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Briefing Statement on Status of Bighorn Sheep in Badlands
National Park

The Audubon Bighorn (Ovis canadensis auduboni) was widespread in the Badlands until market hunting to supply the Black Hills mining boom and conversion of its habitat to ranches and farms pushed it to extinction by 1925. In a cooperative venture, South Dakota Game, Fish and Parks Department traded mountain goats for Rocky Mountain Bighorn (Ovis canadensis canadensis) with the Colorado Game and Fish Department in 1964 to reintroduce sheep into the Badlands National Park. The 22 bighorn from the Pikes Peak region of Colorado were introduced into a 370 acre enclosure for the purpose of establishing a stable captive population, which would provide a source of transplants to other areas of South Dakota, and replace the extirpated Audubon sheep in Badlands National Park. Six areas, Sheep Mountain and Norbeck Pass in the park, Red Stone Basin and the Aerial Gunnery Range in nearby Shannon and southern Jackson Counties, and two locations in the northwest part of the state, were targeted for the progeny of the breeding stock.

By July of 1967, the population had only increased to 27 individuals. From August 18 through 30, a die-off of 13 sheep prompted a decision by park managers and biologists to release the remaining animals into the wild, believing that confinement was resulting in spread of a pathogen. Two adult rams, two adult ewes, four yearling ewes, and six lambs became the core of today's band.

A survey by Henry E. McCutcheon based on a one week visit in June of 1980 estimated the population as a minimum of 27 animals: eight rams, nine ewes, one yearling ram, one yearling ewe, and eight lambs. McCutcheon concluded that the age distribution suggested a high mortality of lambs, but a stable population. Based on fecal samples, there was a low incidence of lungworm parasites. He suggested that limited watering areas and lungworm being passed during pregnancy were keeping the population down. McCutcheon felt that available nutrients for grass production were tied up in decadent grass stands and litter and recommended prescribed fire for reinvigoration of the bighorn range. Summer food habit sampling indicated that the bighorn were selecting out the less common plants for forage. Limited winter sampling showed a heavy dependence on sage, which is not widespread or abundant.

In 1981 the park staff repaired a former stock dam on the east edge of their range to provide an additional water supply. A year later a former spring/seep in Deer Haven, a bighorn stronghold, was unsuccessfully rehabilitated, with no resulting water production. Typical of the species, there continues to be

limited expansion of range.

The park entered into a research agreement with the South Dakota State Department of Game, Fish, and Parks in April of 1987 for the purposes of determining the population status, insuring the continued survival and stability of the Badlands herd, and exploration of the feasibility of transplants. The state agency took the lead in the research, with support from the NPS. Five adult animals were radio-collared to collect information on range size and utilization, lambing areas, and band mix.

In January of 1989, a meeting was called to update the status of the study and its findings, and to discuss bighorn management. Ted Benzon, wildlife biologist with the South Dakota Game, Fish, and Parks Department, presented current population numbers and trends. He estimated a population of 163 sheep in good health. Data indicated that the herd was averaging better than normal lamb/ewe ratios. Mr. Benzon has delineated three lambing areas, well protected by the rough Badlands country. He had concern about the presence of Pastuerella multocida found in the bison herd (two of four samples), which he had tested during the October, 1988 roundup. Other biologists feel that sheep have been exposed to this pathogen for a long time and believe it to be harmless to wild sheep populations. Of much greater concern would be the discovery of P. haemolytica, a deadly microbe to sheep. During a study of bison in the park, it was not found in the bison population. The trigger for P. haemolytica to develop in a sheep population is little understood, but apparently has severe consequences when the animals are under some stressor(s).

A limited prescribed burn in the prime sheep range of the Badlands was carried out in the spring of 1989 with the hopes of reinvigorating a portion of the sheep foraging area. Thirty lambs were documented for the 1989 lambing season, with preliminary data indicating an 80/100 lamb/ewe ratio for that summer. Blood samples from five animals were taken in the fall for chemistry profiles and genetic analysis. Net gun capture from a helicopter still appears to be the most efficient method of obtaining animals. Work will continue on lamb production and genetic analysis to determine heterozygosity within the Badlands herd. Estimating range capacity based on SCS soil range/vegetation production have not been very successful.

The superintendent wanted to see a revised cooperative agreement to replace the 1964 and 1987 documents, since their original intent has been significantly altered. While honoring past commitments, he is cautious not to have the park become a breeding ground for replenishing State bighorn populations. The long term objective of the State is to harvest about 20 animals from Badlands for reintroduction into the Black Hills. Towards that end a draft Memorandum of Understanding between the South Dakota Division of Wildlife and the Rocky Mountain Regional Office has been reviewed by both parties and is nearing completion.

Bighorn sheep population levels, range, and health continue to need monitoring in the future. Additional water sources may require development. Badlands staff would like to locate another area in which to reintroduce sheep within the National Park, particularly the South Unit, as it appears that the current population could withstand a reduction during the next few years and remain viable. An additional band would allow for mutual restocking, should a crash occur in one population. To increase genetic diversity while reducing the number of animals required from the park, a portion of the parent band could be derived from additional stock outside the park. The Oglala Sioux Tribe has made strides to develop a more comprehensive wildlife management and protection program. There is a better atmosphere than ever before that a cooperative effort to restore bighorn could be negotiated. A foundation needs to be laid with research, as called for in the Resource Management Plan, to define the factors limiting expansion of bighorn from their home range, to determine forage suitability, to monitor the effects of fire on preferred plant species, to develop strategies for genetic diversity, and to prioritize possible reintroduction sites.

Bruce P. Bessken

Documents to accompany Briefing Statement

Cooperative Agreement between the National Park Service and the South Dakota Department of Game, Fish and Parks for the Reintroduction and Management of Bighorn Sheep-1964

Job Outline of Research Study prepared by South Dakota Game, Fish and Parks - 1986

Memorandum of Understanding between the National Park Service and the South Dakota Game, Fish and Parks for Research Purposes - MU-1300-7-8003

Letter to Lloyd Kortge from Ted Benzon, SD GF&P biologist regarding results of bison testing for pathogens - dated 11/03/88, with accompanying lab results

Preliminary Data on Badlands Sheep Population supplied by Ted Benzon at Bighorn Update Meeting of 01/05/89, 3 pages

Map of Bighorn range, lambing areas, and animal capture sites

VHS Video Tape of Bighorn within Badlands National Park- 1988

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Prepared by Bruce P. Bessken

COOPERATIVE AGREEMENT BETWEEN THE NATIONAL PARK SERVICE
AND THE SOUTH DAKOTA DEPARTMENT OF GAME, FISH AND PARKS
FOR THE REINTRODUCTION AND MANAGEMENT OF BIGHORN SHEEP

WHEREAS, the National Park Service and the South Dakota Department of Game, Fish and Parks have recognized the desirability of re-establishing bighorn sheep populations in the badlands along the White River and on other former bighorn ranges in South Dakota, and

WHEREAS, Badlands National Monument has been determined by the State to offer the best facilities and protection to bighorn sheep in a restocking program, now,

THEREFORE, it is agreed:

That the State and Service cooperatively shall establish a free ranging bighorn sheep population within the White River badlands, and other former bighorn ranges in South Dakota.

That the National Park Service shall:

1. Provide a suitable area in Badlands National Monument for the construction of a bighorn sheep enclosure, roughly 370 acres in size.
2. Provide labor, material (fence posts to be provided by State), and maintenance for enclosure fence, holding pen and other facilities, including a water supply, for management of bighorn sheep breeding stock.
3. Provide protection to the sheep within the breeding pasture from molestation.

That the South Dakota Department of Game, Fish and Parks shall:

1. Deliver to Badlands National Monument a breeding population of bighorn sheep to initiate the project.
2. Provide technical aid, including veterinary services in the management of the breeding stock.
3. Provide supplemental feed, nutrients, antibiotics and minerals, as may be recommended by the State Veterinarian for the bighorn sheep within the breeding pasture.

That jointly:

1. The site and construction of the sheep enclosure and other facilities required in the management of the bighorn breeding stock will be approved by both agencies.
2. All physical facilities constructed on Monument lands in connection with this project will be property of the United States Government.
3. The breeding stock will be used to produce animals for four (4) releases within the South Dakota White River Badlands and possibly two (2) releases in other areas of former bighorn range in South Dakota. The plantings shall proceed in the following order.
 - (a) In the vicinity of Sheep Mountain located in northeastern Shannon and southeastern Pennington counties.
 - (b) In the vicinity of Red Stone Basin located in northeastern Washabaugh County. Release site to be in or close to Sec. 13, Range 33 West, Township 43 North.
 - (c) In the vicinity of Norbeck Pass in Jackson County. Release site to be in or close to Sec. 20, Range 18 East, Township 3 South.
 - (d) In the eastern end of what is now known as the Aerial Gunnery Range in northwestern Washabaugh and northeastern Shannon counties on or near Sec. 13, Range 41 West, Township 42 North or Sec. 18, Range 40 West, Township 42 North.
 - (e) An area known as Short Pines in Harding County.
 - (f) In the Cave Hills areas also in Harding County.
4. Upon completion of the above plants, this agreement may be extended by amendment to facilitate additional stocking of bighorn sheep as mutually agreed by the Service and the State.

5. No restocking shall be attempted until a breeding stock of approximately (depending on the adequacy of natural forage) twenty (20) ewes has been established, and will be maintained until the last plant, at which time the National Park Service shall have an option to retain six (6) ewes, four (4) of which must be of breeding age, and six (6) rams, four of which must be of breeding age, in the enclosure for additional restocking purposes within the Monument and other NPS bighorn sheep ranges.
6. Nothing in this agreement shall be construed as obligating the agencies concerned to expend or as involving them in any contract or other obligation for the future payment of money in excess of appropriations authorized by law.
7. Amendments to this cooperative agreement may be proposed by either party, and shall become effective upon approval of both parties.
8. This memorandum of agreement shall become effective upon approval by both parties and will remain in full force and effect until the objectives of this cooperative agreement are attained, or until cancelled by either of the parties advising the other, in writing, at least ninety (90) days in advance of such intended cancellation. In event of the latter, the other party shall have the option to retain all or any of the existing breeding stock.
9. (a) During the performance of work under this agreement the South Dakota Game, Fish and Parks Department in this article referred to as the contractor, agrees as follows:
 - (1) The contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The contractor will take affirmative action to ensure that applicants will be employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to, the following; employment, upgrading, demotion, or transfer; recruitment or recruitment

advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this non-discrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.

(3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the said labor union or workers' representative of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The contractor will comply with all provisions of Executive Order No. 10925 of March 6, 1961, as amended, and of the rules, regulations, and relevant orders of the President's Committee on Equal Employment Opportunity created thereby.

(5) The contractor will furnish all information and reports required by Executive Order No. 10925 of March 6, 1961, as amended, and by the rules, regulations, and orders of the said Committee, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Committee for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the contractor's non-compliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further government contracts in accordance with

procedures authorized in Executive Order No. 10925 of March 6, 1961, as amended, and such other sanctions may be imposed and remedies invoked as provided in the said Executive Order or by rule, regulation, or order of the President's Committee on Equal Employment Opportunity, or as otherwise provided by law.

(7) The contractor will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the President's Committee on Equal Employment Opportunity issued pursuant to section 303 of Executive Order No. 10925 of March 6, 1961, as amended, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions, including sanctions for non-compliance: Provided, however, That in the event the contractor becomes involved in, or is threatened with, litigations with a subcontractor or vendor as a result of such direction by the contracting agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

(b) Inclusion of the above nondiscrimination clause in subcontracts may be by reference to Section 301 of Executive Order 10925, dated March 6, 1961, as amended. Subcontracts below the third tier, other than subcontracts calling for construction work at the site of construction, are exempt from the requirements of the clause.

10. No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this contract or to any benefit that may arise herefrom, but this restriction shall not be construed to extend to this contract if made with a corporation or company for its general benefit.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed in duplicate by their officers thereunto duly authorized and their corporate seals to be hereunto affixed the day and year first above written.

Frank A. Hjort

Frank A. Hjort, Superintendent
Badlands National Monument

July 9 1964
Date

R. A. Hodgins, asst. Director

7/15/64
Date

Job Outline

State: South Dakota

Project No. W-75-R

Study No. 7534

Job No. 5

Job Title: Population status of Badlands National Park bighorn sheep.

Objectives: To determine population status of bighorn sheep within the Badlands National Park, and determine the feasibility of using a portion of the herd for transplanting within the Black Hills of South Dakota.

Procedures for Collecting Data: Attempts will be made to locate the bighorn population through aerial and on the ground searches. Potential trapping sites will be located and attempts made to capture a portion of the herd. All captured bighorn sheep will be aged and sexed. Fecal samples will be collected for analysis of parasite load. Radio collars will be attached to two adult rams and two adult ewes.

Procedures for Analyzing Data: Seasonal movements will be used to determine winter and summer ranges for evaluating possible trapping locations. All radio locations and observations of marked animals will be plotted on topographic maps. Of primary importance will be determining population composition; lamb/ewe ratio; ram/ewe ratio; and yearling/ewe ratio, and number of bands within the entire population. A lamb/ewe ratio of 50/100 would be needed in order to consider using a portion of the herd for transplanting. Evaluation of lamb survival and ram/ewe ratio will also be considered.

Location of Work: Badlands National Park in South Dakota.

Technical Personnel Participating: Technical Services and Research personnel, Operations personnel, seasonal personnel, Badlands National Park personnel.

Man Days Required: 90

Job Duration: July 1, 1986 - June 30, 1989

Cost: Total-\$30,000; Federal Share-\$22,500; State Share-\$7,500

Principal Investigators: Leslie Rice, Senior Wildlife Biologist;
Ted Benzon, Wildlife Biologist I

Study Amendment

State: South Dakota

Project No. W-75-R

Study No. 7534

Project Title: Wildlife Research

Study Title: Reintroduction of Rocky Mountain Bighorn Sheep
(Ovis canadensis canadensis) in the Black Hills,
South Dakota.

Need: Presently within the Badlands National Park there is a small herd of Rocky Mountain Bighorn Sheep (Ovis canadensis canadensis). Population size and composition need to be determined in order to evaluate the feasibility of using surplus animals for transplanting within the Black Hills of South Dakota.

Justification: In 1964, 21 Rocky Mountain bighorn sheep were released in the Badlands National Park by the South Dakota Department of Game, Fish and Parks. An agreement between the two agencies was entered into with the Badlands National Park protecting the sheep and the South Dakota Department of Game, Fish and Parks retaining ownership. Badlands National Park was to receive a portion of the herd after transplanting program was completed. Original plans were to enclose the sheep in a 370 acre pasture and as the population increased, portions of the herd would be removed and transplanted to other areas within western South Dakota. However, the large enclosure was never built and at present, the bighorn sheep have access to the entire park.

Winter range, summer range, lambing areas, and group composition are virtually unknown. Present estimates place the population between 30-70 animals. In order to properly evaluate the feasibility of using surplus animals from the herd for transplanting, these factors must be determined.