

Memorandum

To: Paul Gleeson
From: Barbara Lane
Date: September 27, 1993
Subject: Review of data re: possible native presence mountain goat Olympic National Park

Order No.

1443 - PX 9500 - 93 - 328

Ref No.

932345

Enclosed is a final copy of my report "Western Washington Indian Knowledge of Mountain Goat in the Nineteenth Century: Historic, Ethnographic, and Linguistic Data".

Please substitute the enclosed for the copy sent to you earlier and destroy the earlier draft.

On rereading the earlier paper I discovered numerous minor typographical and editorial matters which have been corrected in the final version enclosed herewith.

Also enclosed is a signed copy of the contract associated with this project.

Thank you for inviting me to participate in this review. I found the subject matter stimulating. Dr. Schultz's article is a real contribution to the history of exploration in the region.

Barbara Lane

**Western Washington Indian Knowledge of Mountain Goat
in the Nineteenth Century : Historic, Ethnographic, and Linguistic Data**

Introductory remarks

This commentary is written in response to a request from the National Park Service for a review of materials concerning evidence relating to presence or absence of mountain goat in the Olympic Mountains prior to introduction of this species in the 1920s.

Dr. Lyman (1988) noted that the view that mountain goat were not native to the Olympic Peninsula is based on an absence of biological reports, absence of historical and ethnographic records, and lack of archaeofaunal evidence of pre-1920s presence of the species in this region. Dr. Lyman suggests that the absence of evidentiary support may be explained on various grounds and that it is more reasonable to hypothesize that mountain goat may have been present at earlier times.

Dr. Schultz (1993) has provided a remarkably thorough review and analysis of historical accounts by explorers, biologists, and others which might shed light on the question. She finds some mention of mountain goat, which she carefully weighs and discusses. Dr. Schultz points out that there was far more travel and exploration in the Olympic Mountains than Dr. Lyman noted. Dr. Schultz concludes that the evidence she surveyed provides no support for the hypothesis that mountain goat were present prior to their modern introduction.

Dr. Schalk (1993) surveys ethnographic and archeological accounts and analyzes these data to contest some of the reasons proffered by Dr. Lyman to explain the absence of reports supporting presence of mountain goat in the region. Dr. Schalk notes on the basis of his review and analysis that some of Dr. Lyman's reasoning is in conflict with evidence contained in the ethnographic record. Dr. Schalk concludes that the material he reviews does not support a pre-1920s presence of mountain goat in the Olympic Mountains.

The discussion by these three experts concerns the appropriate weight to be given to statements in historical and ethnographic accounts in assessing earlier presence or absence of natural species in a given region. The divergent views expressed rest in part on an evaluation of recorded data, and in part on the interpretation of a lack of recorded data

This review considers additional data to those noted in the articles under review. These are included in part to provide a broader data base for the discussion concerning mountain goat and in part to suggest additional sources of information which may be relevant to such inquiries.

Before evaluating the substantive data, I offer a brief commentary on one of the analytical issues entailed in this discussion.

Negative Evidence

I suggest that the label "negative evidence" as used by Dr. Lyman, Dr. Schultz, and Dr. Schalk obscures an important analytical distinction. This is a bit of a paradox. If I understand them correctly, all three experts agree that an absence of information, *per se*, does not constitute proof that a species was absent.

Ethnographers attempt to distinguish in their reports whether a given trait was present or absent or whether its presence or absence is unknown. Culture element studies on the Pacific seaboard in the 1930s and 1940s employed separate symbols to signify presence, absence, uncertainty, or no data. It has long been understood that null data signify only an absence of information, nothing more. What significance the absence of data may have, can only be determined by taking into account other information.

Taking into account other information (such as opportunity, interest, competence of investigators), one may interpret absence of information as support for a particular conclusion. However, at the level of discussing the evidentiary record, it is essential that the distinction between null data and other data be maintained.

In the discussion regarding whether or not mountain goats were present in the Olympic Mountains, it is important to distinguish between (1) a lack of evidence and (2) evidence that goats were not present. (An example of the latter would be explicit denials that goats were present in the Olympic Mountains.) This distinction is obscured if one uses the label "negative evidence" to connote an absence of evidence.

In my view, if the term "negative evidence" is used, it should be used as a label for evidence that goats were not present. (I take it as understood that any "evidence" may prove to be incorrect.)

The critical distinction between null evidence and evidence of the sort for which I would reserve the label "negative evidence" is understood by all three experts. Each of them makes the point that absence of reports does not prove that mountain goats were absent.

Despite this, all three experts appear to use the label "negative evidence" to connote an absence of information. In the case of Dr. Lyman, I think there is no doubt as to this usage. Dr. Lyman (1988:14-15) reviews the lack of evidence in biological, historical, ethnographic, and archeological reports and says (at page 15) "The conclusion that mountain goats are not native to the Olympic Peninsula is based on negative evidence."

Dr. Schultz (1993:3, 46) seems to employ the label in a similar, although perhaps more qualified manner. She writes (at page 46): "Nevertheless, the considerable amount of negative evidence (failures to mention goats *among mammals observed* in the Olympics) does not lack significance." (italics not in original) Perhaps Dr. Schultz restricts her use of "negative evidence" to contexts where reporting of goats would be expected, if present.

Dr. Schalk (1993:15) cites statements in the ethnographic record which deny presence of mountain goat in the Olympic Mountains as contrary to "Dr. Lyman's assertion that inferences regarding mountain goats from ethnography are based on negative evidence." Dr. Schalk (1993:37) speaks of "negative evidence or simple failure to mention mountain goats." This language is ambiguous. The use of "or" in the quoted passage could signify "negative evidence" equals "failure to mention." Alternatively, the word "or" might signify a contrast between "negative evidence" and "failure to mention." Since Dr. Schalk does not indicate that he employs the label "negative evidence" differently from Dr. Lyman, I interpret Dr. Schalk's use of "or" in the above statement to equate negative evidence with "failure to mention"

The point I wish to make here is simply this. At the level of describing the data base, it is important to note absence of information and to distinguish this category clearly from all other kinds of information. Null data, *per se*, signify nothing other than a lack of information. Using the label "negative evidence" suggests a value to be assigned to absence of data, thus destroying its special character.

At the level of analysis it becomes useful to identify context in which there is no mention of certain information in order to assess the meaning to be assigned to absence of data. As Dr. Schultz notes, if mountain goat were not native to the Olympic Mountains, absence of reports or remains of mountain goat should not be regarded as surprising. If mountain goat were present

in historic times, absence of any record reflecting this would be exceptional. The task is to examine the nature and adequacy of the record in order to evaluate the weight to be given to an absence of information.

Dr. Lyman's explanations of the lack of evidence for presence of mountain goat

Dr. Lyman's propositions that the biological, ethnographic, and archeological records may be poor indicators of the presence or absence of native mountain goat in the Olympic Mountains raise potentially important concerns. The validity of these concerns can only be assessed by careful review of the reasons offered and examination of the adequacy and quality of the records themselves.

Dr. Lyman (1988:14) suggests that historic biological surveys may not have covered appropriate areas of the Olympic Peninsula. Dr. Schultz has demonstrated that there was far more exploration and reporting of biological species by competent observers in appropriate areas than Dr. Lyman indicates. On the basis of the reports, diaries, and voluminous correspondence that she has analyzed, it is clear that none of these investigators found mountain goat or evidence of mountain goat in the Olympic Mountains.

Dr. Lyman (1988:14) notes that Indians hunted mountain goat in the northern Cascades of Washington and that Indians of British Columbia actively pursued mountain goat for wool, flesh, and horn. He then suggests, without further explanation, that "cultural differences in subsistence activities" may account for "the lack of ethnographic evidence indicating Olympic Peninsula Indians hunted this alpine mammal." This phrasing carries the implication that mountain goat were present in the Olympics, but that the Indians may not have hunted them. The ethnographic record shows that these Indians imported mountain goat products. Dr. Lyman does not explain why these valued commodities would be imported if mountain goat could be hunted locally.

Dr. Schalk shows that the ethnographic record contains explicit denials that goats were present in the Olympic Mountains. Dr. Lyman does not contest the validity of these data. He simply does not mention them.

Dr. Lyman does not discuss evidence in the ethnographic record regarding Indian use of the Olympic Mountains, or of Indian hunting activity in the Olympic Mountains. His failure to

discuss context leaves absence of mountain goat as the logical reason for absence of mention in the ethnographic record.

Dr. Lyman (1988:15) states categorically: "There is no paleontological evidence of native mountain goats in the Olympic Peninsula because no Quaternary fossil localities have been studied in this region." This causal assertion is misleading. Paleontological evidence of mountain goat would not be found (regardless of problems of preservation) if mountain goat were not present. Again, Dr. Lyman's discussion assumes what has yet to be determined.

Dr. Lyman's discussion of the evidentiary record is unsatisfactory because it simply asserts that the lack of evidence regarding mountain goat is a function of the record. No discussion of data or context is provided to assess the weight to be placed on the absence of evidence. Evidence in the record which is counter to his hypothesis is simply not discussed.

Dr. Schultz's analysis of historical accounts

Dr. Schultz provides a comprehensive analysis of all known accounts by visitors to the region which contain mention of mountain goat, or which might have been expected to mention mountain goat. She finds several accounts which mention mountain goat and carefully explains why she finds that these reports are not convincing evidence for presence of this species.

Dr. Schultz considers the absence of mention of mountain goats in the Olympic Mountains in the mid-nineteenth century scientific reports of Suckley and Gibbs. These writers discuss mountain goat presence in the Cascade Mountains. Dr. Schultz offers reasons why she concludes that lack of mention of mountain goats in the Olympics by these investigators indicates that the species was not present there.

Dr. Schultz presents a clear discussion of the kinds of criteria she applies in weighing the historical accounts. She concludes that the record indicates that mountain goats were not present in the Olympic Mountains in the historic period. Her conclusion is clearly warranted by the evidence.

Dr. Schalk's review of ethnographic and archeological evidence

Dr. Schalk discusses the ethnographic and archeological record. My comments are confined to the ethnographic data reviewed by Dr. Schalk. He presents a broad review of mountain goat use and trade in mountain goat products among native people along the Northwest

Coast. Mountain goats were accessible in only certain parts of the area. Mountain goat products were highly valued throughout the region and were traded over long distances. Ownership of mountain goat products were markers of wealth throughout the region. Dr. Schalk's review of the major ethnographic sources for native people of the Olympic Peninsula shows that virtually all these people are reported to have used and valued mountain goat products.

As Dr. Schalk observes, these data cast doubt on the plausibility of Dr. Lyman's suggestion that failure to report hunting of mountain goat by Indians in the area may simply reflect cultural differences.

Dr. Schalk draws attention to explicit statements in the ethnographic record that mountain goats were not present in the Olympic Mountains. He notes also the reports of the Coast Mountains in British Columbia and the Cascade Mountains in Washington as the source of mountain goat wool and other mountain goat products used by Olympic Peninsula Indians.

Additional ethnographic data

Dr. Schalk's report was written prior to the recent publication of "Twana Narratives: Native Historical Accounts of a Coast Salish Culture" by Dr. William W. Elmendorf. These narratives, some of which were collected more than fifty years ago, have just been published for the first time. The Twana, more widely known today as Skokomish, are the residents of the Hood Canal region of the Olympic Peninsula. They regularly visited the Olympic Mountains for a variety of purposes including elk hunting, berry picking, and guardian spirit seeking.

Dr. Schalk includes data on Twana use of mountain goat products and Twana acquisition of mountain goat wool and mountain goat finished products (such as blankets, horn utensils) through trade from outside the Olympic Peninsula. Dr. Schalk relied on information recorded by Dr. Elmendorf which was published in the 1960s.

The recently published volume contains additional material on mountain goat which provides further support for the conclusions reached by Dr. Schalk. Excerpts from three of the narratives in the new publication are presented.

Narrative 19 recounts events surrounding the marriage of a high-ranking Skokomish man to the daughter of a Skykomish head man. Dr. Elmendorf places the date of the marriage as circa 1840. The Skokomish wedding guests arrived at the main Skykomish village (near Wallace) on the Skykomish River where they were fed mountain goat meat by their hosts. The

bride was seated on a mountain goat wool blanket while her relatives piled gifts around her. She was then lifted in the blanket, along with the gifts, and carried over to the groom. The Skokomish were detained several days by their hosts while Skykomish hunters went to get goat meat for the groom's party.

"And from outside somebody hollered, "Here come hunters with mountain goat." Five hunters of the Skykomish had been out hunting goat, and now they came down the river with their canoes loaded with goats. And they hung the hides out to dry. And they brought the meat inside and took the tallow off to save it for paint and to grease the face. They gave the Skokomish that fresh goat meat now. They put the tallow (k ta) in bladders now to save it for the Skokomish to take home." (Elmendorf 1993:96)

Later in the proceedings the Skykomish chief's guardian spirit power song was sung. This man was the bride's father. His power was the mountain. The mountain gave him goats. Later the Skokomish visitors prepared for their departure.

"And they had certain men ready to take all that food down and put it in their canoes, and all that goat wool and the girl they had bought." (Elmendorf 1993:97)

Subsequent events in the narrative relate what was done with the mountain goat meat and tallow after the Skokomish returned to the Olympic Peninsula.

"So the Skokomish went home now. They landed home and they invited people from Hoodspout and Brinnon and Quilcene and all over to come and eat that goat meat and to see that Skykomish girl they had bought. They cooked and ate that goat meat and they took that tallow and greased their faces." (Elmendorf 1993:97)

The narrator goes on to explain that the Satsop people were related by marriage to the Skokomish, but had not been invited to the feast at that time. When they got word of the feast, the Satsop people, according to custom, "barged in." They arrived, broke down the door of the house, and danced around singing "We want to eat."

"There was some of the goat meat and some of the wild carrots left yet and they got busy and cooked that food for the Satsop. And [native name] gave them all the food they had left, that they had brought from Skykomish." (Elmendorf 1993:98)

This narrative relates the distribution (through feasting) of Cascade Mountain mountain goat meat to people of Twana communities along Hood Canal, as well as to Satsop (an Upper Chehalis people).

The collected narratives contain accounts of other intercommunity marriages and of hunting expeditions in the Olympic Mountains, but not a single narrative mentions hunting of mountain goat in the Olympics.

Mountain goat products as wealth items are mentioned in two other narratives, however.

Narrative 45 relates the story of a Sahewamish man and wife who were camped at Mud Bay (head of Puget Sound). The Sahewamish are more commonly known as Squaxin today. The man found a spirit power at Mud Bay which gave him wealth.

"And he went inside and tapped the inside of the house, and there were goat hair blankets and mats for the bedding." (Elmendorf 1993:172)

This incident in a narrative about a Puget Sound Salish man documents that mountain goat wool blankets were known and valued by people living around the head of the Sound. Elmendorf does not date this narrative, noting that it is a traditional tale.

Finally, there is one narrative which connects mention of mountain goat with the Olympic Mountains. It does not identify mountain goat as present in the Olympic Mountains.

Narrative 64 tells about Tyee Charley, a Twana man who got mountain-marmot shaman power at Mount Elinor in the Olympic Mountains. Elmendorf dates this account as referring to an event at about 1840-45. After a lengthy period of fasting and bathing at a lake in the mountains, Tyee Charley finally saw the mountain-whistler dancing at the door of his house. In a trance (?) Tyee Charley was taken to the house of the mountain-marmot who showed Tyee Charley his wealth.

"And he showed him furs and mountain goat hides and dentalia. All sorts of wealth he had there in his house. They claim sku yk i had stolen that wealth, but his house was full of it." (Elmendorf 1993:212)

These last two narratives tell us nothing about the provenance of the mountain goat products mentioned (goat wool blankets and goat hides), but they identify these as markers of wealth, providing additional confirmation of Dr. Schalk's observation.

The first narrative noted above describes mountain goat meat, tallow, and wool obtained by Twana from the Skykomish. This narrative supplies an additional source for mountain goat products not noted in the earlier ethnographic accounts relating to Twana.

Dr. Elmendorf's dating of the first and third narratives are calculated on the ages of specific individuals who were participants in the events, or who were known to be alive at the time of the events reported. If Dr. Elmendorf's estimates are reasonable, and they appear to me

to be, these two narratives provide Twana (Skokomish) data about mountain goat in the 1840s.

A final note of interest. The frontispiece of the new publication is a photograph of Frank Allen, one of the principal Twana narrators, wearing a dance shirt of mountain goat wool woven by his wife. The caption indicates that the photograph was taken in 1940. Information contained in Dr. Elmendorf's monograph "The Structure of Twana Culture" (1960:202) notes that Frank Allen had a ceremonial shirt made by his wife in about 1928 of mountain goat wool obtained from the Skagit. Frank Allen had worn this shirt at spirit dances either at the Lummi or Swinomish reservations. (There is also a picture of the anthropologist wearing the mountain goat wool shirt.)

In summary, the newly published data about mountain goat contained in the narratives about Twana and Sahewamish are consistent with and provide added support for Dr. Schalk's conclusions based on a review of the earlier ethnographic record.

Linguistic Data Collected in the 1850s

Both Dr. Schultz and Dr. Schalk refer to mid-nineteenth century records written by George Gibbs. Gibbs contributed reports on ethnology and geology which were published in the scientific Reports of the Pacific Railroad Expedition. Gibbs' reports (and his contributions to natural history reports which appeared under the names of other authors) were based on field investigations undertaken in Washington Territory in the 1850s.

One of Gibbs' interests was the study of Indian languages. His vocabularies of western Washington Indian languages provide some data relevant to the present discussion. These word lists contain native names for mountain goat and mountain sheep. People do not have names for animals about which they have no knowledge. The existence of names for these species indicates some knowledge (whether first hand or hearsay) about these species.

More importantly, perhaps, in the context of the present discussion, the collection of native names for mountain goat and mountain sheep informs us about the knowledge of these species held by Gibbs who elicited and recorded the information. Gibbs' use of the terms "mountain goat" and "mountain sheep" is raised in the papers by Dr. Schultz and by Dr. Schalk.

Dr. Schultz (1993:17-18) notes and comments on statements contained in Gibbs' 1877 report (which was published posthumously). Gibbs described trade between native people living east and west of the Cascade Mountains.

"The trade between the two districts was once considerable. The western Indians sold slaves, haikwa, kamas, dried clams, &c., and received in return *mountain-sheep's wool*, porcupine's quills, and embroidery, the grass from which they manufacture the thread, and even dried salmon, the product of the Yakima fisheries being preferred to that of the sound." (Gibbs 1877:170) [italics added]

In a later section of the same report, Gibbs noted that game was a less important component in the diet of Indians living west of the Cascade Mountains:

"There are *mountain-sheep or, more properly goats*, in the higher parts of the range: but they probably never constituted an important article of food, their wool being the principal object of their capture." (Gibbs 1877:193) [italics added]

The second statement has led Dr. Schultz (1993:18) to conclude that Gibbs used "mountain sheep" and "mountain goat" interchangeably. The statement "mountain sheep or, more properly goats," is certainly confusing and is not typical of Gibbs' statements. In my opinion, it is likely that if Gibbs had been alive at the time it was published, he would have altered the statement to clarify his meaning. For reasons to be discussed below, I believe this was a notation meant to correct an earlier confusion.

Dr. Schalk (1993:16) begins a discussion of general information regarding the distribution of mountain goats by citing two statements contained in the 1877 Gibbs publication. The first of these is the statement (Gibbs 1877:193) which led Dr. Schultz to conclude that Gibbs used "mountain goat" and "mountain sheep" interchangeably. The second statement is not the same as that cited by Dr. Schultz, but another taken from the same Gibbs publication. This statement, like the one cited by Dr. Schultz, gives mountain sheep (not mountain goat) as the source of blanket wool.

"The Indians of the Sound and the Straits of Juan de Fuca attained considerable skill in manufacturing a species of blanket from a mixture of the *wool of the mountain-sheep* and the hair of a particular kind of dog. . . . The wool is obtained from the hunting tribes next to the Cascade Mountains, and is an article of trade." (Gibbs 1877:219-220) [italics added]

Dr. Schalk does not explicitly state that he interprets the Gibbs statement at page 193 to indicate that Gibbs used "mountain goat" and "mountain sheep" interchangeably. However, Dr. Schalk's characterization of the two statements as providing evidence about the distribution of mountain goats can only be understood as an oversight, or as a tacit assumption that Gibbs used the two terms interchangeably.

At the close of his discussion, Dr. Schalk (1993:17) comments on the potential for confusion regarding biological nomenclature when dealing with early historic accounts. Dr. Schalk notes that Gibbs, as editor of Swan's 1870 monograph on the Makah, thought Swan did not accurately distinguish between mountain sheep and mountain goat. This would suggest that (at least in 1869) Gibbs did not refer to mountain goat and mountain sheep interchangeably.

It is my view that the native word lists collected by Gibbs in the 1850s indicate that Gibbs did not use "mountain goat" and "mountain sheep" interchangeably. Gibbs collected native terms for both these species in two major language divisions of western Washington. He recorded names for both species in Snohomish and Skagit (Puget Salish) and in Lummi/Semiamoo (Straits Salish).

Gibbs' unpublished journal (1855:0176) contains a short word list titled "Snohomish & Skagit." The first two words on the list are:

Big horn sheep	hah-le-wuts
Mountain goat	s'hwate-ligh

Gibbs' unpublished journal (1857:0183) contains a Lummi (Semiamoo) word list which also contains words for Mountain goat and Mountain sheep:

big horn	kweh-whut-chen
mountain goat	pe-kulh-kun

In 1863 Gibbs published vocabularies of the Clallam and Lummi languages. In his preface, Gibbs noted that the Clallam vocabulary was collected at Port Townsend during his residence there of a few months, while the Lummi vocabulary was collected at Semiamoo Bay while he was connected with the Northwest Boundary Commission. Gibbs (1863:vii) warned: "Neither of them underwent more than a partial revision, and inaccuracies have therefore doubtless crept in." Gibbs' published Lummi vocabulary contains entries consistent with the 1857 journal entries:

Big horn (<i>ovis montana</i>)	kwe-kwut-chen
Mountain goat (<i>aploceras</i>)	swet-le, pi-kulh-kan

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The Lummi vocabulary published in 1863 gives both the Straits Salish term for mountain goat recorded in 1857 (pe-kulh-kun) and the Puget Salish term recorded in journal entries for the Skagit and Snohomish.

The 1863 published list for the Clallam language does not contain an entry for Mountain sheep or Big horn. The term given for Mountain goat is swet-le.

In his 1855 unpublished journal the Nisqually word list has no entry for mountain goat. There is an entry for mountain sheep and the term given is s'weht-leh. This is the term which appears in all other Gibbs lists as mountain goat. Gibbs' Dictionary of the Nisqually posthumously published in 1877 gives "Swet-le, the mountain-goat, *aploceras*." There is no entry for Mountain sheep.

It is apparent that the earlier (aberrant) identification of mountain sheep with swet-le has been corrected in the posthumous publication. It is conceivable that this earlier confusion accounts for the perplexing language "mountain sheep, more properly mountain goat" discussed earlier in this review.

It is of interest (although not pertinent to the discussion regarding the mountain goat/mountain sheep discussion) that Gibbs also recorded a short Chemakum word list which includes a Chemakum term for mountain goat. The Chemakum lived on the Olympic Peninsula. Their language was unrelated (or only remotely related) to either Straits Salish or Puget Salish. Their term for mountain goat was not cognate to either of the Salish terms recorded. No entry for Mountain sheep or Big horn appears on the brief Chemakum word list.

Native terms for mountain goat and mountain sheep do not, of course, indicate that these species were present in the region where the language was spoken.

Summary of Linguistic Evidence

These records show that in 1855 and 1857 Gibbs elicited terms for mountain goat and mountain sheep in Puget Salish and Straits Salish languages. Gibbs' interest in natural history and in scientific classification, coupled with his eliciting and recording of distinct names for these species in the Indian languages he studied, make it highly improbable that Gibbs used the terms "mountain sheep" and "mountain goat" interchangeably.

In my view, the earlier mis-identification in the Nisqually word list of mountain sheep with the Indian term given elsewhere (Skagit/Snohomish, Clallam, and Lummi) for mountain

goat, which was later corrected in the Nisqually dictionary, is most likely the explanation for the confusing passage "mountain sheep or, more properly goats" discussed earlier. Failure to catch this correction throughout the posthumous 1877 printing of Gibbs' work would also explain why mountain sheep wool (rather than mountain goat wool) is identified as the material used in blankets (Gibbs 1877:170, 193, 219-220).

Historical and ethnographic accounts in addition to those reviewed by Dr. Schultz and by Dr. Schalk, as well as laboratory examination of Salish blankets attest that these contained mountain goat wool. (Willoughby 1910; Kissell 1916, 1929; Orchard 1926)

Conclusion

Dr. Lyman properly states that lack of biological, historical, and ethnographic reports of mountain goat in the Olympic Mountains do not constitute proof that goats were not present prior to their introduction to the region in the 1920s. He then attempts to account for the absence of documentation of this species in the region. Dr. Lyman's discussion of the evidence is superficial and not persuasive.

Dr. Lyman suggests that historic biological surveys may not have covered appropriate areas of the Olympic Peninsula. Dr. Schultz has demonstrated that there was far more exploration and reporting of biological species by competent observers in appropriate areas than Dr. Lyman indicates. On the basis of the reports, diaries, and correspondence that she has analyzed, it is clear that none of these investigators found mountain goat or evidence of mountain goat in the Olympic Mountains.

Dr. Lyman suggests that "cultural differences in subsistence activities" may account for "the lack of ethnographic evidence indicating Olympic Peninsula Indians hunted this alpine mammal." This phrasing carries the implication that mountain goat were present in the Olympics Peninsula, but that the Indians may not have hunted them. Dr. Lyman ignores explicit statements in the ethnographic record that mountain goat were absent in the Olympic Mountains. Dr. Schalk effectively shows that Indians of the Olympic Peninsula used and valued mountain goat products which they imported from outside the area. I concur with Dr. Schalk's observation that if mountain goats were present in the Olympic Mountains, Olympic Peninsula Indians almost certainly would have hunted them.

Dr. Lyman states categorically: "There is no paleontological evidence of native mountain goats in the Olympic Peninsula because no Quarternary fossil localities have been studied in this region." Dr. Lyman's causal assertion is misleading. Paleontological evidence of mountain goat would not be found (regardless of how many or how few such sites were studied and regardless of preservation problems) if mountain goat were not native to the region.

In his concluding discussion, Dr. Lyman (1988:22) suggests that the key to implementing National Park Service policy clearly lies in ascertaining the timing of mountain goat extirpation in the Olympics. . . ." Again, Dr. Lyman's language assumes as given that which has not been proven.

I agree with the conclusions reached by Dr. Schultz and by Dr. Schalk that the evidentiary record provides no support for the hypothesis that mountain goat may have been native to the Olympic Mountains. On the basis of the evidence adduced and analyzed by Dr. Schultz and by Dr. Schalk, I find that the absence of evidence provides strong indication that mountain goats were not present in the Olympics in historic times. Further, the ethnographic record contains specific denials that this species was present on the Olympic Peninsula.

Dr. Lyman's speculations and hypotheses are interesting and appropriate as an academic exercise, but conjectures as to what might have been in the Pleistocene or Holocene cannot be bases for practical decisions concerning natural history management in the present.

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