

NEVADA'S EXPERIENCE WITH THE HIMALAYAN SNOW PARTRIDGE

Glen C. Christensen, Nevada Fish and Game Commission, Reno, Nevada

In 1960 while a Nevada Fish and Game biologist was on assignment in India, Pakistan and Afghanistan, it was possible to obtain a general appraisal of the habitat of the Himalayan snow partridge (Tetraogallus himalayensis). Due to travel restrictions it was not possible at that time to actually work with the bird itself or to search out a source of supply. However, the similarity between parts of the great Himalayan mountain chain and many of the mountainous areas in Nevada (between 7,000 to 13,000 feet elevation) was impressive and it appeared that the snow partridge was a bird that would be well worth additional study.

A year elapsed before the opportunity to secure some snow partridge materialized. In this instance a Reno sportsman, Mr. Hamilton McCaughey, had managed to cut through miles of red tape and secure special permission from the President of Pakistan to enter the remote northern State of Hunza in quest of the famous Marco Polo sheep. His interest was not restricted to the Marco Polo sheep alone and he readily volunteered to try and secure some snow partridges for the Commission.

As a result of Mr. McCaughey's efforts, the Commission received its first snow partridge in late 1961. This was the sole survivor of six birds which Mr. McCaughey had collected. All six of the birds arrived safely at the Honolulu quarantine station; however, they were severely infected with coccidiosis. Only one bird survived the 21-day quarantine period. Disease was to be one, and perhaps the most discouraging, of many problems encountered during subsequent importations. Nevertheless, the one hen which was obtained showed such remarkable characteristics that the Commission felt an all out effort to obtain a suitable supply of these magnificent game birds was justified.

Following Mr. McCaughey's trip to Hunza it was possible to establish a liason with the Mir of Hunza and to arrange for a yearly trapping program and shipment of the captured snow partridge to the United States. This method of acquiring birds "by remote control" was tried during 1962 and 1963. The 1962 importation was quite successful, but in contrast the 1963 importation was a near disaster. At the end of 1963, only 24 snow partridges were

on hand (19 birds had been released in the Ruby Mountains of eastern Nevada) and only six of them were hens. It became apparent that due to the long distance involved in transporting the birds, mechanical problems during the various phases of transport, and disease epidemics, that it would not be feasible to import a sufficient quantity of snow partridge on a yearly basis to sustain a wild release program. Furthermore, it also became obvious that the obtaining of an adequate stock for game farm propagation may depend a great deal on obtaining some direct control over the sex ratio of the birds exported from Hunza.

In order to try and alleviate some of these problems, and also to obtain additional information about the life history and habitat requirements of the snow partridge, a Nevada Fish and Game biologist was sent to northern Pakistan in the fall of 1964. The cost of the project was co-sponsored by the Office of Navy Research and the Nevada Fish and Game Commission. Prior notice had been given to the Mir of Hunza to arrange for the trapping of 100 or more snow partridges and a delivery point was set up at the small Himalayan village of Gilgit (the closest air terminal to the source of supply - 64 miles south of the Hunza border).

Almost one year was consumed in working out the necessary arrangements with the Mir of Hunza and in obtaining approval from the Government of Pakistan for the project. Even so, permission to enter Hunza was still denied. The project was activated in August, 1964. Permanent headquarters were selected at Rawalpindi, Pakistan (200 airline miles from Gilgit), where pens capable of holding 120 birds were built. Arrangements were then made to enter Gilgit and to secure government permission to transport birds from Gilgit to Rawalpindi.

In late September the birds were transported by burro for approximately 70 miles from various villages in northern Hunza to Baltit (the capitol of Hunza). From here they were taken by jeep another 64 miles to Gilgit. The Mir of Hunza stated that approximately 150 birds were collected by the villagers, of these only 95 arrived in Gilgit and all of them were in poor condition as a result of coccidiosis, malnutrition, scalping, various broken bones, exhaustion, and shock. They were immediately placed on medication and an adequate food ration. Within two days they were flown to Rawalpindi and placed in the large quarantine pens (on wire floors). During the holding period it was determined that there was approximately an equal sex ratio and all birds were vaccinated against fowl pox and treated for coccidiosis. At the end of three weeks the weak and seriously maimed birds, which obviously could not recover, were culled out. Seventy-six birds were then shipped to Karachi, Pakistan, and from there direct to New York City.

On arrival at New York, the birds were processed through customs and then trucked to quarantine at Clifton, New Jersey. The entire trip from Rawalpindi, Pakistan, to Clifton, New Jersey, took approximately 60 hours and this fast service was only made possible by having a man on the spot to coordinate activities. During previous importations, the birds

would often be held at the Gilgit airport for several days and again for several days at Karachi. The 1963 importation was lost in Germany for two days. Therefore, the mechanics of the 1964 importation which resulted in moving the birds over 11,000 miles to Reno went off as scheduled and resulted in accomplishing the desired objectives.

Even though the transportation phase of the project worked out well, it was obvious when the birds were received in Gilgit that the primary problem - disease - was in Hunza. In tracing out the main source of disease, it was determined that the snow partridges were generally captured as chicks and then raised with chickens in the villages. Consequently, they were exposed to coccidiosis and other poultry diseases. A second cause of disease which resulted in Aspergilosis in the birds obtained in 1964, seemed to have originated from contaminated grain which was fed to them in Rawalpindi. Unfortunately, there was no way to solve the problems of disease, malnutrition, mishandling etc., which originated in Hunza since foreigners were not allowed to enter this State. The disease problems which were encountered during the four importation projects were: coccidiosis, fowl pox, blackhead, aspergilosis, lymphomatosis, and chronic respiratory disease. Needless to say, disease was the greatest killer of birds throughout this phase of the program. Table 1 presents a summary of the number of birds imported, losses, releases, production and brood stock on hand.

Table 1. Summary of Snow Partridge Introductions and Fate.

Year	Number of Birds Purchased	Transport & Quarantine Losses	Released	To Game Farm	Losses on Game Farm	Production	Brood stock On Hand
1961	6	5	0	1			
1962	36	9	19	8			
1963	60	45	0	15			
1964	95	49	0	46			
1965	-	-	-	-	36	16	
1966	-	-	-	-			50
	197	108	19		36	16	50

Upon completion of the 1964 importation program it was felt that sufficient snow partridges were on hand in Nevada to phase into a full snow partridge propagation program and to discontinue the importation projects. A small game farm facility was built at Yerington, Nevada, in 1965 for this purpose. The few eggs which were obtained prior to 1965 had been contracted to a private game farm for hatching and this proved to be unsuccessful. The Commission's game farm layout and all phases of the operation were patterned after guidelines developed by personnel of the Poultry Husbandry Department, University of California, Davis. In order to work out the necessary incubation and hatching techniques, the snow partridge eggs were

regularly flown to Davis and hatched at the Davis facility under the supervision of Dr. Ursula Abbot. The day-old chicks were then flown to the Nevada facility for rearing. A total of 57 eggs were laid by five hens, with two of these hens (a four-year-old and a three-year-old) being the major producers. A total of 29 chicks were hatched and 16 were raised to maturity. Hatchability of the eggs was 90% on the first hatch and decreased to 20% on the fourth and last hatch. Dr. Abbot was able to trace this, and a slipped tendon problem in chicks to a vitamin and mineral deficiency (an insufficient supply of choline, folic acid, and manganese) in the laying birds. It therefore appears that this problem can be compensated for. Last year's success in hatching and rearing snow partridges, although limited, is considered as being a major break-through in the program. We now have 24 pair of adult birds on the game farm for the 1966 breeding season. The major guidelines for breeding, dietary requirements, incubation, hatching and rearing now seems to be taking form and it is felt that, barring unexpected complications in the future, a sustained release program can be commenced in the spring of 1968.