STATEMENT OF POLICY - SEEDING AFTER WILDFIRE
Adopted December 2, 1995

POLICY: The California Native Plant Society (CNPS) strongly urges public agencies to allow burned wildland areas to revegetate naturally and opposes the practice of artificially seeding undisturbed burned watersheds.

The CNPS recognizes the serious dangers posed by post-fire flooding and erosion, and that there are liability issues faced by public agencies; however, significant evidence is available that seeding of burned wildlands is ineffective at protecting life and property and can impair the recovery of native plant communities.

BACKGROUND

Fire is a natural process in most California ecosystems, many of which are experiencing increased urbanization. Many plant communities and species are specifically adapted to periodic fires. Fire suppression policies have resulted in unnaturally high fuel levt6ls in many wildland areas close to human habitation. Consequently, these areas are susceptible to catastrophic wildfires that remove vegetative cover from vast expanses of land. Burned watersheds are prone to accelerated runoff, erosion, and debris flows, which pose dangers to life and property downslope. In attempts to prevent or alleviate these dangers, burned areas have often been seeded with grasses or other plant species that are expected to provide rapid vegetative coverage of slopes, thereby stabilizing the soil and reducing the magnitude of flooding.

Millions of tax dollar's have been spent on aerial seeding of burned areas. At the same time, a growing and convincing body of scientific evidence indicates that seeding is generally ineffective in reducing erosion, and is ecologically disruptive to native plant and animal communities.

This position statement addresses seeding of undisturbed wildlands following wildfire. Firelines, roads, helicopter landing pads and other severely disturbed areas may be unable to rapidly recover and revegetate following fire. Seeding with local native species may therefore be effective in reducing post-fire erosion from such severely disturbed soils.

ARGUMENTS AGAINST SEEDING

The arguments against seeding can be divided into two categories:

1) Seeding is ineffective in reducing threats to life and property from post-fire flooding and erosion, and;

2) Seeding has serious negative effects on the recovery of native vegetation.

The references listed at the end of this document form the basis for the following points:

1. Seeding is not a reliable method of reducing post-fire erosion.

A. Some researchers have found that seeded areas can experience greater erosion than comparable unseeded areas [e.g., due to an unexpected increase in gopher activity in seeded plots as demonstrated by Taskey et. al. (1989)].

B. In order for seeding to have an effect on erosion and flooding, seeds need to germinate early in the fall and plants must develop sufficiently to provide cover and root mass before major winter storms. Therefore, seeding requires a precise sequence of meteorological events that cannot be relied upon: the first rains must bring sufficient water for germination, yet be gentle enough so as not to wash seeds off slopes.

C. Similarly, when major storms occur early in the year following a fire, before seeded species are established, seeding has little or no effect on erosion or flooding.

D. Seeding is ineffective on steep slopes (>35%) because the steeper the slope the less likely seeds are to stay in place and germinate successfully. For example, a flush of green grass is often observed at the base of steep slopes with few seeded species present on the slopes themselves [e.g., Janicki (11989)].

E. Seeding has no effect on the process called dry ravel by which soil moves downslope during and subsequent to burning of supporting vegetation. Dry ravel can be a major component of the total sediment yield from burned watersheds (Spittler, 1994).

F. Debris flows (large flows of mud, rocks, and other debris) frequently occur during mid-season storms after soils have become saturated. Seeded plants would not be established by this time.

2. Natural vegetative recovery can be compromised by artificial seeding

A. Several studies have shown statistically significant reduction in abundance of native seedlings when seeded grasses established successfully (Barro and Conard, 1987; Janicki, 1989; Keeley, 1995; Spittler, 1994; Taskey, 1989).

B. Flashy fuels created by grasses can increase the likelihood of a premature reburn, which can result in the elimination of key shrub species from chaparral plant communities, effectively bringing about a type-conversion to a herbaceous community of non-native grasses and forbs (Keeley, 1995).

C. When native shrub seedlings are displaced by seeded grasses, the effects last long beyond the first year or two after the fire. Some evidence indicates that when steep brushland slopes are type-converted to grassland, the incidence of erosion and slope failure can increase markedly due to the shallower interface between roots and underlying soil (Barro and Conard, 1987).

D. In chaparral, native fire-following annuals could be diminished in or eliminated from the soil seed bank if they are repeatedly subjected to competition from artificially seeded grasses. Seeds of these specialized plants lie dormant in the soil between fires and only complete their life cycle in the first year or two after fires. This burst of growth by fire annuals helps to retain nutrients on burned sites (Keeley, 1994; 1995).

E. Artificial seeding can open up previously resistant plant communities to invasions by weedy plants and other pest species, thus decreasing native biological diversity and possibly impairing function of ecosystem processes, some of which protect downstream values. For example, a recent US Forest Service study (Conard and Beyers, 1993) showed that significantly more non-native Brassica was found in plots seeded with ryegrass than in those allowed to revegetate naturally.

COMMENTS ON THE USE OF “NATIVES" FOR POST-FIRE SEEDING

The use of native species rather than the traditional European grasses and forbs has been put forth in recent years as a solution to the post-fire seeding dilemma. CNPS urges consideration of the following points with regard to this issue:

A. If species or varieties are used that are native to California, but that are not locally native to the specific area to be seeded, there is the potential for contamination of the local gene pool. This can lead to a loss of vigor in populations endemic to the site, and possibly to a long-term loss of vegetative cover.

B. There has been much discussion of developing large supplies of locally native seeds in order to seed burned areas with genetically appropriate plants that originated at or near the target site. However, the

feasibility of this practice is questionable (e.g., Keeley, 1995). Realistically, it is probably beyond the capacity of land managers to collect and store enough seed to cover the many thousands of acres burned each year.

C. As more is learned about the ecological complexity of the native flora and its response to fire, the wisdom of artificially applying seed of any species is called into question. Researchers such as Keeley (1995) stress the potential for disruption of critical small-scale ecological patterns in burned plant communities.

D. Artificial seeding with any species is not likely to produce significantly better results than allowing natural vegetative recovery.

COMMENTS ON THE USE OF DOMESTICATED GRASSES SUCH AS OATS OR BARLEY

The use of domesticated species such as cultivated oats (*Avena sativa*) and cereal barley (*Hordeum vulgare*) is frequently proposed as the least dangerous form of seeding. The reason for this is that these species are thought to be unlikely to persist beyond a year or two or to invade the native plant community. Further research is needed to test the validity of these assumptions. Neither available empirical data nor anecdotal accounts are sufficient to show that seeding with these species succeeds in reducing erosion without disrupting native ecosystem recovery.

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Background information and references can be obtained by calling CNPS at (916) 447-2677

ADDITIONAL BACKGROUND READING

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