



BREEDING RECORDS AND NEST SITE PREFERENCE OF INDIAN WHITE-BACKED VULTURE IN KANGRA VALLEY OF HIMACHAL PRADESH, INDIA

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ABSTRACT

A total of 19 breeding sites of Indian White-backed Vulture (*Gyps bengalensis*) were recorded during breeding seasons of 2009-2011 in different parts of Kangra valley of Himachal Pradesh. All the nests were recorded on pine trees (*Pinus roxburghii*) in pure chir pine forests on slanting hilly tract with some source of water. All the breeding sites in Kangra valley were recorded around human settlements and dead cattle carcasses from the villages were the major source of food for this species. However, easily available food near cowsheds at Khajjian and Baroh attracted a good population of vultures. No direct evidence of interference of motor transport and human activities as source of hindrance in successful breeding of vultures was observed. However, Monkeys were reported to interfere in normal vulture breeding at Pehad nesting site only.

KEY WORDS: Breeding records, nest site preference, Indian White-backed Vulture, Kangra valley.

INTRODUCTION

Vultures are believed to have evolved in parallel with large herds of migratory ungulates, feeding on the remains of sick, injured and depredated individuals (Mundy *et al.*, 1992). With the disappearance of these herds from most of the world range of vultures, the food supply formerly provided by wild ungulates was replaced by domesticated animals (Pain *et al.*, 2008). Although *Gyps* vulture populations were probably declining slowly in many parts of the world during the 20th century, a very different situation existed in India, Nepal and Pakistan. Here, large populations of Indian White-backed Vulture and Long-billed Vulture remained until the 1990s. Large numbers of Slender-billed Vulture, which was not distinguished as a separate species from Long-billed Vulture until recently (Rasmussen and Parry 2001), were also found in the Northeastern parts of the subcontinent (Ali and Ripley 1983, Prakash *et al.*, 2007). Indeed, during the 1980s Indian White-backed Vulture was thought likely to be the commonest large bird of prey in the world (Houston 1985). This abundance was undoubtedly due to a plentiful food supply, in the form of the carcasses of domesticated ungulates (Pain *et al.*, 2008).

MATERIALS AND METHODS

Study Area

Kangra valley is encapsulated on the north by the enormous Dhauladhar range of Himalayas and the district lies between 31° 21' to 32° 59' N latitude and 75° 47' to 77° 45' E longitude. The altitude of the valley varies from around 400 to 1000 m above mean sea level. The valley has been

dissected by some perennial streams emerging in the Dhauladhar and as a whole has small hills alternating with valleys and rugged wild or lush vegetation and gentle terrain.

Keeping in view the sharp decline and paucity of published work on ecology and population dynamics of Indian White-backed Vulture, studies were started in October 2009 on various ecological aspects of this species in Kangra valley with the financial assistance from Department of Science and Technology (Govt. of India), New Delhi. Extensive surveys were conducted in different parts of Kangra valley. Various natural ecosystems/habitats like forests, grasslands, rivers, lakes and wetlands, human habitations etc., spread over different parts of Kangra valley were selected for extensive studies. The present study area was stratified on the basis of presence of potential Indian White-backed Vulture habitats. Therefore, stratified random sampling technique was followed for recording the presence of this species in various parts of the valley (Snedecore and Cochran 1993). Different ecological and socio-cultural parameters like habitat type, terrain type, nearby human settlements, source of water and food, socio-cultural practices of disposal of carcasses, human/animal interference and accessibility of Diclofenac to vultures were taken into consideration. Some ecological observations were also made around Cow sheds at Khajjian (near Nurpur) (run by Department of Animal Husbandry, Himachal Pradesh) and Baroh (run by a Radha Krishna Welfare Trust) in Kangra valley of Himachal Pradesh (Figure 1).

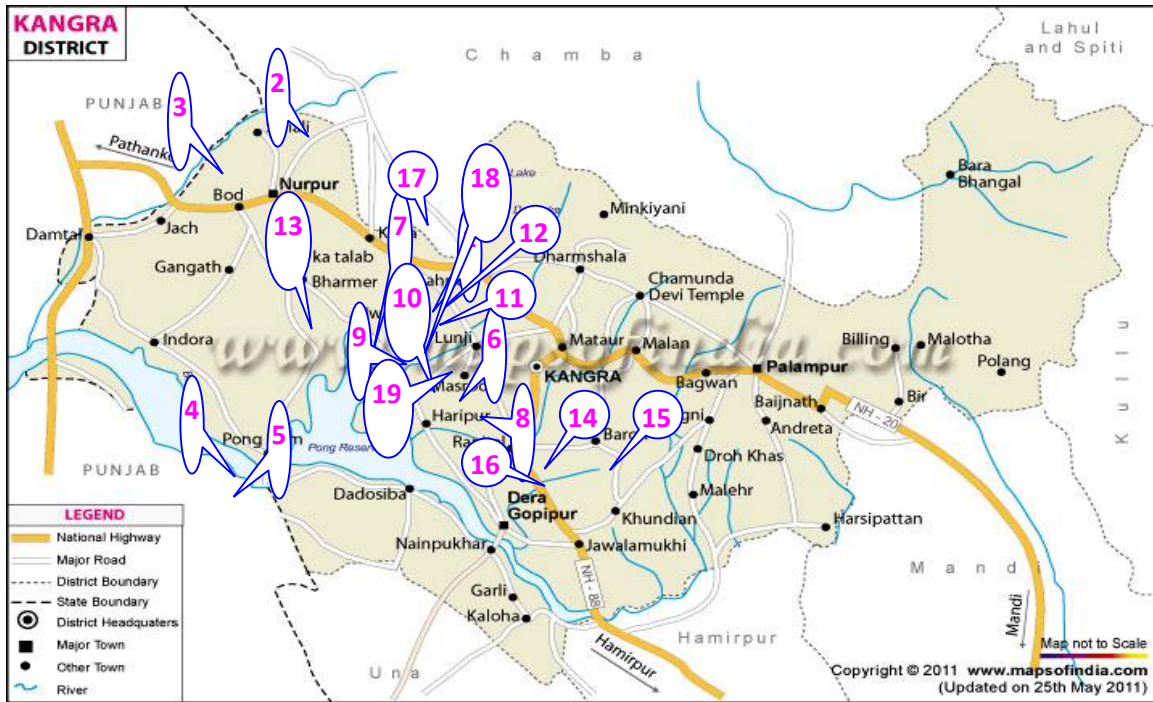


FIGURE 1: Map of Kangra district showing nesting sites

(Original map source: <http://www.mapsofindia.com/maps/himachalpradesh/districts/kangra.htm>, downloaded on August 23, 2011 at 13:15 hrs IST)

Breeding sites:

- | | | | |
|------------------|--------------|--------------|-------------------|
| 1. Pehad | 2. Tunnhatti | 3. Baghola | 4. Dhameta |
| 5. Katrah | 6. Salol | 7. Dolla | 8. Tarkhankad |
| 9. Karnola | 10. Harnera | 11. Padhu | 12. Chhalahan |
| 13. Mastgarh | 14. Baroh | 15. Palra | 16. Khabbal Kholi |
| 17. Badd Dramman | 18. Chattri | 19. Palothar | |

RESULTS AND DISCUSSION

Present explorations revealed the presence of a total of 19 breeding sites of Indian White-backed Vulture in different parts of Kangra valley of Himachal Pradesh (Table 1).

All the nests were recorded on pine trees (*Pinus roxburghii*), indicating a nesting tree preference of 100%, towards pine. In its normal range of distribution Indian White-backed Vulture breeds in large trees like *Ficus bengalensis*, *F. religiosa*, *Mangifera indica*, *Dalbergia sissoo* etc. (Ali and Ripley 1983), which are also constituents of flora of Kangra valley, however, present investigation points towards nesting tree moderation of this vulture species towards pine. Nesting on pine trees would complicate its normal breeding chances as pine forests are very prone to forest fires. Moreover in all the nesting sites, pure chir pine forest on slanting hilly tract with some source of water was a preferred habitat for this species in Kangra valley. Though no direct observations on dependence of this vulture species on water sources at nesting sites were recorded, however, there is some definitive role of water bodies in selection of nest sites as elucidated by Ali and Ripley (1983). In addition, a clear tendency for nest sites to be located within well-foliaged trees along watercourses with the nest placed in a prominent fork within the tree canopy has been reported in African vultures (Irwin 1981, Mundy 1982, Steyn 1982, Tarboton

and Allan 1984, Mundy *et al.*, 1992, Steyn 1996, Tarboton 2001, Roche 2006), therefore, use of pine trees by Indian White-backed Vultures for breeding in Kangra valley of Himachal Pradesh can be justified as these trees have very fine canopy with a number of forks for nest building.

All the breeding sites in Kangra valley were recorded around human settlements and dead cattle carcasses from the villages were the major source of food for this vulture species. Frequency of sighting of carcasses in the valley was normally high as almost one carcass was recorded on alternate days in different areas spatially separated around 40-50 km apart. However, counts of vultures (conducted on monthly basis) around cowsheds at Khajjian and Baroh points towards the attraction of vultures towards easily available sources of food, as on all field days around 60 (±10) individuals of different species of vultures were recorded around these cowsheds. These observations get support from some previous studies, like Mundy *et al.* (1992) elucidated that vultures have evolved in parallel with large herds of migratory ungulates and Pain *et al.*, (2008) reported that with the disappearance of these herds from most of the world range of vultures, the food supply formerly provided by wild ungulates was replaced by domesticated animals. Therefore, in formulation of

conservation strategies (especially in situ) the role of cowsheds cannot be underestimated.

TABLE 1: Ecological details and breeding sites of Indian White-backed Vulture in Kangra Valley of Himachal Pradesh

S.No.	Locality	Habitat and terrain type	Source of water and food	Human/animal interference observed
1.	Pehad (near Shahpur)	Nesting trees: <i>Pinus roxburghii</i> ; Pure chir pine forest on slanting hilly tract	PS; HS	Monkeys and human
2.	Tunnuhatti	Nesting trees: <i>Pinus roxburghii</i> ; Scattered chir pine trees on slating hilly tract	PS; HS	Human and motor transport (road side)
3.	Baghola, (Near Nurpur)	Nesting trees: <i>Pinus roxburghii</i> ; Scattered chir pine trees on undulating area	PS; HS	Human and motor transport (road side)
4.	Dhameta, (Near Pong Wetland)	Nesting trees: <i>Pinus roxburghii</i> ; Chir pine forest on undulating area	S & PW, HS	Human and motor transport (road side)
5.	Katrah (Near Pong Wetland)	Nesting trees: <i>Pinus roxburghii</i> ; Scattered chir pine trees on sides of pond wetland	PW, HS	Human
6.	Salol (Near Lunj)	Nesting trees: <i>Pinus roxburghii</i> ; Pure chir pine forest on slanting tract	PS; HS	Monkey, Human and motor transport (road side)
7.	Dolla (Near 32 Miles)	Nesting trees: <i>Pinus roxburghii</i> ; Pure chir pine forest on slanting tract	PS; HS	Human and motor transport (road side)
8.	Tarkhankad (Near Daulatpur)	Nesting trees: <i>Pinus roxburghii</i> ; Pure chir pine forest on hilly tract	PS; HS	Human
9.	Karnola (Near Manei)	Nesting trees: <i>Pinus roxburghii</i> ; Pure chir pine forest on slanting valley	PS; HS	Human and motor transport (road side)
10.	Harnera (Near Manei)	Nesting tree: <i>Pinus roxburghii</i> ; Mixed forest with scattered pine trees on hilly tract	PS; HS	Human and motor transport (road side)
11.	Padhu (Near Manei)	Nesting trees: <i>Pinus roxburghii</i> ; Pure chir pine forest on slanting tract	PS; HS	Human and motor transport (road side)
12.	Chhalahan (Near Mhhad)	Nesting trees: <i>Pinus roxburghii</i> ; Pure chir pine forest on hilly tract	PS; HS	Human and monkey
13.	Mastgarh (Near Jaunta)	Nesting trees: <i>Pinus roxburghii</i> ; Pure chir pine forest on hilly tract	PS; HS, CS	Human and motor transport (road side)
14.	Baroh	Nesting trees: <i>Pinus roxburghii</i> ; Pure chir pine forest on slanting tract	PS; CS, HS	Human
15.	Palra (Near Kandhi)	Nesting trees: <i>Pinus roxburghii</i> ; Pure chir pine forest on slanting tract	PS; HS	Human and motor transport (road side)
16.	Khabbal Kholi (Near Badoh)	Nesting trees: <i>Pinus roxburghii</i> ; Pure chir pine forest on slanting hilly tract	PS; CS, HS	Human and motor transport (road side)
17.	Badd Dramman (Near Thulel)	Nesting trees: <i>Pinus roxburghii</i> ; Pure chir pine forest on hilly tract	PS; HS	Human
18.	Chattri (Near Shahpur)	Nesting trees: <i>Pinus roxburghii</i> ; Pure chir pine forest on slanting hilly tract	PS; HS	Human and monkey
19.	Palothar (Near Lunj)	Nesting trees: <i>Pinus roxburghii</i> ; Pure chir pine forest on slanting hilly tract	PS; HS	Human

PS: perennial stream; HS: human settlements; CS: cow shed; S: stream; PW: pong wetland

Information on socio-cultural practices of disposal of carcasses and accessibility of Diclofenac to the vultures revealed that only 5% of the chemists in surroundings of nesting sites indicated the use of human diclofenac to the cattle. However, they were well aware about the story of

vultures and diclofenac. Moreover, practice of removal of the skin and leaving the carcass for vulture consumption by locals has been a tradition of gone days. In the absence of this practice, dead bodies of domestic animals are usually buried. However, this social custom in Kangra valley is

being practiced by some migrants from Punjab who unknowingly are supporting a small breeding population of critically threatened Indian White-backed Vultures. In addition, these immigrants were knowledgeable persons regarding the placement of carcass for vulture consumption as according to them vultures thoroughly clear the bones than other scavengers. Hides and bones of dead cattle are excellent source of money for them. Kangra district supports more than 5.5 lakh cattle and buffaloes (Sharma *et al.*, 2009) therefore scarcity of food does not seem to play significant role in life of vultures in the valley but the socio-cultural practices of disposal of carcasses need the urgent attention. Most of the breeding sites of Indian White-backed Vultures in Kangra valley were reported around the roads therefore, human activity and motor interference was a cause of the concern. No direct evidence of these factors as hindrance in successful breeding of vultures was observed. However, Monkeys and Baboons have been reported to interfere in normal breeding of African vultures (Mundy *et al.*, 1992, Emmett 2003, Roche 2000, 2006). During the course of present study a night roosting site of a troop of Rhesus Monkey (*Macaca mulatta*) was continuously sighted at Pehad nesting site. Though, no direct evidences of interference of the Monkey troop with vultures were recorded, but the number of vulture nests at Pehad decreased from 6 occupied (breeding season 2009-2010) to 1 occupied nest (breeding season 2020-2011). Therefore, the vultures at Pehad shifted to a new nesting site at Chattri (around 1 km from Pehad) with 3 occupied nests (breeding season 2020-2011).

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