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WELCOME FOR OUR NEW PRESIDENT DR. PETER PRASCHAG

Foreword



Photo: Dr. Peter Praschag with *Batagur baska*, the male for the breeding colony at Turtle-Island, Graz.

This year Prof. Dr. Hermann Schleich and myself decided to go for a slow and smooth transition of presidency for Arco Nepal.

Although I have been working with almost all freshwater turtle and tortoise species native to Nepal, I have to admit, that I have never visited the country. In an effort, to catch up, I am looking forward to visit as soon as possible.

First, let me introduce myself: After I received my degree in Biology and Zoology, I founded the conservation and breeding institution Turtle Island, together with my father Reiner. Next to my duties as a turtle-breeder and conservator, I support various wildlife film productions as a scientific advisor. Furthermore, I am a sworn and court-certified expert for biology (keeping and breeding of zoo animals) and a member of the Freshwater Turtle and Tortoise Specialist Group/IUCN, the Field Conservation Committee, and a scientific consultant at the Turtle Survival Alliance (TSA). I serve as Vice-President of Turtle Island Corporation, a U.S.A based nonprofit with 501(c) (3) status.

My scientific focus is on chelonian conservation, ecology and evolution, linking *in situ* and *ex situ* conservation measurements, population genetics, effective populations size and minimum viable population sizes for a long time survival of endangered species, phylogeny and taxonomy of turtles and tortoises, the use of phylogenetic analyses to answer ecological and conservation related questions and the improvement of captive husbandry of chelonians for conservation related and educational reasons.

Although my research focus and expertise clearly are on turtles and tortoises, throughout my life time my interest has extended to other groups of reptiles and to amphibians as well.

In the past we focused on captive conservation breeding efforts of endangered turtles, but now being part of Arco-Nepal gives me the opportunity to further link *ex-situ* breeding programs with *in-situ* conservation measures.

To study amphibians and reptiles under lab conditions is an excellent tool to expand crucial knowledge about their biology and ecology, which can directly be used for wild living populations. In addition, captive bred specimens can be repatriated and therefor used to restock decimated wild population.

I will do my best to transfer my keeping and breeding experiences to the Budoholi Turtle Rescue & Conservation Centre, which can play an important role in establishing assurance colonies producing hundreds of offspring as well as to collaborate with interested Nepali institutions like National Parks, Protected areas and zoos.

A sound taxonomy and detailed knowledge about local geno- and haplotypes is the base of any responsible assurance breeding and rewilding project. Therefore, I am a strong advocate to push genetic studies to avoid repeating failures from the past.

I am looking forward to collaborate with all of you and hope to be able to take part in the great contributions for the conservation of amphibians and reptiles of Nepal.

Dr. Peter Praschag / CEO/President Arco-Nepal e.V.
Graz, October, 2022

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First verified distribution records for *Protobothrops himalayanus* (Squamata, Viperidae) in the mountains of northern Nepal

Pablo Garcia Antón, Tapil Prakash Rai, Sabin Adhikari & Rishi Baral

Abstract

We document the first verifiable records of *Protobothrops himalayanus* in the mountains of northern Nepal. We recorded two individuals of *P. himalayanus* in two different localities in Gorkha and Manang Districts. These are the westernmost records of the species, extending its distribution by approximately 145 km and 235 km respectively from the nearest previously known occurrences in Nepal. With these records, we confirm the presence of this species in Nepal.

Key words: Himalayan distribution extent, Biodiversity, Conservation

Introduction

Nepal, which is within the central Himalayan biodiversity hotspot (KÄSTLE et al., 2013), exhibits a remarkable diversity of reptiles, counting with at least 144 species. The herpetofauna of Nepal is probably one of the best studied in relation to other Asian countries (SCHLEICH & KÄSTLE, 2002; SHAH & TIWARI, 2004; RAI et al., 2022). However, there are still some regions that have been poorly surveyed (GAUTAM et al., 2020). Recently, increasing survey efforts revealed several new reptile records from this region: e.g. *Pareas monticola*, *Takydromus sikkimensis*, and *Eublepharis macularius*. Additionally, new species have been discovered and taxonomic changes have been proposed for some taxa of Nepal (PANDEY, 2015; BHATTARAI et al., 2017, 2020; PANDEY et al., 2018; RAWAT et al., 2019; RAI et al., 2021), suggesting that the diversity of reptiles can be underestimated (RAI et al., 2022).

The genus *Protobothrops* HOGE & ROMANO HOGE, 1983 is a clade of Asian lance-headed vipers (HERRMANN et al., 2004; MALHOTRA & THORPE, 2004; GUO et al., 2016; CASTOE & PARKINSON, 2006), characterized by a notable diversity of morphological traits, widely distributed across a large panoply of habitats, where they display a great variability of ecological strategies (GUMPRECHT et al., 2004). This genus is among the most common venomous snakes over most of eastern and southern Asia (ZHAO et al., 1998; MCDIARMID et al., 1999).

Currently, the genus *Protobothrops* is represented by 15 recognized species: *P. elegans* (GRAY, 1849), *P. flavoviridis* (HALLOWELL, 1861), *P. jerdonii* (GÜNTHER, 1875), *P. tokarensis* (NAGAI, 1928), *P. cornutus* (SMITH, 1930), *P. mucrosquamatus* (CANTOR, 1939), *P. kaulbacki* (SMITH, 1940), *P. xiangchengensis* (ZHAO, JIANG & HUANG, 1978), *P. mangshanensis* (ZHAO, 1990), *P. sieversorum* (ZIEGLER, HERRMANN, DAVID, ORLOV & PAUWELS, 2000), *P. trungkhanhensis* (ORLOV, RYABOV & NGUYEN, 2009), *P. maolanensis* YANG, ORLOV & WANG, 2011, *P. dabieshanensis* HUANG, PAN, HAN, ZHANG, HOU, YU, ZHENG & ZHANG, 2012, *P. himalayanus* PAN, CHETTRI, YANG, JIANG, WANG, ZHANG & VOGEL, 2013, and *P. kelomohy* SUMONTHA, VASARUCHAPONG, CHOMNGAM, SUNTRARACHUN, PAWAGKHANANT, SOMPAN, SMITS, KUNYA & CHANHOME, 2020, based on both morphological and molecular data (MALHOTRA & THORPE, 2004; WÜSTER et al., 2008; GUO et al., 2009, 2011; GUO et al., 2016; UETZ et al., 2022).

Protobothrops himalayanus is one of the rarest viper species of the genus. The species was described in the basis of two specimens (one adult female [holotype] and a second adult female [paratype]) from Jilong Valley, Jilong County, southern Tibet, China (PAN et al., 2013). It is a mountain endemic species

(occurring from 1300 to 2100 m) that inhabits the forests, scrublands, and banks of small streams across the southern slopes of the Himalayas of Nepal, Bhutan, India, and China (PAN et al. 2013; DAS et al., 2021). However, the identity and distribution of this species is poorly known and controversial in Nepal where it has so far recorded from Simigaon, Gaurishankar Conservation Area (Dolakha District) (SCHLEICH & KÄSTLE, 2002; KÄSTLE et al., 2013; SHARMA et al., 2013; VOGEL et al., 2014; PANDEY et al., 2015).

During a field expedition to the high mountains of northern Nepal carried out in June 2017, two dead specimens of *P. himalayanus* were found and photographed (not collected), which were probably killed by local people in the foothills of the rugged mountain terrain, close to the human settlement in two different localities (Fig. 1); Thangurmu village in Gorkha District, at 1620 m a.s.l. and Marshyangdi Rural Municipality, (one of the 15 rural municipalities encompassed by Annapurna Conservation Area) in Manang District at 1286 m a.s.l. are separated by an air distance of approximately 90 km; (Table 1).

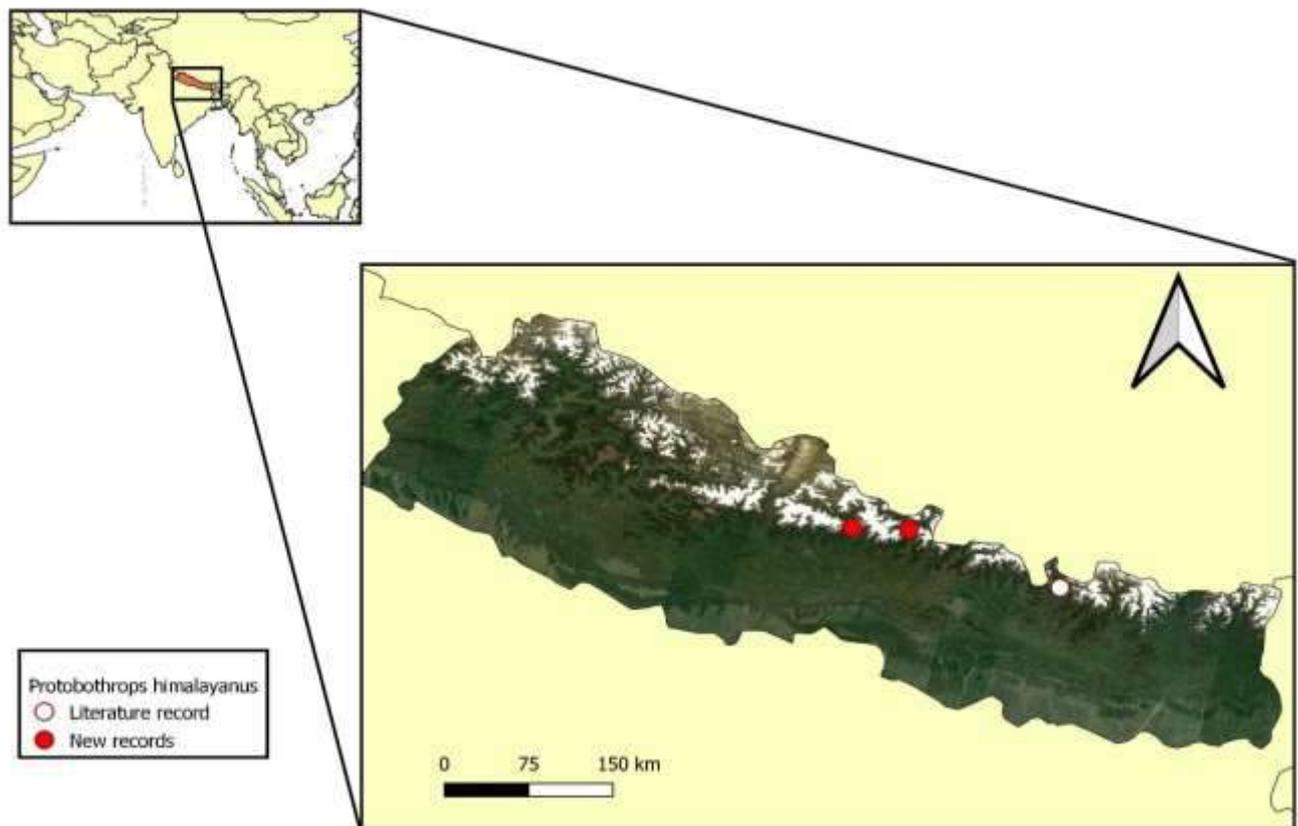


Fig. 1). Map of the known distribution (white dot) of the Himalayan Habu Pit Viper (*Protobothrops himalayanus*) in Nepal (according to SCHLEICH & KÄSTLE, 2002; KÄSTLE et al., 2013; SHARMA et al., 2013; VOGEL et al., 2014; PANDEY et al., 2015) and sites of the new observations (red dots).

The specimen recorded in Gorkha District was an adult female, approximately 940 mm of snout-vent length. Both specimens recorded showed morphological features consistent with those described by (PAN et al., 2013), differing from other species of *Protobothrops* by the following diagnostic characters:

1) relatively large body size (TL up to 1510 mm); 2) dorsal scales are weakly keeled with (24-25) rows at midbody; 3) relatively high number of ventral and subcaudal scales (65–76 pairs); 4) 7–8 supralabials; 5) 11 to 13 infralabials; 6) dorsal head uniform dark brown, laterally a reddish brown obscure postocular streak, starting behind the eye; 7) dorsal body and tail olive, with distinct black edged red brown transverse bands across the body and tail; 8) eye found from bright brown and reddish brown to mildly brown.

As a whole, these characters differ from those present in the other species of the genus *Protothrops* in the study area, with *P. himalayanus* being a morphologically unique species whose identification does not raise serious doubts (PAN et al., 2013; SHARMA et al., 2013). Although their identity in Nepal has been confused with *P. jerdonii*, in which they differ in the number of dorsal scale rows, the number of ventral scales (198–216 vs. 160–192), in a larger overall size (TL max 1510 mm vs. TL max 1090 mm) and coloration (PAN et al., 2013; KÄSTLE et al., 2013).



Fig. 2 a, b) Road killed specimen of *Protothrops himalayanus* found in Thangurmu, Gorkha District. Photographs taken by Ctibor Kostal.

Consequently, we confirm the long-suspected presence of *P. himalayanus* in Gorkha District (Fig. 2 a, b) and the boundary Manang and Lamjung Districts of Nepal (Fig. 3 a, b). This records extend the previously known distribution about 145 km (Thangurmu, Gorkha District) and 235 km (Marshyangdi Rural Municipality, Manang District) west of the nearest known bibliographic locality in Nepal (SCHLEICH & KÄSTLE, 2002; SHARMA et al., 2013; VOGEL et al., 2014; PANDEY et al., 2015) while emphasizing the need of developing additional herpetological studies in Gorkha, Manang and Lamjung Districts in order to promote political strategies regarding the conservation of natural habitats. Therefore, these new distribution records provide an improvement in the chorological knowledge of this little-known species, which distribution limits are far from being known today. In this sense, we recommend further herpetological research along the known localities and in other areas between the recognized populations



(Fig. 3 a, b) Road killed specimen found in Marshyangdi Rural Municipality, Annapurna Conservation Area Manang District, Nepal. Photographs taken by Rishi Baral

where this species could potentially be found increasing the knowledge on the biology, ecology, and conservation status of this enigmatic species, currently catalogued as “Least Concern” in the IUCN Red List (DAS et al., 2021).

Country	Locality	Latitude	Longitude	Source
Nepal	Simigaon (Dolakha District)	27.871266 N	86.233837 E	Schleich & Kästle, 2002; Kästle et al., 2013; Sharma et al., 2013; Vogel et al., 2014; Pandey et al., 2015;
Nepal	Marshyangdi Rural Municipality, Annapurna Conservation Area Manang District	28.43018 N	84.39543 E	This work
Nepal	Thangurmu, Gorkha District	28.4147439N	84.8946244E	This work

Table 1. Occurrence localities of *Protobothrops himalayanus* in Nepal, with information on country, locality, coordinates, and source.

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A lost chance - Chauni “Simsar” Wetland: Past and Present

Kaluram Khambu Rai

Chauni Wetland in History

It has been 59 years sitting on the edge of the Chauni Wetland. I closely witnessed the various changes that have come to this wetland since 1963 A.D. In the beginning, it was the largest natural lake in the region, such that a boat was needed to cross the lake and reach Bhalukhop through Tatuwamari. The lake used to be surrounded by a dense mixed Sal forest. Within this pristine wetland ecosystem, many world-famous species of plants and animals were found. In general, the wetland was a hotspot for biodiversity. The exploitation of natural resources in an unscientific way to satisfy the greed of people is a curse of modern society. This has accelerated climate change impacts, induced disasters, and resulted in different forms of crises. Even Chauni wetland could not remain untouched by this global trend. That massive forested area was largely cleared and it was evident that the environment of this region was also under the grip of the climate change. The erratic rainfall and too little or too much of it negatively impacted the agricultural production of this area.

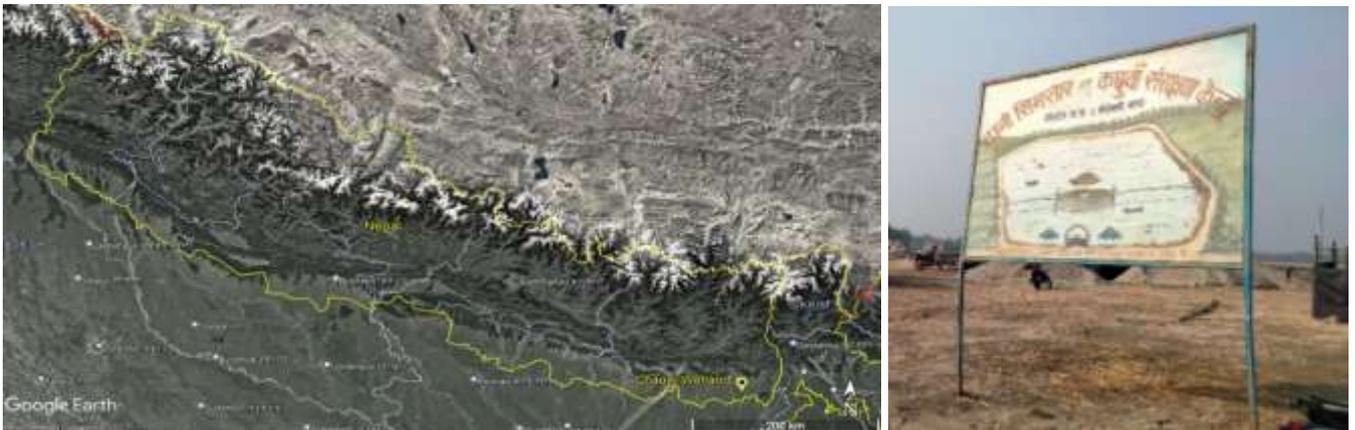


Fig. 1, 2) Location of Chauni Wetland (yellow dot) in southeastern Nepal

In view of the imminent threats of such an environmental crisis, a project 'Chauni Wetland and Turtle Conservation Center' was created some three decades ago with the aim of restoring the original species of turtles and the overall biodiversity by restoring the Chauni Wetland as a healthy habitat. The plan to restore the ecological system of the wetland and protect the biodiversity of the area was given the highest priority in that program.

The concept of the project was that if the wetland and biodiversity were restored, the habitat of the original plants and animals would be restored as well and many species could be recovered. For example, there was a program to replant Sal, Satisal, Khayar, Saj, Barro, Harro, Jamuna, Kyamuna, Tatari, Padari, Dumri, Rudraksha, Khamari, Thakal, herbs, etc. in its premises. Similarly, faunas: fishes (Solimukhe fish, Chuche gaichi, Bam, Tengra, Mungri, Singhi, Buwari, Pothi, Changa, etc.), amphibians (Indian Bullfrog, Marbled Toad, Chunam Frog, Indian Balloon Frog, Cricket frogs, etc.), reptiles (Elongated Tortoise, Soft-shelled turtles, Roofed turtles, etc.), lizards and snakes (Golden Monitor Lizard, Banded Krait, Cobras, Oriental Rat Snake, Cat snake, etc.), birds (Lesser Adjutant, Egrets, Herons, winter-visitor birds, etc.) were expected to return in the restored habitat.

Chauni Wetland: Yesterday's plan

In order to achieve the above objectives, the Chauni Wetland Conservation Project had the following structures in plan: Enclosing the existing area of the lake with an earthen embankment of about 21 feet

width, constructing a small foot-track in the middle of the embankment, making a green track by planting different species of plants (as mentioned above) on both sides of the foot-track, construction of a resting



Fig. 2. Google map of Chauni Wetland in Tatuwamari, Gaurigunj Rural Municipality-2, Jhapa. Scale at lower right bottom.

place for visitors at the side of the foot-track, enclosing the outer edge of the green dam with a strong wire fence to protect the plantation, arrangement of an inlet from the bottom of the wall to allow rainwater inside the pond, keeping the muddy part of the lake with marshy plants on the edge of the lake to raise and protect different species of turtles (as mentioned above), filling a certain portion of the lake facing the main road or by taking in a lease or purchasing the private land on its side to build an office complex that comprise of the main entry gate, laboratory cum office, information centre, security post, etc. were kept in the project.

If the construction work of the lake was done according to the above plan, the protection of Chauni Wetland would be more and the exploitation of the lake would be less. This type of project that exploits natural resources less but protects them more is called nature-oriented (Eco-centric) conservation work. In eco-centric conservation work, restoring the wetland ecosystem of the lake and protecting biodiversity is given high priority.

Chauni Wetland: Today's plan

Currently, it was found that the construction work is being done in Chauni Wetland according to the new project under the budget of the Ministry of Tourism and Culture, Province No. 1 in collaboration with Gaurigunj Rural Municipality, Jhapa. Mr. Khapin Regmi is the supervisor of the construction company that commenced the work. After meeting with him, we asked for information about the ongoing construction work in the Chauni wetland.

His words were: "The work is taking place under the budget and planning of the Ministry of Tourism and Culture, Province No. 1 as well as the operation of Gauriganj Rural Municipality. Various items of the structure of the lake are being constructed according to the layout plan of the project given by the concerned authorities. The part of the lake from the edge connected with the main road to the south of the lake is already filled with soil about 100 meters in length to the north for making a parking lot and an office complex. An estimated 30-meter-wide embankment surrounds the perimeter of the pond, making a motor vehicle pass through the embankment. There is a plan to make flower beds on both sides of the road, and to make benches and sheds for visitors. In particular, a children's park is being built for children

to play on the outer edge of the road. The inner part of the dam containing water and the outer bank previously connected to farmland will be separated by a concrete wall. Also, there is a comprehensive program of planting trees at intervals inside the Park to provide shade to visitors." Mr. Regmi, the supervisor of the construction company, briefed while showing the works being done at the construction site.

The on-site inspection of the construction work of the Chauni Wetland was completed under the leadership of construction manager Mr. Regmi. Local intellectuals, civil society leaders, and workers namely Mr. Bishnu Neupane, Mr. Surendra Rai, Mr. Buddhiraj Tamang, Mr. Rajendra Rai, Mr. Milan Rai, Mr. Sandeep Rai, Mr. Likuwali Rai, Mr. Balram Rajbanshi (UML Ward President), Mr. Harka Tamang (UML Ward Secretary), Mr. Mimiraj Rai (Secretary of Chauni Wetland Protection Committee), Mr. Khapin Regmi (Supervisor of Chauni Project Construction Management Company), etc.



Fig. 3, 4). Construction work at Chauni Wetland (photos by Tapil Rai, TRCC)

The Future of Chauni Wetland?

After a quick look at the structure of Chauni Wetland, which is currently under construction, I realized that now this lake is oriented towards building a tourist park rather than protecting wetlands. It was found that the technical work being done here is more commercial-driven. From the environmental point of view, the process of transforming any natural resource into a means of material and financial gain is called a techno-centric project. Yes, a work similar to this example was found to be taking place in Chauni Wetland. Now, Chauni Wetland has transformed into a water reservoir instead of a natural wetland. Looking at the structure here, it was seen that it is built in the pattern of a tourist place with modern facilities like Jamunxhadi Wetland and Tourism Area, a popular recreational site in Jhapa District. Jamunxhadi was also a natural wetland in the beginning, but it has also been commercialized and transformed into a popular recreational spot. In my view, this Chauni Wetland should be built as a nature conservation project on the pattern of Sukhani Martyrs Memorial Park, Salbari, but in the view of the current planners of Chauni Wetland, it is for generating income like a park in Jamunxhadi. That's the difference.

However, the important fact to note is that the geographical locations of Jamunxhadi and Tatuwamari (Chauni Wetland) are different. Jamunxhadi is close to the East-West Highway and there are many places around it that are being urbanized at a very fast pace. Therefore, there is no decrease in the number of entertainment-seeking visitors, and income generation is satisfactory. But Chauni wetland does not have these above-mentioned advantages. Thus, due to geographical isolation, there is a possibility that it might be unused and converted into ruins due to a lack of commercialization. At that time it will not be possible to bring back the natural wetland because the concrete structure on the inside and outside of the lake does not allow it to return to its natural state. In that case, an environmental crisis will arise and who will be responsible for it? Local civil society or governments at different levels!! The next generation will find the answer.

Conclusion

Last year on hearing that new construction works are occurring at Chauni Wetland, I requested the Assistant Professor of Environmental Science/Mechi Multiple Campus, who is also the Lead Keeper of Turtle Rescue and Conservation Centre (TRCC)/Martyrs Memorial Park Mr. Tapil Prakash Rai, Student Researcher of Central Department of Zoology (Tribhuvan University) Mr. Asmit Subba, and Coordinator of TRCC-Turtle's Club Mr. Sabin Adhikari to inspect the wetland. In the report given by them after their field visit, it was mentioned that due to the new structures under construction, the original characteristics of the wetland has become deteriorated to the point of non-existent. A curiosity remained in my mind as to how it could have reached that state. Therefore, this time with the help of my local friends, I reached the site to observe it. Looking at the current form of Chauni Wetland as an environmental science student, I could only say OMG because there was no room for improvement. The original wetland area has disappeared due to the concrete wall in the inner and outer parts of the lake. Since I was brought up with the belief that wildlife should be protected and my own concern for the environment, I have been very restless until now, with the feeling that some suggestions forwarded will be considered on time to improve it. Therefore, I communicated via different means my request and suggestions to the concerned authorities before the construction work started. But all the efforts turned out to be pointless to them. Such irresponsible behaviour made me feel pathetic. I understand that everyone needs entertainment places; it is also one of the characteristics of modern civilization. But it is never wise to establish an amusement park by destroying an important natural resource, a wetland.

In the end, what I appeal to the local brothers and sisters is that if this new Chauni Wetland Park is built according to your wish then I do not have anything to say. Whatsoever, I still opine - it will cause less benefit and do more harm. Therefore, be vigilant to avoid the harmful environmental consequences like pollution, drought, biodiversity loss, etc caused by this new project. And be successful in improving the living standard by earning maximum income from it, my best wishes!!



Fig. 5) Author (third from right) with locals and civil society leaders while visiting Chauni Wetland (photo by Mr. Dewan Rai)

Prof. Dr. Kalu Ram Rai 'Khambu'
Tatuwamari, Gauriganj Rural Municipality-2, Jhapa
2022/9/3 AD

First record of the critically endangered Black softshell turtle, *Nilssonina nigricans* (ANDERSON, 1875) for Nepal.

Peter Praschag, Tapil Prakash Rai & Hermann Schleich

Abstract

Once *Nilssonina nigricans* was regarded as the rarest turtle existing, we publish a new distribution record for S-Nepal. Since soft shell turtles are difficult to identify on species level and have a cryptic life, not much is known about their biology, ecology or distribution. This new record of a critically endangered turtle species highlights the importance of the protection of the biodiversity hotspot in wetland areas of south-east Nepal.

Key words: New distribution record, *Nilssonina nigricans* critically endangered, SE-Nepal.

Introduction

Already GRAY (1872) pointed out, as simple as it is to identify a soft-shell turtle as such, so it is hard to classify one by species. The distinctiveness of superficial structures and colour characteristics as well as osteological features can change drastically during ontogeny in trionychids. In addition, the timing of final differentiation of these characteristics is prone to intraspecific variation.

In his revision MEYLAN (1987) assigned the following four soft-shell turtles from the Indian subcontinent to the genus *Aspideretes*: Indian soft-shell turtle, *A. gangeticus* (CUVIER, 1825); Indian peacock soft-shell turtle, *A. hurum* (GRAY, 1830); Leith's soft-shell turtle, *A. leithii* (GRAY, 1872); and black soft-shell turtle, *A. nigricans* (ANDERSON, 1875). An important osteological character shared by these species is the presence of two neurals between the first pair of pleurals (instead of one neural as in the remaining representatives of the tribe Trionychini sensu MEYLAN 1987). The strong morphological similarities in coloration (of the ocelli) size, skull and shell shape among the four species also extends to the Burmese peacock soft-shell turtle *Nilssonina formosa* (GRAY, 1869).

However, based on molecular and morphological evidence ENGSTROM *et al.* (2004) and PRASCHAG *et al.* (2007) concluded that *N. formosa* is so closely allied to the four species of the South Asian genus *Aspideretes* HAY, 1904 that all species should be placed in the same genus. Together with first records of wild living *N. nigricans* in Bangladesh and *N. formosa* in China this molecular phylogeny of the genus *Nilssonina* was confirmed by LIEBING *et al.* 2012. The genus name *Nilssonina* (GRAY 1872) has nomenclatural priority. All five species possess a similar appearance and feature, at least in the juvenile stage, a pattern of four to six ocelli on the carapace.



Fig. 1 a,b) Typical ocelli in juvenile and adolescent *Nilssonina hurum* (photo: P. Praschag)

Distribution

Until 2002 the Black softshell turtle (*N. nigricans*) was thought to be confined to the artificial pond at the Hazrat Sultan Bayazid Bostami Shrine in Nasirabad near Chittagong, Bangladesh. From this site,

N. nigricans was described by ANDERSON (1875), and subsequent authors believed that the species either became extinct in the wild (PRITCHARD 1979; GROOMBRIDGE 1982) or that it ‘descended from introduced individuals of the more widespread *Trionyx* [now *Nilssonina*] *gangeticus*’ [*gangetica*] (GROOMBRIDGE 1982; KHAN 1987) or of *N. hurum* (RASHID 1990). For a long time, *N. nigricans* was thought to be one of the world’s most endangered chelonian species, comprising not more than 150–300 individuals in the semicaptive colony near Chittagong (GROOMBRIDGE 1982; AHSAN *et al.* 1991; HILTON-TAYLOR 2000).

Due to its apparent rareness and the tale that the Muslim Saint Bayazid Bostami, when founding the turtle shrine in the year 830, turned the evil spirits of the site into turtles, *N. nigricans* became nationally and internationally renowned as the ‘holy’ turtle of Bangladesh (e.g., PRITCHARD 1979; KHAN 1980; GROOMBRIDGE 1982; OBST 1986; ERNST & BARBOUR 1989; ERNST *et al.* 2000). However, using mainly skull osteology as well as colouration and pattern characters, PRASCHAG & GEMEL (2002) suggested that *N. nigricans* occurs not only in the shrine pond near Chittagong, but also in the neighbouring Indian state of Assam.

First record of Nepal

The Betana Wetland (Nepali: बेतना सिमसार) is situated in Belbari Municipality of Morang District of Nepal, about 15 km E of Itahari with an altitude of approx. 123 m. The lake extends of about 5.5 ha and the forest area covers 175 ha being a part of the popular Char Kose Jhadi jungle.

The wetland is home to endangered plants and animals such as turtles, fishes, birds, mammals and indigenous plants. About 49 species of birds have been reported from the area. The forests mainly consists of *saal* and *khair-sisoo* trees. A small portion of the forest area homes tombstones of the Kirati people. The pond’s depth varies from 0.5 to 1.5 m during the dry season to 1 to 2.5 m during the monsoon season (www.landnepal.com/details/623.html). DAHAL, D.R. (2020; ppt presentation) recorded *Lissemys punctata* (BONNATERRE, 1789), *Nilssonina hurum* (GRAY, 1831), *Pangshura smithii* (GRAY, 1863) and *Indotestudo elongata* (BLYTH, 1854) for the Betana area.

SCHLEICH and students visited Betana wetlands several times, while last visit was in 2016. In 2002 (SCHLEICH *et al.*) reported *Lissemys*, followed by ACHARIA (2004) with *N. hurum* and *N. gangetica* (latter only reported by shells).

To attract tourists, a mini zoo has been constructed inside the wetland area along with some other infrastructures.



Fig. 2 a,b) View on the habitat (photo: Schleich, H. 2016)



Fig. 3) Geographic situation of Betana wetland area (photo: Google Earth)



Fig. 4 a - e) *Nilssonia nigricans* pictures taken at Betana wetland in 2016 by H. Schleich & L. Kiesel. The specimens show the typical head pattern as well as the wider skull with more massive cheeks.

Known distribution and records from Nepal

The distribution and natural history of the Black shelled softshell turtle attracted much interest as it was for long time regarded being extinct in the wild. (IUCN, 2002). PRASCHAG & GEMEL (2002) proved the species survival in the wild in the distributional range of the Brahmaputra river system including isolated subpopulations (BARUAH et al. 2010) from temple ponds in Assam and Tripura NE India. In addition, the first author could record the species from Meghna and Karnaphuli river in Bangladesh (PRASCHAG 2018, unpublished).

For the existence of *N. nigricans* in Nepal and thus the Gangetic river system and tributaries, this is the first proven record for this critically endangered softshell turtle with the records from Betana wetlands! The country occurrences for *Nilssononia nigricans* are now Bangladesh, India and Nepal.

Characteristic features of *Nilssononia nigricans*

The species is difficult to differentiate from its sister taxon *N. hurum*, but has a more domed carapace and heavier anterior carapace margin.

The most detailed description including ontogenetic stages as well as diagnostic differences with other S-Asian trionychids are given by PRASCHAG & GEMEL (2002).

N. nigricans is quite similar to *N. hurum* also it differs in shell shape, head pattern, white labial whitish streak and with an ossified keel in the lower mandible from subadult age onwards (BONIN et al., p.135, PRASCHAG & GEMEL, op.cit.). The juveniles are brightly coloured with yellowish-orange ocellus, adults can be completely black but some showing a typical vermiculated dorsal shell pattern.

The skin above the bony disc shows longitudinal rows of elongated tubercles and irregularly scattered tubercles occur in moderate amounts on the posterior carapace rim. On the nuchal area, a row of 15 to 20 very large, fully developed longitudinal tubercles exist. The margin of the carapace, excluding the cranial region, is yellow to orange, and much distinct from its basic coloration. Attached to this yellow-orange ring in its lateral and caudal regions is a zone where the dark olive-grey to brown ground colour is interspersed with numerous yellowish dots. The paler olive -grey blotches do not penetrate inside this zone. The plastron of neonate specimens is dark grey to black with small yellow dots which can be so tiny and dense that the plastron receives a metallic hue.

The basic colour of the head is equally dark grey to black. A distinct grey to dirty-yellow band runs diagonally over the base of the proboscis. A large postorbital grey to yellowish blotch and more or less triangular shape is located immediately behind the eye.

N. hurum closely resembles *N. nigricans*, however, the postorbital and temporal blotches are smaller in *N. hurum*. In *N. nigricans*, the top of the head is covered by substantially bigger blotches contributing to a net-like, reticulated pattern.

Hatchlings of the Black soft-shell turtle are approx. 4.5 cm long (AHSAN et al. 1991) while adult females attain a carapace length of 74 cm and adult males up to 91 cm (DAS 1995), with a mass of over 50 kg (AHSAN & SAEED, 1989).



Fig 5. Symphyses showing typical midline crest of lower mandible in *N. nigricans* (photo: Praschag, 2002)

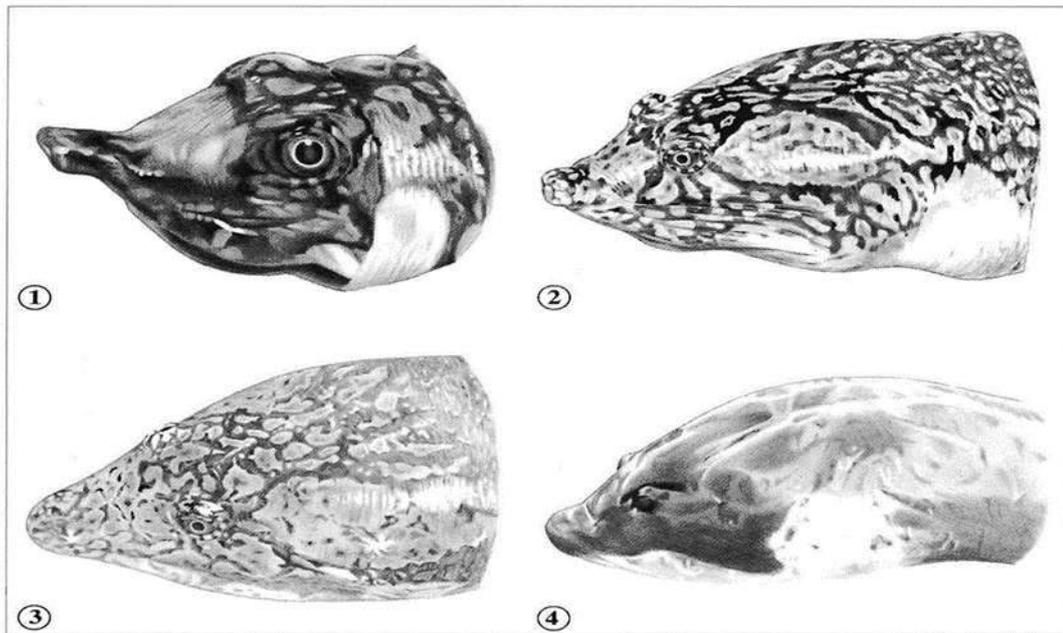


Fig. 6) Head patterns of *N. nigricans* (PRASCHAG & GEMEL, 2002) during ontogenetic stages.

Natural history of *Nilssonina nigricans*

Nilssonina nigricans is known from medium-sized to very large riverine situations in the wild (PRASCHAG & GEMEL, 2002; BARUAH et al. 2010), and several captive populations in temple ponds.

Maturity seems to be reached at about 40 cm carapace length and from 7–10 years. Females produce clutches of 10–38 eggs (AHSAN & SAEED, 1992). The Black softshell turtle occurs in wetland areas adjacent to river systems and directly in rivers and its larger tributaries. In the Brahmaputra *N. nigricans* is sympatric with *N. gangetica*, *N. hurum*, *Chitra indica* (GRAY, 1831) and *Lissemys p. andersoni*. Whereas *N. gangetica* is occupying the main river canals, *N. hurum* prefers the oxbows and river section without high current. Hatchlings of *N. nigricans* can be found in smaller tributaries with clear and fast flowing water together with *Pangshura sylhetensis* (JERSON, 1870) and *Cyclemys gemeli* (FRITZ, GUICKING, AUER, SOMMER, WINK & HUNSDÖRFER, 2008) in northeast India. Because only hatchlings and juveniles of *N. nigricans* can be found in this fast flowing, smaller tributaries, it can be assumed that gravid females migrate upstream to nest, avoiding competition for their offspring with other soft shell turtle species. (PRASCHAG, unpublished data).

According to PRASCHAG (pers. observation) the tameness of Black soft-shell turtles is species specific.

Conservation

A latest listing for all Nepali turtle species in respect to conservation issues (IUCN/CITES/NRDB) had been presented by SCHLEICH, H. in 2020 not including this new species record.

Nilssonina nigricans has been placed under CITES I since 01/07/1975, it is not yet listed by the Nepali government in its National Red Data Book (NRDB) and mentioned as “Critically Endangered A4cd” by IUCN 2021.

According to former own observations and with PANT et al (2020) statement “Due to the promotion of the lake site as an ecotourism area, anthropic activities could further deteriorate the lentic quality and biodiversity of the lake. Precisely, the main regulating factors of hydrochemistry in the lake include commercial fishing, excessive use of pesticides and chemical fertilizer, irrigation, bathing, washing cloth, waste disposed of by the tourists, and ultimately impacts the abundance and composition of the macrophytes. Therefore, periodic evaluations of hydrochemical parameters with macrophytes are required for the protection and long-term sustainability of the Betana wetland and its vulnerable turtle species.”

What obviously has to be targeted and solved most urgently is to eliminate poaching and trade of local turtle fauna through awareness and education campaigns and law enforcement. A detailed study as suggested and offered by ARCO-Nepal since many years has to be carried out most urgently, control artificial feeding (the fencing of the lake already showed some positive contribution against visitor interactions) as well as chemical and physical pollutions and disturbances and to study the populations dynamics and demography of Betana wetlands´ turtle fauna since several years.



Fig. 7 a, b) (Photo: P. & Reiner Praschag) Turtles openly offered at weekend markets in the south of Bangladesh. In the 1990ies *N. hurum* used to be one of the most hunted and offered species on the markets.

Acknowledgments

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PLATE I – The Softshell Turtles of Nepal - *Nilssonia gangetica* (photos: H. Schleich)



PLATE II - The Softshell Turtles of Nepal – *Nilssonina nigricans* (photos: P. Praschag)



Nilssonina nigricans at different ages (all from Assam, except bottom right: Chittagong, Bangladesh)

PLATE III - The Softshell Turtles of Nepal (photos: H. Schleich)



Lissemys punctata



Lissemys punctata, juvenile



Lissemys punctata



Lissemys punctata, ventral view



Nilssonina gangetica, adult from Koshi



Nilssonina gangetica, juvenile N-India

PLATE IV – The softshell turtles of Nepal (photos: H. Schleich)



Chitra indica from Koshi river



Chitra indica from Koshi river



Nilssonia hurum from W-Nepal



Blackish *N. hurum* from E-Nepal



Nilssonia hurum, neonate; Chitwan National Park

An Urgent Call For Help

Survival for unwanted pets now and in 2023!!

Hi, I am Hermann, running Arco-Spain as reg.soc. since 2005.

Last four years we were supported by government but with change to new ministry we were left without any support to maintain 250 animals, turtles lizards and birds. We are situated in SE-Andalusia and need help to maintain the installations, labour aid and food. You can find us on our website www.arco-spain.org or on FB. One also can send us email and we can forward a lot more detailed information. We were registered as a CITES Rescue center ES024 but are now on the brink of surviving. We are also an interpretation centre for the herps of Almeria province and need also updating and renovating our big sized 27 posters on our nature trail. we have 7 big ponds, 13 terrestrial enclosures and aviaries. For years, Customs, CITES authorities, Local police, Guardia Civil and Environment Dept. deposited animals as well as zoos and private persons - but we now don't get any support and hope for your contribution. On our website (www.Arco-Spain.org) it's easy to find a donation button or simply go to <https://gofund.me/22dd5b86> and help us with some donation!



Wir sorgen uns für Exoten und für unerwünschte Reptilien jetzt und in 2023!!

Hallo, ich bin Hermann und leite Arco-Spanien als registrierte altruistische Gesellschaft seit 2005.

In den letzten vier Jahren wurden wir von der Regierung unterstützt, aber mit dem Wechsel zum neuen Ministerium blieben wir ohne finanzielle Hilfe um 250 Tiere, Schildkröten, Echsen und Vögel am Leben zu erhalten. Wir befinden uns in SE-Andalusien und brauchen Arbeitshilfen sowie Spenden für Futtermittel und um die Installationen instand zu halten. Sie finden uns auf unserer Website www.arco-spain.org und auf FB.

Man kann uns auch eine E-Mail schicken und wir können gerne noch viel detailliertere Informationen weiterleiten. Wir wurden als CITES-Rettungszentrum ES024 registriert, stehen aber jetzt kurz vor der Überlebensfrage. Wir sind auch ein Interpretationszentrum für die Amphibien und Reptilien der Provinz Almeria und müssen auch 27 großformatige Poster auf unserem Naturlehrpfad aktualisieren und erneuern. Wir haben 7 große Teiche, 13 Landgehege und Volieren. Jahrelang haben Zoll, CITES-Behörden, örtliche Polizei, Guardia Civil/SEPRONA und Umweltamt sowie Zoos und Privatpersonen Tiere deponiert - aber wir bekommen seit 2022 keine Unterstützung und hoffen auf Ihren Beitrag. Auf unserer Website (www.Arco-Spain.org) finden Sie einen Spendenknopf oder gehen Sie einfach zu <https://gofund.me/22dd5b86> und helfen Sie uns mit einer Donation!





Indotestudo elongata at TRCC/Jhapa feeding on fallen figs (*Ficus oligodon*). Photo Tapil P. Rai.