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The Publication of the California Native Grass Association Volume VII, No. 1 April 1997

RESEARCH REPORTS

THE FEASIBILITY OF THE FEDERAL POLICY ON NATIVE GRASS SPECIES - a California Perspective

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ABSTRACT

The initial federal policy of using local native grasses for planting on federal land was enacted in 1976. The policy has been further developed including a policy on the use of native plant material in restoration and other revegetation projects for Region 5. The policy is often unclear to parties that are obligated to implement seeding on federal land. This technical paper attempts to clarify the federal policy, identify feasibility issues, examines basic approaches in using local native grasses and reviews a case example of implementing the federal policy on the management of vegetation in a transmission line rights-of-way in the Plumas National Forest in California.

The Colgate-Challenge transmission line Vegetation Management Study is a cooperative effort between a utility company, the US Forest Service, and various environmental and cultural organizations working together to better manage right-of-way areas in a National Forest. Pacific Gas & Electric Company, an utility with strong environmental policies, is looking for creative means of better managing their utility right-of-ways. Of primary importance is to provide safe, reliable and economical electrical service to their customers. These goals must be achieved within parameters that will preserve and not damage the environment. The US Forest Service is dedicated to manage forest lands and to implement policies which are intended to protect and preserve the natural environment and its many resources. Historically, Forest Service has also encouraged multiple use of the forest lands to provide recreational, social, cultural, educational and economical values to the American public.

The goal of this paper is examine the opportunities of the federal policy, rather than to negate any value of it. On the one hand, the government needs to recognize the feasibility of the policy. On the other hand, those who are responsible for the mitigation of erosion control and restoration plantings must recognize and understand the basis and importance of the policy. Both parties need to work together to make the policy work for specific planting situations as well as for the general welfare of the environment and for the public.

THE FEDERAL POLICY: Past and Present Policies

What is the policy?

Authority for the issuance of a federal policy on the use of native plant material on federal lands is the National Forest Management Act of 1976 (Sec. 6, 90 Stat. 2949). Further direction is provided in Title 36, Code of Federal Regulations, Part 219, Section 27, Subsection G.

The following information was taken from an official memorandum (Anonymous, 1994) to the Forest Supervisors, Staff Directors and Station Directors, PSW in Region 5 (California) dated June 30, 1994 regarding the policy on the use of native plant material in restoration and other revegetation projects.

"To the extent practical, seeds and plants used in erosion control, fire rehabilitation, riparian restoration, forage enhancement, and other vegetation projects shall originate from genetically local sources of native plants." Five major key elements to implement the policy were identified:

"1. Prescriptions for use of plant materials for revegetation must be developed by knowledgeable plant resource specialists prior to implementation to ensure that the project is feasible and suitable plant material is used."

"2. All revegetation facets must be evaluated early in the planning process for Forest projects."

"3. Plant materials (seed, cuttings, and whole plants) used in all revegetation projects shall originate from genetically local sources of native species, to the extent practicable."

"4. Do not use plant materials of species sold as native if the genetic origin is not known."

"5. Plant materials collected or purchased for Forest Projects must be carefully evaluated to ensure that these materials are healthy, free of pests, and that they are handled, stored, and conditioned for successful use."

Reasons for policies

The basic reasons for the policy is to maintain the native flora and conserving the biodiversity, health, productivity, and sustainable use of forest, rangeland and aquatic systems. A major emphasis of ecosystem management is the conservation of natural biological diversity including the conservation of local germplasm (Anonymous,1994). The objective is to maintain genetic diversity among individuals within populations and maintain ecotypic variation among populations. The federal policy applies to all native species including woody and herbaceous plants.

The need for flexibility in implementing the policy

More research and development needed.

Close examination of the federal policy implies more research and development is needed. This is found in the sections, "Goals", which states " to stimulate development of new ways to

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achieve ecosystem management objectives that consider multidisciplinary long term effects. This includes evaluation of alternatives that provide economical as well as practical means to restore plant communities.", and in the section, "Project Coordination Guidelines" in which the following is stated, "the review process should evaluate whether objectives are sound and that they can be feasibly be met." and "Project monitoring should include assessing the effectiveness of the use of native plants for restoration and/ or rehabilitation.". Connie Millar (1994), Geneticist at the PSW Forest Service Research Station in Albany, California, offered preliminary genetic guidelines for seed collection and transfer for native grasses in California. These general genetic considerations were very similar to those in the 1994 policy. She indicates the lack of genetic information and species-specific studies will necessitate the refinement or changes to the guidelines in the future as information becomes available.

Adjustments needed in the seed supply industry.

At the present time, only about 5 to 8 percent of the total number of native grass species in California are commercially grown as a regular inventory item by seed producers in California. These are produced with the objective of supplying a diverse market in large geographical areas with broad ecological range; they are not site specific or considered local native species in the context of the federal policy. Because of the cost of production and overhead, it is essential for growers to concentrate their resources to produce a product that will satisfy their markets and allow them to make a reasonable profit. Traditionally those markets parallel the fast establishing ubiquitous varieties developed by the former Soil Conservation Service and various universities and private seed companies.

The objectives of the rangeland grass industry were entirely different from the objectives of the current federal policy where providing feed for cattle was the major objective. As man utilized the land more for grazing, forestry, recreation and other development, erosion and revegetation became more significantly important. Because of the nature of erosion which can cause rapid degradation, the fast-establishing grasses of the rangeland industry were considered ideal by many. The Federal policy now recognizes some of the drawbacks of using traditional rangeland species and even non-local sources of native grass species in natural environments. The basis of their criteria is different from traditional rangeland use because the emphasis is restoration and preservation of natural environments on federal lands based on genetic and ecological principles. The feasibility and economics of using local native species will be discussed in this paper.

Need to make the policy workable for all lands, but recognizing uses of other grasses

The Federal policy should be a model for all lands where preserving natural resources is desirable. The difference between private and public lands is the rights of the property owner in relation to current laws. Unless specific legislation exists that dictates the preservation of habitat of a protected species, requiring the planting of local native grasses can not be required. In order to encourage the use of native grasses, both local or otherwise, more research information and education must be provided to property owners who have land that matches the profile of where using native grasses is desirable. For private and public lands, the profile is not well defined at this point in time and may never be entirely defined because of changing economic and environmental attitudes of the public and government.

The important consideration is that a system of checks and balances are in place to monitor and research any potential irreversible damage to sensitive and unique natural environments and to not impact the economic conditions of citizens who have to make a living related to the use of their land. Meanwhile we must use sound judgment with what we know and decide what is the most appropriate action on a case by case basis. The key incentive would be to demonstrate the benefits and value of using native grasses to the property owner. In many cases, property owners may volunteer or agree to use native grasses without complete knowledge of how they will perform in comparison with grasses that they are more familiar with and of which they can predict results. They may do so because they are willing to try something that is sound in principle and to do what is correct. In a way they are participating in a process of improving the state of technology that effects their livelihood and way of life.

Applying Policy to Colgate-Challenge Transmission Line

Background

The Colgate-Challenge transmission line provided a opportunity to examine the federal policy in relation to a specific application of seeding local native grasses. The objective of the utility, Pacific Gas and Electric Company, was to determine the effectiveness of establishing a vegetative cover to inhibit the regeneration of native tree species in the rights-of-way (ROW). The elimination of tree regeneration in this area is important for the maintenance of the powerlines to prevent disturbance to the line and to prevent outages and wildland fires. The existing mixed evergreen forest vegetation includes evergreen conifers, tan-oak, and madrone but also include deciduous black oak. Current practices of maintaining the ROW includes cutting, crushing, and physically removing the woody vegetation. Chemical control in the ROW on federal land is seldom used except around the base of the power poles.

Studies (Chan, 1995) were initiated in the fall of 1995 to investigate the feasibility and effectiveness of using native grass species to inhibit tree regeneration by establishing a competitive low-growing vegetative cover. The initial test plots included evaluating the performance of 9 local native grass species in relation to germination and their growth response to various environmental conditions that existed along the ROW. At the same time evaluation of the natural regeneration and conditions of the ROW was performed in order to integrate this natural vegetation response with artificial re-establishment of a native groundcover. The first year studies also included the beginning of various horticultural treatments of deergrass which appears to be one of the most promising candidates for outcompeting tree seedlings. This native grass species also had some ethnic value to the native Americans for making baskets. PG&E was willing to evaluate the possibility of developing a co-operative program with the Indians to utilize the ROW for deergass cultivation in conjunction with controlling tree regeneration in limited and selective areas. The other test plots initiated in 1995 were to evaluate direct seeding of Squaw-Carpet (*Ceanothus prostratus*), a very dense low-growing shrub that can completely covers the ground in limited size areas and is occasionally found along roadsides or openings in the forest.

One of the outcome of the first year testing was the realization of both the utility and the Forest Service that the Federal Policy had a tremendous impact or influence on what and how native grasses would be used to accomplish an objective. Another outcome was that there were not obvious answers of how effective local native species would performed for the intended purpose. For these and other reasons, a need to develop a cooperative program to examine the feasibility and to apply the policy appropriately was recognized. The process of working together to make the policy work and to achieve successful results with local native species was initiated at a meeting in August of 1996. At the time of writing this paper, the process is ongoing and will include these objectives:

- Σ More clearly define what is a "local native species" and the use of local native species "to the extent practical".
- Σ Evaluate the most promising local native grass species that exhibits the adaptation of the range of environmental conditions of the ROW.
- Σ Evaluate local native species that appear to be ubiquitous in nature.
- Σ Develop strategies of using mixtures of native grass species with other herbaceous native species that exhibits characteristics of different growth cycles, adaptation ranges, and with good colonizing or compatibility characteristics to create a competitive groundcover.
- Σ Examine the process and costs of contract growing of seed crops of promising local native species.
- Σ Examine the feasibility of establishing local native grass mother seed blocks along the ROW for both operational control of tree regeneration but also as sources of seed for further vegetative cover in the ROW as well as for use on other restoration projects in the Forest.

Σ Evaluate the long term results of whether the objectives were achieved, if using local native grasses were cost-effective, and what level of acceptance was appropriate.
Σ What are reasonable expectations of the time frame for accomplishing an specific objective using local native species.

Utility perspective

The perspective of PG&E regarding the Federal Policy is to try to comply with the policy. From the perspective of a company running a business, achieving results and saving or reducing maintenance costs is important to the utility. Therefore PG&E approached their project methodically with the intent of solving a problem. Their approach was one of vegetation management and began with conceptual planning and development. Of primary consideration was to manage unwanted tree regeneration without using chemicals. Using local native grasses was not an issue for the utility just as long as the vegetation was effective in reducing tree regeneration at an economical cost. Parameters such as the cost of maintaining the ROW over a given period of time versus the cost of ROW controlling tree regeneration using vegetation management techniques was the definitive answer for the utility.

Forest Service Perspective

The primary perspective of the Forest Service was to preserve and protect a natural resource. Native grasses themselves as well as the forest ecosystem are the natural resources that need to be preserved. Without a federal policy, deterioration of these resources will continue to decline. The tendency of using introduced species because of their availability, lower costs, and short term results often precludes the use of local native species. With a federal policy, there is optimism in reversing that trend. However, to be successful the policy must be feasible but yet effective and embrace the sound principles of ecological balance and genetic compatibility. These are the issues that still must be demonstrated and put into common practice.

Outcome of testing prior to operational seeding at the Colgate-Challenge Transmission Line

Although testing is still ongoing, preliminary results are sufficient to realize the value of site-specific information regarding issues relating to the efficacy of using local native grasses. The state of native grass technology is not sufficient to predict results accurately nor determine the relative differences between species prior to seeding. It would not have been prudent to implement large scale operational seeding without testing. Testing provided information that avoided mistakes in species performance, minimizing higher costs and achieving objectives. Significant findings and observations to date included:

Differences between species that would effect achieving objectives
Σ Wild collecting and seed processing can be exceedingly expensive compared to cultivated seed production and has a direct effect on seed quality
Σ Germination of the species tested varied from approximately 50% to less than 3 %
Σ Survival of the species tested was acceptable for all species even though germination was low for some
Σ Growth of seedling in the first year varied from approximately 6.o to 15.0 centimeters
Σ Time of seeding and seed treatment can be significant
Σ Planting may be more desirable than seeding in some instances

Other factors related to the efficacy of the species:
Σ Great diversity of planting and environmental conditions exists along the ROW
Σ Natural regeneration is quite responsive and should be incorporated with seeding recommendations
Σ Native grasses should be seeded in conjunction with other appropriate native plants
Σ Management must be integrated with seeding and establishment in order to assure the greatest chance of success

FEASIBILITY OF FEDERAL POLICY

Efficacy of Erosion Control and Restoration

The efficacy of using native grasses for erosion control and restoration plantings is the basic motivation for using native grasses and the key for the success of the Federal Policy. In the opinion of many practitioners the state of expertise in establishing native grasses is not as great as that for introduced species nor is the development of varieties for specific applications anywhere near that of the introduced species. Availability and economic production of introduced species is far advanced because of the use of grasses for cattle production, agricultural production and other rangeland applications. Looking at the past history of introduced species raises questions in regards to the Federal Policy and to the native grass industry as a whole. In California, can developing native grasses similar to commercial introduced varieties and using these in California be compatible with the policy of using "local" native grasses? A great amount of information is known of native grasses of various parts of the United States whose range also extend into California can grow well and be extremely competitive when seeded in California. Many of the introduced varieties have been developed to a level where they can be established in wide geographic regions and in many different environmental conditions. Questions raised which relates to their genetic and performance development which may conflict with native grass development per federal policy (but may be valid on non-federal lands) includes:
Σ Whether native grasses developed in the same manner as introduced species would retain the same genetic components as wild species in their native habitat? (It is unlikely that they would for various reasons.)
Σ Whether such native grasses would perpetuate on a permanent basis without management?
Σ Whether native grasses would have the same pervasive competitiveness and inhibit other native vegetation as in some cases with introduced species?
Σ Is it economically feasible to develop local native species to the same level as introduced species if they have limited geographical limitations or must other production systems be used to produce local native grasses?
Σ Is it valid to develop varieties of native grasses for non-federal land to the same level as introduced grasses and to use them over wider geographic areas in a similar manner as introduced grasses? (These in fact could be planted as close as several feet apart at boundary lines under the current policy)

Efficacy of native grass development in altered site conditions

The performance of any grass, or any other plant species, will be different under undisturbed or slightly disturbed conditions as contrasted with altered or drastically altered soil conditions. High expectations of successful results are reasonable for local native species grown in natural or slightly disturbed conditions where they naturally occur. However, local native grasses can not be expected to perform at an optimum level in drastically altered sites even if they were collected adjacent to the site because the conditions are no longer "natural" as compared to the pre-disturbed condition. Is this altered condition better treated with this local native source or would a non-local source or commercially developed variety be more effective? The issue would be if seeding other non-local sources can not be used and the site deteriorates because seeding was not performed what is worst? -the non-local source in the environment or the deterioration which could also be a serious impact to ecosystem. The treatment of drastically altered sites are special cases which do not have easy answers. Therefore, it is an area that may have to be treated differently under the Federal Policy. It is an area where more research and technical transfer is needed.

Efficacy of species for erosion control and restoration

Efficacy characteristics for erosion control and restoration should be included in determining the Federal Policy. In erosion control, the protection and sustaining the integrity of the soil are the major objectives of plantings. In restoration planting, the major objectives are to re-establish native species in balance with each other and with the environment and in doing so, re-establish wildlife habitat. Thus, even though other objectives may need to be developed or are interrelated , the characteristics of native grasses use should reflect the primary objectives of the planting.

In erosion control, it is usually important and beneficial to cover exposed soil soon as possible. Characteristics of native

grasses that exhibit the aggressiveness and pervasiveness that would achieve this objective have not been commonly observed. This is obvious when one considers the number of natural stands of native grasses in California and the number of ubiquitous species present. However, this observation does not preclude the feasibility of using a wide range of native grasses for erosion control. It does suggest considerable amount of manipulation and management of the seeding site may be necessary in order to achieve successful long term erosion control with many native grass species. A following section describes technical establishment requirements and how they are related and should be considered as part of the Federal Policy.

In restoration plantings, the initial establishment characteristics of native grasses differs considerably from those in erosion control. Diversity and balance with other native plant species rather than a complete cover is more the norm for many native grasses (Bartolome etal, 1986). To be successful it is not important for a complete cover but just the opposite in many cases. Natural areas often consists of pockets or spots of native grasses intermixed with other native vegetation. Where man has used introduced species for grazing and other applications, varied observations have been made ranging from complete dominance of the introduced species to co-existence but usually sub-dominant to introduced species. What is the appropriate proportion of native grasses for any site is an important consideration for the level of acceptance in mitigation and restoration plantings.

Regardless of whether one is seeding to achieve erosion control or restorations, a mixture of native grasses is desirable. This concept is probably more important than to attempt to determine a single most promising species. In doing so, multiple criteria for a reasonable number of species appropriate for the site will assure the optimum chances for success. Again, the success of the Federal Policy is predicated on the efficacy of establishing native grasses for the long term and in doing so is most cost-effective .

Policy Effects on Establishment Issues

In relation to past practices, the most obvious effects on the Federal Policy on native grass establishment are:

- Σ Availability
- Σ Timing of plantings
- Σ Current state of technology and resources
- Σ Effectiveness of local native sources compared to other sources
- Σ Levels of acceptance

Availability of local native species

Seed suppliers have questioned the feasibility of developing high numbers of local native sources in their inventory. The economics of doing so does not appear sound at this stage of development in the industry and in the market. Growers appear to be willing to grow local native seeds on contract but in order to be profitable they have to grow sufficient amounts in order to charge a moderate price for the commodity. Or if small amounts are grown, the price will most likely be relatively high. These cost levels are realized in comparison to introduced species that have been developed and used in the past. Considerable research and development were conducted by the former Soil Conservation Service of the USDA, experimental research stations of many universities, and private companies to produce varieties of grass species that were capable of growing under a wide range of environmental conditions and applications. These seeds could be mass-produced because they had a large market and broad applications.

Depending on how a "local native species" is defined, contract growing of native grasses for federal lands- planning, approval of sources, collecting and processing, testing of seed, and a minimum of two to three years of growing could be necessary almost every time a local native seed crop is needed. If the crop is not grown in the area in which it is to be planted, it is probably best to use only the first generation crop in order to maintain the genetic make-up of that local source. This creates a serious economic disadvantage in producing seed at a lower cost. Compared to many introduced species of which stable supplies can be maintained and readily available, local native species are not readily available when compared to the conventional manner of the past.

Timing of plantings

The argument has been made that with proper planning, availability of local native seed is feasible. This may be true for large federal projects that require funding for development and planning of local native seeds can be incorporated into the projects, but there are a number of situations which may occur that would be critical for seeding to occur soon as possible. Significantly, various catastrophic events could occur which would expose soil and subject it to serious erosion. Examples of this kind of occurrence would be wildfire on soil with a high erosion potential, an unforeseen failure of a hydro facility causing scouring and denuding of vegetation, and landslides. Of a smaller magnitude, but probably of a greater frequency are small development or construction projects that have a short approval process of less than a year.

The difference in results of seeding immediately after disturbance as compared to two to three years after disturbance can be significant. The most important consideration is the erosion potential of the site. The greater the erosion potential, the greater the need to establish a vegetative cover over the soil to protect it. Other non-seeding protective measures could be used as interim measures until seeding is performed or until grass is established, but all of these are added costs or they are temporary, and a certain amount of risk in erosion is still present as compared to a permanent vegetative cover.

Another difference in seeding immediately after disturbance compared to several years later is the results of the seeding due to more favorable soil and competition conditions. In disturbances in which soil is loosen, the loose soil is a more favorable seedbed compared to that soil later when it is compacted and crusted by rain. Germination and growth occurs more spontaneously under a favorable seedbed and the chances of establishment are more favorable. In addition, when the disturbance first occurs and soil is exposed and devoid of vegetation, seeded grasses have less competition and thus a greater chance of establishment.

Are local native species always more effective and genetically superior than other source of native grasses ?

At this time, little can be discussed in regards to this issue because much of the comments would be speculative and argumentative. Considerable research (Knapp & Rice 1994 &1996; Rice 1995) has and is being conducted but there is relatively little definitive data (Millar, 1994). More research and documentation are needed as well as criteria and levels of acceptance for sources of grasses that would be appropriate for any site. The real issue is not a policy for federal lands, but what is the most appropriate source for any given site.

Current state of technology and resources

The current state of technology in establishing native grasses as applied to the objective of the Federal Policy is relatively young. However, much is known in regards to basic information such as their ecology and distribution, their physical attributes, germination and growth characteristics. Although more specific technical information may be needed to resolve difficult or special problem situations, the basic information that is known will suffice as a basis for selecting appropriate species in most cases. Organizing and compiling basic information and making it readily available to users is the first step in applying native grass technology. A very useful tool in accomplishing this task is the development of computerized expert database systems (Chan, 1994). These systems can also incorporate techniques for determining appropriate planting methods and identify sources of native grasses and other resources for site-specific applications. Some of the many advantages of such systems include updating the system with new information as it is developed, networking with other developers of data such as the universities and special interest groups such as the California Native Grass Association and the International Erosion Control Association, and more universal acceptance with governmental and environmental agencies.

Levels of acceptance

The level of acceptance for results of native grasses should be conditional rather than rigid. On many large federal

construction projects, the level of acceptance is relatively high. Coverage percentage of 70% or higher are required one year after seeding and monitoring periods of 5 years with remedial seeding as needed are not uncommon (Anonymous, 1991). These standards are intended to re-establish vegetation, but they do not take into consideration site differences nor that the technology of introduced species have been developed to such a high degree compared to local native species. Thus, the policy should provide some flexibility in the level of acceptance. Possible changes in standards should be to emphasize implementing the most current appropriate technology correctly rather than a predetermined percent success and to utilize mechanical and other measures to prevent erosion during the interim period when the native vegetation is becoming established.

Policy Effects on Cost Issues

Cost effectiveness of native seed

At the present time the cost of native grass is typically greater than introduced rangeland grass. The following is only one trial and was evaluated for one year in which species performance and costs were examined, but because the site was located at a favorable site, seeds were tested, and data was collected by a competent seeding specialist, it may be fairly representative of what could happen at other sites, particularly those in harsher environments.

In a species trial (Kephart, Chan, 1996) at Diablo Canyon near San Luis Obispo, California, the performance of 11 native grasses were tested. Four replicate plots for each species were seeded and germination and establishment at the end of the first growing season were recorded. Pure live seed determination was made for each species and a seeding rate of 50 pure live seed per square foot was used in each 25 square feet replicate plot. Actual seeding rate per replicate plot per species ranged from 1337 to 2500 seeds. Based on the survival after one growing season and the average cost of the seed from three major growers, the cost effectiveness was determined. Average seed cost ranged from $7.88 to $121.35 per pound and cost per acre ranged from $44 to $2654 per acre. Seedling survival ranged from 0.0 to 8.5 seedlings per square feet. The best results were with *Bromus carinatus* with a seed cost of $237 per acre and 8.5 seedlings per square foot (a cost of $0.0006 per living plant). The worst results were with four species that did not germinate or survived and *Nassella pulchra* with a seed cost of $2654 per acre and 0.4 seedlings per square foot, Table 1.

The outcome of this trial suggests that unless you can predict the results of any seeding, a pilot seeding would be prudent. Making mistakes can be extremely costly. The other conclusion would be that native seed planting can be cost-effective, if the results are long term.

Costs relating to Quality control

Planning:

The cost of planning native grass plantings will tend to be more expensive than introduced species because seeding with native grasses is more technically difficult at this point in time. In order to be successful, one must be technically correct from the aspect of a considerable number of scientific disciplines. Objectively, one would like to establish a sufficiently high number of grass plants for any given situation at the lowest cost per living plant. However, reasonable levels of acceptance must be establish for each planting based on ecological criteria.

Testing:

Each time a local native grass is collected for immediate use, it needs to be tested for viability and quality. Stored seeds of questionable quality or viability need to be tested also. On a recent project, a cost of $150 was charged per seed test per seed source. If small areas less than an acre are to be seeded, $150 for seed testing alone would be more expensive than the cost of some rangeland seeding in the past using introduced species.

The cost of testing is not only in the test itself, but the time it takes to do the test and to get results back. Labs can not always handle seed tests as quickly as it is necessary to use that information when it is needed. For example, if Deergrass, (*Muhlenbergia rigens*) was collected in late December and it is to be planted in December, seed testing could preclude that planting. Various intangibles could be impacted such as: budgets must be spent by the end of the year, if not, added cost will be incurred; postponing the planting will cost more; changes in the specifications will require change order to the contract which increases costs, etc. Even if the planting does not have to be planted in December, testing delays could impact cost even in February because specifications could not be prepared with accurate seeding rates and to determine accurate estimates for bidding purposes. If the seed had a dormancy, seed test may take one month or more to test the seed.

Seeds for remedial measures:

If the specification is written so that the contract must perform remedial seeding based upon the seeding results at the end of the first growing season, provisions which will increase cost need to be developed. Either extra seed need to be purchased at the time of the original seeding just in case results are not sufficient (and that seed needs to be tested before it is used) or the long and expensive process of growing local native seed for a relatively small amount of seed will applied. In the interim, mechanical erosion control measures may have to be installed.

Duration

The duration of seeding projects is most likely going to be longer than with introduced species which will increase costs. Typical timeframe just to acquire local native seed is two to three years for many perennial grasses if everything goes smoothly. In some cases, growers may not be able to propagate difficult species or will have crop failures. Without high quality and adequate supply of seed, the contractor can't begin his work, and if the seed is not ready at a favorable seeding date, seeding may have to be postponed to another favorable season. During this time weed competition may become a cost factor. Management to control competing vegetation is often an unknown at many sites so it is best to reduce competition soon as possible. The amount and duration in relation to cost is difficult to determine ahead of time, especially if chemical control is not used. If chemicals are used, other downside effects may occur to non-targeted organisms.

MAKING THE FEDERAL POLICY WORK
Recognizing Basic Native Grass Applications

Basic Approaches Using Native Grasses

Four basic considerations should made in applying native grasses. These are:

- Σ Is seeding necessary?
- Σ What is the erosion potential?
- Σ Are you restoring, managing or maintaining sensitive vegetation?
- Σ Are you increasing native grasses and native grass populations?

The answers to one or more of these questions will provide you insight on how to plan successfully for any given project. Conventional seeding methods with commercially grown seed regardless of whether the seed is local native seed or otherwise is fairly standardized in the revegetation industry. However, alternatives to conventional seeding methods are not well-known nor practiced to any large degree. For examples, what are the precise criteria for an alternative of not seeding, and who decides and who is accountable for that approach?

Basis for alternative seeding methods may be the timeframe, diversity, size of seeding area or consistent availability of local native seed. On federal land that is being preserved and protected, one might assume that development and disturbance to the environment should be minimal in a relative sense. Further assumptions would be that the areas disturbed should be relatively small. Exceptions to this would be catastrophic events such as wild fire and landslides. Characterization of the need for seeding could be construed as providing site-specific or local seed for many small areas and occasionally considerable amount of seed for relatively large areas such as after a fire, natural disturbances, construction of a utility right-of-way.

Thus, a consistent market and availability for local native grasses for federal land could be rather limited and risky for seed producers. Increasing the market by including local and state lands that are adopting similar policies may help stabilize the

market, but the same premise still exists. Producers have to be sufficiently skilled and knowledgeable to respond to the needs of the various governmental agencies, but they also need to expand their markets if they are to have any opportunities to reduce the cost of their seed. One grower interviewed indicated that he would have to be given an order for at least 2 to 5 acres in order for him to economically produced the seed and that he would need to be able to harvest that seed for several years. Thus, if markets are not expanded, alternatives to conventional seeding and seed production may be needed or desirable for small areas in order to help achieve the goals of the Federal Policy. Two such alternatives are described below.

Wild collected seed or wild-harvested hay

Pacific Gas and Electric Company has had a long history of using site-specific native plants on their revegetation projects. These practices were instituted in 1978, many years before the recent regional policy was initiated. In natural areas in the Sierra National Forest disturbed by construction at the Helm Pumped Storage Project, PG&E demonstrated the successful use of native hay consisting of native grasses and other native herbaceous species. Native hay taken from mountain meadows as well as from upland montaine areas was effective for restoration of several of their construction sites (Chan, 1992). More recently, on the construction of the PGT-PG&E Pipeline Expansion Project that extended from the Idaho/Canadian border to Central California, native hay seeding was used in wetland/riparian areas including vernal pools (Anonymous, 1991).

Colgate-Challenge Case Study and Strategies -native seed mother blocks

From past experience with native hay seeding, one strategy incorporated into the proposal for vegetation management is developing native seed mother blocks in the Transmission line ROW. The primary objective is to establish native grasses to inhibit the regeneration of tree species, but in the process of doing so, established stands will be used as a source of seed or native hay for future seeding in the ROW as well as a source of seed for other revegetation projects in the Forest. The feasibility of this concept is being studied in a cooperative effort between PG&E and the Forest Service.

However, conventional seeding and seed production remains the primary source of native grasses. In many cases, there is no better alternatives. But, to make the Federal Policy work, alternatives for special situations and conditions may need to be developed.

Research & Development Needed

Various references for research and development have already been mentioned in various sections of this paper, and therefore the need will only be reiterated as being necessary to make the federal policy work. These areas included genetic studies, ecotypic variation studies, studies on species performance and establishment of difficult sites, technical transfer including expert database systems integrated with record-keeping/ documentation systems, and networking co-operation programs.

Federal Government's and Users' Effort

Cooperative effort on the part of the federal government and users of native grasses is a major element to the success of the federal policy. The government should be flexible as the situation warrants and adamant when the situation is clear. It should develop criteria that are reasonable and attainable within the scope of the federal policy. It should train its regulatory personnel to recognize various planting situations and how to treat them. Its personnel needs to be consistent in enforcing the federal policy and must keep current on any changes in the policy.

Users must do their share to support the federal policy and to preserve and protect our federal lands. Users should be knowledgeable of the Federal Policy. They should develop communications early with the regulatory agency(s) in determining their expectations and compliance. They should have the opportunity to provide input into the final plans in order to assure feasibility and economic stability during the planting project as well as working with the regulatory agency to establish an appropriate level of acceptance.

LONG TERM GOALS AND STUDIES TO REFINE THE FEDERAL POLICY

What Still is Needed

The federal policy for Region 5 identifies goals of using native plant materials, including native grasses. However, it needs to now detail how those goals will be achieved. Unless a program is developed which can provide users more precise guidelines on how to determine seeding prescriptions on a site-specific basis, the full value of the federal policy will not be achieved nor will it accomplish what it was intended to do. To make the federal policy work, real tangible cost-effective results must be achieved, and both the Agency and the User are accountable if they are not.

Basic scientific knowledge of native grasses needs to be applied at every planting site. At the present time we are only using a fraction of what we know about native grasses in seeding specifications. As previously mentioned, use of computerized expert database systems coupled with record-keeping systems of pertinent plantings would be powerful tools that will help attain the goals of the federal policy. These are long range tools that can organize what we know and how to apply that, and they can accelerate the process of organizing and utilizing new data achieved from research and development as well as from operational seeding under the natural conditions. In so doing, they will upgrade and transfer technology of native grasses and help assure their successful use.

Recommendations or Guidelines for Current Policy

The following are recommendations and guidelines to considered in taking action now in facilitating the implementation of the federal policy:

- Σ Specify and differentiate procedures for using local native seeds for
  - immediate implementation
  - seeding within 2 to 3 years
  - when no seeding is desirable or necessary
  - and when introduced species may be substituted on an exception basis
- Σ Initiate native grass seed acquisition in conjunction with the environment impact report process for major construction or development projects on federal land
- Σ Identify local sources of native grass stands of which can be harvested for use on federal land; clarifying collecting permit requirements
- Σ Provide free or minimal cost seed testing services for users that are contracted to seed or plant on federal land
- Σ Define effective temporary erosion control procedures for interim erosion control until an adequate and appropriate seed supply can be acquired and grass established

CONCLUSION

Close examination of seeding with native grasses compared to introduced species reveals that at this point in time they should be considered two distinct phenomena. It does not seem to be fair to compare the two and attempt to state whether one is better than the other. What is important is to determine which is appropriate for each individual planting situation. The federal policy is valid for the reasons stated in its general purpose. However, because of the state of technology in establishing native grasses, particularly in difficult, disturbed sites, the expectations of achieving high results with native grasses should be conservative, and compatible with what is found in nature.

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ANNOUNCEMENTS

The **California Native Grass Association** invites you to join the **Quail Ridge Wilderness Conservancy** in a natural history and cultural history boating and hiking tour of the Quail Ridge Reserve on Lake Berryessa

Saturday, May 17, 1997

This fun and very important fundraiser will help the California Native Grass Association in its ongoing efforts to develop, promote, and restore native California grasslands and to educate the public on the value of native grasses. It will also help the Quail Ridge Wilderness Conservancy in its efforts to establish a museum on the Quail Ridge Reserve, and to protect the diverse natural area of the Reserve.

The Quail Ridge Reserve, located on a 2,000-acre peninsula overlooking Lake Berryessa in eastern Napa County, is home to one of the finest stands of native oak-perennial grass savannahs in the entire state. There are 14 species of native perennial grasses at the Reserve, including stands of *Nasella pulchra* and *N. lepida, Melica californica* and *M. torreyana, Bromus carinatus,* and *Elymus glaucus.* Numerous oak species abound, and the number and variety of wildflowers growing on the Reserve is astounding. Over 60 varieties of butterflies have been seen. The variety of birds using the area is impressive, including bald eagles which are increasingly common around the Reserve. Native Americans used the area extensively. We will spend a large part of the tour learning about the Natural and Cultural history of the area.

This all-day trip will begin, rain or shine, at 10:00 a.m. when we will leave Markley Cove Resort for the south side of Lake Berryessa aboard a comfortable 35-seat capacity watercruiser equipped with a canopy, propane grill, and toilet facilities. We will begin the adventure by exploring the south lake by boat for about one hour. We will then land the boat and take a two hour hiking tour of the Quail Ridge Reserve during which we will observe the native grasses and other native plants, and learn about the natural and human history of the area from Dr. Frank Maurer, Executive Director of the Quail Ridge Wilderness Conservancy. We will particularly focus on the native grass/oak woodland habitats. After a lunch break we will cruise the main lake, exploring for another 1 1/2 hours while we learn more about the history and culture of the area. We will finish the adventure by exploring the east side of the lake where we will look for eagles and other wildlife before returning to Markley Cove approximately at sunset. Be sure to bring a picnic lunch and supper or evening snack, along with drinking water and any other beverage of your choice, sun and wind protection (hat, sunscreen, jacket), binoculars, and a camera if you wish. The boat is wheel chair accessible. (If you use a wheelchair, please call for details.)

We are all very busy and need a break from our hectic lives to enjoy one of the truly spectacular natural areas of the State. You'll get plenty of fresh air and exercise, and will be helping the California Native Grass Association and Quail Ridge Wilderness Conservancy which both need your support. The tour will be especially well suited for older children and families who are interested in the natural and cultural history of northern California. For information on the event contact Dan Strait at (916) 487-0747. For the purchase of tickets, call Markley Cove Resort (credit cards accepted) at (707) 966-2134. Be sure to register early because there will be room for only 35 participants. Those who register for the event by March 1, 1997 will receive a free pack of assorted California native grass writing cards, a $10 value, so please register early! Cards will be handed-out the day of the outing.

For those not able to attend the May 17th outing, the Quail Ridge Wilderness Conservancy will be having additional boating and hiking tours of the Quail Ridge Reserve all Winter and Spring. Every day at Quail Ridge is a unique adventure. For information about additional outings contact Frank Maurer at (916) 758-1387.

Cost: CNGA members, $35, nonmembers, $40.

New Publication Includes CNGA!

The newly revised and expanded 3rd edition of *Where on Earth: A Guide to Specialty Nurseries and Other Resources for California Gardeners*, by Barbara Stevens and Nancy Conner, published by HeyDay Books, has listed CNGA with more than 400 other nurseries, gardens, attractions, plant societies, and general resources. This 400 page guide lists for $12.95, ISBN: 0-930588-92-4. Inquires may be addressed to:

HeyDay Books
P.O. Box 9145
Berkeley, CA 94709
(510) 549-3564
FAX (510) 549-1889

OAK NEWS: THE OAK HABITAT RESTORATION PROJECT

Tenative dates for oak activities in 1997 may be obtained from The Walnut Creek Open Space Foundation, P.O. Box 309, Walnut Creek, CA 94597
Activities include: Seedling maintenance, search and protect seedlings from bare acorn plantings, acorn harves, volunteer luncheon, screen construction, acorn planting

NEW MONOGRAPH ON CALIFORNIA'S RARE LILIES WITH ORIGINAL FOUR-COLOR ILLUSTRATIONS

SACRAMENTO, CA — The California Native Plant Society Press (CNPS) has published *RARE LILIES OF CALIFORNIA*, by Peggy Lee Fiedler, with thirtyeight four-color original illustrations by Catherine M. Watters. This book is unique and ground-breaking in two ways - it provides the first account of the state's rare lilies, and it is the first book to look at all of the rare species, subspecies, and varieties within a large and broadly circumscribed family of California's plants.

RARE LILIES OF CALIFORNIA clearly shows that many native lilies in California are rare, most have no state or federal protection, and virtually all are threatened with local extirpation or extinction. Because of the clear picture it presents, this work will inspire a greater appreciation of the uniqueness of our California flora and conservation efforts for the lilies and other plants of California.

The author and illustrator use the well-known and universally appealing liliaceae plant family to show the many complex and contextual facets of rarity. The lily family stands alone in the western united States in its long evolutionary history, morphological diversity, phylogenetic complexity, potential economic value and its singular beauty.

The *RARE LILIES OF CALIFORNIA* will interest lay and professional botanists, undergraduate and graduate students, and anyone interested in wildflowers and botanical art.

Chapters include:
• **Introducing California Lilies,** with descriptions of the thirty four native genera, and morphological illustrations;
• Patterns of Rarity in California's Lilies, with discussions of the causes of rarity and protection of rare plants;
• **Patterns of Lily Evolution and Ecology in California,** with discussions of patterns of floral evolution, pollination ecology;
• descriptions and four-color original illustrations of thirty-eight of the state's most rare and beautiful lilies;
• Appendices, including tables of morphological variations in the Liliaceae and related families, liliaceous genera in California, rare, threatened and endangered California lilies ancl their protected status, and seven forms of rarity, illustrated by California Liliaceae

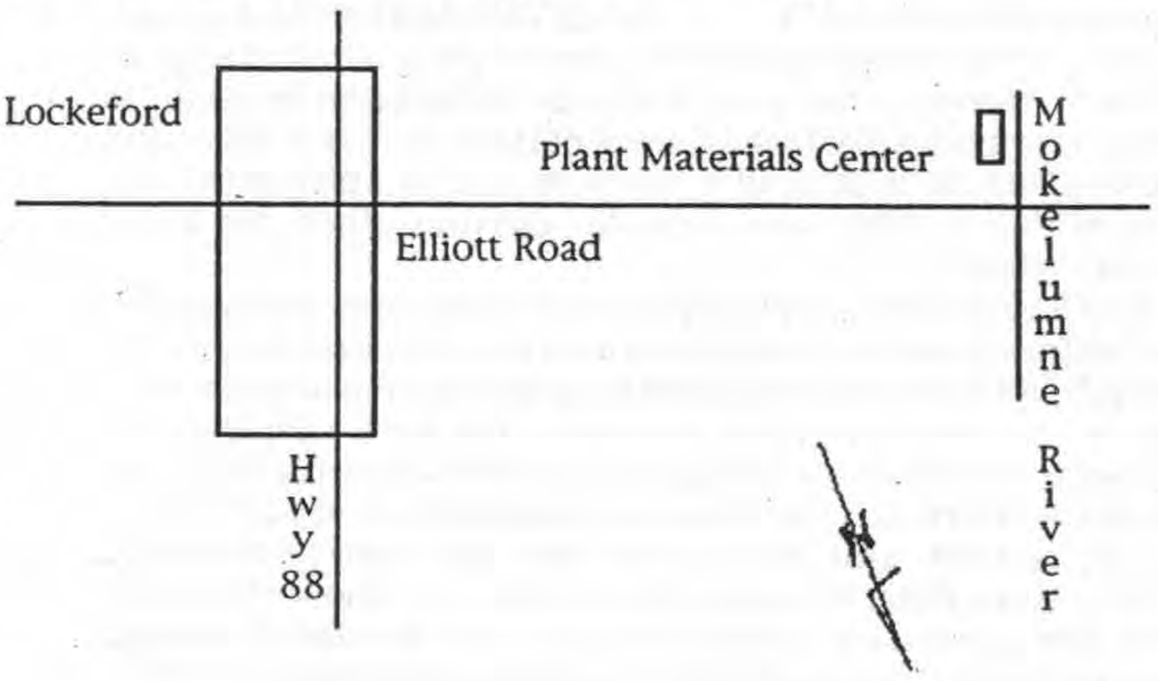
Peggy Lee Fiedler is Associate Professor and Director of the Graduate Program in Conservation Biology, Department of Biology, San Francisco State University. Catherine M. Watters is a Botanical Artist, painting in watercolor. *Rare Lilies of California is* her first book.

The California Native Plant Society of an organization of lay persons, students and professionals united by an interest in California native plants. The Society is committed to the dissemination of accurate biological information to facilitate plant conservation in the state. CNPS was founded in 1965 and has 8,500 members in 31 chapters throughout the state.
SAMPLE REVIEW COPIES AVAILABLE UPON REQUEST
TITLE: *RARE LILIES OF CALIFORNIA* AUTHOR: Peggy Lee Fiedler; ILLUSTRATOR: Catherine M. Watters PUBLICATION DATE: Dec. 1996 BINDING: Hardcover $100.00 ISBN 0-943469-31-X Softcover $24.95.00 ISBN 0-943460-30-1 PUBLISHER: California Native Plant Society Press OTHER SPECS: 154 pages, Including appendix, references and glossary, 38 illustrations on color plates ORDER FROM: CNPS, 1722 J St., Ste. 17, Sacramento CA 95814 916/447-2677; FAX: 916/447-2727 WHOLESALERS: BAKER & TAYLOR, MIDWEST LIBRARY SERVICES

LOCKEFORD PLANT MATERIALS CENTER
OPEN HOUSE MAY 8, 1997

9:40-10:00 Coffee and sign in.
10:00-10:15 Introductions and overview of plant materials program.
David Dyer, Plant Materials Center Manager
10:15-11:00 Native plant release guidelines.
Chip Sundstrum, Calif. Crop Improvement Assn.
Gene Bishop, PMC Soil Conservationist
11:00-11:15 Observations from the CNGA native brome study.
David Amme, Calif. State Parks
11:15-11:35 Rangeland seeding studies in the willows area.
Dennis Nay, Range Conservationist
11:35-12:30 PMC field tour.
12:30 Lunch (Please bring a lunch)

USDA - Natural Resources Conservation Service Lockeford Plant Materials Center
21001 North Elliott Rd. Lockeford, CA 95237
209-727-5319
One mile north of Lockeford and next to the Mokelumne River.



The Trinity County Resource Conservation District

The Trinity County Resource Conservation District will be presenting a one -day workshop on the revegetation techniques used in restoring the Grass Valley Creek Watershed. This workshop is intended for natural resource professionals and others involved in restoration projects. Topics to be covered.in the workshop include the following: vegetation inventorying and monitoring, fertilizing, native grass seeding, native and non-native grass mulching, outplantings, willow wattling and staking, and native seed collecting.

The workshop will be held in Weaverville from 8:00 a.m. until 5:00 p.m. on June 6th. Cost for the workshop is $35.00, and includes a copy of the RCD' s restoration manual and refreshments. For registration materials, please contact the Conservation District at 623-6004, or on the Internet at: http://www.snowcest.net/tcrcd/index.htm

BOOK REVIEW

Bromus L. of North America. Leon Pavlick. 1995. Published by the Royal British Columbia Museum. *Available in the United States from* The Reveg Edge, Box 609, Redwood City, California 94064, phone (415) 523-7333. 160 pp. paperback. $24.95 postpaid.

The last monograph on the North American *Bromus* was written 97 years ago. *Bromus* is probably the most taxonomically confused grass genus in California.

Pavlick unravels the species confusion that the Jepson manual created by lumping several species into "*Bromus carinatus.* " He subdivided the *carinatus* group into "new" species useful to the ecologist, resource manager and ecological restorationist by resurrecting a number of sometimes neglected taxa, "and some taxa treated in infraspecific rank or no rank at all...are again treated as species...," with *Bromus marginatus, B. polyanthus* and *B. subvelutinus* as examples.

According to Pavlick, the California native *Bromus* species now are:

B. arizonicus (Shear) Stebbins
B. carinatus Hook & Arn.
B. ciliatus L
B. grandis (Shear) A.S. Hitchc.
B. laevipes Shear
B. marginatus Nees.
B. maritimus (Piper) A.S. Hitchc.
B. orcuttianus Vasey
B. orcuttianus Vasey **var. *hallii***
B. polyanthus Scribn.
B. porteri (Coult.) Nash
B. pseudolaevipes Wagnon.
B. richardsonii Link
B. subvelutinus Shear.
B. suksdorfii Vasey
B. vulgaris (Hook.)Shear

Pavlick's work contains a straightforward key; species descriptions; and habitat and distribution information including maps for each species. He includes major references, and line-drawing illustrations for each species. What I am hoping to see in future editions is a list of the actual specimens that were used for the species illustrations, and their locations .

The appendices include a section on nomenclature cross references and type specimen data; glossary; and a bibliography with over 150 references cited.

This monograph will be the key reference on the *Bromus* genus in North America. I am personally eternally grateful for Pavlick's transformation of *Bromus,* from a taxonomic nightmare to an enjoyable group to work with.

—Craig C. Dremann, The Reveg Edge, Redwood City, California.

Call for Papers- CNGA and SERCAL Joint Meeting

The Annual Meeting of CNGA for 1997 will be held with the California Chapter of the Society for Ecological Restoration. They have reserved the Veteran's Center in **San Luis Obispo** for **October 21-23** (Tues-Wed-Thursday). The theme of the CNGA portion of the meeting will focus on the importance of localized genetics in native plant restoration.
Requirements that plant material be taken from the immediate location of a site to be restored often make restoration with native species prohibitively expensive. How do we deal with that problem?

We plan to have the **CNGA session on Thursday, Oct 23**. SERCAL will have workshops on the 21st, technical sessions on the 22nd, and shared presentations with CNGA on the 23rd. Field trips are scheduled for the 24th.

We are planning the CNGA plenary session to include invited speakers, and later, several shorter presentations. We would like our invited speakers to discuss:

- How did the USFS deal with the greenhouse industry in reforestation contracts and the decisions on what ecotypes to use for collection, grow-out and re-planting? Could we use lessons learned in that process as the native grass industry grows?

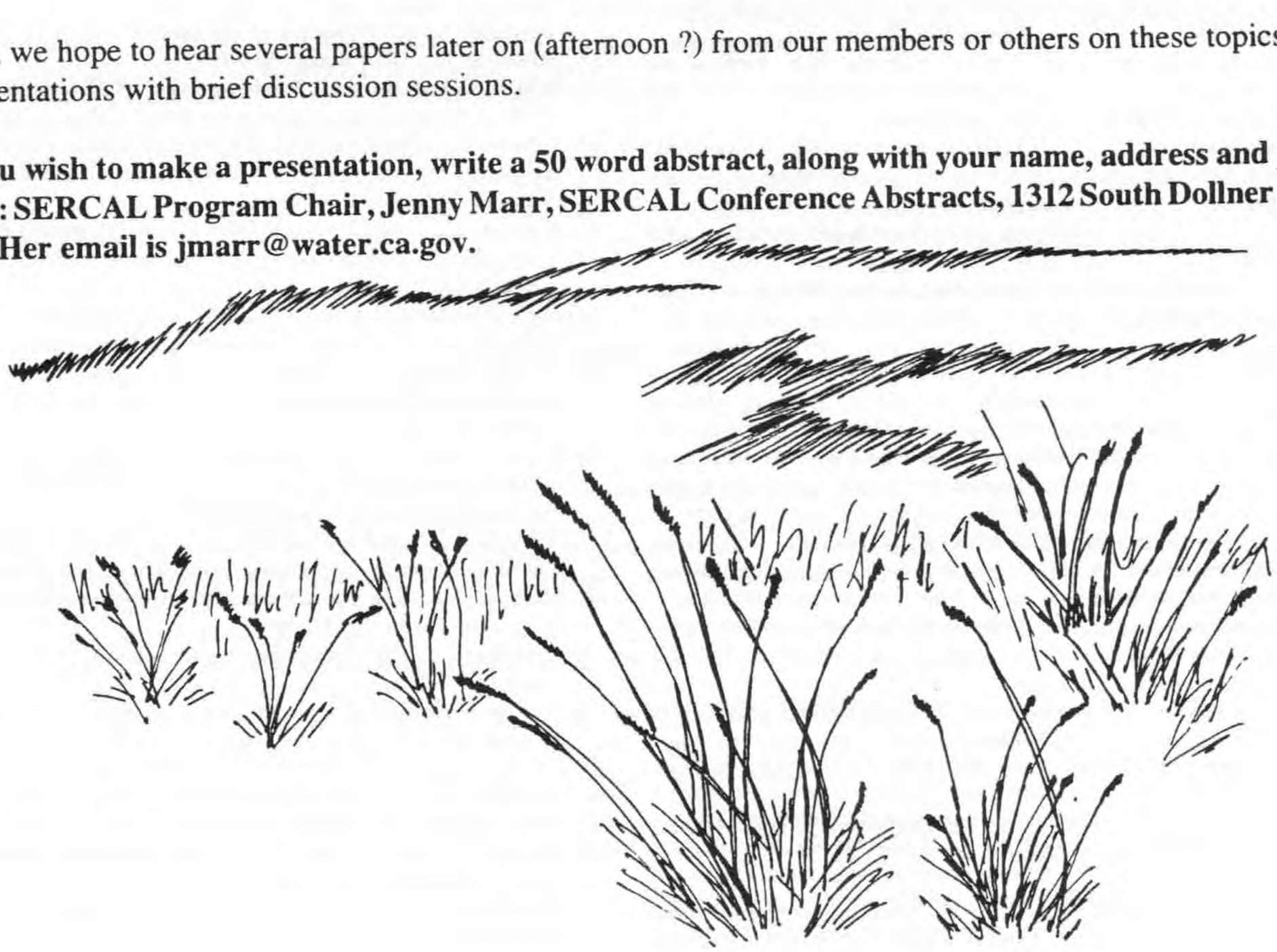
-From the perspective of North America, what are the patterns of morphology or genetics in grasses? Which genera or species have been studied? How much more needs to be known? Which species are well known; can we generalize from them? What are the most cost-effective things to study (morphology, enzyme electrophoresis, DNA minisatellites, etc.)? Dr. Mary Barkworth has agreed to bring the perspectives of a plant taxonomist to these questions.

- How can the University of California serve this growing industry in dealing with "appropriate" genetics? How can the existing programs in Agronomy and Natural Resources meet this need and help promote the use of native grasses? We are hoping that Vice President Reg Gomes or a representative from UC-Systemwide can talk with us.

- From the perspective of the four largest native grass seed producers, what are the dimensions of the problems with "local" seed demands. What is the economic value of native grass seeds statewide? What is the potential value? What agency (federal and state) are potential markets? Is seed supply, as dictated by "local" demands, limiting market potential? We look forward to contribution from Scott Stewart, John Anderson, David Gilpin, Paul Kephart and Vic Schaff as co-authors.

Then, we hope to hear several papers later on (afternoon ?) from our members or others on these topics. These will be shorter presentations with brief discussion sessions.

If you wish to make a presentation, write a 50 word abstract, along with your name, address and phone number and send to: SERCAL Program Chair, Jenny Marr, SERCAL Conference Abstracts, 1312 South Dollner Street, Visalia, CA 93277. Her email is jmarr@water.ca.gov.



GRASSLANDS NOTES AND OBSERVATIONS

DR. G. LEDYARD STEBBINS PUBLICATIONS AVAILABLE

Dr. Stebbins, the fascinating, prominent evolutionary geneticist has studied genetics of California Native grasses for over 65 years. Dr. Stebbins now has a world-wide website which lists his 265 publications. Copies of these publications are available from Dr. Stebbins in reprint or photocopy form, and are ordered by their numbers. His complete list of publications, chronologically listed, are at:

http://www.batnet.com/rwc-seed/stebbins.html

I have listed below a selection from Dr. Stebbins' list of publications for the readers of *Grasslands*. **No. 104** will be of great interest to people working with *Elymus glaucus*. the story of the discovery of microspecies within the *Elymus glaucus* complex. Dr. Stebbins found that different populations of *Elymus glaucus* will not produce fertile seed when cross pollinated. Therefore they are genetically isolated, like species. He calls this genetically isolated material *microspecies* or *cryptospecies*.

No. 60 will be of interest to southern Californian native grass enthusiasts working with *Elymus condensatus* and *Elymus triticoides*. Each of his papers serve to remind us of the wealth of research and information on native grasses that Dr. Stebbins has to offer. His formidable body of work is a valuable foundation for our modern understanding of native grass genetics.

You can also chat with Dr. Stebbins directly. Phone him on Mondays, Wednesdays or Fridays from 10 AM-1 PM at **(916) 753-2665**, or you can make an appointment to come and visit with him. Contact Dr. Stebbins' assistant, Molly, for reprint prices.

—Craig C. Dremann, The Reveg Edge

Selected articles by Dr. Stebbins on grasses:

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President's Address

John Menke
Spring 1997

Let me begin by saying that I am pleased and honored to help CNGA continue to develop, promote and restore the role of native grasses and other lifeforms of plants in the diverse landscapes of California. I remember the formative meetings we had in developing this organization, and the initial leadership and enthusiasm of Bob Delzell, our first President. I am studying where I can make the largest contributions to CNGA in following-up on immediate Past-President Mark Stromberg's legacy, among other accomplishments, of getting our financial house in order. I am working hard to carry on our history of President's making these kinds of commitments. I also want to recognize Dan Strait for his mentorship during my President-Elect tenure. Talk about communication linkages, Mark and Dan are champions of e-mail and frequent daily communication for the benefit of making the best decisions for CNGA's members and others using the plant materials and technology we all believe in.

Being a University of California employee for the last 24 years, and having served on project committees such as the UC Integrated Hardwood Range Management Program development committee and the Sierra Nevada Ecosystem Project Science Team, I felt my greatest contribution to CNGA would be to foster larger research and cooperative extension efforts in the University of California and other educational institutions concerning restoration ecology of native grasses, grasslike plants and forbs. Having spent my career in conservation aspects of range management related to livestock grazing, I am finding the diverse application of native plants to be mind expanding, challenging and incredibly interesting. From erosion control, to biodiversity restoration, range improvement, wetland restoration, habitat enhancement, to community beautification, the uses seem endless.

However, uses and opportunities are not without challenges and controversies, and most of us see that many of CNGA's goals are information limited. While trial and error experience can take programs a long way, some questions are best, or can only be, answered once organized research and extension outreach programs are in place. I have set a personal goal of promoting a larger effort by existing university research and extension faculty, and where possible recruitment of faculty devoted to restoration ecology and associated technology development.

To kick off the effort, the CNGA Board invited and visited with UC Division of Agriculture and Natural Resources representative, Dr. Robert Peyton on March 10th at our regular Board Meeting. Dr. Peyton was highly interested in our initiative and made several constructive suggestions on how we might proceed. Closer communication with the California Biodiversity Council was one suggestion we will pursue. Mark Stromberg has already presented a program to them. Development of an issues and scoping document appears necessary to begin a greater dialog.

Another task needing to be done is to inventory existing faculty and extension personnel statewide for several related fields of plant science, plant genetics, restoration ecology, weed biology and management, and conservation ecology as they relate to native grasses. Communication with the various departments in the University of California system-wide and State universities is an important additional task. For example, the Department of Agronomy and Range Science at UC Davis has prioritized a new extension faculty position in restoration ecology. Recruitment of university faculty and extension specialists into CNGA will always be a valuable way to communicate our needs and goals.

Dave Dyer, Lockeford Plant Materials Center Specialist and CNGA member, recently sent me the March 1997 issue of "Golden State Plant News", the newsletter of USDA/NRCS plant related programs. I am pleased to report that the 26-field office reports from Alturas and Yreka to Indio, California had a substantial discussion of native grass trials and restoration efforts. Many of us have been critical of what we have considered to be an excessive use of exotic grasses. While exotics are still a major part of the USDA program, there is an increasing emphasis on natives.

Past President Mark Stromberg continues to work with representatives of the California Chapter of the Society for Ecological Restoration on arrangements for our joint annual fall 1997 meeting with SERCal in San Luis Obispo. Arrangements so far indicate we will have a fabulous joint meeting with numerous choices for full or partial attendance to the main program and selected workshops. More details are forthcoming.

CNGA Board Member John Anderson has arranged two back-to-back workshops for May 22-23 at his farm, with an indoor session at the Winters Community Center (see details in this newsletter). Themes are 'Evaluating Native Plants in the Farmscape: The right species in the right place' and 'Using Prescribed Fire for Vegetation Management: Workshop for Land Managers'. These are outstanding opportunities for hands-on experience sharing!

Finally, in the last newsletter we inadvertently overlooked reviewing Board Member Glen Holstein's presentation at last year's fall meeting. Glen presented an important talk which may help explain why native grass restoration projects in the Central Valley fail too often. Based on growing evidence, Glen suggests that the strongly rhizomatous native grass, Leymus triticoides, was more frequently dominant than bunchgrasses in most parts of the Central Valley. He pointed out the limited evidence for historical dominance by Nassella pulchra in the Central Valley, and why trying to establish primarily oak woodland understory grasses like Elymus glaucus and Bromus carinatus in Central Valley open areas usually fail. Glen stressed the need for more emphasis on native sedges and herbaceous forbs in parts of the Central Valley.

CNGA BUSINESS NEWS

CNGA's NEW VOICE MAIL PHONE

CNGA has a new phone number, with voice mail, for the benefit of our members and the general public. Please note, however, that as of November 1, the area code will change from **916** to **530**. The phone number currently is: 916-759-8458, Extension 3. The number as of November 1 will be 530-759-8458, Extension 3.

IDEAS FOR CONSULTING LIST

It has been proposed that CNGA 'provide' a list of members who volunteer for consulting on a variety of topics, to be made available, either as part of our CNGA voice mail, or for MaryKate to use to respond to requests for information. Possible topic areas could include native grass genetics, n.g. restoration techniques, n.g. seed sources, n.g. management (fire, grazing, mowing, exclosures, etc.), n.g. ecology and distribution. Not only would such a list be an aid to MaryKate, but it would further our mission goals. Any feedback? Any volunteers? Please contact MaryKate at the CNGA phone number.

CNGA MEMBERSHIP LIST DISTRIBUTION POLICY

It is the policy of CNGA that the general membership list be maintained in confidence except for very selective sharing with Board-approved, not-for-profit professional organizations and societies. Because of the broad and diverse background of the CNGA membership, this policy does not preclude the development and distribution of Board and member-preapproved lists of the selected subsets of the membership. It is further the policy of CNGA, that selling of any general membership list is forbidden. Handling and mailing costs may be charged to cover costs of list development and distribution.

CNGA POSTER

Carolyn Shoulders, aided by Wilma Follett of the California Native Plant Society, is moving forward on poster production of California Native Grasses, to be ready in time for the October Annual Meeting.

CNGA BROCHURE UPDATED

Mark Stromberg has produced a beautiful new brochure that is the first new one for CNGA in about four years. If you are in a position to distribute copies—i.e., representing CNGA at some related meeting, please contact MaryKate at the CNGA voice mail.

CNGA REPRESENTED AT THE APRIL 20TH CONCORD PAVILLION EARTH DAY

MaryKate Sleeper, who many of you may not yet have had the pleasure of meeting or talking to (she is our behind-the-scenes accomplisher of all things to keep the organization going), has volunteered to represent CNGA with our display at this event. CNGA is occasionally asked to appear at other events, such as landscape architecture meetings, or ecological conferences. We have not had our display updated recently, and would appreciate photos of beautiful native grass landscapes, whether rural, urban, restoration sites, or production.

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Donations: to support CNGA in its efforts to Develop, Promote, and Restore, I am enclosing a donation of $_____for_____
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