A 20

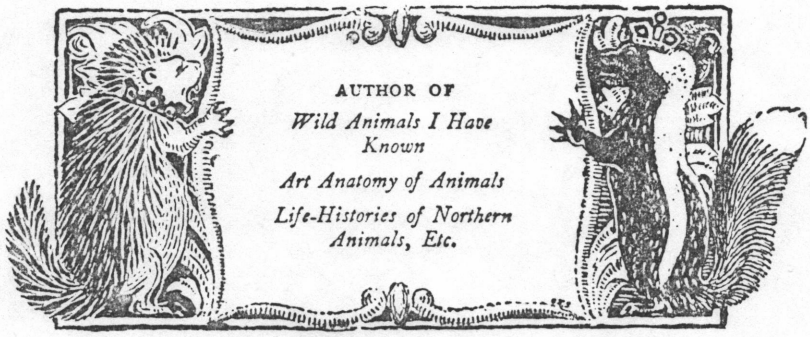
LIVES
OF
GAME ANIMALS

An Account of those Land Animals in America, north of the Mexican Border, which are considered "Game," either because they have held the Attention of Sportsmen, or received the Protection of Law.

BY

ERNEST THOMPSON SETON

FELLOW NEW YORK ZOOLOGICAL SOCIETY
MEMBER NAT. INST. ARTS AND LETTERS



WITH 50 MAPS AND 1500 ILLUSTRATIONS
BY THE AUTHOR

VOLUME III — PART II
HOOFED ANIMALS

BOSTON
CHARLES T. BRANFORD, COMPANY
1953

(519)?

The Bighorn, Mountain Sheep, Brown Bighorn, Rocky Mountain Argali, American Ibex, Tayé, Wild Sheep of California, Mountain Ram, Deer-sheep, Sheep-deer, Thick-horned Sheep, Curl-horned Sheep

Ovis canadensis Shaw

(L. *Ovis*, a Sheep; *canadensis*, because it was first described from the Canadian Rockies)

Ovis canadensis Shaw, 1804, *Naturalists' Miscell.*, Vol. 15, Feb., pl. 610.

Type Locality—Mountains on Bow River, near Exshaw, Alta.

French Canadian, *Bélier Sauvage de Montagne, Grosse Corne, Cul-blanc.*
Mexican, *Cimarron.*
Hopi, *Pang̀-wuh* (Mearns).
Crow, *Is-pwir-té-té.*
Slave, *Sass-sei-yewneh* = Foolish Bear (Richardson).
Cree, *My-attick* = Ugly Reindeer (McGillivray).
Blackfeet, *Emo-ki-canow* (McGillivray) *E-mah-kí-kin-i* = big-head (Grinnell).
Mandan, *Ahsahta* (Lewis & Clark).
Ogallala Sioux, *Ta-hin-cha Sunka-la* (Dr. J. R. Walker).

The genus *Ovis* of Linnæus, to which this animal belongs, are ruminants of the Sheep type. They are large animals—most of them larger than the domestic Sheep—stoutly built, with medium or short legs; ears, small and pointed; tail, short, pointed, and without a tuft on the end; feet, with 4 hoofs each; snout, with small naked place between the nostrils; chin, without beard; glands between toes and under the eyes; mammæ two; horns in both sexes, those of the ram very large and massive, sweeping back, round, and up again in a noble curve, and bearing, besides many wrinkles, a rugged cross ridge for each year of his age. The horns of the ewe much smaller and nearly straight.

Teeth: Inc. $\frac{0-0}{3-3}$; can. $\frac{0-0}{1-1}$; prem. $\frac{3-3}{3-3}$; mol. $\frac{3-3}{3-3}$ = 32

When the Bighorn is seen wild in its native surroundings, the first impression is of a Deer with ram's horns. In colour, it seems all over, of a dull grayish brown, with white nose and stern.

A closer view shows that it has a blackish tail whose colour is joined to the brown of the back, by a long dark stripe cutting the rump patch in two; and that it wears white stockings with dark front facings.

Size. A ♂ from Wiggins Fork, Wyo., Sept. 21, 1906, No. 27393, Am. Mus. Nat. Hist., measures:

Length, 6 ft. 5 in. (1,953 mm.); tail, 5 in. (127 mm.); hind foot 15½ in. (394 mm.).

For the benefit of sculptors and taxidermists, I give fuller measurements of a fine ram that John Muir got near the Modoc Lava-beds northeast of Mt. Shasta:

Length from nose to root of tail, 5 ft. 10½.; length of tail, 4½ in.; height at shoulders, 3 ft. 6 in.; girth of chest, 3 ft. 11 in.; length of ear, 4¾ in.; length of horn around the curve, 33 in.; girth of horn at base, 16 in.; tip to tip of horns, 29½ in.

The ewe is much smaller than the ram.

A large ♀ in the American Museum measured as follows: Length, 5 ft. (1524 mm.); tail, 5 in. (127 mm.); hind foot, 15½ in. (394 mm.).

A more representative ewe which I collected on Eleanor Creek, in the Wind River Mts. of Wyoming, Oct. 6, 1898, was as follows:

Length, 4 ft. 6 in. (1,369 mm.); tail, 4¾ in. (120 mm.); hind foot, 15½ in. (394 mm.); length of head, 11⅝ in. (295 mm.); height at shoulders, 34 in. (862 mm.); from breast to ground, 17½ in. (445 mm.); from hock to ground, 14 in. (355 mm.); girth of chest, 40½ in. (1,027 mm.); girth of belly, 46¼ in. (1,172 mm.); from point of snout to base of ear, 10¼ in. (260 mm.); length of eyeball, 1 in. (25 mm.); length of ear, 5 in. (127 mm.); width of head through the eyes, 6¼ in. (158 mm.).

Weight. Clarke Fisk sets the weight of 2-year rams at 110 lbs.; of 3-year-olds at 170 lbs. According to all available testimony, 300 lbs. is about the average weight of big, that is, 6-year-old rams. John M. Phillips's heaviest British Columbia mountain ram weighed 316 lbs.[1] Audubon gives the weight of his fine ram at 344 lbs., of which the horns were 44½ lbs.[2]

The ewe whose dimensions he gives on the same page, weighed 240 lbs.; which is surprising. But Audubon is Audubon, so we must accept it, even though at times Audubon be Bachman, which is equally good.

---

[1]Personal letter.

[2]Q. N. A., II, p. 165.

The full-grown ewe which I secured Oct. 6, 1898, weighed only 136 lbs., and a second taken the same day, a 2-year-old, was 103½ lbs.

Colour. In early autumn, the proper season of the sportsman's interest, the Bighorn's coat is short, smooth, and dark.

The late September Wyoming ram, whose size has been given, is, in general colour, of a soft brownish gray which is much darker and becomes of a dark caribou-gray on the nape, throat, chest, armpits, legs, and tail; also on the band that joins the tail and back. In this gray, there is an almost purplish tinge. The snout, space about each eye, ear-linings, rump-patch, horns, scrotum, belly, a band down the inner back side of each leg, and another down the back edge of each hind leg, is *yellowish white*. On all four feet, the white band runs onto the outer toe, leaving the inner one dark. Three well-marked colours it shows—brownish gray, purplish gray, and dull white.

A Cascade Mts., B. C., specimen, ♂, Dec. 7, 1889 (A. M., No. 14478), is quite similar in pattern, but in general of a warmer brown and deeper tone.

The horns are of a dark umber brown; the hoofs black, and the eyes in all adults of a beautiful pale amber or golden yellow. In the lambs, the eyes are brown.

Some specimens have the white of the snout expanded so it covers the whole face; and in some, the back stripe does not cross the stern patch to the tail.

Sheep are darkest in late summer and early autumn. The hairs are darkest at the tip, and lighter and grayer toward the base; the bases of those on the head being nearly white. By December, the coat begins to fade a little from exposure. It also becomes brittle as it ages, so that the combined result of the fading and wearing off of the dark points is continuously to lighten the animal's colour. The face gets much hard rubbing in feeding, so that the white roots of the hair are more or less exposed by the springtime. Many have the face pure white by February, when May comes, the process has gone so far that many Sheep look white at a distance; and have thus given rise to the report of Mountain Goats in Colorado. In June, the old hair is shed; and in their new, sleek, short, August coats, they are once more of a rich brown. This hue, however, is subject to much variation, some specimens being slaty, and some very dark umber.

At this time, the ram looks very slim, sleek, and deer-like; but the lengthening of the hair and thickening of the fur, combined with the general fleshing of his body as the cool weather approaches, give him quite a burly, thickset, and massive look by early winter.

In colour, the ewe is much like the ram, but paler and of less emphatic

pattern. In several examined, the tail stripe did not cross the white stern patch.

Her changes of coat are like his.

A discussion of the horns appears later.

Races

Ranging as it does from the arctic regions in Alaska almost to the tropical on the point of lower California, the Bighorn is unique among our Big Game. Since it inhabits so many faunal areas, it has, of course, split up into a great many geographical races, and maybe several species.

Extreme splitters have made 5 or 6 separate species. Extreme lumpers, especially those of the English School, make only one species, *Ovis canadensis;* of which all the rest, even the Kamchatkan species *nivicola*, are listed as mere geographical races. Amid such diversity of opinion, it may be well to keep the middle of the road, and treat the American Bighorns as two super-species: The heavy-horned, Rocky Mountain Bighorn with its 10 races, and the slender-horned, Alaskan Sheep with its 5 races. The latter is treated in a separate Life.

The following are the recognized races of the Rocky Mountain species:

canadensis Shaw, the typical form as described. T. l., near the site of Banff, Alta.

auduboni Merriam, a large animal with the largest teeth of all the group. Horns narrower and longer than in *canadensis*. T. l., Badlands of South Dakota.

californiana Douglas, like *canadensis*, but much darker in colour. T. l., near Mt. Adams, Wash.

mexicana Merriam, large; ears nearly double the size of those of *canadensis*. In colour, darker than *nelsoni*, lighter than *canadensis*. T. l., Lake Santa Maria, Chihuahua, Mexico.

nelsoni Merriam, a desert form; small and very pale, with rump-patch crossed by dark tail line. It looks remarkably like a pale edition of the Black Sheep (*stonei*) of the Liard country. T. l., Grapevine Mts., east edge of Inyo Co., Calif.

sierræ Grinnell, like *nelsoni*, but larger, with shorter ears and tail; coat grayer and heavier; horns at base, round instead of triangular. T. l., east slope of Mt. Baxter, Sierra Nevada, Calif.

gaillardi Mearns, a small race like *nelsoni*, but darker; without white nose; feet, small; horns 2 or 3 in. apart at the base instead of nearly touching, and strongly incurved. T. l., between Tinajas Altas and Mexican boundary line, Ariz.

cremnobates Elliot, much like *nelsoni*, but paler. T. l., Matomi, San Pedro Martir Mts., Lower Calif.

texiana Bailey, a pale form; between *canadensis* and *mexicana* in colour; with narrow muzzle bones and heavy dentition. T. l., Guadalupe Mts., El Paso Co., Texas.

sheldoni Merriam, a dwarf form from Colorado Desert, T. l., El Rosario, northern Sonora, Mexico.

History

When Coronado, on his famous journey, reached Cibola in 1540, he wrote (Aug. 3) to Mendoza, the Governor of Mexico, a long account of the place and its products. The following is an extract:

"They have many animals—Bears, Tigers, Lions, Porcupines, and some Sheep as big as a Horse, with very large horns and little tails. I have seen some of their horns, the size of which was something to marvel at."[3]

This is the first record in our histories of American Bighorn Sheep seen by Europeans.

Over 150 years later, that is, in 1697, Father Juan Maria de Salvatierra crossed the Gulf of California, from the mouth of the Yakui River to the California Peninsula—then supposed to be an island. He was soon joined by Father Francis Maria Piccolo. They established missions during the following five years of their sojourn there, at various points from about latitude 26° southward to La Paz. It was in this region that they became acquainted with the Tayé, or Mountain Sheep, as recorded by Father Piccolo, the historian of these missions.

After a year or so, Father Eusivius Kino discovered that this "California" was not an island; and on February 10, 1702, the fact, with a map and description, was published by Father Piccolo. In it was an account of the Tayé or Mountain Sheep. It is here quoted in full, for it is the first detailed appearance in print of the American Bighorns; and is, further, "the source of all subsequent accounts of Sheep in California, based on the records of the early Jesuit missionaries.

"Besides several sorts of Animals that we knew, which are here in plenty, and are good to eat, as Stags, Hares, Coneys, and the like; we found two sorts of Deer, that we knew nothing of: We call them Sheep, because they somewhat resemble ours in make. The first sort is as large as a Calf of one or two Years old: Its Head is much like that of a Stag; and its Horns, which are very large, like those of a Ram: Its Tail and Hair are speckled,

[3]Winship's Coronado, 14th Ann. Rep. Ethno., p. 560.

and shorter than a Stags: But its Hoof is large, round, and cleft as an Oxes. I have eaten of these Beasts; their Flesh is very tender and delicious. The other sort of Sheep, some of which are White and others Black, differ less from ours; they are larger, and have a great deal more Wool, which is very good, and easy to be Spun and Wrought.'"

Thus, the "California" where the Tayé was found in 1697, was the peninsula of Lower California. The California of to-day had not at that time become a field of missionary enterprise; was, indeed, entirely unknown.

It is interesting to note that the Mountain Sheep occupy those very same hills to this day.[4]

This account by Piccolo continued, for about 100 years, to be the only published information about the Bighorn; and it is amusing now to recognize its unacknowledged offspring in most of the published natural histories that treated American game animals during the next two centuries. Each succeeding recorder simply made his own dilute of this, the original account.

The best known of these conscienceless writers was Father Miguel Venegas, a Mexican Jesuit, who in 1758 published his "Noticias de la California" (of which an English edition in 2 vols. appeared in 1759, called "History of California"). In this Venegas repeats Father Piccolo's account, but adds a picture of the Bighorn which he calls "The Tayé or Californian Deer," Tayé being its name in the Monqui tongue. This engraving is produced herewith ($2\frac{3}{4}$ x $3\frac{1}{4}$, original size). It is doubtless the earliest representation of the species. (Plate LXXVI.)

Some eighty years later (1784), Thomas Pennant, in his "Arctic Zoology," included the Argali among his American animals, citing the above missionaries as his authorities.

In the fall of 1800, Duncan McGillivray, a clerk in the service of the North-West Fur Co., was on the headwaters of the Bow River (near where Banff now is) with David Thompson, the famous explorer. While hunting, he came on a small herd of Bighorn. He recognized them as a new species of animal; and being a man of understanding, he sent a specimen to the Royal Society of London, where it arrived in 1803, and was promptly named and described by nearly everyone in the world of zoology.

Dr. George Shaw, however, managed to get his name published first; so it stands to-day *Ovis canadensis* Shaw, Feb., 1804. This was followed by *Ovis cervina* of Desmarest, March, 1804; and then by *Ovis montana* of Schreber, April, 1804. These facts, established by Dr. Wilfred H. Osgood,[5]

[4]Allen, N. A. Sheep, p. 19.

[5]Proc. Biol. Soc. Wash., Feb. 2, 1914.

have set at rest the question of the creature's scientific name and its godfather.

The story of McGillivray's hunt appeared first in the New York *Daily Advertiser*, Dec. 4, 1802. It was reproduced in several other periodicals, especially the New York *Medical Repository*, Vol. VI, 1803, pp. 238–40.[6]

After this, other travellers reached the Far West. Each of them added a little to our knowledge of the Bighorn, till now that it is threatened with extinction in the United States, we have achieved a very comprehensive knowledge of its habits and ancient homeland.

Horns and Record Heads

The marvellous curling horns of the rams were apparently the first things to catch the eyes, and rivet the attention of these early historians. Without exception, they comment on them.

The horns of the ram are the coveted trophy of the sportsman; for they are the creature's peculiar gift and crowning glory, his one distinguishing and imperishable ornament, the record of his size and of his life.

The illustrated series shows how the animal's age is notched on his horns. Only a ram who has had a superbly successful life, can show such horns as are represented in Plate LXXVII. He must have been a noble animal, gifted at the outset with a robust constitution; or he could not have grown them so massive. To have outwitted his enemies long enough to have achieved that length, he must have been wise and crafty above his kind.

A horn that measures 36 in. around the outside curve, from base to tip, and 15 in. in girth at base, must be considered in the highest class.

In Rowland Ward's "Records of Big Game," 1922 edition (pp. 383–84), are 36 that are more than 36 in. in length; 14 of these are of 40 in. and over; 21 are 16 in. or more in girth.

A record for length is 49 in., with a girth of 16 (owner's measurements). It was taken on the Clearwater of Idaho; it is owned by J. Simpson. A good second is J. B. Marvin's Alberta head measuring: Length, 48 in.; girth, $18\frac{1}{8}$ in.; spread 23 in. (owner's measurements).

The record given here for girth is a British Columbian head of 19 in. with a spread of 15; but the horn is only $36\frac{3}{4}$ in. long (owner's measurements). The owner is C. H. Kennard.

The best head measured by Rowland Ward himself was taken in Alberta by H. E. Knobel. It measured: Length, $42\frac{1}{2}$ in.; girth, $18\frac{1}{4}$ in.; spread, $22\frac{3}{4}$ in.

[6] See also Dr. J. A. Allen's paper, in the references.

In *Forest & Stream* for June 1, 1895, the following notable heads are recorded by the Boone and Crockett Club Committee, who examined and measured them:

Geo. H. Gould, length, 42½ in.; girth, 16¼ in.; spread, 25¾ in.; Lower Calif.
G. O. Shields, length, 37¾ in.; girth, 16¼ in; spread, 22½ in.; Ashnola, B. C.
C. G. Gunther's Sons, length, 33½ in.; girth, 17¾ in.; spread, 21 in.
Theodore Roosevelt, length, 29½ in.; girth, 16 in.; spread, 18½ in.; Little Missouri River, Sept., 1887
T. W. Fraine, length, 30 in.; girth, 16 in; spread, 26 in.; Purchased from a dealer.

On July 7, 1906, I received from Belmore Brown of Tacoma, the details of 3 remarkable Mountain Sheep heads that he had just examined in the collection of W. F. Sheard.

1st Rt. Horn 43 in. long; 17⅜ in. girth (about 6 in. broken off the tip)
Lt. Horn 43¾ in. long; 17¼ in. girth
2nd Rt. Horn 38½ in. long; 17½ in. girth
Lt. Horn 35 in. (broken off) 17⅝ in. girth
3rd Rt. Horn 34⅜ in. long; 17½ in. girth
Lt. Horn 35 in. long; 17⅝ in. girth

The following are recorded in Rowland Ward's book (p. 384). All are owner's measurements.

Length on front curve	*Girth*	*Spread*	*Place*	*Owner*
49	16		Clearwater	J. Simpson
48	18⅛	23	Alberta	J. B. Marvin
47⅝	16⅛	23	Do.	W. Grant Mackay
45½	14½	22	Do.	J. D. Hazen
45½	16		Near Banff	J. C. Phillips
44½	17	21	Near Golden, B. C.	Madison Grant
43⅛	16¾	18½	British Columbia	Wilson Potter
42½	16¼	25¾	Lower California	Am. Nat. Coll.*

*Taken by Geo. H. Gould, Oct., 1894.

Baillie-Grohman records that out of 70 or 80 Bighorns that fell to his gun, the largest was a ram whose horns were each 19 in. in girth.[7]

[7]Camps, p. 161.

Rufus B. Sage writes that not far from Long's Peak, Nov. 10, 1843, he killed 2 Sheep whose horns were 19 in. in girth and nearly 3 ft. long. But he does not produce the specimens.[8]

Dr. W. J. Holland of Pittsburgh has a head that is, at least, in the record class, if not at the head of it. In 1910 I saw and examined this. It is as follows:

Right horn 43 in. (both horns had lost 2 or 3 in. by a break); girth, 17. These measurements were taken between 25 and 30 years after the specimen was shot, so the doctor is undoubtedly right in claiming for them an original basal girth of 18½ or 19 in. This ram was killed by Howard Eaton in the Badlands in Oct., 1880.

John M. Phillips of Pittsburgh writes me that he has a head whose horns measure but 17 in. in girth now, but which measured 18½ when worn by the living ram; and he is of the opinion that the horns of the Holland head were fully 18½ in. in girth originally. A final claim for the ram record is made by August Gottschalck on behalf of his Montana armoury head now in the possession of Fred Klein of Hoopeston, Ill. Length, 41 and 41¼ in., girth, 17⅜ and 18½ in., spread at points, 18¾ in.; weight dried 30 lbs.

A ewe taken by John Muir northeast of Shasta near the Modoc lava beds, had horns that measured 11½ in. long, and 6 in. in girth each. This appears to be near the record for a female, as the longest in Ward's book is 10½, with a girth of 5½.

A ram's horns should be measured as soon as secured. Horns shrink surprisingly as they dry out. In one year they will shrink an inch to an inch and a half, that is 5 to 10 per cent. in girth; somewhat but not so much in length.

The big ram taken by N. Hollister in the Mt. Robson region, mid-September, 1911, had a horn girth of 17⅞ in. in the field, but only 16½ in. when it got to the Museum. As these were careful measurements with a steel tape, it shows how much the horns may shrink in 7 months.

These facts shed light on some apparent inconsistencies. In perfect good faith, some sportsman announces that he secured a pair of 19-in. horns 10 years ago; and when the doubting critics apply the tape, and find them but 17½ in., the sportsman is unfairly put in a wrong light.

Weight of horns. Audubon's great ram head weighed 44½ lbs. Geo. F. Dippie, of Calgary, showed me one that weighed 43½ lbs. L. L. Dyche

[8]Rocky Mt. Life, p. 347.

smell of the race quite strong. It probably has to do with a system of smell signals. The gland, with the corresponding depression in the bones beneath it, is much more developed in the Asiatic Bighorns. This further advancement of Eurasian species, compared with those of smaller areas, seems to be a law.[13]

Pads

Another detail of the Bighorn equipment for the life battle was observed by Bailey among the Sheep of Texas.

He says: "Among other peculiarities noticed in the fresh specimen are the pads of the breast and the knee, where the skin had developed to an almost cartilaginous shield over a quarter of an inch thick, and so hard that it was not easily cut through with a sharp knife. The whole sternum and front of the knees were thus protected, and for very evident reasons.[14]

Hitherto, the Camel has been supposedly the inventor and exclusive wearer of the rubber knee pads. But, after all, the Texan Sheep lives in Camel climate; so why not Camel fashions?

Domestication and Hybridity

All available evidence seems to show that the Bighorn might be easily domesticated. Yet so far as recorded, no one has done it, or even tried it; except, perhaps, in the Washington Zoo where the experienced head keeper, W. H. Blackburne, has bred and raised a number of lambs.

In the N. Y. Zoological Society 5th Annual Report (1901, pp. 114–15) is a brief note stating that Dr. Hyer of Halle-on-the-Saale, Germany, had succeeded in crossing Bighorn male with Mouflon female and vice versa, that the crosses are interfertile, and will breed with the domesticated Sheep.

Range and Haunts

Map VI shows the remarkable range of the Brown Bighorns, from north latitude 55° almost to the tropical region that puts a red tip to the southern end of the Californian peninsula. North of 55°, the Brown Bighorn is displaced by the Thin-horned group.

Over this immense area of 2,000,000 square miles, wherever mountainous, the Bighorn was plentifully distributed as late as 1870. Even such outlying groups as the Black Hills of Dakota, the Blue Mountains of Oregon, and the San Francisco Peak of Arizona, were fully stocked with the great Brown Sheep.

[13]See Evolutionary Force of a Wide Range, by E. T. S., Journ. Mamm., Aug., 1922, pp. 167–69.

[14]Texas, p. 73.

All the ancient records, and all the old-timers that I have consulted, tell that this creature was not originally a cliff-dweller. Its feeding grounds were the grassy foothills and bluffs not far from the crags. It would follow along the river bottoms to graze, but was ever ready to fly to the rocks for protection.

It was not gifted with speed, or weapons, or fighting strength; nor could it find shelter underground like so many of the otherwise defenceless. But this it had—the power to bound up a sheer and rugged cliff that was impossible to any other big creature in its range—except, perhaps, a Cougar or a White Goat.

To-day, all that is changed; the pressure of new perils has driven the Wild Sheep permanently to the high mountains. It is now a mountaineer. Nevertheless, it does, at times, set out across the level country to seek better forage. Its keen eye takes in mountains five to ten miles away; and the wise old ewe will strike out with her band, if she must, and make her way to the far, fair pastures she has spied out from some peak.

Another exception to the rugged upland habit, according to Baillie-Grohman, "occurs after rutting time when the rams, in very poor condition, will wander from their crags to the level plain land, where the rich bunch grass helps to recuperate their strength. Especially if snow has fallen on the higher ground will they be found feeding, sometimes as much as a mile from the base of the next mountain chain. I often saw, in the month of December, small bands grazing in this manner; but so watchful are they on these occasions—an old doe being constantly on guard duty on the most prominent knoll—that it is most difficult to approach them within shot."[15]

One other of the great forces of nature has been enlisted by the Bighorn; that is, thirst, the terror of the desert.

T. S. Vandyke tells me (Oct., 1899): "The favourite home of the Sheep is among the most rugged and arid of the desert peaks. It is absolutely impossible for man to follow them there. No matter what his strength, his skill, or his endurance, the still-hunter is worn out by the fearful heat and the excessively dangerous climbing among the slide rock and friable clay-bluffs long before he has a chance of success. The only way in which they are ever killed is by lying in wait at a water-hole, and murdering them as they come to drink."

And this is rarely done, for the Sheep come to this death-trap only in the hours of gloom; and in many parts of the desert, as will be seen, they have learned to dispense with water altogether.

---

[15]Camps, p. 164.

Primitive Abundance

The early explorers of its region, mention the Sheep as often as they do the Deer. Though probably not to be compared in number with Buffalo, Antelope, or even Elk, there can be no doubt that the Bighorn existed in millions in palmy days of Coronado.

That enterprising, bigoted, but heroic and epoch-making traveller, tells of the Great-horned Sheep that he saw in his famous journey through Arizona and New Mexico in 1540; but does not say how numerous they were.

Lewis and Clark's first reference to the Bighorn—and presumably first sight of them—is when they reached the Yellowstone, May 25, 1805. From this on, there are numerous mentions. On May 28th, near the mouth of Judith's River, they saw "the Bighorn in great quantities, and must bring forth their young at a very early season, as they are now half grown."[16]

Next day they add, "There was a great abundance of the Argalea or Bighorned animals in the high country through which it [The Judith River] passes."[17] After this, for a time, the Bighorn was the most abundant of game.

All mention of them ceases after August 1st, and until April 12th when among the West Coast tribes, the Clakclellahs, near the mouth of Cruzatte's River. The next mention is June 2d, when, on the return journey, they were back to the Tommanamah or east branch of Lewis River. After which the Sheep once more abounded and became a staple of diet; especially about the mouth of the Bighorn River, where they remark that it was the abundance of these animals which gave the river its name.[18]

Their last mention of the Bighorn is when the travellers were near the mouth of the Yellowstone on their way back.[19] This was evidently the greatest of all Bighorn countries. Here we find a tribe called "the Sheep-eaters," who lived on the Sheep, as the Plains Indians did on the Buffalo. Here, indeed, we learn from eyewitnesses that the Bighorn existed in thousands.

Zebulon M. Pike mentions, in his "Exploratory Travels through Lousiana" (p. 218, 1889 ed.), that on Jan. 1, 1807, he "found on the way one of the Mountain Rams which the Doctor and Brown had killed and left on the road. Skinned it with horns, etc." But I find no other mention in his record.

[16]Exped., I, p. 249.
[17]P. 250.
[18]As above, II, p. 413.
[19]As above, II, p. 423.

We have no appraisal of the abundance of Sheep in the Southwest, that is Coronado's country, until we find that of J. O. Pattie, who crossed Arizona in 1825, and tells that, on Jan. 1st, he saw "multitudes of Mountain Sheep" on the banks of the San Francisco River, which rises near the same sources as the Helay, that is Graham Co., Arizona.[20]

On the Upper Platte near Sweetwater Hills in Central Wyoming, Capt. J. C. Fremont writes, July 30, 1842: "We saw here numerous herds of Mountain Sheep, and frequently heard the volley of rattling stones which accompanied their rapid descent down the steep hills. This was the first place at which we had killed any of these animals; and in consequence of this circumstance and of the abundance of these Sheep or Goats (for they are called by each name) we gave to our encampment the name of Goat Island. Their flesh is much esteemed by the hunters, and has very much the flavour of the Alleghany Mountain Sheep."[21]

Rufus B. Sage refers once or twice to killing Sheep in his exploration of the foothills west of Denver in 1844; but the inference is that they were less numerous than the Deer there.[22]

George F. Ruxton, writing in 1847, says of the Bighorn: "They are generally very abundant in all parts of the main chain of the Rocky Mountains."[23]

Newberry's account (1857) says: "On the slopes and shoulders of Mount Shasta, the *Ovis montana* exists in large numbers; so much so, that one spur of the mountain has been named "Sheep Rock"; and there hunters are always sure of finding them."[24]

W. H. Brewer found Sheep common on the mountains surrounding South Park in 1871, and states that they are particularly abundant above the timberline on the highest peaks.[25]

John Muir told me in conversation (Oct. 2, 1899) that the High Sierra from Whitney northward used to be full of Sheep. In 1874, they were numerous south of Rhett Lake, and common on Shasta. Sheep Rock used to be a common winter ground for them. Near Mt. Humphrey, on the San Joaquin River, he once saw over 40 in a flock.

Abe Leeds of Hamilton, Mont., was my guide in 1902. He was a reliable old-timer; and assured me that, in 1884, there were thousands of Sheep on the Lost River, which is an affluent of the Snake, and crosses

[20]Narrative, 1883, pp. 55–56.
[21]Explor. Exped. Rocky Mts., 1842, pub. 1845, p. 56.
[22]Rocky Mt. Life, 1857, pp. 347, 351.
[23]Wild Life in the Rocky Mts., 1916 ed., p. 207.
[24]Pac. R. R. Report, 6, 1857, Zool., p. 72.
[25]American Naturalist, V, 1871, p. 220.

the Red Desert of Idaho. Also in 1886, when, in the Bighorn country, Sheep were more plentiful than any other game, he had seen 500 in one day, usually in small bands of 15 or 20.

Prof. D. G. Elliott says that, in 1886, he made a hunting trip into Yale Co., British Columbia. Starting from Hope on the Fraser River, he crossed part of the Coast Range to Ashnola. He found great numbers of Sheep and Mule-deer. On one occasion, a procession of over 150 ewes, lambs, and small rams, all led by an old ewe, filed past him at 75 feet distance.[26]

W. R. McFadden of Denver, tells me that about 1892, he saw 57 ewes and lambs in a band on Crater Mountain in British Columbia, about 18 miles north of the Washington line.

M. W. Miner writes in 1897: "It is estimated there are between 2,000 and 2,500 Mountain Sheep, now inhabiting the slopes and mountains of the middle Fork of Salmon River, mostly in the vicinity of the upper end of the Great Canyon, which is about 60 miles from the main Salmon River. . . . Two trappers who wintered in that country last winter told me . . . it was almost a daily occurrence to see bands of 60 to 100 feeding on the bare hill sides."[27]

On Feb. 11, 1899 (p. 110), W. L. Simpson writes to *Forest & Stream:* "Some 400 head of Mountain Sheep, mostly ewes and lambs, are wintering on the Big Gros Ventre, Jackson's Hole."

Population in Those Days

Some idea of the primitive number of Sheep may be formed from the population in Glacier National Park. In 1916, I spent some weeks camping in the Park, and after using all sources of information, calculated that the 2,500 square miles of the Park contained not less than 1,500 Sheep. In the official Report[28] this estimate of mine was raised to 2,000, or about 1 Sheep to the square mile of this possible territory.

The Park is far from ideal range. It contains very little true Sheep pasture of the kind that they sought a hundred years ago. One can travel about a whole month, as I proved in 1916, and never see a Sheep. In the Big Horn Basin, judging by Lewis and Clark's accounts, and those of later travellers, Sheep may have been ten times as numerous as the above Park estimate. Offsetting this, however, is the sparse population of the arid desert regions. So that it is very safe to assume the primitive number

[26] Allen, N. A. Sheep, p. 25.
[27] Recreation, Oct., 1897, p. 301.
[28] Wild Anim. Glac. Pk., Dept. Int., 1918, p. 27.

at between 1,500,000 and 2,000,000. This, of course, does not include the Slim-horned Sheep of the north, whose numbers may be at least as great.

The Remnant about 1900

"The last Mountain Sheep was killed in Shasta Valley by George Conner on a Sunday morning in 1873."[29]

The Sheep were practically cleared out of the Black Hills about 1887, though according to Howard Eaton, a few lingered on till 1899, when the last one was killed.

G. B. Grinnell says: "W. S. Phillips has kindly informed me that about June of that year [1890] he saw 3 sheep on Mt. Inyan Kara."[30]

Prof. E. C. Bishop of Ames, Ia., assures me that in Aug., 1897, he saw 8 Mountain Sheep on Sheep Mountain, 50 miles northwest of Pine Ridge, and 50 miles east of Buffalo Gap. He got within 300 yards of them.

Edwin Carter, of Breckenridge, Colo., told me in 1899 that the few Sheep on Pike's Peak were all that remained in eastern Colorado.

Judge D. C. Beaman, of Denver, was less pessimistic. He told me (1899) that he believed there were yet Sheep in most of the Colorado Mountains; and that, thanks to protection, there were twice as many as ten years ago.

John Muir assured me that in 1899, there were still a few Sheep about Mt. Whitney and in the Yosemite.

In July, 1902, I spent some time at Pine Ridge, S. D., riding and camping with Dr. James R. Walker. He stated that Mountain Sheep were still found in the region—that there were 3 bands of less than a dozen each on the Indian Reserve. They frequented the impassable Badlands along White River. He showed me 4 specimen heads, and gave me the best of them; this I sent to the National Museum.

That same summer, I visited the Black Hills, and was assured and convinced that there were no Sheep left there then. The few that were still holding out in the Badlands were all that Sam Day, the taxidermist, had heard of for some time.

In 1902, Dall de Weese estimated the total number of Sheep in Colorado at 700.[31] In 1910, E. R. Warren wrote: "They are gradually increasing in number."[32]

---

[29]Wm. Russell, Cal. F. & G., July, 1916, p. 125.
[30]Amer. Big Game, Boone & Crockett, 1904, p. 334.
[31]Merritt Cary, N. A. F., 33, 1911, p. 63.
[32]Mamm. Colo., p. 10.

In western Texas, Bailey was assured by an old resident of one of the canyons, a man who had supplied his table with wild mutton for many years, that he considered Bighorn fully as numerous at that time (1905) as fifteen years before.[33]

Present Numbers

In the Yellowstone Park, the Sheep, of course, hold their own. When I lived there in 1897, there were about 150 Sheep in the Park; in 1914, there were 210; and in 1922 there were supposed to be 300.

When I was in the Glacier National Park in 1916, I concluded from the evidence of the guides that there were about 1,500 Sheep within the boundaries. As already noted, these have steadily increased, and now number probably 2,500.

The estimate for 1915 was 7,230 Sheep in Colorado alone; that is, ten times as numerous as they were 20 years before.[34]

In California, also, an encouraging condition prevails. About 1900, I was assured that the Bighorn was extinct except in Lower California. Some few hunters believed that there was a scattered remnant in the Desert Mountains; but their extinction was practically accomplished. Then came the era of awakening, followed by good game laws, and a measure of enforcement as well as some sanctuaries; with the result that the Sheep are increasing in many localities.

E. H. Ober, Assistant Game Commissioner of California, wrote in 1915, that flocks amounting to over 150 had been seen recently on the eastern slope of the White Mountains, about 20 miles east of Independence. Homestake Canyon is their watering place during the summer months.

"East of Homestake Canyon," he continues, "and across Saline Valley twenty miles to Hot Springs, and around Sand Springs and Last Chance Mountain, Mountain Sheep may be found everywhere. Also on Ubehebe Mountain, lying east of Saline Valley, Mountain Sheep are very abundant, and south of Ubehebe Mountain for 100 miles; all through the Funeral, Argus, Panamint and Slate ranges of mountains, they abound. They are most numerous, however, in Inyo County, in the above-named mountains, and in and around 'Windgate Pass' and the Sheep Mountain country, and on the western slope of Tin Mountain northeast of Ubehebe Mountain.

"Directly east of Big Pine, about 30 miles, there is a very beautiful herd; the writer, on several occasions having seen as many as 40 at one

---

[33]Texas, p. 71.

[34]Boone & Crockett Report.

time. . . . Very reliable reports reach me concerning their splendid increase each year.

. . . . . .

"In the Sierras, running through Inyo County, there are three herds of Mountain Sheep [*sierrae*], and these are a distinct and much larger variety than the Desert Sheep. People generally are not aware of the existence of these Sheep, as they are found high up in cloudland, and above the localities frequented by man. The largest herd known in the Sierras can be found northeast of Independence, and about ten miles away; the writer has observed this herd upon many occasions, and their number is in the near neighbourhood of 85 to 90; 65 having been counted at one time this last winter, at the base of the mountains touching the valley, and within a stone's throw of an automobile road; thus refuting the popular notion that Mountain Sheep do not change their altitude, regardless of weather conditions.

"The herd next in size, may be found about twenty-five miles west of Bishop City, on Mount Tom; and numbers about 40 or 50 head."[35]

To this he adds:

"Last spring, while collecting some specimens for the United States Biological Survey, I was able to make a close study of one of the large herds of Sierra Mountain Sheep ranging north of Independence, Inyo County. I had previously estimated the number in the vicinity of Mount Baxter to be about 80; but during a two-weeks' trip, we saw at least 200 individual Sheep, and doubtless . . . many others [were] ranging in the near vicinity. Including the Nelson Mountain Sheep, which inhabits the desert ranges, there must be in the neighbourhood of 1,500 Sheep in Inyo County alone."[36]

Prof. Leon L. Gardner, writes: "That Mountain or Bighorn Sheep still exist in small bands in various parts of the California Mountains is a fact well known. It, however, comes as a welcome surprise to find them living, breeding and at least holding their own in numbers, in the mountains not farther than thirty miles from Los Angeles. Vague reports from old hunters that in certain parts of the ranges near Mount San Antonio, commonly known as 'Old Baldy,' there were 'Wild Goats and Sheep'; and that they were 'mighty hard to get near to,' furnished the incentive for investigations which have demonstrated that one species of Bighorn Sheep occurs in the ranges north of Claremont, Los Angeles County. Whether or not this is the Nelson Bighorn (*Ovis nelsoni*) is an open question which can be

[35]Forest & Stream, Oct., 1915, p. 228.

[36]As above, pp. 236–37.

decided only by the collection and study of specimens."[37] On June 12, 1915, he saw 3 Sheep near "Old Baldy."[38]

In Sept. 1914, he says, "a whole band was seen on Ontario Peak." On p. 20 he adds: "Regarding the numbers of Sheep living in this territory it is not possible to say definitely. If all the Sheep are in one band, then their number is between 50 and 60 head."

In 1912, Charles H. Townsend wrote that Sheep were still commonly found throughout the desert ranges of Lower California.[39]

In 1915, a committee of the "Boone & Crockett Club" of N. Y., made a valuable report on the number of Sheep still existing in America, as follows:

"In the fall of 1913, probably 3,000 or 4,000 or more exist in the Desert ranges of Arizona. Some still remain in the Santa Catalina Mts., north of Tucson. Though protected by a close season, prospectors, Indians, and others going into the mountains indifferently shoot them for meat. In spite of this, they are holding their numbers. More investigations in the Grand Canyon, corroborate the numbers suggested in the Committee's last report.

"In California, Nelson's Sheep exist in numbers in the mountains about Death Valley, and in less numbers along the lower Colorado River. Here, for thirty years the Sheep have at least held their own. In the high Sierras running through Inyo County, some 200 Sheep have been observed in different bands. There are probably many more. There are Sheep in the San Jacinto Mountains.

"Mountain Sheep were formerly abundant in the Warner Mountains and the Steen Mountains in south central Oregon, but a careful search in these ranges in 1914 failed to discover any traces of them—only vague reports of their presence. In limited areas in eastern Oregon there are still fair numbers of them in certain localities. In Nevada, small numbers exist in nearly all the desert ranges in the southern part of the State. Small numbers are also known to range in the Toiyabe range in central Nevada, in the east of central Nevada, near the Utah border, and perhaps in the extreme north central section. Sheep are being illegally killed in Nevada more rapidly than elsewhere. The conditions there are not hopeful for their survival.

"In Colorado, Sheep seem to be increasing, and in some parts of the State, have become extraordinarily tame, even coming down the moun-

---

[37]Cal. F. & G., Jan., 1918, p. 17.

[38]As above, p. 17.

[39]Bull. Am. Mus. Nat. Hist., Vol. XXXI, Art. XIII, p. 119.

tain-sides in winter to feed in the towns and about the ranches with the Cattle. These Sheep may eventually afford a supply to restock other areas of the country. The Forest Service estimates that there are 7,230 Sheep in the National Forests of Colorado. . . .

"In Wyoming, Sheep are believed to be slowly increasing, especially in the north and south forks of the Shoshone River in the game preserve. In the Bonneville National Forest, the severe winters, poor winter range, and predatory animals seem to be causing a decrease. The Forest Supervisor there reports that he commonly finds Coyote tracks following the trail of Sheep in the snow. A small band still exists, and there are about 160 on the Big Horn Mountains. They appear to have become extinct with the last year on the Medicine Bow Peak. In the Yellowstone Park, the number is about what it was [300].

"A few Sheep still exist in Texas and New Mexico. For the present, Sheep should enjoy a close season everywhere in the United States. Large numbers of Sheep occupy the desert ranges of Lower California, extending almost the entire length of the Peninsula. Large numbers are found also on nearly all the ranges of Western Sonora, growing scarcer a hundred miles south.

"It is clear that, in the United States, desert Sheep hold their numbers better than the northern variety."[40]

W. P. Taylor, reviewing the 1916 Game situation in California, says, "At present the Desert Sheep is apparently increasing in some sections of its range, notably the desert ranges in Inyo County; and stationary or decreasing in others, as in the desert portions of the more southerly counties, San Bernardino, Riverside and Imperial. There are, fortunately, some large bands which promise well, and which at least indicate that there is no cause for concern over the immediate future of the species within the State."[41]

During the winter of 1921–22, I lived near Victorville, Calif., on the Mohave Desert. From the talk of the settlement, I gathered that Sheep were much more abundant than Deer, and easier to get. Dr. Harry Garcelon told me, indeed, that, Sheep were yet to be found in fair numbers, on all the surrounding mountains, especially the Ords, the Funeral Range, and the Calico Range. He had often seen them. About a year before, he saw a band of 12 or 14; and promised definitely that if I would come back in August when most of the water tanks are dry, he could show me 50 Bighorn Sheep within one week.

[40]Report, pp. 20–23.

[41]Scientific Monthly, Oct., 1916, p. 405.

In Utah, condensing the account of Claude T. Barnes,[42] there are 106 Sheep on the whole Uinta Mts.; about 25 head near Springdale, Washington Co.; about 400 in the Ashley Forest; a few on Granite Mt., Tooele Co., and a few along the canyons of the Green, Grand and Colorado rivers, especially along the Grand River near Moab,—probably a round 1,000 in the State.

The estimate made by the Biological Survey, of 10,000 as the total of Mountain Sheep in the United States in 1920,[43] seems to me obviously too low.

On the strength of the material presented here, supplemented by general information from hunters, and finally adding the official census figures of the game in the National Forests in 1922, I estimate the number of Sheep existing in the United States as follows:

Arizona	3,500
California	3,500
Nevada	500
New Mexico	500
Utah	1,000
Colorado	8,000
Texas	500
Wyoming (incl. Yellowstone Park)	4,000
Montana (incl. Glacier Park)	5,000
Idaho	1,500
Total	28,000

From all accounts, there are fully as many as that in northern Mexico, and lower California where the "Boone and Crockett" committee reports them in "large numbers."

In Canada and Alaska, where they continue in nearly primitive numbers, there must be fully, 2,000,000 Wild Sheep, all species included.

Home Range

The Sheep are very clannish. A certain flock roams on a certain upland, and although, at some seasons, the rams are apart, they are not on a different range. They seem to keep in touch with the herd, which is composed of ewes, lambs, and spike-rams; that is, those not yet arrived at full ramhood.

[42]Mamm. Utah, 1922, pp. 26–28.

[43]Bull, 1049, U. S. Dept. Agri., 1922, p. 24.

Their value may be that of ancient record or of definite information. In some, there is even a redeeming golden thread of human heroism; but each and all of them is more or less an unwitting attest to the nobility of the hunted wild thing, that never surrenders, never gives up; and after he has done his glorious best and failed, dies in his homeland—silent, steadfast, without wail or moan, or the hint of a craven thought.

References

1799–1814—New Light on the Early History of the Greater Northwest, Alex. Henry's Journal, etc., pub. 1897. Edited by E. Coues. Cited herein as Henry's Journal.

1814—History of the Expedition under Captains Lewis and Clark, 2 vols. with Introduction and Index by James K. Hosmer.

1849—Quadrupeds of North America, by Audubon and Bachman, II.

1898—Camps in the Rockies, by J. Baillie-Grohman.

1898—Mountains of California, by John Muir.

1905—Biological Survey of Texas, by Vernon Bailey, N. A. F. 25.

1912—Historical and Nomenclatorial Notes on North American Sheep, by J. A. Allen, Bull. Am. Mus. Nat. Hist., March 4.

1916—Ovis sheldoni, a New Mountain Sheep from Sierra del Rosario, Sonora, Mexico, by C. Hart Merriam, Proc. Biol. Soc. Wash., Sept. 6.

1921—In the Alaska-Yukon Gamelands, by J. A. McGuire.

Can't find This one