



UNIVERSITY OF OREGON

Maureen Finnerty, Superintendent
Olympic National Park
600 E. Park Ave.
Port Angeles, WA 98362-6798

July 6, 1993

Dear Superintendent Finnerty,

Thank you for the opportunity to review the evidence regarding the question of whether mountain goat (*Oreamnos americanus*) were present in the Olympic National Park before their introduction in the 1920s. At the request of Dr. Paul Gleeson, I have reviewed papers written by Drs. Schultz, Schalk, Lyman, and Houston & Schreiner. In this letter, I will evaluate the strength of the evidence presented in these papers, and make some recommendations that I hope will contribute to a resolution of this issue.

Houston and Schreiner (1993) present information on the current distribution of species for the Olympic Peninsula in the broader geographic context of the Northwest Coast of North America. They essentially treat these species distributions as if they have persisted for the Holocene period, the last 10,000 years. Much of this paper is devoted to trying to explain these distributions, an effort that is probably premature. The authors account for the relatively impoverished terrestrial fauna of the Olympic Peninsula by claiming that the subalpine and alpine areas are "habitat islands" that have been isolated from surrounding areas for 10,000 years. They cite Barnosky (1984) as a source for this interpretation, but unfortunately, this work is not listed in their bibliography. To me, it seems premature to attempt to explain current mammalian distributions based on a reconstructed early Holocene fauna for which we have little direct evidence, that is, actual faunal remains from paleontological or archaeological deposits.

As a cautionary tale, consider a comparable situation on the islands of the Alexander Archipelago in southeast Alaska. Based on habitat requirements and the contemporary distribution of mammals in that and surrounding areas, Klein (1965) proposed a model of how various species originally colonized the islands. Brown bear currently inhabit the northern islands (Admiralty, Baranof, and Chichagof), black bear inhabit the islands south of Frederick Sound, and both species occur on the mainland. Klein, quite reasonably, suggested that the brown bear moved into the area from the north, while the black bear moved in from the south. However, recent investigations of newly discovered caves in karst areas of Prince of Wales Island (Baichtal 1992; Autrey 1993, pers. comm.) have revealed paleontological deposits containing remains of both brown and black bear dated to between 9000 and 10,000 years ago on this island where only black bear occur today. This demonstrates how problematical the practice of extrapolating current species distributions back to the early Holocene can be.

Because Houston and Schreiner make a number of analogies with what they term "landbridge islands" of the Alexander Archipelago (as well as the Queen Charlottes and Vancouver Island), this cautionary tale seems particularly relevant. The current distribution of mammals may hold only limited relevance for earlier in the Holocene. The paleontological and archaeological sites throughout these regions hold great potential for unraveling some of the dynamic biogeographic processes that have occurred in this larger region throughout the Holocene.

The Schultz paper is a thorough and detailed review of the historical evidence relating to the presence of mountain goats. Dr. Schultz has done an excellent job of scrutinizing the historical accounts by

considering the experience and expertise of the authors, their methods of observation, and where relevant, the intended audiences. I think she makes a strong case that mountain goats were not present historically on the Olympic Peninsula, but some of the subtleties of her arguments may be lost on the particular interest groups which may have their own agendas. She does cite a number of historical references to mountain goats (including Quimper, Pantoja, Gilman, and Barnes), and I suspect that these sources could be interpreted quite differently by those who support the idea that goats were present historically. Since the "mountain sheep" and "mountain goat" are occasionally used interchangeably, the Bancroft (1875) reference might also be taken as evidence of the presence of goats in the Olympics. My own opinion is that if goats were abundant, we would expect considerably more historic information regarding them. Schultz has convinced me there is no reliable evidence for the historic presence of goats, but I do not believe that she will have persuaded all those with interests in the Park who may have different opinions on the matter.

Schalk does a masterful job of integrating a variety of types of ethnographic and archaeological data. His review supports Schultz's finding that goats were not present historically. The region's ethnographic sources indicate that mountain goat wool and horns were valued trade commodities imported into the region from Native groups whose territories encompassed mountain goat habitat in the Cascades, mainland British Columbia and southeast Alaska. The distribution of Native groups who maintained wool-bearing dogs also supports the absence of goats on the Olympic Peninsula. Schalk presents ethnographic evidence that clearly contradicts Lyman's (1988) claim that inferences regarding the presence of mountain goats derive solely from the absence of references to the animal.

Whether or not mountain goats were present historically is not, however, the crux of the issue. Most ungulate populations are characterized by cyclic fluctuations, and the Olympic mountain goat populations could have undergone a "crash" at some point prior to the historic period, or could have been hunted to local extinction at some time during the past by the Native people of the area who highly valued their wool. As I understand it, **the more critical question for Park managers is whether mountain goats were part the natural ecosystem during its evolution during the Holocene period.** This question is also addressed by Dr. Schalk, and was an important point originally raised by Dr. Lyman (1988). In Schalk's (1993:41) words, "what can be stated with reasonable certainty is that the distribution of mammals during the early nineteenth century cannot be extrapolated into the prehistoric record or throughout the Holocene."

The archaeological record pertinent to this question is seriously deficient, as readily acknowledged by Schalk. He reviews collections from 24 archaeological sites on the Olympic Peninsula that have produced faunal remains. Only two of these are located away from the coast, and it is not surprising that locally available fauna dominate these assemblages. Even if residents of these coastal sites had hunted mountain goats in the interior, chances are goat bones would have been deposited at high elevation camp sites where the carcasses would have been processed. In his review of Northwest archaeological sites that contain mountain goat remains, Schalk makes the key point that such occurrences are more frequent the closer they are to mountain habitats. **Schalk also points out that there is virtually no direct information on Olympic Peninsula fauna for the period between 3000 and 10,000 years ago.**

Schalk concludes his paper with a series of good recommendations, including the identification and recovery of faunal remains from natural or cultural deposits in the subalpine zone of the Olympic Mountains. While I am in total agreement with this recommendation, it represents a relatively long-term objective, and I would think that Park management is probably anxious for a resolution to the issue, considering the volume of information already compiled on the subject. I would like to reiterate another one of Schalk's recommendations, especially because it can be accomplished with data apparently already available to Park staff.

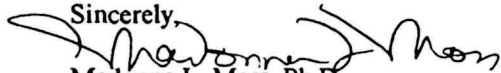
Considering the fact that the Park has already recovered cultural material from at least two high elevation sites (South Hoh Rockshelter, Seven Lakes Hearth), and that approximately 60 subalpine

lithic scatters have been identified, Park management should support a pilot program of blood residue analysis on stone tools from these sites. I have recently discussed this possibility with Dr. John Fagan, Archeological Investigations Northwest, and he believes mountain goat blood residue can be distinguished on hunting tools and butchering implements. Interestingly, he and his staff have recently documented the presence of mountain sheep from blood residue analysis of stone tools from the mid-Holocene Canyon Owl site in the Oregon Cascades. It is noteworthy that this site's setting does not support mountain sheep today, nor did it historically. I have not yet seen a copy of this report, but have requested one from the Willamette National Forest.

I strongly recommend that you direct your staff to arrange for blood residue analysis of stone tools from some of the high elevation sites in the Olympic Mountains, especially those located within the current range of the mountain goats. Ideally, it would be useful to analyze materials from sites dated to the mid-Holocene, because this time period is so poorly known. If mountain goats are not identified in the course of such analysis, I think the Park will have strengthened the case that mountain goats were not present in the Olympic Mountains during human prehistory.

If you or your staff would like to discuss any of this report, or if I can be of further assistance, please feel free to contact me. I would also like to thank you for the opportunity to review the evidence concerning this important interdisciplinary issue.

Sincerely,



Madonna L. Moss, Ph.D.
Assistant Professor

cc Dr. Francis P. MacManamon

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