

Double-humped camels of Ladakh: prospects and constraints to sustained survival

The Bactrian camel (*Camelus bactrianus*) is a large, even-toed ungulate native to the steppes of Central Asia. They are mainly found in cold deserts of China, Mongolia, Iran, Afghanistan, Pakistan and Kazakhstan¹. A small population of *C. bactrianus* also exists in India, distributed largely in the Nubra valley of Ladakh region (a cold arid desert in Trans-Himalayas), Jammu and Kashmir (Figure 1). It was introduced as a draught animal in Ladakh by travellers of Yarkland in the 19th century. However, after closure of the silk route in 1950, few Bactrian camels were left behind with local traders in the Nubra valley².

At present the total population of double-humped camel in Nubra valley is about 211, including 21 calves below the age of one year (status up to March 2015). The camel population is largest in Hunder village, followed by Sumoor, Diskit and Tigger. In 2012, the total estimated³ camel population in the valley was about 150. Fortunately, the population has evidenced an increasing trend during the past few years, which is a favourable sign for conservation of this precious animal species² (Figure 2).



Figure 1. Double-humped camel in Nubra valley, Ladakh, Jammu & Kashmir, India.

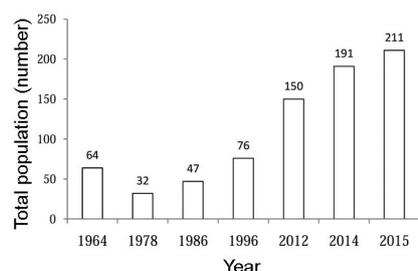


Figure 2. Status of double-humped camel in Nubra valley.

Bactrian camels are the major tourist attraction in Nubra valley. Tourist season in the valley starts after mid-March to April and lasts up to September and October. Camel-riding activity is carried out in the sand dunes which extend over few kilometres area in the valley. During summer season, the valley appears beautiful due to greenery, increase in water level in River Shyok and presence of sand dunes. A registered co-operative society (Central Asia Camel Safari) exists in Hunder village, which is headed by an elected president. Other villages also have their own small unions controlling the camel-riding activity. Tourism is the major source of income for many villagers in Nubra valley, though they also cultivate wheat, barley, alfalfa, potatoes and other vegetables during the summer season. Several guest houses, hotels, restaurants and rest houses have been constructed, but most of them remain closed during winter seasons (December to March). Bactrian camel is a valuable animal as its demand for riding purpose is high. An untrained adult male fetches around INR 50,000–70,000; whereas a trained (for camel riding) male camel costs around INR 100,000. The value of an adult trained female camel is more than the trained adult male camel (about INR 120,000), though males are generally preferred over females. Thus, camels play an important role in local economy as for several families in the valley, camel-based tourism activities are the major source of income. Other sources of income include government jobs, agriculture and animal husbandry (yak, sheep and goat) and other allied professions.

Larger camel populations remain in semi-wild condition and the farmers bring them home to train for camel riding only during the tourist season. During rest of the year, they graze in the community grazing areas where sea-buckthorn (*Hippophae rhamnoides*) is the prominent flora⁴. During winter season, limited plant materials are available because of extreme cold climatic conditions; hence the body condition of camels deteriorates drastically. The hump decreases in size and hangs on either side. Villagers store alfalfa (*Medicago*

sativa) hay for feeding camels during winter season. After onset of summer, camels once again attain good body condition due to better availability of vegetation. Some villagers have started fencing the community grazing areas, due to which availability of grazing area for camels and other livestock is shrinking. The increase in agriculture activities is also posing a hurdle to free grazing by livestock. Sometimes, camels cross the fences and enter into agriculture areas, where they are driven out by lathi and sharp metallic weapons leading to fatal injuries. Villagers are not aware about scientific methods that can be used for identification of camels. This also results into dispute over ownership of camels and conflict among local people.

Important health problems faced by these camels as reported by villagers and observed in our investigations, include corneal (eye) injuries and subsequent corneal opacities occurring while browsing on bushes of sea-buckthorn, and neonatal mortality mostly due to predation by wild carnivores like foxes, jackals and dogs. Pregnant camels are left for grazing and they usually give birth to young ones in the community grazing areas, where the newborn calves are prone to attack by predators. Sometimes, lung infections, infertility, urinary tract problems like cessation of urination and posterior paresis, and subsequent complete paralysis are also noticed. Available diagnosis and treatment facilities for camels and other domestic animals appear inadequate, as villagers reported scarcity of medicines during medical emergencies. Camel owners also mentioned that they get good support from local Remount Veterinary Corps unit of the army for treatment of sick animals. Besides, a veterinary hospital is also located at Diskit, which is run by the State Animal Husbandry Department.

After interactions with local people during a survey conducted by team of scientists in the recent past, it was concluded that the following measures should be undertaken to safeguard the future of the double-humped camel in the Nubra valley:

(1) Attempts should be made to encourage camel-based tourism activities in

Nubra valley. Some incentives to camel owners may be offered, like starting camel insurance programmes, providing loans for purchase of camels, loans for construction of housing facilities, etc.

(2) The community grazing areas should be protected from encroachment. Attempts should be made to reduce conflict among camel farmers and other villagers arising due to the camels entering agriculture land.

(3) Small-scale industries/cottage industries for processing/manufacturing camel-based products should be encouraged. Camel hairs are used for making blankets, shawls, sweaters, gloves, etc. About 3–4 kg camel hair is obtained from one adult animal during April–May each year. Leather is not obtained from the dead camels. The camel hair/leather-processing plants could be established and farmers may be encouraged by providing subsidies for their establishment.

(4) Villagers may be encouraged to keep pregnant camels indoors and provide them balanced ration, so that they can give birth to calves under supervision. This would prevent parturition in the community grazing areas and reduce neonatal mortality due to attack by predators or some other reason. Newborn calves should not be allowed to go to the community grazing areas for at least 2–3 months.

(5) Complete feed-block or other kinds of feed supplements which can meet the

nutritional deficits of camels during lean (winter) season and scarcity conditions in the valley should be made available. If possible, feed/fodder processing units should be established and feed supplements based on locally available ingredients could be developed.

(6) People in Nubra valley neither practice camel milking nor consume camel milk. They should be encouraged to train the female camels for milking and include milk yield traits in selective breeding programmes. The milk of double-humped camel should also be evaluated for its nutritional and medicinal properties. Production of value-added products from camel milk during tourist season will enhance the income of camel farmers.

(7) Facilities for camel healthcare should be developed in the valley. Availability of medicines and trained veterinary personnel should be ensured throughout the year.

(8) Training should be provided to camel farmers regarding normal restraining and handling and on different methods of animal identification, like hot/cold-branding, tattooing, tagging, bar coding, etc.

(9) Farming of double-humped camels may be started in other parts of Jammu and Kashmir as well where conducive environmental conditions exist. Their widespread use in tourism activities may help secure livelihood of the people

as well in the conservation of these camels.

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An unusual roosting behaviour of Schneider's leaf-nosed bat, *Hipposideros speoris* at a cave-temple roost in Tamil Nadu

Bats are involved in the essential ecosystem services such as pollination, seed dispersal and insect control^{1–3}. However, a multitude of factors like anthropogenic disturbance, climate change, habitat loss and emerging diseases have greatly affected bat communities across the globe with many species facing population contraction and local extinction^{4–6}. Such drastic decline in ecologically important communities may result in unpredictable and often irreparable changes in the ecosystem structure and function⁷.

In many temple premises in Tamil Nadu, bats are considered as a nuisance and considerable amount of money is spent to get rid of them. For example, a

decade and half ago about 15,000 individuals of *Rousetus leschenaulti* used to roost inside Cheranmahadevi temple near Tirunelveli⁸; but recent observations reveal that these bats have completely abandoned this roost. Similarly, at the Kuthungal cave in Idukki district, Kerala, killing and human consumption have led to a drastic decline of the resident *R. leschenaulti* colony⁹.

Under such a scenario of widespread persecution of bats, we report an unusual roosting behaviour of the Schneider's leaf-nosed bat, *Hipposideros speoris* from the Muthaiyan cave temple roost in Tamil Nadu¹⁰. This insectivorous bat prefers to roost in dark and inaccessible

caves, and synanthropic habitats like old temples and unused houses¹¹. However, in this case we found that human presence in the cave temple as well as temple rituals like burning of camphor and ringing of bells did not disturb these bats (Figure 1). The cave temple is located in the Hogenakkal forest (11°57'44"N, 77°45'50"E; 272.7 m amsl), about 75 km from Salem. The height of the entrance of the cave temple is about 4 feet and one has to bend his/her head down to enter the temple. We performed an emergence count and observed that the colony consists of about 3050 bats.

This unusual roosting behaviour of *H. speoris* at the Muthaiyan cave temple