

# BIGHORN SHEEP INVESTIGATIONS IN CALIFORNIA

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Abstract. In October of 1968, the Department of Fish and Game undertook to determine the status of bighorn sheep in California. The present estimate is approximately 3,500 bighorn. Sheep have declined in number in many areas during the past quarter century; however, there are thrifty herds remaining in some areas. Water shortage, competition with burro, and man usurping bighorn habitat are serious problems facing the species today.

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## INTRODUCTION

In March 1968, the California Legislature passed a resolution that said, in part, "Resolved by the Senate of the State of California, the Assembly there concurring, that the Department of Fish and Game is requested to gather information on the current status and composition of bighorn sheep herds and factors limiting the size of such herds and to investigate the possibility of increasing both herd size and range through water developments, reintroductions, control of competition and other methods, and to report thereon including a detailed species plan for the protection, preservation and management of bighorn sheep."

In October 1968, a two-man team undertook the first comprehensive study of bighorn sheep (Ovis canadensis) for the entire State. This study was supported by Federal Aid to Fish and Wildlife Project W-51-R, "Big Game Investigations."

## METHODS

For a systematic approach to gathering data and reporting, the State was divided into 14 broad study areas that were known to have populations of bighorn.

Waterhole counts were made at selected sites during the heat of the summer. If one could cover every waterhole in a mountain range for a long enough period of time, and the weather conditions are hot and dry, one should be able to count every sheep. Time, manpower, and weather conditions made this impossible, so this technique has limited use.

There is no substitute for covering the ground to inventory sheep populations and habitat. To do this, aerial surveys by fixed-wing aircraft and helicopter are made for orientation and to determine locations of water sources. Desert bighorn are not counted from a fixed-wing plane. Sheep may be counted from a helicopter, but unfortunately you never see the

total population. Hiking surveys must be made in all areas identified as sheep range. Population estimates are based on observation of animals and fresh sign.

An inventory of water sources that could be located was made and recommendations for improvement were issued where needed. Sites for the construction of water catchments were recommended where water is absent in otherwise good sheep habitat.

The habitat was evaluated by a technique developed by Dr. Charles Hansen. This method takes into consideration topography, vegetation, weather, water, competition, sheep use, and human use. This technique gives each area sampled a numbered rating and it applies equally in all sheep habitat from the White Mountains, Mono County, to the Mexican border.

Feral burro range was noted and mapped for all the study areas with burro populations.

Other factors affecting sheep, including competition with other animals, land use, predation, parasites, and food habits were investigated.

## RESULTS

We have now completed field investigations in all of the study areas except the Sierra Nevada Mountain Range. Our present refined estimate is approximately 3,500 bighorn in the State. This figure is very close to the rough approximate that the State has been using since about 1955. However, some areas were found to be better than expected and other large mountain ranges had a much lower population than expected. Some populations are definitely down from the recent past. Summarized in Table 1 are population estimates for each study area.

Table 1. Bighorn sheep herds in California 1968-1971.

	Report Area	Estimate	Previous Estimate	Comment
I	San Diego Co.	391	130	Thrifty
II	Eastern Imperial Co.	162	100	Holding
III	Southern Riverside Co.	620	445	Thrifty
IV	Joshua Tree	100	200	Declining
V	Northeastern Riverside Co.	15	24	Declining
VI	Southwestern San Bernardino Co.	15	55	Declining
VII	Southeastern San Bernardino Co.	175	90	Holding
VIII	Northeastern San Bernardino Co.	310	200	Declining
IX	Northwestern San Bernardino Co. and Southern Inyo Co.	54	97	Declining
X	Clark/Kingston Mountains	80	55	Holding
XI	Death Valley	500	915	Declining
XII	Northern Inyo and Southern Mono Cos.	165	199	Declining
XIII	San Gabriel	625	585	Thrifty
XIV	Sierra	250	390	Declining
	Lava Beds	10	0	Reintroduction 10/29/71
	Total	3,472	3,485	

Previous estimates were made by various field people and compiled in Sacramento by Fred Jones in 1955. Generally speaking, in most areas of California sheep have been declining for many years, but particularly in the past quarter century because of prolonged drought conditions. In the area where our estimate is larger than the previous estimate, it reflects a more thorough investigation and refined survey techniques, and not an increase in the bighorn population.

## DISCUSSION

### Reintroductions

Areas of historic sheep range have been investigated for possible reintroduction. On  
CAL-NEVA WILDLIFE 1972

October 23, 1971, 10 sheep trapped in British Columbia were released in a 1,100-acre enclosure in the Lava Beds National Monument. Hopefully we will be able to make more reintroductions in northeastern California with sheep produced in this enclosure. An area in Ventura County has been considered for reintroduction and one location in San Bernardino County has been recommended for reintroduction at this date. Other sites considered have problems that must be solved before reintroduction can be made; i.e., water provided, competing livestock and/or feral burro, conflicting land use.

#### Problems

Serious problems that are depressing bighorn numbers are: competing wild burro, lack of water, encroachment into habitat by man with roads, trails, off-the-road vehicles, houses, and mining.

Burros are protected by State and Federal law and there is no program at the present to control burro numbers or protect overuse of the range. The Bureau of Land Management, the California Department of Fish and Game, and conservation groups are engaged in an active cooperative effort to develop water sources. We have identified critical bighorn habitat in private ownership and efforts are being made to secure these parcels into government ownership. The California Division of Highways has modified fencing and culvert specifications on Interstate 40 where it cuts through sheep habitat.

We can and must maintain bighorn numbers. We can even increase bighorn numbers and range with an active, vigorous management program. We cannot be complacent with this new knowledge, or we will find that the bighorn will continue to decline and one by one, the more marginal areas will cease to support bighorn populations.