

SPECIMEN #1 - Craters of <sup>CRMO-109</sup> the Moon

WILDLIFE

PARTIAL SKULL WITH HORN CORES

TIN, R25E, SEC. 23, NW $\frac{1}{4}$ , NE $\frac{1}{4}$ , SW $\frac{1}{4}$

LOCATED JULY 1, 1982

RECEIVED FROM LOUISE SKONIER - CRMO  
MUSEUM COLLECTIONS

The unknown  
and mis-labeled?  
full curl sheath →

found sheep trail butte  
1960

SPECIMEN #2 - CRATERS <sup>CRMO-109</sup> OF THE  
MOON N.M.

WILDLIFE

BONE FOUND WITH SPECIMEN #1 (FEMUR)

TIN, R25E, SEC. 23, NW $\frac{1}{4}$ , NE $\frac{1}{4}$ , SW $\frac{1}{4}$

LOCATED JULY 1, 1982

RECEIVED FROM LOUISE SKONIER - CRMO  
MUSEUM COLLECTIONS



IN REPLY REFER TO:

# United States Department of the Interior

## NATIONAL PARK SERVICE

Craters of the Moon National Monument

P. O. Box 29

Arco, Idaho 83213

July 7, 1981

Chairman  
 Zoology Department  
 University of Montana  
 Missoula, Mon. 59812

Mr. Chairman:

Craters of the Moon National Monument is in the process of preparing several resource management statements concerning various aspects of the park. One such project is a historical inventory of native wildlife which once roamed the craters environment and adjacent lava flows of south central Idaho. There are two such species of particular interest: the desert bighorn, *Ovis canadensis* var., and the wood or mountain bison, *Bison bison athabascal*.

To aid in this assignment, we are checking the authenticity of our museum specimens and/or related artifacts found on the Snake River Plain. On hand, we have remains which could possibly be from these species but we lack the technical data and expertise to verify them.

Therefore, would it be possible for your department and support staff to help in the identification of these remains, (i.e. weathered horn sheaths and skull pieces)? This could be accomplished by either providing you with these artifacts or you providing us with classification data.

If your staff could assist us with this project, it would be greatly appreciated. Thank you for your consideration.

Sincerely,

David Clark  
 Park Interpreter

mr



DEPARTMENT OF ZOOLOGY

(406) 243-5122

University of Montana

Missoula, Montana 59812

July 16, 1981

David Clark  
Craters of the Moon  
National Monument  
P.O. Box 29  
Arco, ID 83213

Dear Mr. Clark

We have in our Bovid collection enough materials that should enable us to compare and identify your artifacts (no guarantees) so feel free to send us the material.

I, personally, will look after the material and see that it is returned to you as soon as possible.

Sincerely yours

A handwritten signature in cursive script that reads "Christine C. Hass".

Christine C. Hass  
Curator  
Bird and Mammal Museum

cah



# United States Department of the Interior

## NATIONAL PARK SERVICE

Craters of the Moon National Monument

P. O. Box 29

Arco, Idaho 83213

IN REPLY REFER TO:

July 29, 1951

Ms. Christine Hass  
Curator/Birds and Mammal Museum  
Dept. of Zoology  
University of Montana  
Missoula, MT 59812

Dear Ms. Hass:

Enclosed are various artifacts found within Craters of the Moon National Monument which we are unable to classify. These include three specimens of horn sheaths and 1 partial skull.

We are in the process of putting together an exhibit on the wild-life that once existed within the monument, that would include grizzly, bison, and sheep. If you could classify these artifacts to species and if possible, subspecies, it would be of immense help.

Mailing labels have been enclosed to cover return postage. Please insure as this further guarantees delivery.

If there are any questions, please call (208) 527-3257. We very much appreciate your interest in our problem.

Sincerely,

David Clark  
Park Interpreter

Enclosure.

mr



# United States Department of the Interior

## NATIONAL PARK SERVICE

Craters of the Moon National Monument

P. O. Box 29

Arco, Idaho 83213

IN REPLY REFER TO:

K1815

August 19, 1982

236-3168 - Museum -  
2680 - office -

Dr. John White  
Idaho Museum of Natural History  
P.O. Box 8428  
Pocatello, Idaho 83209

Dear Dr. White:

Craters of the Moon National Monument would like to enlist your aid in the identification and analysis of various skeletal remains found within the monument and its lava tubes. We are familiar with your expertise in classifying the recent cave discoveries of the Shoshone District of the Bureau of Land Management and it was their suggestion we contact you with our finds.

In reference to our previous telephone conversation, by Louise Skonier, we are now sending two specimens of partial skulls and one of an associated femur. Specimen #1 was discovered this past July and was found along with specimen #2 in a small lava tube southeast of Two Point Butte within the monument. Specimen #3 is an old find in the museum collection, of which I have no information on its background. This particular specimen was sent to a lab at the University of Montana last August and I am enclosing a copy of their letter containing their analysis results—this information may be of some assistance to you for identification and comparison purposes. In addition to species identification, the monument is also interested in an age estimate of these specimens, if possible.

where is  
this lett  
with  
their  
results

Your assistance in this matter is greatly appreciated and will aid the monument in both reorganizing the museums collections and accurately representing to the visitor an up-to-date picture of the previous fauna in the Snake River Plain environment. If more information is required, please give the monument a call (527-3257). Enclosed is a return label for the specimens.

Sincerely,

David R. Clark  
Park Interpreter

Enclosure



# IDAHO MUSEUM OF NATURAL HISTORY

Idaho State University  
Campus Box 8096  
Pocatello, Idaho 83209-0009

Telephone (208) 236-3168

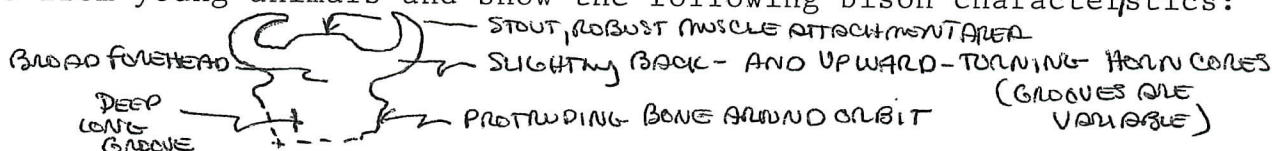
1 February 1983

David R. Clark  
Craters of the Moon  
P.O. Box 29  
Arco, ID 83213

Dear Mr. Clark:

Please forgive this tardy reply to your request for information on the bones you sent. I have returned them to you in today's mail. Dr. White turned the material over to me when he left on sabbatical and I got carried away by the semester.

I inspected the femur and two partial skulls you sent and identify them as bison. The femur is very robust and still immature; the skulls are also from young animals and show the following bison characteristics:



As you can see, the "experts" often disagree, and members of the cattle family are especially difficult to separate. I compared your material with the skull series we have in the Museum and am confident they are bison.

I am impressed by the fact that the bones, in spite of being broken, are in good condition. The end of bison hunting on the Snake River Plain occurred between 1820-1830, but stragglers may have held on for awhile.

We are continuing to work on fauna from natural traps, caves and rockshelters and would like to see this locality if possible. Maybe we can call you this spring?

Thank you for your patience.

Sincerely,

*Susanne Miller*  
Susanne Miller  
Research Associate  
Paleontology Laboratory.

K1815

February 14, 1983

Dr. John White  
Idaho Museum of Natural History  
P.O. Box 8428  
Pocatello, Idaho 83209

Dear Dr. White:

We just received the notice that the bones supplied to you earlier were indeed those of bison. Although it was apparent that the bison's past range included the monument, this is the first documented evidence that they sometimes crossed over the flows into the heart of the area. This, along with the Bureau of Land Management finds of the grizzly and wolf, really makes for a very interesting story. We may consider telling this story to the visitors to Craters of the Moon when the new exhibits are planned this year. Because this is only in the preliminary stages, we would like to impose on you again for information.

In a summary, could you tell us about your work on fauna from natural traps and caves in this area and what the significance of these finds has been. If there are any papers available, copies would be appreciated.

We are also very interested in locating the remains (skull) of any bighorn sheep that have been found under the same circumstances as the other animals. Again, references indicate that these were present like the others, but bonafide documentation can not be located. We would also need a skull, etc. if we did an exhibit to include all of these species.

Again, we only see a small possibility of including this exhibit in a group of general exhibits on volcanic geology, but we are still at the point where it could be considered. If you can supply us with this information we can consider it intelligently.

We very much appreciate the work that you, Susanne Miller and the rest of your staff have done for us already.

Sincerely,

Robert J. Hentges  
Superintendent

cc:  
D.R. Clark



# Idaho State University

MUSEUM OF NATURAL HISTORY  
Pocatello, Idaho 83209

Telephone (208) 236-3780

21 February 1983

CRMO

FEB 23 '83

|                                     |                  |                                     |
|-------------------------------------|------------------|-------------------------------------|
| <input checked="" type="checkbox"/> | SUPERINTENDENT   | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | ADMIN. CLERK     | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | PARK RANGER      | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | PARK INTERPRETER | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | MAINTENANCE      | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | FILES            | <input checked="" type="checkbox"/> |

Robert J. Hentges  
Craters of the Moon National Monument  
P.O. Box 29  
Arco, ID 83213

Dear Mr. Hentges:

I too would like to know more about the former distribution of bighorn sheep on the Snake River Plain! I am afraid we don't have any definitive records of their occurrence on the Plain, although many records (historical, mammalian, archaeological) point strongly to the possibility, based on peripheral records. The bighorn is and was fairly cosmopolitan animal, both a desert and montane species, and was originally distributed eastward to western Dakotas and Nebraska (see Hall, 1959) from Canada to Mexico. They were a mainstay of many of the Shoshonean people and are abundant in archaeological sites from southeastern Idaho (cf. Weston Canyon Rockshelter, Franklin Co.) and central Idaho. Davis (1939) cites them occurring in Owyhee and Franklin Co.'s and abundant in the Little Lost, Lemhi, and Pahsimeroi Mtns. and valleys, so I would expect them to have occurred in appropriate areas out onto the Plain. Their main requirements seem to be rocky areas and "badlands" offering good "vantage" points for long-distance viewing and escape. We'll just have to keep looking!

Here are some basic references that might be of use and interest to your exhibits and wildlife people. I highly recommend the Russell book as a fairly reliable source. I haven't read it for a long time and don't remember any observations of the Craters area as such, but he crossed the Snake River Plain several times in several directions and at least noted the Buttes and Hell's Half Acre. Good reading. We'll keep our eyes open and share any other faunal trap or other information we accumulate. We'll keep in touch and help with the exhibits in any way we can. You might also contact Dick Hill, the BLM archaeologist in the Idaho Falls office. He is also a "bone person" and has looked at cave/rockshelters in this area. If I remember correctly he has identified a number of critters and even has elk material from some sites south of Big Southern.

Sincerely,

*Susanne Miller*  
Susanne J. Miller

Paleontology Laboratory

(over)

Davis, W.B.

1939      The Recent Mammals of Idaho. Caxton Printers Ltd.  
Caldwell, Idaho.

Geist, V.

1971      Mountain Sheep: A study in behavior and evolution.  
University of Chicago Press.

Hall, E.R. and K.R. Kelson

1959      The Mammals of North America. (2 vols.) The Ronald  
Press. Co. New York.  
(There is a newer edition out, 1982, by Hall alone,  
but either is good.)

Russell, Osborne

1969      Journal of a Trapper: 1834-1843. University of Nebraska  
Press. Lincoln. (paperback)

August 12, 1981

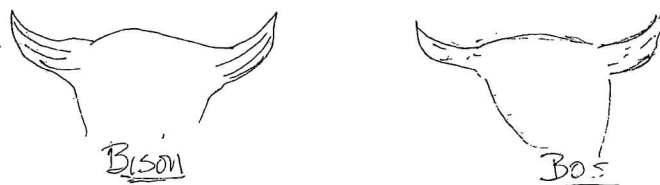
David Clark  
Craters of the Moon National Monument  
P.O. Box 29  
Arco, ID 83213

Dear David:

After consulting with Dr. P.L. Wright (Professor emeritus of Mammalogy) and Dr. W.G. Melton (Professor of Paleontology), I think I may have come up with some answers for you.

I have enclosed some range maps for Bison and Ovis. I.McT. Cowan is considered a good source for the information on the sheep. E.R. Hall is known as a "splitter" and, according to Dr. Wright, may be guilty of small sample sizes for his subspecies determinations.

As far as B.b.bison and B.b. athabasca, both Dr. Wright and Dr. Melton feel that Hall's dividing line is perhaps too arbitrary and that there was a great deal of movement of both subspecies across the Continental Divide. In other words, any bison material you discover has the chance of being either subspecies. However the partial skull you sent is probably not Bison. Both Dr. Wright and myself classified it as Bison, but Dr. Melton examined the horn cores and said it was most likely Bos. His reason for saying so is this: apparently the horn cores of Bison show distinct longitudinal grooves, while Bos do not. I examined some of his specimens, and some from our museum and found this to be the case. Diagrammatically the horns appear like this:



This is one of the very few differences. Also listed in some keys is whether or not the horns or horn cores project laterally outward (Bison) or more or less vertically from the skull (Bos). As you can see, this is not always a reliable character.

With the large size of the horn cores, it is very likely that this is a "longhorn". Dr. Melton assures me that the animals were present in that part of Idaho in the past.

Since the skull sutures are still open, the animal was probably "immature" and less than 2-3 years old.

On to specimen #2. As we have no specimens of Desert Bighorn in our collection, I could not compare it. Looking at Cowan's and Hall's range maps, though, it appears an unlikely candidate. Dr. Melton mentioned that, during the Pleistocene, the area which includes the Snake River basin had a milder, moister climate than today and it is possible that the Desert Bighorn could have once ranged that far. However, he feels that your specimen is probably more recent than that. From studying the sheath alone it is not possible to determine subspecies, you need at least the horn core.

The age of the animal can only be determined by a longitudinal section of the horn:



and counting the rings from the inside. With a specimen this weathered I'm not sure it can be done.

The best method of dating the sheath would be Carbon-14 dating. Washington State University and U.C. Berkeley both have C-14 labs for this purpose. I think Dr. Melton mentioned that it might cost up to \$150.00 per sample, but don't quote me on that. Exactly how large a specimen they need, I have no idea.

When I first told Dr. Melton about the sheath, he brought up the possibility of Woodland Musk Ox, a now extinct subspecies whose remains have been found in sites around Lincoln, Montana and as far south as Pocatello, Idaho. I found that interesting and thought you should be aware of the possibility.

*Bootherium bombifrons*

Specimens #3 and #4 both stand the possibility of being Bison. The older, weathered sheath is pretty smooth on the inside and may be Bos but that could also just be weathering. The newer looking horn shows some definite grooves and could be Bison. They are both almost certainly Bovidae, and Bos or Bison most likely.

So those are my speculations. I enjoyed the work and will gladly give you any more help. However, I will be leaving the 23rd of this month to spend the fall in Virginia, and will not be back until the end of November. If you need any more help before then you might send inquiries to Dr. Wright (Dept. of Zoology, UM) or Dr. Melton (Dept. of Geology, UM) as I have no idea what their schedules will be like this Fall.

It has been good working with you and good luck on your exhibit.

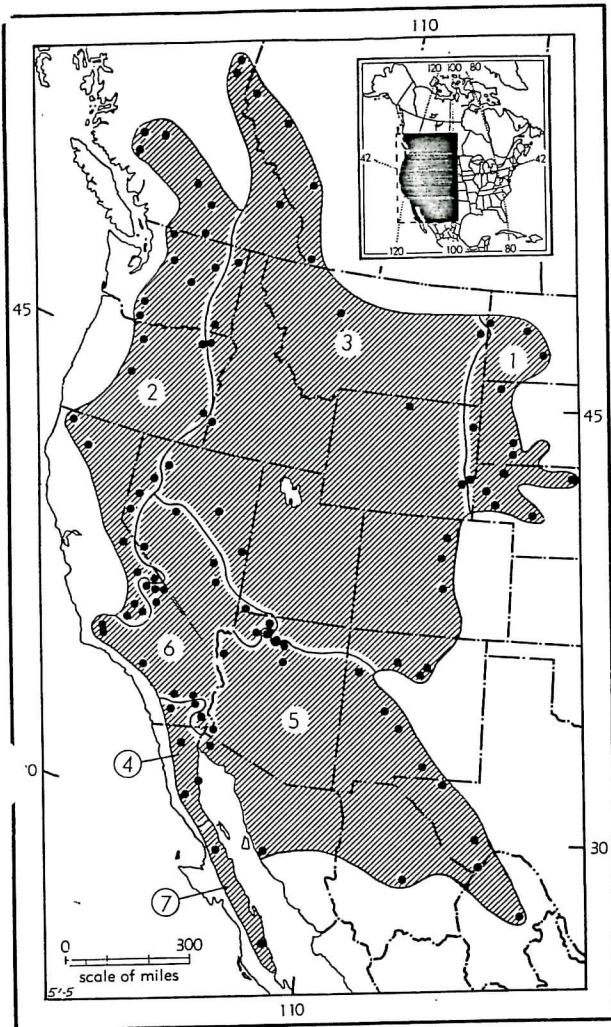
Sincerely,

*Christine Hass*

Christine Hass  
Curator, Bird and Mammal Museum

ARTIODACTYLS

1117



Map 545. *Ovis canadensis*.

- |                              |                             |
|------------------------------|-----------------------------|
| Guide to subspecies          | 4. <i>O. c. cremnobates</i> |
| 1. <i>O. c. auduboni</i>     | 5. <i>O. c. mexicana</i>    |
| 2. <i>O. c. californiana</i> | 6. <i>O. c. nelsoni</i>     |
| 3. <i>O. c. canadensis</i>   | 7. <i>O. c. weemsi</i>      |

*Ovis canadensis mexicana* Merriam

1901. *Ovis mexicanus* Merriam, Proc. Biol. Soc. Washington, 14:30, April 5, type from Lago de Santa María, Chihuahua.
1901. *Ovis canadensis mexicanus*, Lydekker, The great and small game of Europe, western and northern Asia and America, p. 11.
1907. *Ovis canadensis gaillardi* Mearns, Bull. U.S. Nat. Mus., 56:240, April 13, type from Gila Mts., between Tinajas Altas and Mexican boundary, Yuma Co., Arizona.
1912. *Ovis canadensis texianus* V. Bailey, Proc. Biol. Soc. Washington, 25:109, June 29, type from Guadalupe Mts., El Paso Co., Texas.
1916. *Ovis sheldoni* Merriam, Proc. Biol. Soc. Washington, 29:130, September 6, type from El Rosario, northern Sonora.

MARGINAL RECORDS.—Arizona: mouth Cataract (= Havasu) Canyon (Hoffmeister, 1971:177); Hava-

supai Point (op. cit.: 155, as *O. canadensis* only); Desert View (op. cit.: 177); San Francisco Mtn. New Mexico: Zuñi Mts.; Magdalena Mts.; Sheep Mtn.; Guadalupe Mts. Texas: E rim above Frijole; Glass Mts.; Boquillas Canyon. Coahuila: approx. 5 mi. E San Lazaro. Chihuahua: Chihuahua. Sonora: Costa Rica Ranch; Rosario. Arizona: Gila Mts.; Black Mts.; Colorado Canyon, Vitz's Crossing, 17 mi. N Pine Springs. Not found: Arizona: Black Mesa of The Alamo.

*Ovis canadensis nelsoni* Merriam

1897. *Ovis nelsoni* Merriam, Proc. Biol. Soc. Washington, 11:218, July 15, type from Grapevine Mts. [high limestone ridge forming middle of range, about 5 mi. southerly from Grapevine Peak], on boundary between Inyo Co., California, and Esmeralda Co., Nevada, just S of lat. 37° N.
1898. *Ovis canadensis nelsoni*, Lydekker, Wild oxen, sheep, and goats of all lands, living and extinct, p. 208.

MARGINAL RECORDS.—Nevada: 28 mi. N Austin; 6 mi. NE Italian Spring, Quinn Canyon Mts., 7000 ft.; Irish Mtn. Utah: Beaverdam Mts. (Stock, 1970:433). Arizona: Kanab Canyon; Toroweap, thence along W side Colorado River to California: 20 mi. W Picacho; Canyon Springs, Chuckwalla Mts.; Santa Rosa Mts.; head Rock Creek, San Gabriel Mts.; Cuyama Plain, base White Mtn.; Caliente Peak, Cuyama Valley; W slope Inyo Range; W slope Sheep Mtn., White Mts.; Tin Mts.; Grapevine Mts. Nevada: Middle Fork Cat Creek, 8900 ft.

*Ovis canadensis weemsi* Goldman

1937. *Ovis canadensis weemsi* Goldman, Proc. Biol. Soc. Washington, 50:30, April 2, type from Cajon de Tecómaja, 2000 ft., Sierra de la Giganta, about 30 mi. S Cerro de la Giganta, Baja California.

MARGINAL RECORDS.—Baja California: Sierra San Borjas, 20 mi. N Calmallí; type locality.

Dall's Sheep



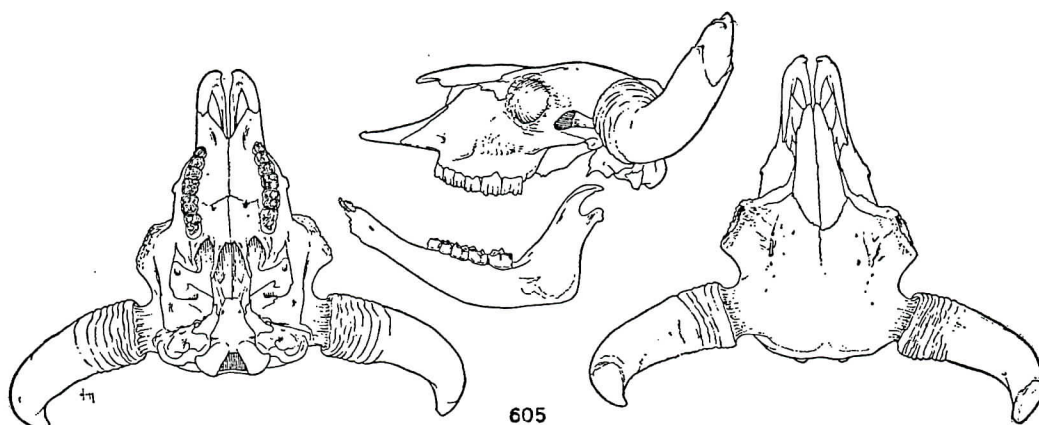


Fig. 605. *Bison bison bison*, Buffalo National Park, Wainwright, Alberta, No. 48115 K.U., ♂, X 1/2.

External measurements: (males) 3042–3803; 330–913; 584–661; (females) 2132–2896; 304–508; 508. Weight of large male approx. 818 kg.; large female, 545 kg. Head heavy; neck short; shoulders high, humped; tail short, tufted at tip; fur on head, neck, and shoulders brownish black, long, woolly, forming beard on chin; fur of body short, brown to light brown. Greatest length of skull, (males) 491–595; basilar length, (males) 454–555; alveolar length of molars, (males) 82–98; length of maxillary tooth-row, (males) 142–150 (135–147.5 in females).

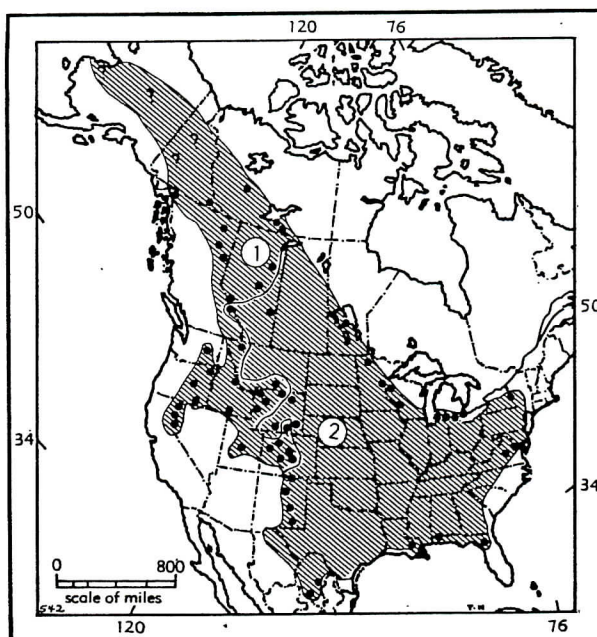
As of 1974 a pure blooded remnant of *Bison bison athabasca* persists in the District of Mackenzie in the Nyarling River–Big Buffalo Lake area of Wood Buffalo Park. After 1957 stock from there was transported more than 100 mi. WNW and established in an area near Fort Providence (Banfield, 1974:407). Herds of *B. b. bison* have been established in several wildlife preserves in the United States and Canada.

#### *Bison bison athabasca* Rhoads

1898. *Bison bison athabasca* Rhoads, Proc. Acad. Nat. Sci. Philadelphia, 49:498, January 18, type from within 50 mi. SW Fort Resolution, Mackenzie.  
1899. *Bison occidentalis* Lucas, Proc. U.S. Nat. Mus., 21:758, type from St. Michael, Alaska.  
1932. *Bison bison oregonus* V. Bailey, Proc. Biol. Soc. Washington, 45:48, April 2, type from Malheur Lake, Harney Co., Oregon.  
1933. *Bison bison haningtoni* Figgins, Proc. Colorado Mus. Nat. Hist., 12(4):30, December 5, type from head Rock Creek, NE of South Park, Park Co., Colorado.

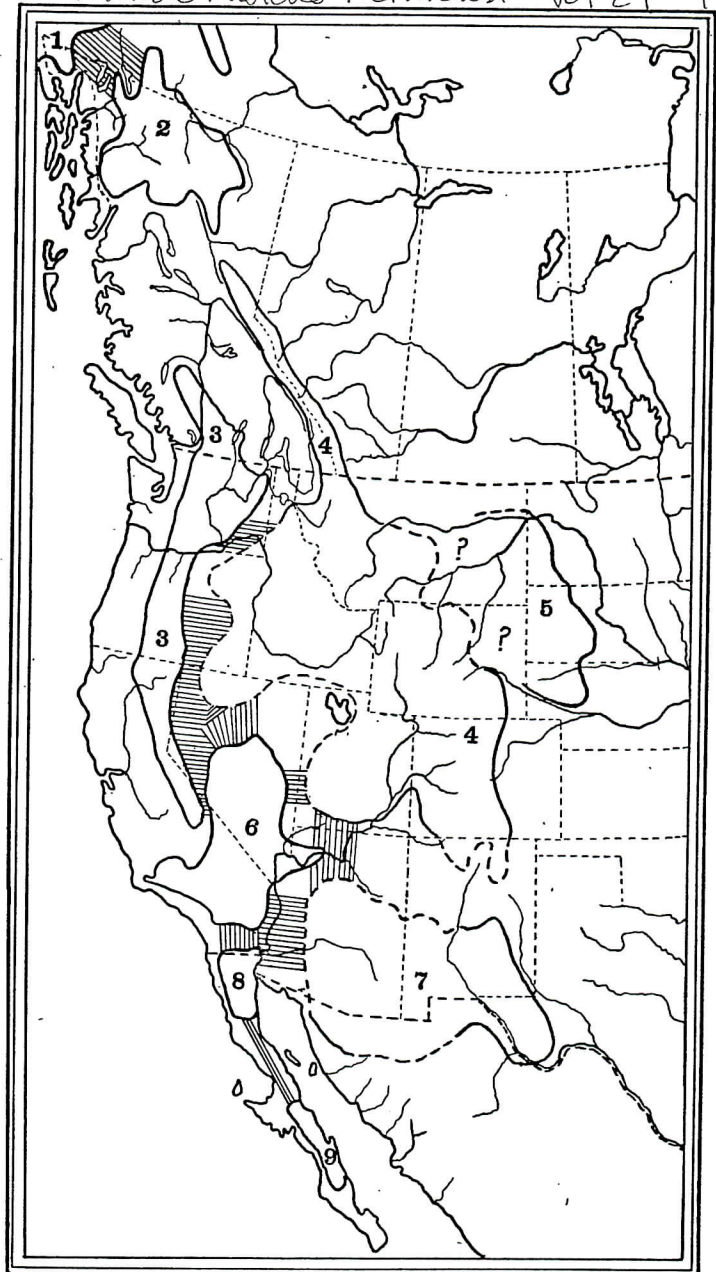
MARGINAL RECORDS.—Alaska?: 30 mi. above mouth Tanana River. Yukon?: Peel River. Mackenzie: vic. Great Marten Lake; type locality; 40 mi. NE Fort Smith. Alberta: E side Athabaska above and below Fort McMurray; between Methye Portage and Lake La Biche. Montana: Glacier National Park. Idaho: Agency Creek, Lemhi Co. Wyoming: Gardiner River, Yel-

lowstone National Park. Montana: Pryor Mts. Wyoming (Long, 1965a:719, unless otherwise noted): W slope Bighorn Mts. (Fryxell, 1928:138); 22 mi. W Cody; Hoback River; Gross Ventre Range, E Jackson. Colorado: Lost Park, near Marvin Lake; Alma, 10,232 ft. Wyoming: Snowy Range (Long, 1965a:719). Colorado: Pikes Peak region; Elk Mts., Gunnison Co.; top of Book Cliffs. Utah: Twelve Mile Creek Canyon, near Gunnison. Idaho: 20 mi. W Raft River, Cassia Co. Oregon: Barren Valley, E of Steens Mts. California: near Honey Lake; near Eagle Lake; Alturas Valley. Oregon: Izee. Washington: Grand Coulee. Oregon: near Joseph (Olterman and Verts, 1972:10, as *B. bison* only). Alberta: 15 mi. S Henry House, Buffalo Prairie. British Columbia: Fort St. John region; Cypress Creek; Fort Nelson. Yukon: near Fort Liard. British Columbia: Atlin



Map 542. *Bison bison*.

1. *B. b. athabasca* 2. *B. b. bison*



Map illustrating probable distribution of geographic races of native sheep of North America south of the 60th Parallel at the advent of white man, compiled from specimens and published accounts. Broken lines indicate boundaries based on unsatisfactory data. Hatching indicates areas of intergradation. 1, *Ovis dalli dalli*. 2, *O. d. stonei*. 3, *O. canadensis californiana*. 4, *O. c. canadensis*. 5, *O. c. auduboni*. 6, *O. c. nelsoni*. 7, *O. c. mexicana*. 8, *O. c. cremnobates*. 9, *O. c. weemsi*.

ACCESSION INVENTORY FORMACCESSION NUMBER: 109 TYPE OF ACCESSION: Field CollectionDATE OF ACCESSION: 21 JUL 1982CATALOG NUMBER(S): 1134-1135; 1368

| CATALOG<br>NUMBER          | LOT<br>QUANTITY | ITEM                        |
|----------------------------|-----------------|-----------------------------|
| 1134                       | 1               | Partial skull (Bison bison) |
| 1135                       | 1               | Knife blade                 |
| 1368                       | 1               | Femur (Bison bison)         |
| TOTAL NUMBER OF ITEMS = 03 |                 |                             |

## MEMO TO ACCESSION FILE

## Field Collection - Found In Park Museum

Date: 15 SEP 1984Accession Number: 109Accession Date: 21 JUL 1982Catalog Number(s): 1134-1135 and 1368.☐ Items had never been accessioned.☒ Items had been improperly accessioned. Original Accession Number: 172 & 173

Accession consists of:

Bison skull and femur and a knife blade.

Park possession of item(s) can be definitely traced to: 1982Original Catalogger: Mark Herberger  
(name)CRMO Employee? (YES) NODate of original cataloging: 1 JUN 1983 and 9 SEP 1983

Comments:



Signature

Park Technician  
Title