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UNITED STATES DISTRICT COURT
DISTRICT OF ARIZONA
PHOENIX DIVISION

CENTER FOR BIOLOGICAL DIVERSITY; SIERRA CLUB, Plaintiffs, vs. MICHAEL WILLIAMS, in his official capacity as Forest Supervisor of the Kaibab National Forest; DALE BOSWORTH, in his official capacity as Chief of the U.S. Forest Service; UNITED STATES FOREST SERVICE, an agency of the U.S. Department of Agriculture; ANN VENEMAN, in her official capacity as Secretary of the U.S. Department of Agriculture; and UNITED STATES DEPARTMENT OF AGRICULTURE. Defendants.	**Case No. CV 04-0355 PCT RCB** **EXPERT DECLARATION OF DR. JACK STERLING STATES IN SUPPORT OF PLAINTIFFS' MOTION FOR SUMMARY JUDGMENT**

I, Jack Sterling States, do declare:

1. My name is Jack Sterling States. I am a professional biologist with longstanding research interests in the Kaibab squirrel, its feeding habits, and its dependence on the ponderosa pine forests of Arizona.

2. I currently serve as an adjunct professor of botany at the University of Wyoming, and as an emeritus professor of biology at Northern Arizona University, where I taught from 1970 to 1996. I earned a Ph.D. in botany from the University of Alberta at Edmonton in 1969 and a Masters of Science in botany from the University of Wyoming in 1966. I have been an active member and officer of Sigma Xi, the scientific research society, and the academic honor society Phi Kappa Phi. My numerous scholarly publications on tassel-eared squirrels include articles and peer-reviewed symposium papers concerning the ecology and dietary habits of the Kaibab squirrel. Attached is my abbreviated resume, including references (highlighted) to the articles I have published on the Kaibab squirrel.

3. I have consulted or performed contract research on ecosystem and habitat characteristics in the Grand Canyon/Kaibab National Forest area for the U.S. Forest service, the National Park Service, and the Arizona Game and Fish Department ("AGFD"). I have also contributed to environmental assessments for timber sales in the Kaibab National Forest, and have conducted an in-service training program on ponderosa pine ecology for National Park Service staff at Grand Canyon National Park, and was an instructor for several years in a silvicultural recertification course for Forest Service personnel on topics of forest soil microbiology and Arizona forest ecosystem management.

4. Through my research, I have become very familiar with the ecology, population biology and behaviors of the Kaibab squirrel and its relationship with the ponderosa pine forest ecosystem of the Kaibab National Forest in Arizona.

5. In my professional capacity, I have been asked by the Plaintiffs in this case to review the East Rim Administrative Record ("record") as it pertains to the impacts of the East Rim Vegetative Management Project ("Project") on the Kaibab squirrel. My review has included, among other things, careful examination and analysis of the documents contained in the record that discuss the Kaibab squirrel population and how the Project will affect that population. I have reviewed Plaintiffs' Memorandum in Support of Motion for Summary Judgment, and I have reviewed Federal Defendants' Memorandum in Support of Federal Defendants' Motion for Summary Judgment (Defendants' Memorandum), with particular attention to the sections pertaining to the Kaibab squirrel. I have also reviewed all of the documents referenced on pages 25 and 26, and on page 5, footnote 1, of Defendants' Memorandum as they pertain to the Kaibab squirrel.

6. The statements below reflect my professional judgment based on thirty-five years of biological research, familiarity with relevant scientific literature, and personal acquaintance with the ecology of the Kaibab Plateau.

7. I am providing this testimony in order to assist the Court in understanding technical material contained in the administrative record relating to the Kaibab squirrel, and to draw the Court's attention to gaps and omissions in the Forest Service's analysis and discussion of Project impacts on the Kaibab squirrel population.

8. My testimony here complements my other writing and research, and I provide it in the interest of encouraging the use of valid scientific principles in forest

planning and management. Because of the public interest nature of this litigation, I am not charging a fee for my services.

9. Because of the vulnerability of the Kaibab squirrel population, it is especially important that Defendants consider all relevant factors and properly the apply existing scientific literature in assessing the Project impacts on the squirrel. The Kaibab squirrel has "sensitive species" status (Tab 175 at 4, 11), national natural landmark status (Tab 203), and has been designated by the Kaibab National Forest as a Management Indicator Species ("MIS"). Tab 224 at 2.

10. As discussed below, my review of the record leads me to the inescapable conclusion that the Defendants' analysis and conclusions concerning the effects of the Project on the Kaibab squirrel fail to consider key factors and omit important, relevant information. I also find that Defendants either misconstrue original key aspects of scientific studies in the record relating to the effects of timber harvest on the Kaibab squirrel, such as the Patton study discussed below.

11. For more than 10 years, I conducted research, interacted with, and consulted for the Kaibab National Forest (U.S. Forest Service) and Grand Canyon National Park (National Park Service) on issues pertaining to impacts of timber harvest treatments on the Kaibab squirrel. My relationship with the North Kaibab Ranger District was initiated in 1979 when, in collaboration with Dr. Patton and Mr. Richard Wadleigh, North Kaibab district biologist, I assessed squirrel population response to timber harvest by applying a food resource utilization technique to their nine "intensive management" study plots (Patton et al. 1985, Tab 5). In addition, I expanded the study to include sites with "group selection" and "shelterwood" harvest treatments (the same treatments proposed for the East Rim Project). In *no instance* was a beneficial effect (significant increase in squirrel population) noted either then or ten years later at the

conclusion of the study. In fact, three of the original Patton study sites (including an untreated control site) had no resident populations of squirrels when re-assessed. I attributed the loss of squirrels to absence of VSS 4-6 age-class trees that had been removed by an unauthorized timber sale.

12. The mitigation recommendations for Kaibab squirrel management are included in the EA (Tab 230 at 21) by reference to the ID team wildlife Management recommendations (Tab 173) and are based on Dr. Patton's research. A critical omission in those recommendations is the desirability to manage for pockets of 60% canopy closure or more, and wherein 60% of the trees are 12-17" in diameter and 40% are 18" diameter or greater. Clumps or groups are mentioned but not defined in the design criteria and need to be. The desired condition (suitable and optimum squirrel habitat) of the proposed treatments cannot be achieved if the clump (patch) size, composition (heterogeneity of age classes), density (canopy closure) and distribution (as an arboreal corridor for squirrels) is clearly specified. This is a very serious omission in Defendants' analysis that has the effect of giving the Defendants carte blanche in approving harvest treatments without regard to adverse effects on squirrel populations.

13. The record indicates that the Forest Service has the following information regarding the Kaibab squirrel population: (a) population estimates from 1982, (b) population trend data for a limited time period taken from a master thesis, and (c) reports on annual squirrel harvests by hunters. See Vol. 4, Tab 236 at 57-59. Much of this data is extremely outdated or fails to consider key factors (as discussed below). Based on my professional experience, I believe it is entirely feasible for the U.S. Forest Service to collect reliable population data, both actual and trend, for the Kaibab squirrel. It appears Defendants have simply decided not to gather the data.

14. Defendants ignored key factors in their analysis of the Kaibab squirrel population data. For example, Defendants refer to what they term a "stable" population trend for combined Kaibab and red squirrels on the Kaibab National Forest from 1988-1999, based on AGFD surveys and a student's master thesis (Salafsky 2002). Tab 236 at 57. The student counts were derived by walking and driving, a methodology that does not take into account important factors such as that squirrel sitings are strongly influenced by the availability of food on the ground (mushrooms and truffles). Ironically, the Kaibab National Forest biologist discounts these general route population surveys by stating, "This information serves the Department's [AGFD] needs far better than ours." Tab 133 at 13.

15. The record evidence shows that the Kaibab squirrel populations, rather than being stable, are actually in decline. According to one of Defendants' MIS report (Tab 222 at 36), the estimated Kaibab squirrel population declined by 76% over a 20 year-period from an estimate of 22,000 to 5,300 in the year 2002. Tab 222 at 36. (The 2002 estimate was based on the trend data discussed above. *Id.*) The population trend table summary (Tab 222 at 24) lists the Kaibab squirrel population status as uncertain, as indicated by the question mark in the table. In addition, the National Natural Landmark status report (Tab 223 at 1) notes a "recent steep decline" in the small endemic population of the Kaibab squirrel. The decline may be due, *in part*, to drought. But because the current drought affects squirrel survival by limiting the food resources provided by ponderosa pine, a timber harvest project of the magnitude planned for the East Rim will quite likely serve to exacerbate the problem – a key factor that Defendants' analysis fails to consider. A final point is that stability estimates by Defendants' experts, as indicated by averaged population counts, neither reflect nor consider the management actions of the AGFD taken over the years to mitigate and prevent "bust" cycles of Kaibab

squirrels from dropping below a threshold of no return, as evidenced by the several-year moratorium on hunting in the 1960's.

16. The AGFD population data cited by Defendants was derived through and hunter harvest information game surveys for red and Kaibab squirrels combined. The averages are graphed over 15 years providing a general impression of stability. *See* Tab 236 at 58. Averages eliminate extremes and thus fail to show the characteristic "boom" and "bust" of Kaibab squirrel populations. Furthermore, a valid interpretation of population stability is reached only when it is separately compared to the *carrying capacity* parameters of the habitat *for each species*, something that Defendants and their experts fail to consider in their analysis of Kaibab squirrels.

17. The designation of the Kaibab squirrel as an MIS for early seral stage ponderosa pine stands is entirely inappropriate and quite likely to be unproductive. I wish to emphasize this concern by pointing out to the Court that tassel-eared squirrels have been identified as Management Indicator Species by National Forests throughout their range of occurrence. This is because of their specialized association with *mid- to late succession ponderosa pine forest habitat* and for the ability to represent other species with similar habitat requirements. Studies of squirrel foraging and nesting behavior, including my own, show that tassel-eared squirrels are basically unaffected by either presence or absence of "dog-hair" thickets and dense pine regeneration, VSS 1-2. (An analogy to the Defendants' choice would be the designation of rainbow trout as MIS for stagnant ponds.).

18. Defendants consider the best Kaibab squirrel habitat to be an interspersion of habitat types within the forest to provide *arboreal travel routes and food on the ground and in the trees*. *See* Tab 236 at 57. However, their description of management treatments results is contradictory to this desired condition: "*7,790 acres will be thinned*

by removing selected trees while retaining sufficient trees to maintain the old-growth character of the stands, (and) will create clumps of trees within larger groups and increase the percentage of ponderosa pine and Douglas-fir in the groups." Defendants' Memorandum at 4 (emphasis added). First, Kaibab squirrels do not use Douglas-fir and its presence introduces competition from red squirrels. Removal of medium aged and mature trees will not create clumps, but instead will thin them thereby decreasing their percentage representation within the group. Removal will also eliminate requisite interlocking canopy thereby disrupting arboreal travel routes, and will decrease or eliminate food production on the ground (truffles and mushrooms). The prescribed placement of clumps with interlocking canopy towards the center of regeneration treatment areas (Tab 173) precludes the possibility of maintaining continuous arboreal corridors of any kind. Defendants' analysis fails to consider these important factors.

19. I do not dispute the purpose and justification made by the defendants for the removal of VSS age class 1-2 trees and thin VSS 3 trees to reduce ladder fuels and unhealthy competition for nutrients and space. Tab 254 at 2. However, the selected management alternative cites, as a goal, the creation of 79% more open areas with some regeneration by removal and thinning of valuable mid-sized tree groups and patches (5" to 17" diameter). Tab 254 at 3. Much of the East Rim has already been extensively harvested. Even after 20 years, the old clearcuts are still evident, many of which have very poor regeneration. Defendants' analysis did not consider this factor.

20. In my opinion, an EIS would be a reasonable and prudent step in resolving the issues presented here. Failing that, I am deeply concerned that the East Rim Project and other projects based on this Project's rationale and approach, could, through cumulative effects, irreversibly harm the Kaibab squirrel population on the north Kaibab

plateau. I believe that if Defendants' biologists had considered the factors discussed herein, they would have reached the same conclusion.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Executed on_____ , 2004

By:_____
Jack States, PhD
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