



Forest History Society, Inc.

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June 18, 1993

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OLYMPIC NATIONAL PARK
PORT ANGELES, WA 98362

Maureen Finnerty
Superintendent
Olympic National Park
800 E. Park Avenue
Port Angeles, WA 98362-6798

Dear Superintendent Finnerty:

Thank you for the opportunity to review and evaluate the four documents related to the question of historical presence of mountain goats in Olympic National Park. I am persuaded that mountain goats were historically absent in the area.

All documents were useful, but I am most influenced by Randall Schalk's ethnographic and archaeological work. From his and similar works, I have come to understand just how thoroughly native peoples made full "use" of their environment. If goats had existed on the Peninsula during the time period studied, a resource that valuable would have left abundant evidence.

The least persuasive work by far was that of Professor Lyman's. To be blunt, I found it to be a poorly written, poorly edited, and poorly published bit of speculation of what might possibly be found if there were enough grants to support enough digs. This piece is akin to a historian lamenting that if the courthouse had not burned down with all the records it supposedly contained, that no doubt someone could write a fine history that would answer all of our questions. If life were only that simple.

Ms. Schultz's historical work was most competent and readable, and also persuasive. I found it to be properly balanced, given her assignment. She reviewed the logical sources, dealing convincingly with the occasional references to goats. I believe that she is correct in interpreting the absence of goat references in the large majority of the sources as reasonable proof that goats did not exist.

Finally, the Houston and Schreiner extract on the Peninsula as a biogeographical island provided the necessary background to evaluate the Lyman piece. In sum, the four documents offer adequate evidence to answer the basic question on the presence of goats.

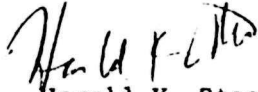
The secondary question on the presence of goats during the late Quaternary is more difficult for me, a historian, to address with reasonable confidence. As noted above, I give little credibility to Lyman's work, while I am appreciative of Houston and Schreiner's effort. Based upon these two

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documents, I find no evidence that goats existed in the Park area during the late Quaternary.

I hope that you find my opinions to be useful. For your information, I have also enclosed my full resume.

Sincerely,



Harold K. Steen
Executive Director

HKS/aa

Enclosure

VITA

Harold Karl Steen

Born: May 12, 1935, Vashon, Washington

Education

B.S. in Forestry, University of Washington, 1957.

Major: Forest Management (silviculture, economics, policy).

M.F. in Forestry, University of Washington, 1962.

Major: Mensuration and Statistical Analysis.

Thesis: "A Method of Stand Structure Analysis in Coastal Douglas-fir."

Ph.D., University of Washington, 1969.

Major: History of Conservation. An interdisciplinary program administered by the College of Forest Resources in conjunction with the Department of History. Primary emphasis on American history with supporting study in economics, geography, political science, and law. Committee chairman: David R. M. Scott, College of Forest Resources. Dissertation guided by Vernon Carstensen, Department of History.

Dissertation: "Forestry in Washington to 1925." Political and economic development of modern forestry concepts and policies.

Professional Experience

U.S. Forest Service, North Bend Washington, 1957-58. Forester. General forestry (timber cruising and appraisal, road and property surveying, game census, fire suppression, reforestation, snow surveys for run-off prediction).

U.S. Forest and Range Experiment Station, Portland, Oregon, 1962-65. Research Forester. Forest fire research (field work and data collection with office and laboratory analysis in fire ecology, fire-weather meteorology, and fuel sampling.)

Forest History Society, Inc., Durham, North Carolina, 1969-present.

- Assistant Director (1969-73): General administration, research, and editing.
- Associate Director for Research and Library Services, 1973-77. Responsibilities include supervising library, processing and indexing manuscript collections, drafting grant requests, research and writing, technical consultant to oral history program, liaison with UCSC (teaching, student interns).
- Acting Executive Director, October 1977 to October 1978.
- Executive Director, October 1978 to present. General administration, budget preparation, program planning, development coordination, research and writing.

Professional Experience (Forest History Society, Inc., continued)

- Edited *Journal of Forest History* (1969-72): recruit, select, and edit articles, illustrations, and book reviews for quarterly journal, specializing in history of conservation, forestry and lumbering.
- Principal Investigator, U.S. Forest Service History Project(1972-76): research, organize and write a book-length history of the U.S. Forest Service.
- Principal Investigator, *The Encyclopedia of American Forest and Conservation History*, funded by the National Endowment for the Humanities. Published by Macmillan, 1983.
- Principal Investigator, *This Well Wooded Land*, a book-length project staffed by four historians and funded by the National Endowment for the Humanities. Published by the University of Nebraska Press, 1985.
- Consultant to the U.S. Department of Justice on Indian Land Claims and Water Law. 1976-present.
- Deputy Leader, Forest History Section IUFRO, 1980-1986.
- Leader, Forest History Section IUFRO, 1986-present.
- Editorial Board, *Environmental Review*. 1976-1986.
- Consulting Editor, *Journal of Environmental Education*. 1973-81.
- Sierra Club History Committee. 1976-present.
- Chairman, Society of American Foresters, Forest History Working Group. 1974-78.
- Chairman, History Committee, Northern California Section, Society of American Foresters. 1976-78.
- Secretary/Treasurer (1975-76), Chairman-elect (1976-77), Chairman (1977-78), Monterey Bay Chapter, Society of American Foresters.
- Registered Professional Forester, State of California, License #792.
- Licensed Forester, State of North Carolina.

Faculty Appointments

Adjunct Professor of Forestry, Duke University, 1984-present.

Adjunct lecturer in history, Duke University, 1984-present.

Adjunct joint appointment in history and forestry, North Carolina State University, 1985-present.

Honorary Societies

Phi Alpha Theta (History)
Sigma Xi (Science)
Xi Sigma Pi (Forestry)

Book Reviews Published in:

American Historical Review
American West
Idaho Yesterdays
Journal of Forest History
Journal of the West
Pacific Northwest Quarterly
Technology and Culture

Papers Presented:

"Forestry Will Be Practiced When It Pays: The History of Forestry in California." PCB American Historical Association Meeting, Los Angeles, 1971.

"Symbiotic or Paranoic: The Relation of the U.S. Forest Service to the Lumber Industry." Western History Association Meeting, Fort Worth, Texas, 1973. Also presented at Cosmos Club, Washington, D.C. to Potomac Corral of the Westerners, 1973.

"Overview of the Task of Writing the History of the U.S. Forest Service." Western Social Science Association, Tempe, Arizona, 1976.

"History: A Professional Obligation or a Social Nicety?" Columbia River Section of the Society of American Foresters, Eugene, Oregon, 1976.

"Property and the American Conservation Movement." IUFRO, Nancy, France, 1979.

"A Historian's view of RPA." Colorado State University, 1979.

"The Relationship of the Federal Government to Private Forestlands: The American Conservation Experience." IUFRO, Kyoto, Japan, 1981.

"The Piney Woods: A National Perspective." Hattiesburg, Mississippi, 1984.

"Forestry on the Indian Lands of the Mountainous West of America." IUFRO, Ljubljana, Yugoslavia, 1986.

"Historiography of North American Forestry." IUFRO Forest History Group Proceedings, Canberra, Australia, 1988.

"Settlement of Indian Claims in the United States." IUFRO, Zvolen, CSSR, 1988.

Papers Presented: (continued)

"Historical Overview of Land Ownership in the United States." National Stewardship Conference, Duluth, MN, 1991.

"Changing Values-Changing Institutions: In Forestry." T. J. Starker Lecture, Corvallis, OR, 1991.

"Shifts in American Forest Policy." South Carolina Society of American Foresters, McCormick, SC, 1993.

Publications:

"A Measure of Wind-Caused Fuels," Pacific Northwest Forest and Range Experiment Station *Research Note #17*, 1964.

"Recent Publications and Reports on Forest Fire Research," in *Western Forest Fire Conditions* (Portland: Western Forestry and Conservation Association, 1964), pp. 36-40.

"Relation Between Moisture Content of Fine Fuels and Relative Humidity," Pacific Northwest forest and Range Experiment Station *Research Note #4*, 1963.

"Variation in Vegetation Following Slash Fires Near Oakridge, Oregon," Pacific Northwest Forest and Range Experiment Station *Research Note #25*, 1965.

"Vegetation Following Slash Fires in One Western Oregon Locality," *Northwest Science* 40 (1966), pp. 113-20.

"History of Forestry in America: An Overview," U.S. Forest Service, 84 pp. processed, 1971.

"Why Oral History?" with Susan R. Schrepfer, *Forest History* 16 (October 1972), pp. 4-5.

"Grazing and the Environment: A History of Forest Service Stock-reduction Policy," *Agricultural History* 49 (January 1975).

"History: How Its Done," Society of American Foresters *Proceedings*, 1975.

"SAF and Its History," *Journal of Forestry* 73 (August 1975).

"Oral History: A Valuable Supplement," with Susan R. Schrepfer, *Journal of Environmental Education* 8 (Winter 1976), pp. 60-62.

The U.S. Forest Service: A History (Seattle: University of Washington Press, 1976. 2nd Printing, 1977; 3rd Printing, 1991).

"Gordon Robinson: Forestry Consultant to the Sierra Club," OHI, 1979.

History of Sustained-Yield Forestry: A Symposium (Forest History Society, 1983).

The Piney Woods: A National Perspective, in *Mississippi's Piney Woods: A National Perspective*, University Press of Mississippi, 1985.

Publications: (continued)

"History: A Straight Line to Experience," *Forest World*, 1986.

"Duke's School of Forestry and Environmental Studies at Age 50," *Forum*, 1988.

Coauthor: "The Changing Forest Resources and Forest Industries in the South;" in *The South's Fourth Forest: Alternatives for the Future*. USDA Forest Service 1988.

"What Prompted the Nation's Conscience about its Forests," in *Our American Land*, 1987 Yearbook of Agriculture.

Interview with John R. McGuire: Forest Service Chief, 1972-1979, 1988.

Interview with William E. Towell: AFA Executive Vice-President, 1967-1979, 1989.

Guide to Forest History Society Photograph Collection (Forest History Society, 1989).

David M. Smith and the History of Silviculture, OHI, 1990.

"Forestry, a Staple of Tarheel Life, Economy," *Tar Heel Forestry*, 1991.

The Beginning of the National Forest System (USDA, 1991).

Interview with Langdale Family, 1992.

Interview with R. Max Peterson: Forest Service Chief, 1979-1986, 1992.

Interview with R. Keith Arnold: Deputy Chief for Research, 1969-1973, 1993.

Interview with M. B. Dickerman: Deputy Chief for Research, 1973-1975, 1993.

Interview with Robert E. Buckman: Deputy Chief for Research, 1975-1986, 1993.

Interview with Frank H. Wadsworth: Tropical Forestry, 1993.

Interview with William D. Hagenstein: Forestry's Advocate, 1993.

Changing Tropical Forests: Historical Perspectives on Today's Challenges in Central & South America, with Richard Tucker. (Forest History Society, 1991).

The Origins of the National Forests (Forest History Society, 1992).

"Americans and their Forests: A Love-Hate Story," *American Forests*, 1992.

"Expectations: Election's Harvest," *Forest World*, 1993.

Military Experience

U.S. Naval Reserve, 1953-61. Active duty, 1958-60. Naval Communications Station, Guam. Communications technician, second class.

Mountain Goats (*Oreamnos americanus*) in Olympic National Park - A review of the Park Service documents and Lyman's hypothesis

Brian A. Maurer
Department of Zoology
Brigham Young University
Provo, UT 84602
Phone: 801-378-2426

The large population of mountain goats currently inhabiting the Olympic National Park is clearly derived from transplanted animals of two different subspecies introduced in 1924 and 1929. The major question that the Park Service is currently attempting to answer is whether mountain goats can be considered to be native to the Olympic Mountains, or must be considered an exotic species. If the species is exotic, then it can be managed in an appropriate manner to preserve the ecosystem values of the Park. If, however, the species is deemed to be native, then apparently the Park Service must leave the population alone and attempt no management. Apparently, the current population (about 1100 individuals) is having a major impact on the alpine ecosystems of the Park, and preservation of those ecosystems is thought to require intensive management, or removal, of the goats from the Park. Resolution of this problem revolves around how the designation "native" is to be applied to the current goat population.

Park Service policies towards the mountain goat was challenged by a hypothesis proposed by Lyman (1988). Lyman's hypothesis was that during the last maximal glacial extent (~18,000 bp), corridors of appropriate habitat were available that allowed populations of mountain goats to colonize the Olympic Mountains. Populations of the species would have existed there until their extinction. Lyman questioned the conventional interpretations of ethnographic and archeological evidence that suggested mountain goats were absent from the Olympics during historical times, leaving open the possibility that mountain goats were exterminated by humans, either native peoples, or possibly Europeans. Lyman indicated the hypothetical nature of his analysis, and suggested that paleontological evidence for his hypothesis should be obtained. Acceptance of his hypothesis would depend on finding mountain goat remains around 10,000-20,000 years old in the Olympic Mountains or the Puget lowlands. Lyman's paper raises three important points that need to be addressed:

- (1) Were mountain goats present historically in the Olympic Mountains?
- (2) Were mountain goats found prehistorically in the Olympic Mountains, but have since gone extinct?
- (3) If they were found in the Olympic Mountains prehistorically, why did they go extinct?

The draft documents by Susan Schultz and Randall Schalk deal with historical,

ethnographic, and archeological evidence for *historic* occupation of the Olympics by mountain goats. Neither document addresses the possibility that mountain goats had colonized the mountains prehistorically, but went extinct prior to human habitation of the area. Schultz reviewed the historical record of the wildlife of the Olympic peninsula, and indicated that even though there are a number of persons who claimed that mountain goats inhabited the Olympic Mountains, persons who actually traveled through the habitats that goats now occupy never recorded them. This evidence contradicts Lyman's assertion that the areas where goats might have been found were not adequately surveyed. Schalk reviewed ethnographic evidence for the use of mountain goats by indigenous peoples of the Olympic peninsula, and found that the use of mountain goat wool was predominant, but that the wool was always identified as being traded with peoples further east in contact with known mountain goat range. Furthermore, Olympic peninsula peoples kept a breed of dog that produced wool that was apparently used as a less preferred substitute for goat wool. There were individuals that specialized in hunting in the interior of the peninsula for these tribes, yet there is no indication that these hunters ever encountered the highly valued mountain goats. Archeological evidence reviewed by Schalk is equivocal, since most reported excavations were done at lowland sites, but only one report was obtained of mountain goat remains, and these remains were spoons that may have been manufactured elsewhere. The evidence presented by these authors seems to me to indicate that it is highly unlikely that the mountain goat was present in the Olympic Mountains during the last several hundred years covered by the historical record.

Only one paleontological site has been studied, one that included mastodon remains, and in this deposit, there was no indication of mountain goats (Schalk, ms reviewed here). It should be pointed out here, that on the point of the paleontological record, Lyman apparently draws a faulty conclusion regarding the negative paleontological record. He states that we cannot conclude that the mountain goat was absent when the fossil data are so few. He also states, however, that it is faulty to conclude as Lundelius et al. (1983) that the goat must have been present. Yet he then draws the contradictory conclusion:

"The most reasonable position is to hypothesize mountain goats were present in the Olympic Mountains during the late Quaternary" (Lyman 1988:15)

It seems that the most reasonable approach is to suspend judgement regarding the presence of the goat until more data have accumulated. Houston and Schreiner's analysis of the present day biogeography of the Park suggest that dispersal to the Olympic peninsula during the last glacial period was selective and therefore, it is just as tenable to take the view that the goats never colonized the Olympics as to hypothesize that they did.

If we treat the presence of goats in the Olympic Mountains as an unsupported hypothesis, which seems reasonable based on Lyman's (1988) arguments, what are the implications that might follow from it? First, since the likelihood of goats existing in the Olympic Mountains during historic times is low, Lyman's hypothesis suggests that goats would have gone extinct prehistorically. He lists several hypotheses to account for such

extinction. A likely scenario is that the goats might have colonized the Olympic Mountains, but as conditions changed with the receding of the glaciers, the population became isolated (along with several other populations in outlying regions of the goat's current geographic range) and subsequently declined. The decline and eventual extinction could have occurred for one of two reasons: (1) either the isolated population was so small that extinction likelihood was very high, or (2) ecological conditions were poor enough or deteriorated rapidly enough with global climate change that the population was driven to extinction. These reasons need not be mutually exclusive. If mountain goats did colonize the Olympics and then went extinct due to isolation and/or ecological changes, then the most reasonable argument is that their extinction was the consequence of natural ecosystem changes induced before humans were capable of changing the ecosystem in any major way.

A scenario that might be used to argue that goats should be considered native residents would be one where goats colonized the Olympics, but were overhunted prehistorically, as has been postulated for much of the North American megafauna. There is little evidence to evaluate this suggestion at the present time and the suggestion that overhunting was responsible for extinctions of the North American megafauna 10,000 years ago is quite controversial (see papers in Martin and Klein 1984). Further basic research is needed to provide data to establish whether goats were able to colonize the Olympics and whether they were ever hunted by humans.

At this juncture, I am inclined to conclude, tentatively, that even if Lyman's hypothesis is correct, it may be irrelevant to the current debate regarding mountain goats in Olympic National Park. It seems that if goats were ever present in the Olympics, they were never able to establish large enough populations to allow them to persist prehistorically. Therefore, the current population, which is with little doubt the consequence of human introductions, should be considered to be exotic.

One question that still needs to be considered is why the species has been so successful since their introduction. I think that it is highly likely that the current ecological conditions that occur in the Park are different from any previous conditions that existed there. Particularly, human activities have eliminated or reduced populations of a number of historically known species of predators that may have had major impacts on ungulate populations. In particular, wolves were known historically, and they have been totally eliminated from the Olympic peninsula. Mountain lion populations have in all likelihood been significantly reduced. Either of these predators could have had major impacts on both the goats and other ungulates. Prehistorically, there may have been larger populations of predators, and if the goats had colonized the Olympics, the higher predator populations may have kept their numbers down. Furthermore, climatic conditions may have been less favorable in prehistoric times. Although mountain goats are successful now, their success may be more a function of historic and prehistoric changes in the Olympic Mountain ecosystems than the potential that these ecosystems are "pristine" today. In fact, it may be very difficult to identify exactly what a pristine ecosystem is, since *all* ecosystems are constantly changing.

It is abundantly clear, indeed, what we know about ecosystem dynamics would almost require, that the current ecological conditions in the Olympic Mountains are significantly different from those that existed when mountain goats were hypothesized by Lyman to be living there. If the population of mountain goats is now threatening certain ecosystem values in the Park, then these values should be weighted against the value of having a healthy population of a large, charismatic vertebrate like the mountain goat, in the Park. Ecological conditions that exist in the Park at the present are conducive to high population densities of this species, but there is no evidence that they are now, have been in the past, or will in the future, be self-regulating populations. It is entirely possible that mountain goat populations may change the Olympic Mountain alpine and subalpine ecosystems to such an extent that they destroy their resource base and experience a large population decline. It may be desirable to use intensive management techniques to control the mountain goat populations so that major ecosystem alterations do not occur or at least are minimized. The decision about whether or not to do this should be made based on perceived values in the current ecosystem rather than what that ecosystem was thought to have been like prehistorically.

Another related issue is the supposition by the Park Service mentioned by Lyman (1988) that the flora of the Olympics evolved without grazing pressure by mountain goats. There is an implicit assumption here that ecosystems always evolve to have tightly connected, "balanced" relationships among species. This assumption, in turn, further assumes that ecosystems for stable associations among species. These assumptions are untenable, because all that we know about ecosystem dynamics suggests that when evolution occurs in a species, it is rarely limited to within ecosystems (see, e.g., Maurer 1989) and ecosystems themselves are profoundly dynamic (e.g., Botkin 1990, Pickett et al. 1992). If mountain goats are now having a tremendous impact on the alpine vegetation in Olympic National Park, it is not because they are upsetting the "natural balance" among species. Rather, it is because they have altered patterns of ecological change that may lead to ecosystems with undesirable properties, such as lower species diversity or reduced water holding capacity of their soils.

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