, the San Francisco area, and the Monterey Bay Area. However, out-of-state membership is increasing.

Shoulders reported that the California Native Plant Society has produced a native grass poster!!

Janecki attended the Soil and Water Conservation Society Annual Meeting in Santa Cruz. CNGA had a display set up at the meeting, and most of the CNGA membership brochures had been picked up.

ADJOURNMENT

President Dan Strait adjourned the meeting at 3:50 p.m.

The California Native Grass Association: Goals and Objectives--Dan Strait

History: Early discussions about the need for a native grass advocacy organization began during meetings in February 1990. The organization was formally established as the California Native Grass Association during Fall 1991.

Membership: Includes restorationists, scientists (including plant taxonomists, botanists, agronomists and others), commercial producers of native seed and other plant materials, environmental consultants, government agency workers, and others interested in preserving natural systems. Current membership is approximately 400.

Mission: To develop, promote, and restore native California grassland ecosystems, including associated native plant species.

Purposes: (I pulled these out of the President's Address in the April 91 issue of *Grasslands*)

To promote native grass technology as needed to restore ecosystems. This includes selection, evaluation, and establishment of California native grasses and associated plants.

To coordinate and support the production and marketing of commercial quantities of native grass seed and other plant

materials.

To educate our communities on the economic and environmental values of native grasses and associated species.

To endorse conservation efforts to preserve existing native grassland habitat.

Goals: (Where we want to end up)

That native grass and other plant materials are available in sufficient quantity and variety that native plant ecosystem restoration in any region of the state is practical.

That the use and proper management of native grasses becomes a routine recommendation and practice among restorationists and land managers.

That native grass seed and other materials becomes sufficiently abundant and affordable in sufficient quantity and variety that agencies and non-governmental organizations choose to establish policies and guidelines requiring the use of native grasses as part of their restoration and land management activities.

Objectives: (How to reach the Goals):

To establish a network of native grass producers, restorations, and scientists so that they can more easily share their knowledge and experience to further the development and use of native grasses and associated species.

To provide a forum through workshops, meetings, and published research results so that information on native ecosystem restoration, management, and preservation techniques can more easily be shared by all.

To experiment with and develop methods of cultivation, weed control, propagation, and other native grass establishment techniques, and to serve as a resource for the distribution of that information to those involved in restoration activities thereby helping to increase the success of those restoration efforts.

Activities: Annual Field Day - includes guest speakers addressing a central theme, field demonstrations of equipment and techniques, viewing of restoration projects, examination of research results, and more.

Annual Grass Identification Workshop

Annual membership meeting and conference

Quarterly publication of *Grasslands*, the publication of the California Native Grass Association.

Outreach and presentations at workshops and other public events.

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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.

TOPIC: PURPLE NEEDLEGRASS—Great for roadsides, around the home, and the lowest in fire hazard, but there's not enough forage for the cows!

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Spring, 1991, I tested the production of dry biomass of Purple Needlegrass or *Stipa (Nassella) pulchra* in comparison with many of the European annual grasses that now occupy our roadsides, wildlands, hills, parks, etc.

I theorized that Purple Needlegrass had been intentionally replaced by California ranchers with European grasses because of flaws that needlegrass has when land is used for cow and sheep grazing:

1.) It appears that Purple needlegrass does not produce the biomass per acre that the European annuals can produce.

2.) The perennials cannot be eaten to the ground each year, therefore cannot "mine" the soil like the annuals, which can be eaten to dust and then regrow from numerous seed stored in the soil each winter.

3.) Purple needlegrass seeds burrow into sheep wool, and cannot be carded out, making the wool useless, and can burrow into animals' hides.

4.) Purple needlegrass is the only green forage in early summer, which draws grazing animals to it like a magnet, allowing them to very efficiently remove every plant if they are left to graze through summer.

5.) Purple needlegrass plants are very brittle in mid to late summer, and any animal traffic over them caused the crown to be broken and to be uprooted.

The following experiment was to test if Purple Needlegrass is a poor producer of forage. I tested purple needlegrass against the following Old World grasses:

Wild oats (*Avena fatua*), annual rye (*Lolium multiflorum*), perennial rye (*Lolium perenne*), 'Blando' brome (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), as single species and also as mixtures.

I germinated seeds of the above mentioned grasses in flats which were planted May eighth, and then transplanted the germinating seedlings into gallon containers on May twenty-first. When two grass species were grown together, they each shared one-half of the gallon container. All the possible combinations of the Old World grasses were as follows:

WILD OATS + BLANDO BROME
WILD OATS + PERENNIAL RYE
WILD OATS + RIPGUT BROME
WILD OATS + ANNUAL RYE
RIPGUT BROME + ANNUAL RYE
RIPGUT BROME + PERENNIAL RYE
RIPGUT BROME + BLANDO BROME
ANNUAL RYE + PERENNIAL RYE
ANNUAL RYE + BLANDO BROME

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

You can see from the chart that *Stipa* produces the lowest dry biomass per acre, and as single species the Old World grasses produce twice to 2.7 times as much biomass as the *Stipa*. A curious phenomenon was observed, where four of the ten mixtures of European grasses produced greater amounts of biomass than the same species growing alone. These synergistic grass mixes produce from 2.7 to 3.4 times the dry biomass of *Stipa*. This ability of combinations of Old World grasses to produce more biomass than single species may have led to the creation of Old World grass seed mixes.

My conclusion is that ranchers who graze California's valleys and foothills may accidentally or intentionally convert the last remaining bunchgrass prairies to annual grass areas because of the greater amount of biomass produced. With an ever increasing population explosion within the state, and the suburban populations moving into annual grassland areas, the low biomass produced by *Stipa* may be advantageous for homeowners and for roadside maintenance.

Stipa pulchra prairie probably represents the lowest fire/biomass producing perennial and weed resistant non-irrigated vegetation type that one could plant in parts of California. With more and more homes being built in the hills, and the use of herbicides being reduced along roadsides and in wildlands, *Stipa pulchra* appears to be a valuable candidate for use as a ground cover.

REFERENCE LIST

The following is a list of references CNGA recommends when information on particular grasses is desired.

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Hubbard, C.E. *Grasses*. 2nd ed. Pelican Book A 295, Penguin Books, 1968. (About grasses of the British Isles, some of which also occur in California; well-illustrated).

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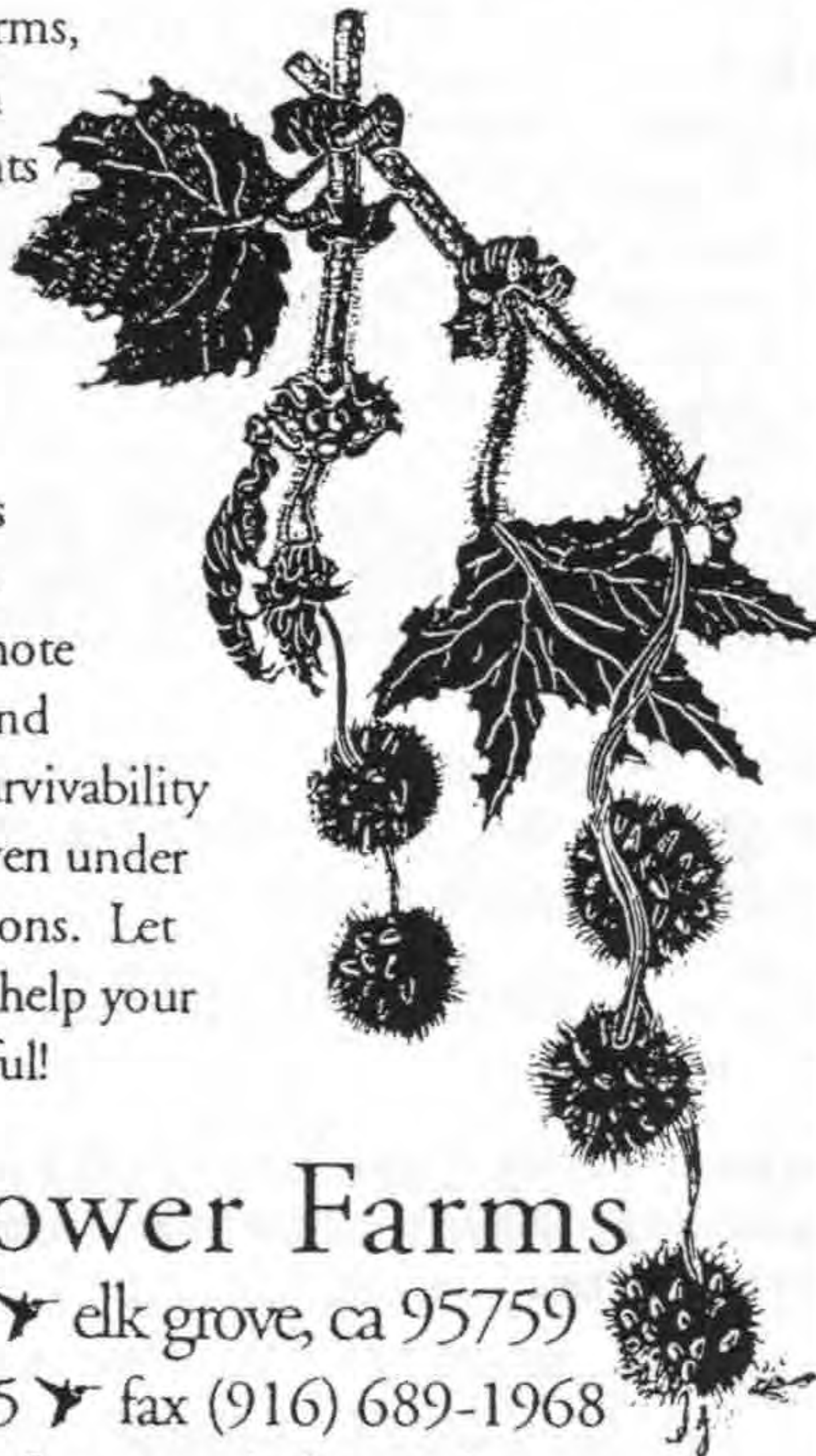
'94 Supply limited for some species.

Species: Purple needlegrass *Nassella pulchra* (NP), Foothill needlegrass *Nassella lepida* (NL), Nodding needlegrass *Nassella cernua* (NC), (SL Blue wildrye *Elymus glaucus* (EG), Slender wheatgrass "Yolo" *Elymus trachycaulus* var. *majus* (ETM), Creeping wildrye *Leymus triticoides* "Rio" (LT), California oniongrass *Melica californica* (MC), Pine bluegrass *Poa secunda* (PS), Three awn *Aristida hamulosa* (AH), Idaho fescue *Festuca idahoensis* (FI), Meadow barley *Hordeum brachyantherum* (HB), California barley *Hordeum californicum* (HC), California brome *Bromus carinatus* (BC) Tufted hairgrass *Deschampsia caespitosa* (DC), Bent grass *Agrostis exarata* (AE), Deer grass *Muhlenbergia rigens* (MR).

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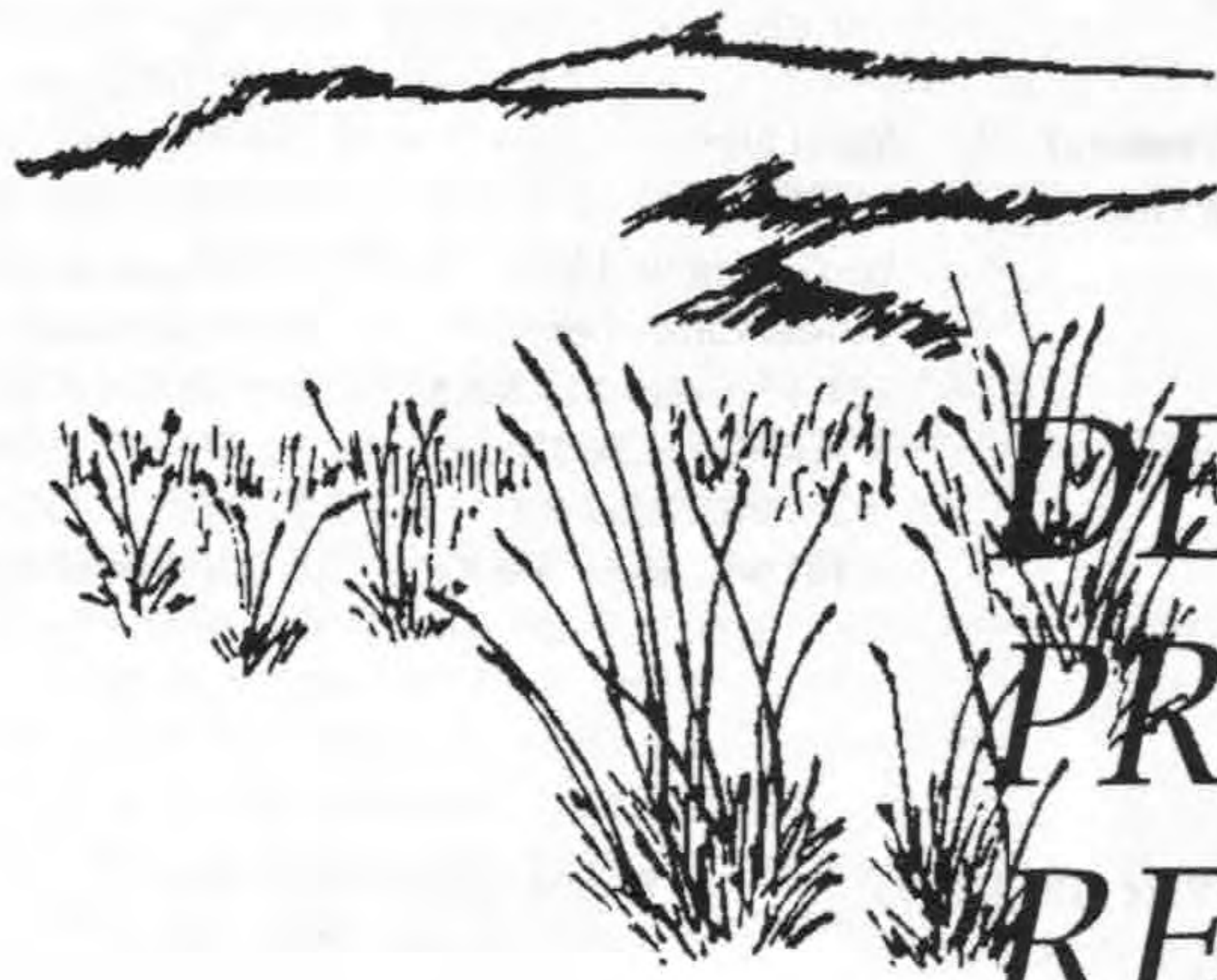
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