

April 5, 2000

Congress of the United States
House of Representatives
Subcommittee on Forests and Forest Health
Attention Michael Twinchek, Clerk
1337 Longworth House Office Building

Dear Members of the House Subcommittee on Forests and Forest Health:

I am deeply honored to be asked to provide follow-up comments regarding the need for adaptive management methods for national forest giant sequoia groves. I have organized my response per the four questions listed in the request letter. I ask that readers refer to my letter addressed to President Clinton dated March 17, 2000 for a more detailed explanation of my concerns. I believe this March 17, 2000 letter has been made a part of the Congressional Record.

Question 1--Are the giant sequoias at risk and if so, what is the nature and extent of risk?

Answer--Yes because:

- a. inaction is the single biggest threat to giant sequoia groves (SNEP 1996);
- b. risk of catastrophic fire in many giant sequoia groves and surrounding areas is higher today because of increased small tree and understory development that have largely developed from our inability to provide a continuous level of management actions in all giant sequoia groves (SNEP 1996; Piirto and Rogers 1999); continued inaction will make this problem worse;
- c. pathogen/insect relationships have been altered because of increased white fir stand densities beneath the old monarch giant sequoia trees (Piirto et al. 1998);
- d. prescribed fires alone could cause undesirable results to monarch trees, special ecosystem attributes, historic/archaeological sites, and to adjacent private property without pretreatment (e.g., selective thinning) of understory fuel ladders.

Question 2--Will a national monument designation in your opinion have any significant impact on protecting the giant sequoia groves?

Answer--The long-term sustainability of national forest giant sequoia ecosystems is not assured in the President's national monument proposal. Efforts to reserve giant sequoia groves within a national monument will reduce management

flexibility. This in turn could stifle any type of activity from proactively being implemented in national forest giant sequoia groves. My specific concerns are:

- a. management flexibility is not assured in the national monument proposal;
- b. federal funding is limited. Reserving 440,000 acres in a national monument will be to the detriment of the giant sequoia ecosystems because those limited federal funds will be allocated over more acres thus losing focus on the giant sequoia groves themselves which comprise only 19,345 acres of the President's 440,000 acre proposal.

A national monument could result in a place where relics of monarch giant sequoia occur where no one will want to manage them given all the hoopla. Drawing a line around a giant sequoia grove and calling it a national monument is not what we need to be concerned about. We need to focus our attention on how to maintain the dynamic giant sequoia ecosystem within a natural range of variability that insures its long-term sustainability.

This subject of long-term sustainability of national forest giant sequoia ecosystems is addressed in a recent report that I and Bob Rogers completed titled: "An Ecological Foundation for Management of National Forest Giant Sequoia Ecosystems." In this report we:

- a. discuss how ecosystem management principles and concepts can be applied to national forest giant sequoia ecosystems;
- b. identify the ecosystem elements (i.e., the components, structures, processes), their indicators, natural range of variability for these indicators, and recommended management variabilities for each of these indicators.

This report is based on scientific evidence (170 citations) and management experience. We believe it serves as an important foundation for developing flexible management strategies for national forest giant sequoia groves.

Question 3--What might be logical boundaries for a national monument?

Answer--I don't support a national monument proposal at this time. We need to evaluate other management options before we make this decision.

But if you were to ask me what is a logical management unit for giant sequoia ecosystems, I would say the sub-watershed basin. I made this initial recommendation in an Environmental Assessment Report and an associated Management Report I wrote for McKinley Grove in 1978. Further elaboration on this recommendation is provided in the Piirto and Rogers (1999) report which I also understand is part of the Congressional Record.

The sub-watershed is a logical, easy to locate boundary that will protect the unique hydrological characteristics that enable giant sequoia groves to occur where they occur based on the evidence we have to date. However, management boundaries for national forest giant sequoia groves must receive close scrutiny because there are many overriding concerns that need to be addressed on a grove by grove, site-specific basis. A 60-day period is not enough time to address the boundary concerns for each of the national forest giant sequoia groves. Personnel of the Sequoia National Forest in cooperation with members of the Giant Sequoia Ecology Cooperative have made an initial effort to identify the sub-watershed boundaries for the groves that occur there. But, I think they would be the first to state that further refinement is needed before final boundaries are established.

Boundaries can restrict our attention to larger landscape relationships. So, if we say that the management unit for a giant sequoia grove is the sub-watershed basin, we must also realize that the work we do in adjacent areas needs to be done with an understanding of the risks of catastrophic fire occurrence. The potential for fire runs up steep terrain could result in significant, if not, catastrophic effects to nearby giant sequoia groves. It is this threat that I think should receive immediate research and management attention. These catastrophic fire risks in adjacent areas must be mitigated with a full-range of management tools including fire surrogate methods.

Question 4--What management tools are needed?

Answer--The full-spectrum of management tools is needed for insuring the long-term sustainability of national forest giant sequoia. These methods include: prescribed burning, selective thinning, regeneration treatments including small group selection cuts, and combinations thereof.

Whatever management activity is prescribed must be done in an adaptive management manner tied to scientific methods. With adequate funding and staffing, the existing interagency Giant Sequoia Ecology Cooperative could continue to provide leadership in this area.

We must draw on the valuable experience gained by the managers of Mountain Home State Forest. If I were asked: What giant sequoia grove comes closest to being managed with long-term sustainability as its cornerstone? I would answer as I did in 1991, Mountain Home State Forest. Prescribed fire, unevenaged forest management which includes small groups selection treatments and selective thinning, regeneration treatments, and combinations thereof are regularly undertaken in Mountain Home State Forest. Mountain Home State Forest started out with 100 million board feet in 1950 when the California Department of Forestry acquired it. Over 100 million board feet exist in Mountain Home

State Forest today. I would recommend we pattern any long-term sustainability proposal for management of national forest giant sequoia ecosystems after the Mountain Home State Forest example.

Final Comment: There is a need to address many questions regarding management of giant sequoia groves in general. Some of these questions include:

1. What is a logical management boundary for giant sequoia ecosystems?
2. What is the extent of the hydrological influence zone that directly affects the giant sequoia grove complex?
3. What is the extent of the fire influence zone that includes and surrounds giant sequoia groves?
4. Are there natural sub-groups of giant sequoia trees that comprise the giant sequoia ecosystems? What is the extent of genetic differences between the sub-groups within a grove and between groves?
5. What are the natural stand and plant aggregations that comprise giant sequoia ecosystems?
6. What is the current canopy opening/patch vegetation pattern a giant sequoia ecosystem? How does this pattern compare to the presettlement forest (i.e., prior to 1890)?
7. What are the genetic implications of any past management activity within the giant sequoia groves?
8. Should we rely only on natural regeneration of giant sequoia?
9. How can consistency in tree/ecosystem attribute inventories and data collection be assured between the different agencies charged with management of giant sequoia groves?
10. How does fuel loading vary both within and outside the giant sequoia ecosystems? What protocol should be followed in evaluating fuel loading? Is this protocol consistent with what the USDI National Park Service, CDF, other agencies, and USDA Forest Service methods?
11. How does fire risk vary within the grove areas and in the adjacent influence zones?
12. What significant features (e.g., archaeological/historic sites, specimen monarch trees, giant sequoia reproduction, infrastructure improvements, threatened and endangered species, special habitat requirements etc.) exist within giant sequoia ecosystems?
13. What are the threatened and endangered species that exist within these giant sequoia ecosystem areas?
14. What are the desired wildlife habitat conditions (i.e., vertical and horizontal structure, composition and amount) for these giant sequoia ecosystems?

15. How should resource and map information be archived (i.e., GIS database)? Who will maintain this database? What protocol should be followed? Is this GIS protocol consistent between agencies?
16. What are the positive and negative impacts of cattle grazing in giant sequoia groves?
17. How can the Giant Sequoia Ecology Cooperative and private citizen groups facilitate adaptive management planning and project execution?

The Giant Sequoia Ecology Cooperative with adequate funding and staffing could assist the agencies in finding answers to these and the many other questions surrounding management of giant sequoia ecosystems. Thank you for giving me this opportunity to comment.

Sincerely,

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Professor of Forestry

cc: Warren Baker
Joe Jen
Norm Pillsbury
Art Gaffrey