

The Himalayan Naturalist

A Friends of Nature publication

VOLUME 2 | ISSUE 1 | APRIL 2019

ISSN 2645-825X

Butterflies in Eastern lowlands of Nepal

Recent discoveries:

Crab-eating Mongoose in Dang

Breeding colonies of Lesser Adjutant Stork
in Sarlahi

Breeding colony of Great Cormorant in
Nepal

Conservation value of upper Mai valley
forest for birds

Distribution of King Cobra in Nepal

Photos from the wild



Editorial

The launch of the first issue of The Himalayan Naturalist (THN) on May 2018 was highly appreciated by researchers and conservationists in Nepal and abroad. The overwhelming response from our readers was very motivational and we would like to thank you all for your support. Initially our consensus was to come up with the next issue within December 2018 so we called for manuscript submission by mid-September. We were happy to receive a large number of manuscripts. While we worked hard to publish the new issue by our December deadline, some factors complicated the process.

Sorting out manuscripts that didn't fully comply with the author's guidelines delayed the peer review process. Our team members were also preoccupied with their primary responsibilities thus creating further delays. This pushed the publication date back by nearly three months. For this, we offer our sincere apology.

Unfortunately, few of the manuscripts we received were not quite original and had to be rejected. THN's editorial board takes plagiarism seriously and do not compromise in this regard. We would like to request our readers to help spread awareness about this serious issue in your circles and would like to request future authors to be more cautious of maintaining originality. You can visit <https://www.plagiarism.org/> to understand more about plagiarism.

With that said, we are very excited to present the second issue of The Himalayan Naturalist. There are nine articles in this issue including one original contribution, four short communications, two distribution updates, one conservation bulletin and a field note, plus the section 'Photos from the Wild'. The articles cover the taxonomic classes herpetofaunas, butterflies, birds and mammals. We would like to thank our reviewers for their invaluable help and advice.

We sincerely hope this issue will be useful and enjoyable and we hope for your feedback and critical comments on how we can keep refining The Himalayan Naturalist.

Thank you!

Email: thehimalayannaturalist@gmail.com

Editors

Bidhan Adhikary *Nepal*

Jeevan Rai *Nepal*

Mohammad Abidur Rahman *Bangladesh*

Yadav Ghimirey *Nepal*

Advisor

Raju Acharya *Nepal*

Layout and Design

Bidhan Adhikary *Nepal*



Inside this issue

- 3 Diversity of butterflies in eastern lowlands of Nepal
S. R. Tamang, A. Joshi, J. Pandey, N. Raut & B. R. Shrestha
- 11 Conservation value of upper Mai valley forest in Panchthar-Ilam-Taplejung (PIT) corridor of Eastern Nepal for birds
C. Inskipp, A. P. Sherpa, D. Bista, H. S. Baral, M. Bunskoek, H. Chaudhary & R. Chaudhary
- 26 Distribution of King Cobra in Nepal
K. B. Thapa, N. Rana & K. B. Shah
- 34 Confirmation of breeding colonies of Lesser Adjutant Stork in Sarlahi, Nepal
S. Bajagain, A. Pradhan & A. Bhusal
- 37 Status and distribution of King Cobra in Southern Annapurna Conservation Area, Nepal
R. Baral, S. K. Yadav, R. Gautam, M. P. Katila, R. K. Gurung, A. Subedi & B. Basnet
- 42 The largest recorded breeding colony of Great Cormorant in Nepal
S. GC, R. Acharya & N. R. Chapagain
- 44 Conserving the Asian Woollyneck in Nepal: efforts, outcomes and lessons learnt
P. Ghimire & N. Pandey
- 46 First record of Crab-eating Mongoose in Dang district, Western Nepal
P. Pandeya & C. Khanal
- 48 Photos from the wild
S. Giri
- 52 My first herpetological field trip
K. B. Shah

DISCLAIMER: Views and opinions expressed in the articles are those of the authors and do not necessarily reflect the opinions and views of the editorial board or Friends of Nature.

FRONT COVER PHOTO Mountain Weasel by YADAV GHIMIREY

Mountain Weasel *Mustela altaica* is a small mustelid species found mostly in areas lying at high altitudes or cold places. It lives in rock crevices, tree trunks and abandoned burrows. It hunts for pikas, hamsters and other rodents. Globally the species is found in Bhutan, China, India, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russian Federation and Tajikistan. In Nepal the species has been recorded from Humla, Mustang, Solukhumbu and Taplejung districts. This photo was taken in Takche area in Limi valley, upper Humla.

BACK COVER PHOTO View towards north from Nyalu pass in Humla by YADAV GHIMIREY

Short Communication

Status and distribution of King Cobra in Southern Annapurna Conservation Area, Nepal

RISHI BARAL^{1,2,3*}, SHAILENDRA KUMAR YADAV¹, RAMJI GAUTAM^{2,3}, MAHENDRA PRASAD KATILA³, RAJ KUMAR GURUNG¹, ASHOK SUBEDI¹ and BINOD BASNET⁴

¹ National Trust for Nature Conservation - Annapurna Conservation Area Project, Hariyo Kharka, Pokhara, Nepal

² Department of Zoology, Prithvi Narayan Campus, Bhimkalipatan-1, Pokhara, Nepal

³ Snake Conservation Society, Nepal, Simpani-1, Pokhara, Nepal

⁴ National Trust for Nature Conservation, PO Box 3712, Khumaltar Nepal

*Email for correspondence: right.rishi1@gmail.com

Abstract Altogether 12 sightings of King Cobra were recorded in the lower region of Annapurna Conservation Area. These include 11 opportunistic sightings and a record from grey literature. These sightings were made between 2016 and 2018 of which two were nest records. All records were from southern belt of Annapurna Conservation Area. The elevation range of the locations ranged from 832 m to 1984 m. The King Cobra nests were intensively monitored with 2 to 5 camera traps to check hatching success rate, behaviour and status. The two nests had a hatching success of 100% and 92% respectively.

Keywords Hatching success, Kaski district, King Cobra, mating, nest

Introduction

King Cobra *Ophiophagus hannah* (Cantor, 1836) is the longest venomous snake in the world with recorded length reaching up to 5.85 m (Chanhome et al. 2011). It is a pan oriental species and occurs in both Western and Eastern Himalayas (Smith 1943). It is widespread throughout South and Southeast Asia and reported from Bali, Bangladesh, Bhutan, Borneo, Cambodia, China, Hong Kong, India, Indonesia, Java, Laos, Macao, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Singapore, Sulawesi, Sumatra, Thailand and Vietnam (David and Vogel 1996; Iskandar and Colijn 2002; Scleich and Kestle 2002). It occurs in a variety of habitats including pristine forests, degraded forests, mangrove swamps, agricultural areas and non-forested lands (Stuart et al. 2012). Female King Cobra have an unusual maternal instinct, building a nest and lying coiled over the heap for the entire hatching period of about 60-90 days (Murthy 1986).

King Cobra is a globally threatened snake species and has been categorized as Vulnerable in IUCN Red List of threatened species (2018) and listed in Appendix II of Convention on International Trade of Endangered Species of Flora and Fauna (CITES) (Stuart et al. 2012). It is considered rare in Nepal and has been listed as Vulnerable in the National Red Data Book of Nepal since 1995. Shah and Baral (2010) recommended the King Cobra to be included in Nepal Government's National Park and Wildlife

Conservation Act 1973 due to different threats and its rarity.

King Cobras have been recorded throughout Terai, within altitudes of 110 to 2500 m (Shah 2000). It was recorded for the first time in Nepal from Chitwan and Rautahat districts (Fleming and Fleming 1974). Till now the species has been recorded from 37 districts of the country (Thapa et al. 2019).

Within ACA, King Cobra has been observed 2 km north of Landruk village by Nanhoe and Ouboter in the summer of 1981. The species was later recorded during the survey of herpetofauna of Modi Khola watershed area. Further evidence of its occurrence was recorded from Dangsing (1800 m), Chomrong (2170 m), Naya pul (1340 m), Tolka (1850 m) and Bhachek Village (1960 m) with the help of discussion with the villagers of these area (Shah 2000). King Cobra has been recorded between 110-2500 m in the country, but it is suspected to occur even higher (Shah 2000).

Here we present information on distribution as well as its nesting ecology in the Ghandruk, Lwang and Bhujung Unit Conservation Office of Annapurna Conservation Area.

Materials and Methods

Study Area

The Annapurna Conservation Area (ACA) which was established in 1992, is the largest Protected Area in Nepal covering an area of 7,629 sq. km with 15 Rural Municipalities and 91 wards of 5 districts (NTNC/ACAP 2016). ACA is recognized as a global biodiversity hotspot (Myers et al. 2000). It covers tropical, sub-tropical, temperate and alpine climatic regions and has 22 different forest types. It is rich in biodiversity and is a treasure house for 1,233 species of flowering plants, 105 mammals, 40 reptiles, 23 amphibians (NTNC/ACAP 2016) and 518 birds (Baral 2018). The area consists of seven Unit Conservation Offices (UCOs) namely Manang, Jomsom, Lomanthang, Ghandruk, Lwang, Sikles and Bhujung UCOs. This study is limited to the southern belt of ACA i.e. Ghandruk, Lwang and Bhujung UCOs (FIG. 1). Ghandruk and Lwang are

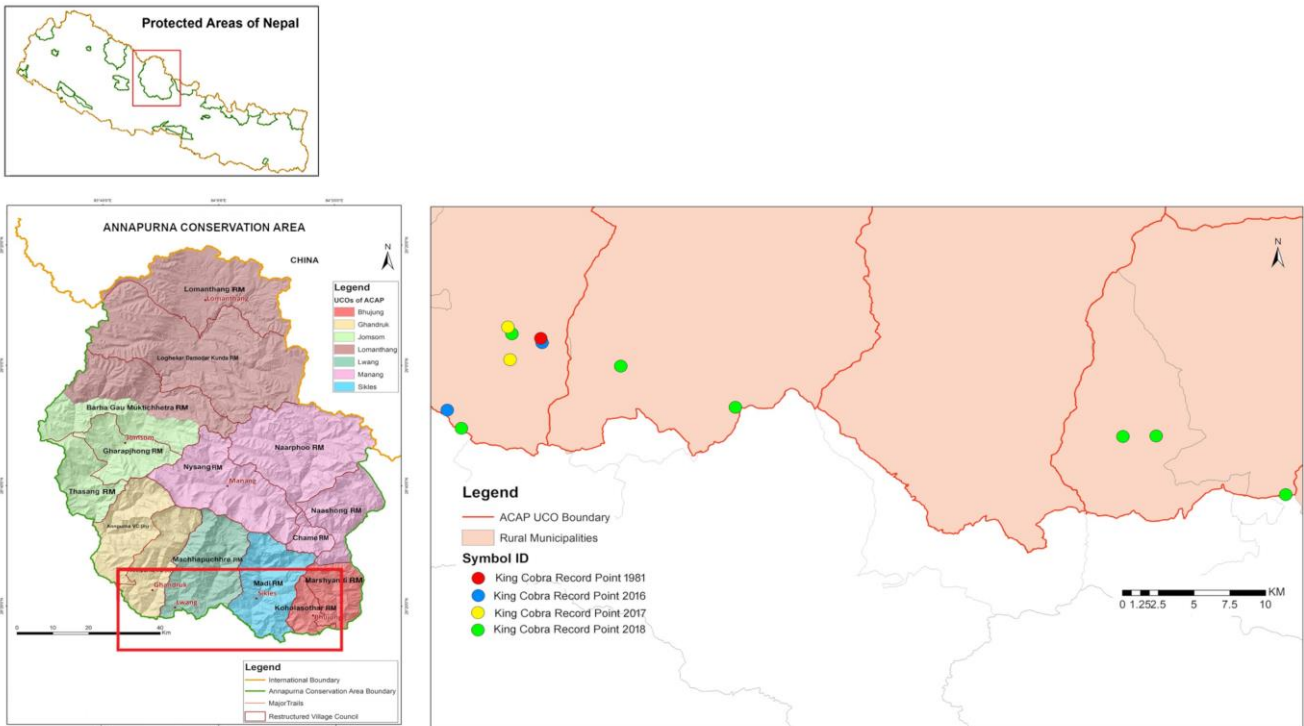


FIG. 1: Study area with sightings of King Cobra. Different colours represent sightings in different years.

located in Kaski district while Bhujung lie in Lamjung district.

The study area is situated in sub-tropical zone with broad leaved forest comprising different habitats dominated by Indian Chestnut *Castanopsis indica* and Needlewood Tree *Schima wallichii* forest. It provides habitat for rare and globally threatened species such as Asiatic Black Bear *Ursus thibetanus*, Chinese Pangolin *Manis pentadactyla*, Red Panda *Ailurus fulgens* and Spotted Linsang *Prionodon pardicolor* (NTNC/ACAP 2016; Ghimirey et al. 2018).

Methods

The information on King Cobra sightings between 2016 and 2018 from ACA was collected based on photographic evidence from newspapers, photographs posted on social media for identification by local people and trekkers and photographs taken by staffs of ACA. Only photographic evidences of the species were considered as confirmed records. Special care was taken to verify the evidence to avoid double count. The location of each site was recorded with the help of the GPS Garmin eTrex by visiting the sites where the species was observed. Literature review was also done to search for additional records from the area in the past. Camera traps were deployed to monitor two different single nests in 2016 and 2018 for 35 and 60 days respectively to assess the behaviour of the species.

Results

A total of 12 records of King Cobra was found from the southern belt of Kaski and Lamjung District out of which 11 were recent records between 2016 and 2018 (TABLE 1).

One record was from literature review which was based on direct sighting in 1981. Of the 11 recent records, nine were of live snakes while two were found dead. Eight records were from Kaski district while three records were from Lamjung district. In Lamjung, two records were of dead snakes killed by people and one record was of mating from Singdi Kharka inside ACA (PHOTO 1) whereas in Kaski, two records were of nests while rest six were of live sightings. The altitudinal range of the records varied from 832 m (Simpani, Lamjung) to 1984 m (Dadagau, Kaski).



PHOTO 1: Mating of King Cobra at Sidhi Kharka, Bhujung, Lamjung.

The first nest of King Cobra was sighted at Gairi Gau, Dangsing on 3 June 2016 at an altitude of 1749 m (PHOTO 2). The nesting location had a high canopy cover of around 90%. The nest consisted of dried leaves of Needlewood Tree, *Pinus spp.* and Indian Chestnut. The site was on a well-drained forested hill having 40° slope, South aspect and water source nearly 100 m away. The nest contained a female King Cobra with 14 eggs which were regularly observed for 45 days. All 14 eggs hatched successfully.



PHOTO 2: Eggs of King Cobra at Gairi Gaun, Dangsing, Kaski.



PHOTO 3. King Cobra in its nest at Karai, Dangsing.

The second nest was recorded at Karai, Dangsing on 17 June 2018. It was situated at 1249 m. The canopy cover of the nest was more than 80 % by vegetation. The nest was made of dried leaves of Needlewood Tree, *Pinus spp.*, *Fern spp.* and Indian Chestnut. The site was on a well-drained forested hill having slope of 40° with water source nearly 50 m far away from the nest. There were 25 eggs out of which 23 (92%) hatched successfully after an incubation period of 65 days.

One camera trap photo captured an image of a barking deer startled by the King Cobra while grazing nearby (PHOTO 4).

A total of 4 and 10 photos of King Cobra were captured in 2016 and 2018 respectively by the camera traps deployed for monitoring the nesting ecology. However, most of the time the camera remained inactive.



PHOTO 4: Barking Deer near King Cobra's nest.

Discussion

The present study recorded 11 sightings between 2016 and 2018. The first two years i.e. 2016 and 2017 accounted for two King Cobra records respectively while there were seven records of the species in the third year (FIG. 2). This shows an increase in the encounter frequency of the species. However increase in the number of people carrying smartphones and cameras and rising trend of use of social media like Facebook and Instagram could also be the reason why we were able to access more records.

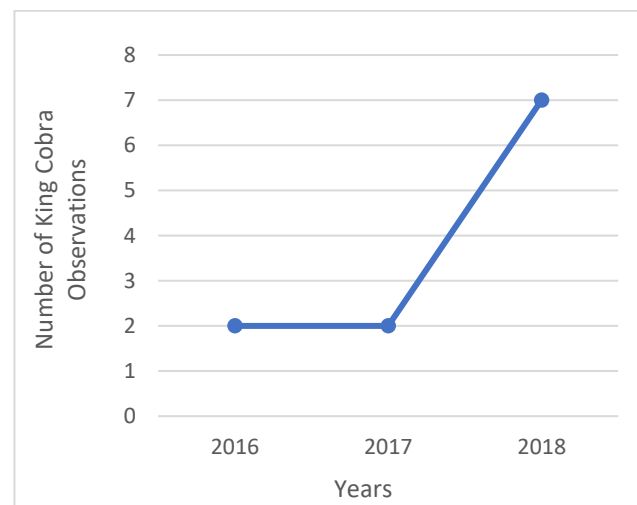


FIG. 2: Trends of King Cobra in sightings in ACA.

Our King Cobra observations were recorded from the southern belts of ACA from Kaski and Lamjung districts with dense subtropical wet forests which is considered an important habitat for the species (Shah and Tiwari 2004). All previous and current records of King Cobra from Nepal are from the dense forests of Terai, midhills and their vicinity in rural agricultural lands (Thapa et al. 2019). In India too they have been reported from similar habitats (Whitaker 1978; Daniel 1983).

Our record of King Cobra mating in the area was during April while all previous mating records were between January and March (Shah 2000). However there is little evidence to say there is a change in mating

TABLE 1: Locality records of King Cobra in Annapurna Conservation Area.

SN	Date	Altitude (m)	Latitude	Longitude	Location	Status
1	April-June 1981	1530	28.37488°	83.82503°	Landruk, Kaski	Live
2	3 June 2016	1754	28.32642°	83.75918°	Gairi Gaun, Dangsing, Kaski	Live (Nest)
3	1 October 2016	1565	28.37102°	83.82670°	Landruk, Kaski	Live
4	7 September 2017	1200	28.38137°	83.80237°	Ghandruk Village, Kaski	Live
5	8 September 2017	1725	28.35975°	83.80397°	Kimche, Ghandruk, Kaski	Live
6	31 March 2018	1984	28.37688°	83.80520°	Dada Gaun, Ghandruk, Kaski	Live
7	18 April 2018	1650	28.30907°	84.24088°	Sidhi Kharka, Bhujung, Lamjung	Live (Mating)
8	21 April 2018	1618	28.30917°	84.26320°	Bhujung Village, Lamjung	Dead
9	9 May 2018	832	28.27035°	84.35687°	Simpani, Lamjung	Dead
10	22 May 2018	1225	28.35568°	83.88282°	Kuibang Village, Lwang, Kaski	Live
11	17 June 2018	1249	28.31482°	83.77010°	Karai, Dangsing, Kaski	Live (Nest)
12	24 July 2018	1163	28.32852°	83.96458°	Bhurjung Khola, Lwang, Kaski	Live

behaviour of the species. A long-term monitoring of their mating behaviour could provide essential clue regarding this aspect of the species' behaviour.

The two nests of the species recorded were both located in the sub-tropical forests facing towards south and dominated by Needlewood Tree and Indian Chestnut. Both sites had southern aspect and were between the altitude of 1249 and 1754 m. The nesting material used in both locations were dried leaves of Needlewood Tree, *Pinus spp.* and Indian Chestnut.

Very limited information on the distribution of King Cobra in ACA and in Nepal is available at present. However with increasing reports of the species coming from various districts (Thapa et al. 2019) it is likely that the species will be recorded from many news districts of the country. General people normally correspond its occurrence with dense forests in the lowlands of Nepal. Hence it is important that outreach programs be carried out in the mid-hills of the country that are potential habitat of the species.

Acknowledgements

We acknowledge National Trust for Nature Conservation, Annapurna Conservation Area Project, Hariyokharka, Pokhara and Unit Conservation Office, Ghandruk, Lwang, Bhujung for providing the flexible time to collect the details information. Likewise, many thanks to Narendra Shrestha for GIS mapping and field officer and staffs Bidur Bikram Kuinkel, Yam Bahadur Gurung, Rajesh Gupta, Lekhnath Gautam, Pawan Yadav, Basudev Neupane, Keshab Sapkota, Krishna Mani Baral, Raju Acharya, Ram Babu Mandel, Om Prakash Singh for providing the necessary information and data. Similarly, many thanks to Mr. Raj Bahadur Gurung, Project manager of Project Abroad, Mr. Rohit Giri and Roshan Giri, field expert of Snake

Conservation Society for providing the photograph and information.

References

- Baral R. 2018. *Birds of Annapurna Conservation Area*. National Trust for Nature conservation, Annapurna Conservation Area Project, Pokhara, Nepal
- Budha, P.B., Singh, R.L. and Chaudhary, R.P. 1998. Animal Diversity of Parsa Wildlife Reserve, Nepal: A Preliminary Survey. *Journal of Natural History Museum*. 17, 65-88.
- Chanhome, L., Cox, M.J., Vasaruchapong, T., Chaiyabutr, N. and Sitprija, V. 2011. Characterization of venomous snakes of Thailand. *Asian Biomedicine* 5, 311-328.
- Daniel, J.C. 1983. *The Book of Indian Reptiles*. Bombay Natural History Society, Bombay, India. PP. 115-117.
- David, P., and Vogel. G. 1996. *The Snakes of Sumatra: An Annotated Checklist and Key with Natural History Notes*. Edition Chimaira, Frankfurt-am-Main, Germany.
- Fleming, R.L. and Fleming, R.L. Jnr. 1974. Some Snakes from Nepal. *Journal of Bombay Natural History Society* 3, 426-437.
- Hrima, V.L., Hriatzuala Sailo, V.L., Fanai, Z., Lalronunga, S., Lalrinchhana, C., Zothansiam, Lalremsanga, H.T. 2014. Nesting ecology of the King Cobra, *Ophiophagus hannah*, (Reptilia: Squamata: Elapidae) in Aizawl District, Mizoram, India. In *Issues and Trends of Wildlife Conservation in Northeast India*. Lalnunluanga, Zothanzama, J., Lalramliana, Lalduhlthlana, Lalremsanga, H.T. (eds.). Mizo Academy of Sciences, Aizawl. PP. 268-274.
- <http://www.recentfusion.com/2016/08/05/king-cobras-found-in-pokhara-annapurna-region>. August 5, 2016
- Majupuria, T.C. 1981. Reptile. In *Wild is Beautiful*. Introduction to Fauna and Wildlife of Nepal, Majupuria, T.C (eds.). S.Devi, Lashkar, India. PP. 147-177.
- Myers, N., Mittermeier, R.A., Mittermeier, C.G., da Fonseca, G.A.B. and Kent, J. 2000. Biodiversity hotspots for conservation priorities. *Nature* 403, 853-858.
- Nanhoe, L.M.R. and Ouboter, P.E. 1987. The Distribution of Reptiles and Amphibians in the Annapurna-Dhaulagiri Region (Nepal). *Zoologische Verhandelingen* 240, 1-105.
- NTNC/ACAP 2016. *Management Plan of Annapurna Conservation Area (2016-2020)*. National Trust for Nature Conservation, Kathmandu, Nepal.
- Schmidt, K.P. and Inger, R.F. 1957. *Living Reptiles of the World*. Garden City, New York.

Schleich, H. and Kästle, W. 2002. *Amphibians and Reptiles of Nepal*. A.R.G. Gantner Verlag K.G., Germany.

Shah, K.B. 1998. *Checklist of the herpetofauna of Nepal with English vernacular names*. NAHSON bulletin, Natural History Society of Nepal. 8, 26-30.

Shah, K.B. 2000. *Habitats, distribution and status of King Cobra Ophiophagus Hannah (Cantor, 1836) in Nepal*. *Journal of Natural History Museum* 10, 135-154.

Shah, K.B. and Tiwari, S. 2004. *Herpetofauna of Nepal: A Conservation Companion* IUCN – The world Conservation Union, Nepal.

Shrestha, T.K. 1981. *Wildlife of Nepal*. A study of renewable resources of Nepal Himalayas. Steven Simpson Natural History Books, Kathmandu, Nepal.

Smith, M.A. 1943. *The Fauna of British India. Reptilia and Amphibia*, Vol.3, Serpentes. Taylor and Francis, London.

Stuart, B., Wogan, G., Grismer, L., Auliya, M., Inger, R.F., Lilley, R., Chan-Ard, T., Thy, N., Nguyen, T.Q., Srinivasulu, C. and Jelić, D. 2012. *Ophiophagus hannah*. The IUCN Red List of Threatened Species 2012: e.T177540A1491874. <http://dx.doi.org/10.2305/IUCN.UK.2012-1.RLTS.T177540A1491874.en>. Downloaded on 19 February 2019.

Thapa, K.B., Rana, N. and Shah, K.B. (in press). Distribution of King Cobra in Nepal. *The Himalayan Naturalist*.

Whitaker, R. and Captain, A. 2008. *Snakes of India: The Field Guide*. Draco Books, Chengalpattu, PP. 312-313.

Whitaker, R. 1978. *Common Indian Snakes: A Field Guide*. Macmillan India Ltd., New Delhi, India.

Biosketches

RISHI BARAL is currently working as a Conservation Officer at National Trust for Nature Conservation, Annapurna Conservation Area Project, Pokhara and is particularly interested in participatory wildlife conservation. He has expertise on research in tree cavity, birds and wildlife.

RAMJI GAUTAM is working as an associate lecturer at Department of Zoology, Prithivi Narayan Campus, Tribhuvan University. His previous studies focused on vulture conservation in Nepal and he has keen interest in snake rescue, rehabilitation and conservation.

MAHENDRA PRASAD KATILA is working for a decade on snake conservation as a field specialist. He is the president of Snake Conservation Society, Nepal and works on the conservation of snake.

RAJ KUMAR GURUNG is currently working as a Project Chief at National Trust for Nature Conservation, Annapurna Conservation Area Project, Pokhara and has more than 25 years of experiences in participatory conservation and management of biodiversity in Nepal.

ASHOK SUBEDI is working on National Trust for Nature Conservation, Annapurna Conservation Area Project, Pokhara as a conservation officer. He is mainly focused on conservation and ecology of snow leopard.

SHAIENDRA KUMUR YADAV is currently working as a Conservation Officer at National Trust for Nature Conservation, Annapurna Conservation Area Project, Pokhara. He has two decades of experience in wildlife monitoring and human-wildlife conflict management issues.

BINOD BASNET is currently working as a Project Manager at National Trust for Nature Conservation, Khumaltar, Lalitpur and has more than 20 years of experience in participatory conservation and management of biodiversity in Nepal.



The Himalayan Naturalist

Friends of Nature (FON) Nepal
PO Box 23491, Sundhara, Kathmandu, Nepal
Email: thehimalayannaturalist@gmail.com
Website: www.fonnepal.org
<https://www.facebook.com/fonnepal2005/>

