

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

THE CHUKAR PARTRIDGE (AVES) OF ST. HELENA
ISLAND, SOUTH ATLANTIC OCEAN

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Four specimens of Chukar Partridge, *Alectoris chukar*, from the population introduced on St. Helena Island in the South Atlantic Ocean ($15^{\circ} 28' S$, $5^{\circ} 42' W$) caught my eye in the British Museum during a visit in 1960. They and an immature specimen in the Yale Peabody Museum "Blossom" collection were not only as pale as the palest subspecies, *A. c. werae*, from southwest Iran, as has been noted by Benson (1950: 81) and inferred by Gosse (1938: 17, 425), but unlike that population were very short winged. When Raymond A. Paynter, Jr., offered to get some fresh specimens for the Museum of Comparative Zoology through Arthur Loveridge, who now lives on St. Helena, I urged him to do so. A pair sent by Loveridge are likewise very pale and small.

This combination of characters corresponds with those of no recognized subspecies from the known natural range of this Palearctic species (Vaurie, 1965). Although the number of specimens available is too small to provide an adequate sample of the full range of variation in the St. Helena Island population, it is worthwhile to describe the general appearance of the population and, on the basis of morphology and known early trade routes, to speculate on the origin of the introduced population.

The St. Helena Chukars are very near in color to the palest and greyest subspecies, *A. c. werae*, but in comparable fresh plumage they are slightly paler still, purer grey and less sandy on the upperparts and more cream than buff on the abdomen. They are smaller than *werae*, however, 4 males measuring 156-160 mm, average 158 mm and 2 females 146 mm and 148 mm against 166-176 (170.1) for 9 males of *werae* and 155,

158, and 165 in 3 females. The St. Helena birds are thus similar in size range to Aegean Island Chukars, *A. c. kleini*, *cypriotes*, and *scotti*, of which 31 males measure 152–165 (157.8) and 25 females 146–155 (149.9). Aegean birds like those of the Himalayas, *A. c. chukar*, are much darker; in fact *kleini* and *chukar* are the darkest of all Chukar subspecies.

St. Helena is a small volcanic island 17.5 km long, 10 km wide and 818.4 m high, lying 1835 km from the west coast of Africa in the path of the Southeast Trade Winds. It was formerly forested, but man and his domesticated animals decimated the trees by the early 19th Century and much of the present lowland cover is scrub. The Chukars are apparently restricted to the more remote, barren and arid cliffs and cactus-covered hillsides of the western end of the island. According to Haydock (1954: 68) and Loveridge (letter to Paynter, 1963) they are at present neither abundant nor easy to obtain.

The Chukar Partridge was already established on St. Helena in 1588 when Thomas Cavendish called at the island and noted that the "great store" of "very tame" partridge were "almost as big as hens and . . . of an ash colour" (Callander, 1766: 468). Both Gosse and Benson believe that the St. Helena Chukar came originally from Persia, presumably on the basis of its resemblance to *werae*. Melliss (1870: 103), on the other hand, suggested that the original stock came from northern India within the range of the nominate subspecies:

"Although there appears to be no record to show whence the partridge was introduced to St. Helena, it is most probably the Chukar-Partridge of Northern India; and as it differs somewhat in plumage, possibly the change of climate or food may have produced the change. A closer examination of the bird, however, is desirable."

All of the Chukar Partridge stocks that have been kept in captivity in western Europe or America or which had been introduced around the world prior to 1950 apparently were ultimately derived from the Himalayan stock, *A. c. chukar*. This very dark subspecies is one of the larger ones, its wing measurements being similar to those of *A. c. werae*. It is easy to keep in captivity (Jerdon, 1864: 566) and today is frequently seen in the markets of India (Biswas, personal communication, 1962). Chukar Partridge of various other subspecies, including *werae*, are kept also at present as cage birds in Iran (Trousdale, personal communication, 1965) and presumably also were in Persia four hundred years ago.

During the 16th Century, there was frequent trade between Lisbon and the Portuguese colonies in India and Persia. St. Helena was an important stopover for vessels on the return voyage to Europe after round-trip in the Cape of Good Hope. Goa, which is the best known colony in the area and the one most frequently mentioned in Gosse's history of St. Helena (1938: 1–36), lies 1600 km south of the range of the Hima-

layan Chukar. There was also, however, an important Portuguese colony at this time at Gumbroon (present-day Bandar Abbas) in the Strait of Hormuz between the Persian Gulf and the Gulf of Oman (Trousdale, personal communication, 1965). Bandar Abbas lies well within the range of *A. c. werae*. Thus, the earliest introductions of chukars on St. Helena may have come from either India or Persia, but as Melliss pointed out, there are no early records available. Any further introductions which might have taken place during English hegemony over the island after 1658 would have been most probably of Himalayan stock brought in by the ships of the East India Company (Haydock, 1954: 68).

The Chukar Partridge is a plastic species varying in color apparently in response to environmental factors, particularly humidity. It is unknown, however, whether geographic differences in color in this species (Watson, 1962; Vaurie, 1965) are due to adaptation, to climate, or to selection for cryptic plumage by predation, nor is it known whether the differences are genotypic or merely phenotypic. There is some geographic variation in size but it is slight except on islands in the Aegean Sea where Chukars tend to be especially small (Watson, 1962), possibly due to the rigors of life in seasonably dry, insular environments.

The two meteorological stations on St. Helena report very different precipitation figures (Great Britain Meteorological Office, 1958). Average annual rainfall at the higher, Hutt's Gate, 628 m, is 821 mm, whereas at Jamestown, 12 m, it is only 140 mm. In northern India near Simla, 2213 m, one of the driest portions of the range of *A. c. chukar*, annual rainfall is 1590 mm. The native environment of *A. c. werae* in the foothills of the Zagross Mountains, however, is quite arid; annual rainfall at Bandar Abbas, 9 m, is only 150 mm, almost all of which falls from December to February.

The present-day similarity in color between the Zagross and St. Helena Chukar populations, Cavendish's implication that in 1588 the St. Helena birds were likewise noticeably gray, the general similarity in rainfall between southwest Iran and at least the lower portions of St. Helena, and the early trade routes, suggest that Chukars were introduced originally to the island from southwest Persia and have differentiated locally somewhat, notably in size. Furthermore, the fact that the population is even paler and grayer than the Zagross population suggests that there were no later introductions from India.

Rapid differentiation of introduced populations has already been demonstrated in the House Sparrow, *Passer domesticus*, in the United States (Johnston and Selander, 1964) and the St. Helena Chukar Partridge offers additional evidence that previous estimates of evolutionary rates for infraspecific characters in birds (Moreau 1930, Mayr 1963: 579) may have been too low.

I am grateful to Mr. J. D. Macdonald of the British Museum and to Dr. Charles Vaurie of the American Museum of Natural History for permitting me to examine the extensive series of *Alectoris* partridge

under their care, and to Mr. Biswamoy Biswas of the Bombay Natural History Museum, and Mr. William Trousdale of the Freer Gallery for information on partridges and Portuguese colonial history. I am particularly indebted to Dr. Paynter and Mr. Loveridge for securing the additional specimens for my examination.

St. Helena material examined: Museum of Comparative Zoology (MCZ) 285844 adult ♂, flats above Bennetts Point, west side of St. Helena, 29 March 1963; MCZ 262144 adult ♀, Horse Pasture, northwest St. Helena, 13 March 1963; British Museum (BM) 1909-8-1-2 (♂, not sexed by collector) St. Helena, 25 April 1908; BM 1935-5-4-1 (♂, not sexed by collector) St. Helena, no date; BM 1936-9-20-3 ♂, St. Helena, 1-15 July 1936; BM 1936-9-20-4 ♂, St. Helena, 1-15 July 1936. Yale Peabody Museum 44609 juvenile ♀ in 1st prebasic molt (primaries not fully grown), St. Helena, 1 October 1925.

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