

MEMORANDUM

SUBJECT: Vegetation Management Workshop
TRA FILE:
DATE: July 29, 2002
FROM: TRA
TO: San Bruno Mountain HCP Trustees

A public vegetation management workshop was held on June 27, 2002.

Presenters and topics included:

Eben Polk, TRA: Exotics control, and history of burning and grazing on SBM

David Amme, Resource Restoration and Management: Proposed pilot grazing plan for SBM

Ray Budzinski, East Bay Regional Parks District: Grazing and controlled burns in EBRPD

Paul Kephart, Rana Creek Restoration: Controlled burns and grazing at Russian Ridge (MROSD)

Don Rocha, Santa Clara County Parks: Controlled burns and grazing in SC County Parks

Doug Tolar, Bay Area Air Quality Management District: Rules for Prescribed Burns

Summary

The purpose of the workshop was to share and make publicly available information about vegetation management at several locations in the Bay Area, with attention to any information which could improve or direct the same at SBM. Discussion focused on grazing and burning, two natural processes which have been missing from SBM for many years.

The goals of other agencies in using grazing and burning are to increase the number and diversity of native plants, reduce exotic plant infestations, and control fire hazards. The SBM vegetation management program is unique in that in addition to these goals, it has a primary goal of providing quality habitat for endangered species and a secondary goal of rejuvenating senescent stands of manzanita and blue blossom.

Each panelist shared current methods used to manage vegetation, primarily grazing and burning, and addressed the unique characteristics of their program (purpose, directing agency, specific butterfly biology, financing and labor supply) which constituted either challenges or advantages in managing vegetation.

Of the presenters, Paul Kephart provided the most detail regarding the success of various combinations of grazing and burning at Russian Ridge, in addition to costs. All presenters stressed the need for a cooperative relationship with CA Dept of Forestry (CDF). Another theme was the need to educate public users of these managed areas on the short-term aesthetic impacts of grazing and burning, and the longer-term benefits.

Controlled burning on SBM has proven difficult to implement recently. Unplanned burns in 1998 and 2000 had the effect of reducing coastal scrub and improving numbers of butterfly host plants, but areas burned without followup efforts were also more susceptible to colonization of adjacent exotic plants. A planned burn in the Juncus Parcel as part of Terrabay's restoration

efforts was complicated by the need to avoid of callippe and bay checkerspot host plants, and canceled due to lack of CDF involvement.

While grazing and fire have been absent from SBM (30+ years), coastal scrub has expanded significantly into the grasslands. The grassland has been reduced in extent significantly in some areas, and has been somewhat compromised by increasing numbers of non-native grasses (which are not treated with herbicide or hand work) and other exotics. Many questions remain surrounding the best timing and combination of grazing and burning on San Bruno Mountain, given the unique goals of the HCP.

David Amme has completed a 3-year pilot grazing plan estimated to cost \$50,000, which he discussed at the workshop. Mr. Amme stressed the need to combine both grazing and burning tools together. We recommend that a burning plan be integrated into the grazing plan to test the efficacy of various combinations of effort. If funded, this plan can test the specific benefits of grazing and burning in several areas on SBM. It is likely that these tools can be used in concert with native planting from the Friends nursery and herbicide and hand control for better management than has previously been achieved.

In summary, burning and grazing on San Bruno Mountain represents a return to more natural ecosystem processes. The developments built on San Bruno Mountain under the HCP were constructed with fire in mind.

Successful use of these tools will require:

1. Increased funding.
2. An amendment to the existing HCP to cover callippe and bay checkerspot butterflies.
3. Increased agency support, including local fire departments, CDF, US Fish and Wildlife Service, and CA Dept of Fish and Game. It is recommended that a controlled burning program should depend as much as possible on local fire departments, to lessen dependencies on a CDF agency with limited manpower and political commitment, and to provide training opportunities to local fire departments.
4. Increased staff time at county and/or city level, including the pursuit and administration of funding grants and efforts at public education.

Notes from Grazing and Burning for Vegetation and Habitat Management Public Workshop

June 27, 2002

Eben Polk, Thomas Reid Associates

3 phases of vegetation "management" regimes & vegetation characteristics at SBM

- Pre 19th century – native animal grazing, intermittent fire, native grasslands
- 1880's – mid 1960's – change from dominance of native perennial bunchgrasses and coastal prairie to dominance of European annual grasses (original extent and composition of native grassland unknown), cattle grazing
- 1970's – present – no grazing, fire suppression, coastal scrub expansion, reduction in grassland quality, increase in thatch of grasses

Currently, problems with coastal scrub encroaching on grassland and threats from invasive exotic plants

Importance of vegetation management

- Maintain habitat for endangered butterflies
- Maintain native plant biodiversity for continued ecosystem functioning

Exotics – At least 35 exotic pest plants on SBM

- Trees: eucalyptus
- Shrubs: gorse, broom
- Herbs: fennel, radish, Italian thistle
- Grasses: many including rattlesnake grass, wild oat, brome, velvet grass, Italian wild rye

Recent History of Burning at SBM: Planned burns: generally limited to eucalyptus slash and gorse

- June 1998: unplanned burn on Callippe Hill, NER. Likely effects: reduced callippe larvae and adults in 1998, significantly increased viola in 1999, increase in *Erodium*, re-establishment of non-native grasses.
- September 2000: unplanned burn (approx 10 acres) near Brisbane Water Tank. Effects: recovery and recruitment of *Lupinus albifrons*, *Viola pedunculata*; also "carpets" of *Erodium* sp. and *Oxalis*.
- Fall 2001: planned burn for Juncus Ravine area failed due lack of manpower from CDF
- 2001: planned burn for Kamchatka Point to kill tussock moth infestation of manzanitas and stimulate seedling germination. Was canceled due to last-minute concerns of Parks in wake of NM fire that got out of control
- Burns have proven difficult to implement.

Recent History of Grazing:

- In August 2001 Meyers Development grazed a strip along Hillside. Grasses were eaten and in many cases bunchgrasses were left intact or partially intact. Large fennel were not eaten, broom was stripped. These plants were left more accessible for hand or herbicide treatment.

Goals in burning and grazing:

- reduce and arrest invasion of exotic perennial herbs, shrubs and trees
- reverse replacement of grassland with coastal scrub
- restore competitive advantage of native grasses and butterfly host plants over non-native grasses
- stimulate senescing *Ceanothus* and *Arctostaphylos* populations
- additional advantage: training for local fire crews

*Comment from Roman Gankin –involved at SBM since 1957 – consequential fire in 1964 on northern slope resulted in coastal scrub expansion, though there was no grazing at that time

David Amme, Resource Restoration and Management – A Grazing Plan for San Bruno Mountain

- Fire and grazing are the 2 most important processes that govern structure, function, and composition of California’s plant communities
- Public perception of grazing on public lands can be problematic
- Currently grassland in islands on SBM, some in land that was formerly cultivated, some in land that was uncultivated
- Stewardship grazing – includes grazing and prescribed burns; includes control of the season, frequency, duration, and intensity of grazing
- Developing 3 year pilot grazing program
 - priority areas
 - adaptive management
 - late fall, early spring grazing
 - 120 – 150 animals, 60% goats, 40% sheep, 24-hour shepherd
 - grazing cells of 1 –2 acres, aim for 60 – 70 acres grazed per year
 - estimated cost: \$45,000/yr implementation, \$5000/yr monitoring
- Also developing 5 year infrastructure improvements plan
 - for Guadalupe Hills and Southeast Ridge grassland areas
 - long range planning for infrastructure and community relations
 - implement permanent boundary fencing and dependable water supply through phased development
 - Fencing program cost: \$270,000 for 11.4 miles of fence
 - Water supply cost: \$75,000 for basic system, labor, and materials
- Monitoring techniques: permanent plots and transects; enclosure “control” plots; measure cover, composition, height of vegetation; known # of animals and duration of grazing; measure RDM (residual dry matter); target habitats, indicator species
- Oversight team: coordinate with agencies and community; document program; adaptive management
- Targeted areas: Dairy Ravine, Saddle, Northeast Ridge, Tank Ravine, Brisbane/Army Rd.

Ray Budzinski, Wildland Vegetation Program Manager, EBRPD – Grazing and Controlled Burns in the East Bay Regional Park District

- Mostly non-native herbaceous vegetation – very prolific, competitive, productive – lots of biomass produced that needs to be managed
- If decomposition is less than production, biomass accumulates – high fuel load for wildfire, also creates layer of thatch in grassland that is not grazed or burned
- Public agencies can be held liable for damage if wildfire results from lack of fire prevention
- Disking of land edges used for fire breaks – not necessarily effective, can have biological impacts to sensitive species (i.e. burrowing owl, Alameda whipsnake), disturbs soil and allows invasives to colonize
- Prescribed burning as a management tool: issues include air quality, controlling species that colonize after burn, difficult to implement – requires flexibility and availability of fire crews
- Grazing as a management tool:
 - efficient, easy to regulate and manage
 - directed by characteristics of different grazers – sheep: good for enhancing perennial, native bunchgrasses; goats: eat woody vegetation
 - grazing on public lands can have economic and open space benefits (supporting ranchers)
- Costs of grazing
 - infrastructure (water, fencing) – may need to fence off sensitive areas (i.e. creeks, wetlands)
 - possibility of overgrazing if you don’t understand carrying capacity of land

- mapping and planning for infrastructure and vegetation types
- At EBRPD, budget for management is generated through grazing contracts (mainly for cattle)
- Goal is to have intermediate amount of residual dry matter (RDM) left after grazing (250 – 500 lbs. per acre) – protects against erosion, protects soil microclimate
- Overall, land needs to be managed to maintain high biodiversity (can't expect nature to take care of it in a system that is impacted by human disturbance)

Paul Kephart, Rana Creek – Controlled burns and grazing at Russian Ridge, Mid-Peninsula Regional Open Space District

Goals for restoration and management at Russian Ridge

- Reduce yellow-star thistle (YST) and Harding grass (*Phalaris* sp.)
- Reduce weed seed bank in soil and control weed seed production
- Reintroduce site-collected native plants
- Control outlying “colonizing” pest plants
- Develop best practice methods and assess costs

Why do restoration and management?

- Get a better understanding of ecological results of management
- Declining native biodiversity

Coastal Prairie community: located along narrow band of coast from San Luis Obispo County to Oregon border; includes terrace prairie, bald hills, inland ridges

- Species composition: high biodiversity – 74 grass species, 253 forb species; *Nassella*, *Elymus*, *Danthonia* are most common species

Methods:

- Visual analysis and transects used to locate treatment areas
- Set up permanent monitoring areas with GPS; quantified with GIS
- Analyzed species cover before and after treatment (used Daubenmeyer Quad)

Treatments:

- Grazing (sheep and goats)
- Herbicide
- Mowing and hand weeding
- Prescribed fire and native plant seeding
- Prescribed fire and native plant seeding, plus Harding grass control

Grazing

- Effective at reducing aggressive annual grasses and weeds (Menke 1989)
- Use intensive, short duration grazing (Lanini et al. 1996)
- Reduces biomass/fire hazard, also reduces thatch
- Animal impact helps disturb soil for planting
- Can be used to create fire breaks with less soil disturbance than disking
- Natural process (no chemicals)
- At Russian Ridge – grazing effective at YST control

Herbicide

- Spot spraying on mature plants (after native forbs finished)
- Used for Harding grass control
- Outlying plants missed in herbicide treatment became seed source for weed expansion

Prescribed fire

- Can be timed to prevent seed maturation
- Reduces biomass
- Low cost per acre (compared to mowing)
- Removes mulch layer, stimulates native plant regeneration
- Repeated burning can reduce invasives
- Need to have good relationship with fire district
- Need to keep burn to its prescription
- At Russian Ridge – 80 acre burn with 100 people on the ground, estimated cost of \$5000 per hour for agency personnel

Native seed planting

- Preserve local gene pools
- Identified perennials that could compete with non-natives
- Perennial natives have deeper root systems – filter water and nutrients through soil
- Did cross-drilling seeding pattern with grasses and forbs, allows grasses to compete (in mixed drill seeding, forbs grow faster and out compete grasses)

Results:

All treatments were effective in reducing YST, different costs per acre

Burning and native seeding: most effective

Seeding very effective – increased natives, decreased exotics

Grazing benefited both natives and exotics

The speaker ran out of time to thoroughly review results – available in powerpoint presentation

Don Rocha, Natural Resource Management, Santa Clara County Parks – Controlled burns and grazing in Santa Clara County Parks

Natural Resource Management –

- Goals and objectives – resource goals, department goals
- Needs and constraints – resources, user conflicts, permitting
- Example: trails maintenance program works with resource management to do restoration work on trails as they are being maintained – cooperation prevents disturbed trail edges from becoming source of weeds

Cattle Grazing – used extensively in Santa Clara County

- Agreements – license vs. spot grazing permit
- Program Implementation – Prescriptions, Assessments, Flexibility, Cooperation
- Grazing used to successfully control yellow star thistle – cattle graze plants before they go to seed, same with fennel – prevents increase in seed bank
- Minimize impacts through rotation of cattle, fencing around sensitive areas, restoration for areas that were impacted before management practices began
- Short-term aesthetic impacts of grazing needs to be explained so that people understand entire process

Prescribed Burning – limited use in Santa Clara County

- Coordination, Permits, Cooperation, Resources
- Hard to coordinate with all the different agencies needs – CDFG imposes buffers around wetlands because of the California red-legged frog; CDF availability
- Monitoring/Adaptive management, Flexibility

Doug Tolar, Air Quality Specialist – Bay Area Air Quality Management District

- New rules for prescribed burning – projects regulated as Wildland Vegetation Management Fires in District Regulation 5: Open Burning
- Fires must be conducted within the limits of a written Smoke Management Plan (SMP) and prescription that describes appropriate range of weather, moisture, fuel, and fire parameters to achieve desired effects of burn

Requirements and Limitations – most of work goes into planning and creating the prescription

- Prescribed burning must be conducted by state or federal agency, or by a private organization in a cooperative agreement with a state or federal agency
- Prescribed burning allowed year-round only on permissive burn days
- Prescribed burning projects must receive prior written approval of the SMP by the District's Air Pollution Control Officer (APCO)
- Burn applicants must submit SMP at least 30 days prior to proposed date of burn
- All SMP's must include all the information specified in Reg. 5, Subsection 408.1 for approval
- No burning is allowed until applicant receives an acreage burning allocation from the APCO prior to ignition on each day of a burn
- The acreage burning allocation issued by the APCO will govern permission to burn on a permissive burn day
- The meteorological prescription in the SMP must also be present prior to ignition
- For each day of the burn, applicant must report total acreage burned and tonnage of vegetation actually burned to the APCO before noon on the next day
- Burners required to submit a post-burn evaluation to APCO within 30 days following project that addresses whether the project objectives were met and describes actual smoke behavior

Note: New enforceability if burn is outside of prescription – under Reg. 5, Subsection 301.3

Reasons burns fail to be implemented

- Don't meet prescriptions (i.e. weather conditions are never as specified)
- Lack of resources (CDF availability based on season and other fires requiring their attention)

About 40% of planned burns get implemented

Any size prescribed burn is subject to the new regulations