SOCIETY FOR THE CONSERVATION OF BIGHORN SHEEP

The Sheepherder

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DESERT BIGHORN SHEEP COUNT IS COMPLETED

California's desert bighorn sheep populations are generally in good condition and at the capacity of their present range, according to information gathered by the Department of Fish and Game and cooperating agencies and the Society for the Conservation of Bighorn Sheep, in the recent waterhole counts.

A total of 816 desert bighorn sheep were counted at 57 desert waterholes that were kept under surveillance by the census-takers during daylight hours for three days each.

On the basis of the census, said Dick Weaver, an Associate Wildlife Manager-Biologist and leader of the department's bighorn sheep investigation team, the DFG has revised its population estimate from 3,500 to 3,750.

"This (the new estimate) does not indicate any appreciable increase in herd numbers," Weaver reported, "but it does reflect the fact that we are continuing to gather more and better information."

The counts, which were made between June 30 and September 8, were designed to keep bighorn survey information current, to determine population trends, to help determine productivity of the herds, to evaluate water supply improvements and to assist in planning future improvements.

In the San Jacinto and Santa Rosa Mountains only those waterholes known to receive heavy use wee counted. 28 observers watched 17 counting stations.....Each observer used a separate data sheet per day. In trying to eliminate duplication, data for the best day per station was tabulated, plus obvious additional observations. Adult rams were classified in the following categories: young- 2 to 3 years old; Mature: 4 to 6 years old; and old as 7 plus years.
The weather was ideal for the count. Daytime temperatures varied between 85 degrees at 10:00 a.m. on June 30th to 110 at 3:00 pm on July 2nd. These waterhole counts are anything but picnics, they are uncomfortable, exhausting and hot work. A person can even get a sunburn while sitting in the shade. It is however, a rewarding task and which more members of the Society should participate. A total of 272 bighorn were classified for the Santa Rosa Mountains and 127 for the San Jacinto Mountains. Normal sex and age ratios were obrained: 53 rams, 100 ewes, 27 yearlings, 46 lambs. Indic-ations ations are that the bighorn populations are at the capacity of their ranges andare in good condition.....As in previous counts, bighorn were seen that did not come to the spring to be counted; some ewes came to the springs without their lambs; males were predominant in all age classes.....Mature and old rams are never well represented in a July waterhole count....Few observers had spotting scopes to aid in age classification.....EVERY OBSERVER SHOULD HAVE A GOOD SPOTTING SCOPE IN ORDER TO DO THE BEST JOB POSSIBLE.....Estimate of 80 bighorn for the San Jacinto Mouontains is quite conservative, since at least 130 bighorn were observed during the count. Dr. Lutz classified 106 bighorn in Tachevah Canyon, a record number out of 197 observations. The number of sheep in the San Jacinto Mountains is probably much gr - eater than 80.....Symptoms of respiratory trouble were observed as in former counts . Persistent coughing was noted for 11 lambs a dn two ewes. A few lambs were obviously sick with signs of weakness and diarrhea.....Information on water distribution in now nearly complete throughout the mountain range. Weak sources of water are often used heavily during the summer when water is availble. There is a water

deficient area in the Santa Rosa Mouontains between Cottonwood Spring and Rattlesnake Spring.....udging from experience, other water sources were probably available in Martinez Canyon this year, besides the 3 springs that were watched. This year, the springs in the larger drainages had above average water flow.....

REPORTS FROM OTHER AREAS :
Chocalate Mountains southeast of the Salton Sea---2 young rams 2-3 years old, one yearling ewe; 16 adult ewes and foutteen lambs

Acawatz Moutains SB County-------one lamb
Turtle MOuntains SB County --11 rams; 33 ewes; 4 yearlings and 9 lambs
Granite Mou ntainsSB " No sightings
Chuckawalla Mts. SB " 2 sheep - unclassified
Old Woman Mountains SB No report
Sacramento MOuntains SB " 1 adult ewe, 1 lamb, and also 1 desicated ewe carcass and one recently dead spring lamb... The Smith Spring had gone dry.

Hopefully , the November issue of the Sheepherder will have a report of the cou nts in Death Valley National Monument.....

From a phone conversation with Dick Weaver: Dick and wife Doris had gone into a remote area of the Santa Rosa Mts. to a spring that Dick had found. They were landed about 500' above the spring by helicopter, with their gear. Dick found the spring dry. During the first day he dug a basin large enough 'to hold a coffin'. The weather washot.. No water ran into the catch basin during the night. So, the next morning they left their campsite and hiked out to their jeep---leaving their gear at their campsite, except for some essentials. Thishike took them some 4½ hours. Dick had hoped to get some pictures and Doris had hoped to do some sketching. They were accompanied by the Bonnar Blongs..... The Park Service is at present revising their plans in Death Valley National Monument. They are planning a trapping program, with the burros captured being given to people requesting them. The western side of the Valley has been divided into 10 management areas. Plans call for the beginning at the north end with the area around Tin Mountain and to work to the south. Apparantly there was not the rainfall in the desert which had been presumed. It would seem that probably the rains came only in the spring.....Dick praised for their invaluable aid to the DFG, the Department of Parks and Recreation; the National Park Service and the volunteers from several conservation groups and other individuals who took part in the survey.

BIGHORN SHEEP AND SNAILS?

What possible connection could there be between these two groups?... The lungworm parasite, a threat to bighorn herds, is the linking factor.(a report by Bob Lange--New Mexico Wildlife--Jan.-Feb.,1973. During May 1972 Lange with Gerald Gates also of the N.M. DFG , were in the Pecos Wilderness searching for snails--They had previously worked on this project of gathering bighorn sheep pellets and snails.....In most areas of the west, including Canada, the Rockt Mountain bighorn sheep numbers are decreasing. In a few locations as in New Mexico heis either increasing or is holding his own. Bighorns are faced with decreasing ranges...They face increasing competition with domestic cattle in many areas, especially their winter ranges. Man, in increasing numbers, passes thru his haunts. However, his biggest challenge in most areas is disease....Many bighorns suffer from pneumonia. Lambs of the year die off in late summer, adults tend to die during the winter. Consequently, in many areas of the West, bighorn are on the decline. Three agents capable of producing pneumonia have been isolated from sheep. The three agents include a bacteria, a virus and a lungworm parasite. Thework in the Pecos involved the lungworm...Virtually all bighorn sheep in their native habitat in North America are infected with lungworms-Protostrongylus stilesi orP. rushi. These two lungworm live in the airways or tissues of thelungs.

Lungworm favors no age in bighorns. The mature, six-year-old ram is as likely a candidate as the two-year-old in the foreground.

The lungworm mate in the lungs and here the female lays eggs containing larvae. The larvae hatch from the eggs within the lung. Laryae are coughed up the trachea because they irritate the lung. When they reach the pharynx, they are swallowed. They pass through the gastro-intestinal tract and leave the sheep in its fecal pellets. The lungworm larva cannot develop any further unless it enters adn grows in an intermediate host. Thus the snail enters the research. Certain species of land snails are intermediate hosts for the lungworm. ..These snails are accidentally eaten by the sheep while they graze and pull up grass orother ground debris. The larvae at this time are barely visible to the naked eye. They are in the soft foot of the snail, itself smaller than the head of a pin. The snail is then swallowed with food. The probably leave the snail in the intestine, penetrating the intestinal wall and entering the circulatory system, thus completing the cycle.....There are six species of snails which act as the host. Samples of snails were taken back to the laboratory for study, four of the six species were found in the Pecos Wilderness. Fecal pellets of sheep were aken for laboratory analysis and showed all to have lungworm larvae. The sheep of this area are healthy and growing in numbers. They believe this is due to a low density of sheep and a good range with adequate nutrition. So, at least in this instance lungworm is not yet a problem although apparantly all the sheep do have this parasite. Further study is being made in an effort to determine the importance of lungworm in the pneumonias of bighorn sheep .

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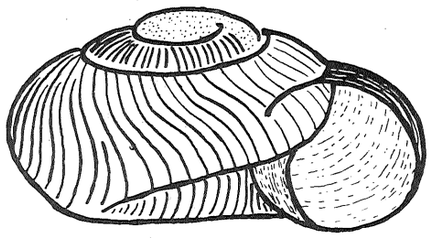
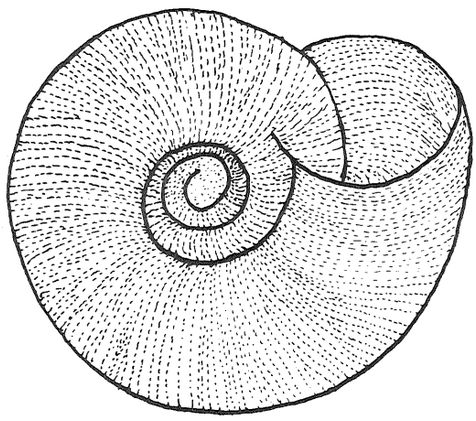
It was noted in the July-August issue that the 21 lungs obtained from hunter killed rams rams in Nevada during the season of 1972 had been examined for pathology and cultured, and that the majority showed evidence of interstitial pneumonia and lungworm infection.

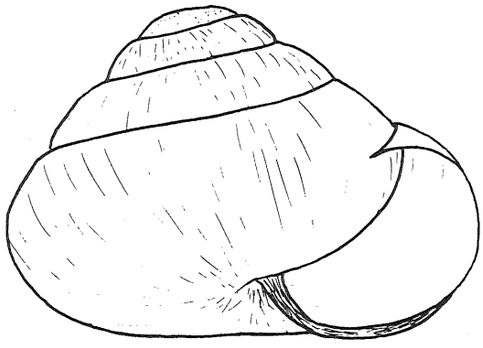
The host with the most . . .



Vallonia cyclophorella



Discus shimeki cockerelli



Euconulus fulvus

These species of land snails are but half of the total number of species known to serve as hosts for lungworm parasites affecting bighorn sheep.

MINUTES---Board of Directors meeting of June 16, 1973

The meeting was held at the mountain chalet of Robert A. Johnson. Also present were James De Forge; E.R. Hein,DDS; John Larronde and Marvin Wood and Loren L. Lutz, DDS; Member present Wayne Dickson; absent Director Richard Thompson.....Treasurer's reporrt showed $3,271.89 in the checking account and$1,778.23 in the Martinez Canyon Fund, as of that date.

OLD BUSINESS: The payment of dues and how to get them coming in was discussed. The Treasurer was asked to send out a second notice to those not paid. Perosnal calls to members was suggested. John Larronde was asked to prepare a list of members not paid and to mail a copy to each of the directors. A four year payment period for Life Membership was suggested. There would be four $50.00 payments.

Dr. Lutz stated that the state wide sheep count was still set for June 29 to July 3, 1973.

Sheep Society dinners were set in Southern California for November or December of 1973 and in Bakersfield for the second week of March 1974. Donald Swarthout will host the dinner in Southern California and Marvin Wood the one in Bakersfield.

Loren Lutz stated that the Board of Trustees was still in the formative stage. Also that the Martinez Canyon Project was still progressing.

Wayne Dickson was appointed the Membership Committee Chairman .

NEW BUSINESS: Dr. Lutz discussed the DUES situation of the Society and stated he was in favor of raising the dues. After discussion of when and how much, the following motions were made:

Motion by E.R. Hein, DDS, Seconded by Marvin Wood,"That the Annual Dues of the Society be raised." Carried Unanimously.

Motion by Robert A. Johnson second by E.R. Hein,DDS, "That the dues of the Society be raised from $10.00 to $15.00 per annum starting in January 1, 1974.Carried Unanimously.

Marvin Wood discussed the need for a Sheep Management Program run by the Department of Fish and Game. That the program was needed to save the sheep in California and that departments should aid with as many people as could be brought into the program.

James De Forge brought up for discussion that the Society should have an Annual Student or Young Peoples Membership. He suggested ways to get them to join saying that reduced Dues of $7.50 and $5.00 initiation fee be charged. That a "student" would be a person under twenty-one years old or in school. After a discussion by the Board members the following motions were made:

MOTION: By E.R. Hein, second by James De Forge, "That there be an Annual Student Membership." Carried unanimously.

MOTION: By James De Forge, seconded by Marvin Wood, "That the Annual Student Membership Initiation Fee for students be Five Dollars($5.00) and the Dues be Seven Dollars and fifty cents($7.50) ." Carried unanimously.

MOTION: By Marvin Wood, seconded by James De Forge, "That the Seven dollars and fifty cents ($7.50) Annual Student Memebership dues be rescinded. Carried unanimously.

MOTION: By Marvin Wood, seconded by Robert A. Johnson, "That the dues for Annual Students Memebership be five dollars($5.00). Carried unanimously.

Dr. Lutz stated that several members of the Society who live in the San Diego Area have thought of forming a branch of the Society. No action was taken after a discussion.

Robert A. Johnson discussed that fact that the Society should make up a list of addomplishments and projects so that the members could have some facts and figures to sell memberships in the Society. Therefore he moved, seconded by Marvin Wood that,"A list of the Society's accomplishments and project- be drawn up and listed andthat they be printed." Motion carried unanimously....Dr. Lutz will follow up on this matter.

Marvin Wood announced that all nembers of the Board of Directors an d Officers of the Clubwere invited to the opening day of pheasant shooting on his son's, Bob's, property this coming fall.

Upon proper motion the meeting was adjourned at 2300hours.
REspectfully submitted, John Larronde--Secretary.

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BIGHORN SHEEP DIES BUT NOT FROM FIRE

One of the California bighorn sheep known to be residing in the special experimental enclosure, in the Lava Beds died but not from the results of the lightning-spawned fire which burned part of the enclosure, in mid-July. A letter from Jim Blaisdell says: Dear Lew:

A ewe that I had observed to be quite crippled on July 8 was ofund dead and nearly completely devoured on July 15. I had expected to find her thus, although was hoping that she would improve in health, The day she was first seen crippled, she was trotting on three legs, as though her left rear hip was injured. I was within eight feet of her when I found her sound of sleep. No would was evident. Her lamb is safe, however, and has been adopted by the rest of the group.

the rest of the group. We still have all of this year's eight lambs, bringing our total in the enclosure to nineteen(19). This is almost 100 percent increase in two lambing seasons.

Hoping all is well with you, Jim.

The herd is now composed of eight lambs, seven ewes andthe two rams brought to the area from British Columbia for reintroduction in October 1971, through the combined efforts of the Department of Fish and Game, the National Park Service the U.S. Fish and Wildlife Service the U.S. Forest Service and the Bureau of Land Management.

photo courtesy of the Wildlife Society.

RECOMMENDED READING

In the September 1973 edition of Western Outdoors, Society member, Bob Householder has an article titled--DESERT BIGHORN. Bob is the Director, North American Sheep Hunters Association, The Grand Slam Club. He states," Sheep hunting is a disease without geology. I am one of the very few lucky people in the country. Why? I am a professional guide and have taken 30 rams for my clients over the years. Exactly 22 of the 30 were the completions of Grand Slams."

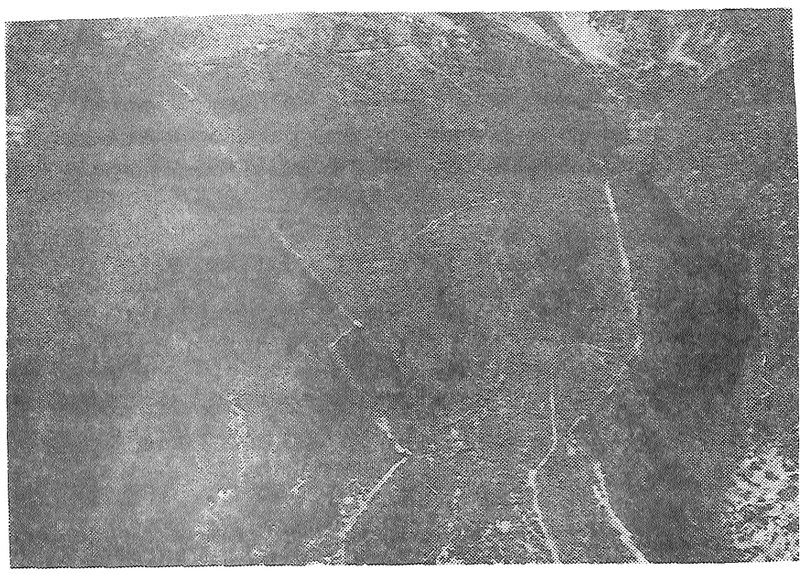
DUTCH CREEK BIGHORN SHEEP ENCLOSURE

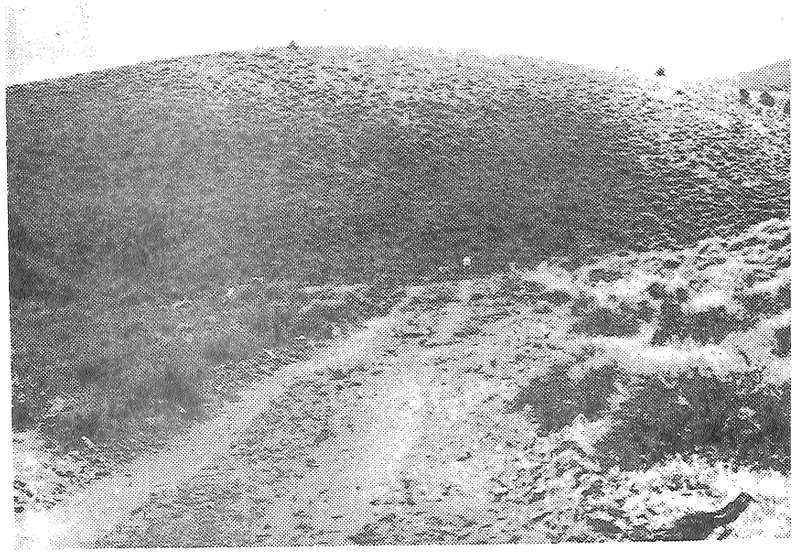
Mention of this project was made in the May-June issue of the SHEEPHERDER and again in the July-August issue, in which it was stated that a further report would be upcoming.

Nick Papez of the Nevada Department of Fish and GAme has recently sent me a copy of a report written by Kraig Beckstrand, who has been conducting the studies this past year. The photos were sent to me by Nick. They show in oneinstance an aerial view of the entire enclosure and in the other a view inside the enclosure of someof the sheep and their range. This report comes in part from conversations with Nick and in part from the report of Kraig.

The bighorn sheep transplant program was a result of a growing interest in the bighorn

a result of a growing interest in the bighorn sheep which was stimulated by Commission proposal to introduce the Barbary sheep into Nevada. It was initiated as the result of a request by the Naval Ammunition Depot, Hawthorne, for the introduction of the Barbary sheep on the base at the December 2, 1966 meeting of the Executive Board of the Commission. Since the Wassuk Range in Mineral County encompasses the Navy Base, and at one time supported a population of Nelson Bighorn Sheep, it was not within the area recommended by the Department for release of barbary sheep, and in fact, had been earmarked for a future release of bighorn sheep. For this reason, a counter proposal was made by the Chief of Game to build an enclosure on the base and release, instead of the Barbary Sheep, bighorn sheep of one of the subspecies formerly occupying habitat in Nevada. The project was contingent upon the availability of funds. However, it was felt at that time that funds would be avail able from several sources if a concrete proposal w as presented.





In January of 1967 the Chief of Game met with the Fraternity of the Desert Bighorn and presented the proposal offered to the people at the N.A. D., Hawthorne. and asked the Fraternity if they could donate toward the cost of the project. On January 14, 1967, they made an offer of funds to the Commission if the Commission would initiate a bighorn sheep transplant program....From contributions totalling $11,187.50 and Federal Aid matching funds, the 450 acre enclosure was constructed between November 1967, and January 1968, at a total cost of $33,156. As a result of problems associated with large mamalian predators indisciminately entering into the enclosure, a two-foot outrigger extension to the perimeter fence with two strands of barbed wire and one electrified wire was authorized for construction. A cross fence separating the upper and lwer portions of the enclosure was constructed at the same time. The total cost of the project then amounted to $46,706.

Study procedure used has been a yearlong, systematic observation and survey of the bighorn sheepactivities in the Dutch Creek Enclosure.

Since the inception of the sheep transplant program, 21 sheep have been stocked into the Dutch Creek Enclosure. The first sheep were fro m the Corn Creek Station and Warm Springs on the Desert Natioanl Wildlife Refuge. Ten animals were released in 1969 from animals captured at Boulder Beach, River MOuntains. T he last introduction of five sheep from the Highland Range was made in the summer of 1970....Totals of 21 sheep have been stocked, 14 produced in the enclosure, and 21 mortallities sustained. Eight of the original stock survive today and six of the fourteen born in the enclosure had survived until April 1973. At that time the herd composition was eight rams and five ewes, of which four were eligible to produce a lamb in the spring of 1973....The sheep had all been liberated in the lower part of the enclosure and kept there until JUly 6,

of 1972, when the gate was opened so that they might enter the upper part of the range. It was only after considerable snowfall in November and December that the sheep filtered back down into the lower part of the enclosure. The gate in the cross fence w as then closed. From July 1, 1972 until June 22, 1973 a US Fish and Wildlife Service trapper removed four coyotes, eight bobcats, six grey foxes and one badger from around the enc - losure. The tracks of a young mountain lion were observed outside the enclosure. One coyote did get inside the pasture but escaped. There has been no depredation. ... Only one mortallity occurred during the year. A six year old ewe was found dead on Marchl, 1973. She had show distress during January. Dr. Robert Taylor, D.V.M.(see report of July-August) came to Hawthorne in an effort to examine her, but was unable to get close enough . However, two days later she could not be located. After a searxh of one week her carcass was found under a pinion tree. Dr. TAylor, then, with the assistance of Dr. Cook and Dr. Drake of the Animal Disease Laboratory at Reno , examined her. After microscopic examination of the tissues, the cuse of death was attributed to liver and kidney pathology. Other pathology included excess pericardial and thoracic fluid, a small area ofplueritis with adhesion to the rib cage and a small area of in- flammation in the anterior small intestines.

Rutting season appeared to have begun slowly during October 1972. During this time some of the younger rams were observed harrassing a few of the ewes. This consisted of sniffing, chasing and butting of the ewes. Attempts at mounting were noted, bu t the ewes were not receptive to these younger rams. The major part of the breeding season was late NOvember into the first of December. The first lamb of the year was sighted April 24, 1973, in the lower part of the enclosure. Birth probably occurred in the lower elevation of the enclosure.....During May four more lambs were born..It is believed that these lambs were also born in the lower part of the enclosure. Sexes of these lambs isnot known as yet. The ewes have become very wild and it is difficult to get closer than a few hundred yards. Only once was Dr. TAylor able to get a close look at the ewes, yearlings, and lambs. At that time one lamb seemed to have a discharge from one eye, but seemed healthy, another lamb was having a minor coughing spell after exeting itself.

A letter from Nick Papez, August 21, 1973 relates that one four-year-old ram had been trapped out of the enclosure to be sent to the Zion National Park in Utah, on August 16th. According to terms of an agreement the Nevada DFG still owes the Zion NP one more ram...."Jake" Metherall, Biologist for the Park Service was active in this restocking program up to his untimely death in a plane crash in Nevada during January 1973.

BREEDING BEHAVIOR OF THE CALIFORNIA BIGHORN SHEEP

Excerpts from the above titled paper by David J. Dunaway, Wildlife Biologist, of the Inyo National Forest . The accompanying photo is also by courtesy of Dave, a true lover of the mountain sheep.

The breeding behavior of bighorn sheep (ovis Canadensis) has been described for many of the sheep populations present on the North American continent (Smith 1954, McCann 1956, Russo 1956, Well and Wells 1961, Blood 1961, Moser 1962, Morgan 1970). The recent study by Geist (1971) which describes the breeding and social behavior of Dall sheep (o.c. dalli) , Stone sheep (O.c. stonei), and Rocky MOuntain bighorn sheep (O.c. canad ensis) is the most detailed and complete coverage of this subject to date.

The early studies on California bighorn sheep in the Sierra Nevada (Grinnell 1912, Ober 1931) were concerned with taxonomy and distribution rather than the ecology of the animal. The first detailed observations on breeding activities was published by E.L. Jones in 1948 . Traditional rubting ranges for California bighorn sheep are located on the ridges and headwater basins of streams that drain the east-facing scarp of theSierra- Nevada. Most of these ranges are above 10,000 feet elevation. The breeding season begins in late October, reaches a peak during the last week of November, and declines after the first week of December. After the rut bighorns move to winter ranges located along thelower eastern scarp of the Sierra Nevada. This movement normally occurs between December 15 and January 5 (jones 1948, Dunaway 1971).

This sequence of events was interrupted in 1972 due to several intensive storms that brought heavy snows to the ru tting ranges between October 1 and November 15. The bighorns were forced to move to winter ranges about six weeks early. Th-s Dave Dunaway was afforded the opportunity to observe the animals during the peak period of the breed- ing season.

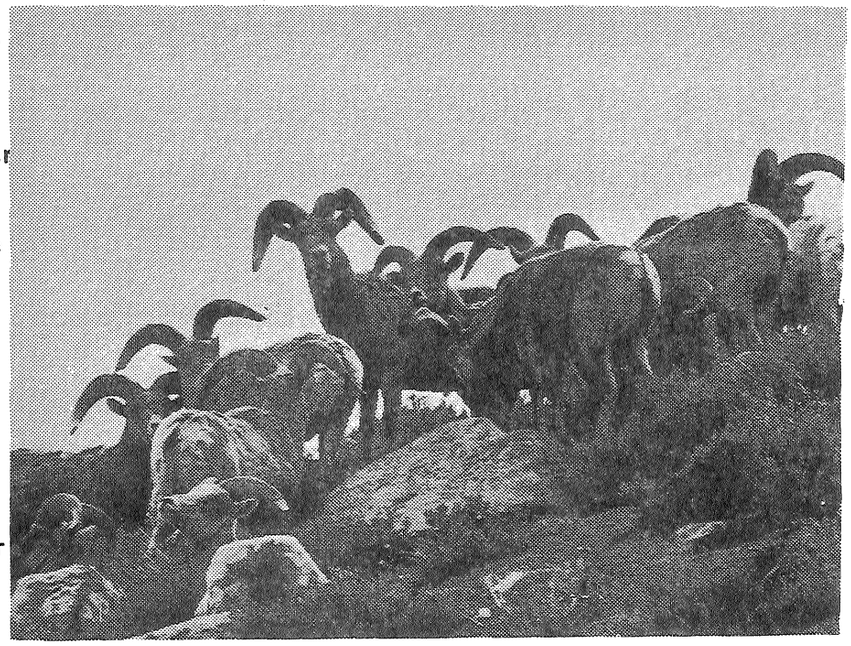
Observations were conducted on the Sawmill Canyon and Black Canyon winter ranges. These areas are wotjin the Mt. Baxter Bighorn sheep herd unit. This unit is part of the California Bighorn Sheep Zoological Area in the Inyo National Forest,

The activities of different bands of sheep were observed using a 15 - 60 power spotting scope from distances that varied between 50 to 500 yards. The bighorns in each band were classified by sex and age classes. Rams were classified by horn size after Geist (1968). Interactions that occurred between rams and between ewes were recorded by types of behavior patterns as described by Geist (1971). Data was quantified by type of inter- action for one 65 minute period for ram-ewe interactions and fifteen 5 minute periods

for interactions between large-horned rams. Total observation time was 57 hours and 15 minutes.

Geist (1971) has defined the following social behavior patterns for bighorn sheep: low stretch (lo), twist (T), front kick (FK), Mount(M), rubbing (R), horning (H), butt (B), Horn threat (Ho), clash (C), threat jump (Tj) lip-curl (Lc), sniffing the vulva (Sv), and horn present (P). These social postures occur between sheep at any time of the year, but are more pronounced during the excitement of the rut.

Social interactions were most intense between the Class III and IV rams. Fifteen individual rams observed during the study period were classified as seven Class III and eight Class IV. The majority of the social interactions observed during the study period occurred between the large-horned rams. The number of rams in a band varied from one to six with an average of 3.5 rams per band. When not pursuing an estrus ewe the rams were normally found ten to twenty yards away from the ewe band in a loose group or a tight huddle. When in a huddle the rams would generally stand side by side or be in a circle, all facing towards the center. The most common interactions were the front kick, horning, horn present and the horn threat. A great deal of shoving and pushing each other with the chest and shoulders also was common between rams when in a close huddle. At times one ram would lay his head across the back of another ram and shove with his shoulders and chest. This normally caused the other ram to throw his head backward and turn and face the second ram. Both rams would generally fo into a horn present when facing each other. Less common interactions were the butts, rubbing, and threat jumps. Horn clashes were observed nine times, but only recorded twice in the quantitative time periods. Two separate horn clash interactions were observed, both between Class III rams. The rams were approximately five feet apart and facing each other , then suddenly dipped their heads and clashed. Both rams would go into the horn present posture following the clash. The spectacular and severe clashes as described by Geist(1971) and Wells and Wells (1961) were not observed during this study period.



However severe, clashes are thought to occur as the leading edges of the horns of the large rams are broken and chipped, many of the animals bear scars on their faces, and one class III ram had almost half of the left horn sheath broken off, no doubt the result of horn clashing.

Rams that approached other rams that were in the group, or a tight huddle, normally did so in a low stretch posture. They would approach another ram from the rear and smell the anal area. This was either ignored by the other ram or he would turn rapidly and face the approaching animal and go into a horn present position . The two may then ignore each other or starr a series of front kicks and horning. Three of the fifteen rams did not enter into any social inter-actions with either estrus females or other rams. The Class III ram with the broken horn , mentioned above was seen in both the Sawmill and Black Canyon areas during the rutting period. This ram remained apart from the other sheep and spentthe time eating or bedded down. It would appear that loss of the horn placed this potentially dominate ram at the bottom of the social ladder. The other two rams, a class III and a Class IV, remained with the ewe bands and did notjoin in the rutting activities with the other interacting males. Both of these rams were approached several times by rams that were active in the rut, and even when kicked, butted, shoved, and mounted, they remained passive and continued to browse or face away from the antagonistic male.

Six juvenile rams, two classI and four Class II, were observed at various times during the rutting period. The young rams divided their time between watching the large rams interact or pursue estrus females and eating and loafing with the ewe bands. On several occassions a juvenile ram became excite watching a large ram in pursuit of a female and would chase after the pair, but did not attempt to take possession of the female. When approached by a large ram, the juvenile would smell or rub the face of the ram, turn and walk away, or go into a hornpresent. None of the juvenile rams observed attempted to interact with the large-horned rams or copulate with the estrus females. One of the Class II rams tried to mount an anestrus ewe that was with the ewe band, but was severly butted by the dame for his efforts.

A total of nineteen individual ewes were observed during the study period. The number of ewes per band ranged from one to eight animals, with four being the average number per band. Field observations show that only one or two of the ewes are in estrus at

anyone time. Apparantly rams are able to find the estrus ewes within the band by snell. A ram would suddenly leave a huddle, quit feeding or get up from his bed and move rapidly towards a ewe band at a fast walk or trot sniffing the air as he goes. fter reaching the band the ram continues to smell until he locates the estrus female. Rams normally approach an estrus ewe from the rear in a low stretch postur. Upon approaching the ewe the most common sequence of actions were the low stretch, lip curl, head twist, smelling or licking of the ewe's vulva, lipcurling again, and more smelling. If the ewe would urinate the ram wou ld nuzzle the urine spot and lip curl.

The movement of one ram towards a ewe band would sometimes draw the attention of other nearby rams. everal times Dave observed four rams all in thelow stretch posure, approaching a female in single file. If one of the rams attempted to pass, he would usually be butted or chased by theram being passed.. Rams chased and pestered the females for varying lengths of time, usually from 1 to 2 mi nutes and up to 10 to 15 minutes. One chase lasted 65 minutes between a ClassIII ram and an adult female--at a pace of from a walk to a trot and even an occassional gallop. The ewe avoided the rams by moving away, whirling and running, jumping onto narrow ledges or a rock outcrop only largeenough for one animal at a time, or by standing with her rump up against a rock face...The physical strain on the animals appeared to be rather severe as both would stop on occassion and gasp for breath. The chase terminated when the ram sucessfully copulated with the female

The breeding behavior patterns displayed by California bighorn sheep in the Sierra Nevada are very similar to those described by Geist (1971) for Dall sheep, Stone sheep, aadRocky Mountain bighorns in Alaska and Canada. These similarities tend to support Geists' hypothesis that bighorn sheep social behavior is almost identical no matter where the population is found. If this is true then we can assume that other behavior patter ns such as the selection and use of the habitats are also applicable to the California big horn of the Sierra. Land use plans for National Forests that support populations of bighorn sheep should recognize and provide for continued maintenance of the integrity of the important bighorn ranges andthe migration routes that link these ranges together.

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SAVE THE DATE OF OCTOBER 27th--

The Fall meeting of the Society for the Conservation of Bighorn Sheep will be held at Harolds' Club----16436 Foothill Boulevard, Fontana, California, Saturday evening October 27th. A No-Host Attitude Adjustment Hour--will convene at 6:30 p.m. and dinner is to be served at 7:30 p.m. Hzrold's Club is located between Sierra and Cherry Avenues, and is off the San Bernardino Freeway. There will be an aftdr dinner speaker.

YOU WILL FIND A STAMPED AND ADDRESSED POSTAL CARD !N THE ENVELOPE WITH THIS BULLETIN.

PLEASE FILL OUT THE CARD AND MAIL IT IN TO DOCTOR LUTZ, RIGHT AWAY--- WHETHER YOU WILL BE ABLE TO ATTEND OR NOT

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YOUR EDITOR CERTAINLY DOES WISH THAT SOME OF YOU MEMBERS WHO DO THINGS FOR THE SHEEP WOULD WRITE TO HIM ABOUT WHAT YOU HAVE DONE AND SEND SOME PICTURE OF YOUR PROJECTS WITH THESE REPORTS. TO DATE IN 1973 ONLY TOM CLOTFELTER HAS DONE THIS, AND IT IS TRULY APPRECIATED, AND I BELIEVE MAKES THE BULLETIN MORE INTERESTING TO SHOW THE ACCOMPLISHMENTS OF THE MEMBERS. IT ALSO IS A VERY BIG ASSIST IN THE SELLING OF NEW MEMBERSHIPS IN THE SOCIETY, AND THIS IS REALLY NEEDED. lew.

ANALYSIS OF DATA COLLECTED FROM THE MT. SAN ANTONIO BIGHORN HABITAT--- Jerome t. Light. The study area all lies wi thin the San Bernardino NF. The San Gabriel Mts. ; the SanGorgonio and Cucamonga alr liein a transverse range. The SBNF receives some 6 million days of visitor use annually. In 1964 concern began to be expressed concerning the bighorn sheep. The Multiple use principle now does include the bighorns...The area has some 3000 days of visitor hiking days annually. Some of the fi ndings are : winter use by skiing has no adverse effect on the sheep. However that of spring, summer and fall do have significant effect.....It seems certain that human use will become greater and if uncontrolled will have a further adverse effect on the sheep.....Studies have shown that under these conditions that rams will tolerate human encroachment to a distance of 150 yards but that the range of tolerance forewes is 350 yasrds.....Guidlines are being set up...all summer routes for hikers should be from 150 to 350 yards from bighorn use areas and kept entirely away f rom the lambing areas. It is believed tha 500 visitor days use per year should be the limit ...no party to consist of more than 10 people...There should be no construction permitted on the summer range during the summer and no construction on the winter range during the winter , etc. Timber harvest should all take place during the winter...Vehicular use must be confined to established roads...Sheep census best taken by use of helicopter.