

tourists help the villagers earn money by running guest houses, hotels, restaurants and shops.

The important diseases prevalent among these animals are actinobacillosis, pneumonia, eye diseases associated with corneal opacity, hydro-pericardium and ectopic pregnancies³. The State Department of Animal Husbandry (DoAH) provides medical support to the camels. However, there is conflict between the camel owners and DoAH due to lack of help from the state administration.

Various researchers approach the camel owners to pursue their research projects, from whom the owners receive material and non-material benefits for exchange of information and providing their animals as a study subject.

Thus the Bactrian camels in the Nubra valley are presently bred from a tourism point of view, which is not a sustainable industry in the Ladakh region because of its sensitive strategic location and fragile environment⁷. This was proven during the Kargil conflict in 1999 and the cloudburst in 2010, when the tourist influx into this region reduced drastically.

Therefore, the following measures need to be undertaken:

- Bring out diversified products (camel-based) which would act as a buffer to sustain these animals in case the tourism industry suffers, e.g. hair quality attributes suggest its usefulness in fibre processing for the village cottage industry.
- Studies should be made to understand the animal and how to conserve it.
- Proper institutional norms need to be enacted so that minor conflicts between the stakeholders could be sorted out locally.
- State departments need to play a more active role.

1. IUCN Red List of Threatened Species; www.iucnredlist.org, accessed on 30 August 2011.
2. Grubb, P., In *Mammal Species of the World. A Taxonomic and Geographic Reference* (eds Wilson, D. E. and Reeder, D. M.), Johns Hopkins University Press, Baltimore, USA, 2005, 3rd edn, pp. 637–722.
3. <http://nrccamel.res.in>

4. *The Hindu*, 30 June 2011; www.thehindu.com/sci-tech/energy-and-environment/article2147329.ece
5. Koshal, S., *Ploughshares of Gods, Ladakh: Land, Agriculture and Folk Tradition*, Om Publ, New Delhi, 2001, p. 288.
6. Angchok, D., Paper presented in the 14th Colloquium of the International Association for Ladakh studies, Leh, 16–19 July 2009.
7. Executive Councillor (Agriculture & Animal Husbandry), Ladakh Autonomous Hill Development Council, Leh, pers. commun., 2011.

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Occurrence of coal at Mainpat Plateau, Surguja District, Central India

A coal seam was encountered during a traverse on the western escarpment of Mainpat Plateau, Central India (22°41'00"N–22°55'00"N and 83°08'00"E–83°25'00"E). The observed coal seam is found near Patkura village (Figure 1) (22°44'45"N–83°06'19"E) and is about 1–5 m thick, at an elevation of 722 m amsl. It has also been traced near Mahuatikra (Jharjhara) (22°47'08"N–83°07'47"E) where thickness increased to about 7 m at an elevation of 780 m amsl. Coal seams have not been



Figure 1. The coal seam near Patkura village.

reported earlier from this area, though a number of coal seams have been reported at lower levels – Hasdo–Arand Coalfield, Lakhanpur Coalfield, Korba Coalfield and Mand–Raigarh Coalfield in the nearby vicinity^{1,2}. These coal fields generally lie at elevations ranging from 535 to 560 m amsl, but this coal seam is exposed at an elevation of 722–780 m amsl.

The Mainpat Plateau is tectonically uplifted about 450 m from the general ground level. At places it is dissected by steep valleys which are up to about 170 m deep. General elevation of the Plateau is around 1060 m amsl. The Mainpat Plateau as a whole is a mesa landform; rising more than 450 m high from the foothills, and consisting of Archaeans (granite-gneisses, phyllite, etc.), Gondwanas and Deccan basalt. Archaeans found at the foothills are overlain by the Gondwanas at the western escarpment and covered by basalt at the top³. The coal seam belongs to Barakar Formation, which is overlain directly by the Archaeans rocks on the western escarpment with the thickness ranging

between 1 and 9 m. Their continuity and extension for quality and quantity requires a detailed study.

1. Choudhary, A. and Basu, U. K., *Geology and Coal Resources of the Southern and South Western Part of the Hasdo-Arand Coal Field*, Bilaspur District, M.P., Unpublished Progress Report, Geological Survey of India, 1967.
2. Fox, C. S., *Mem. Geol. Sur. India*, 1977, **59**, 1–386.
3. Patel, V. N., PhD thesis, Dr H. S. Gour University, Sagar, 2012.

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