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New Herpetofaunal Records from the Kingdom of Bhutan Obtained through Citizen Science

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Social media has, in the past decade, emerged unexpectedly as a powerful tool in citizen science (Liberatore et al. 2018). Whether unintended or formally integrated, it offers, among other benefits, mass participation in activities such as data collection in inventories, monitoring, or natural history observations (Tulloch 2013). It can be argued that such activities often do not consume taxpayers' contributions, as formal research projects tend to do, and can provide a cost-effective means of data collection (Goldstien et al. 2014). The vast number of (and rapidly rising) online resources and virtual specialists available

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to identify samples serve as references and reviewers of such data, increasing the speed over traditional forms of data collection (e.g., scientific publishing) and providing the capacity to absorb multiple opinions. Nonetheless, challenges that remain in citizen science programs are directing the data towards priority scientific objectives and needs, and achieving high standards in data quality (Ambrose-Oji et al. 2014).

Citizen science has been a part of herpetology for over a decade (O'Donnell and Durso 2014). Currently, the global to regional and local databases are biased towards western and other developed countries, especially the United States, Australia, and the United Kingdom (Devictor et al. 2010; Rowley et al. 2019). There is therefore a growing need for similar databases for the rest of the world, especially the tropics and subtropics, home of the greatest and arguably the most threatened biodiversity. Examples from tropical Asia, for instance, are now beginning to emerge through informal engagement (e.g., Das et el. 2014; Kusrini et al. 2018) or organized events (Das et al. 2014).

The Kingdom of Bhutan is located between India and China and although popular for its "Gross National Happiness" approach to development, its herpetofauna remains poorly known. Early inventories of the fauna of Bhutan were reported by visiting or museum-based scientists, including Bustard (1980a; 1980b) who documented crocodiles of the region, and Bauer and Günther (1992), who produced the country's first inventory of reptiles and amphibians. Das and Palden (2000) further contributed to the record of specimens through data collected in the field, as have publications by Bhutanese nationals and Indian researchers over the past decade (Wangyal and Tenzin 2009; Wangyal 2011; Wangyal and Das 2014). At present, the herpetofauna of Bhutan comprises 67 snakes, 28 lizards, six turtles, and 59 amphibians (Wangyal and Gurung 2017). In this paper we present novel records of amphibians and reptiles species contributed by citizen scientists of Bhutan.

METHODS

Between May 2014 and December 2019, over 1000 images were captured using mobile phones and cameras and posted to a Facebook group called "Amphibians and Reptiles of Bhutan– Search Group." Some images were also e-mailed directly to the first author for identification through Messenger, WeChat, and WhatsApp applications. Requested data fields included a photograph, locality, geographical coordinates (see Fig. 1), elevation, date, time, size, behavior at time of observation, and any other remarks. We also incorporated records received through some of the same sources as early as 2008. Most records of squamates were from 1000 to 1500 m elev., while a majority of amphibians and the single turtle recorded were from the plains.



FIG. 2. Representative herpetofaunal species being reported as new for Bhutan in this communication. Top left, *Hoplobatrachus littoralis* (photo: Chogyal Tashi); top right, *Zhangixalus burmanus* (photo: Yeshi Phuntsho); middle left: *Pangshura sylhetensis* (photo: Sonam Rinzin); middle right: *Japalura tricarinata* (photo: Karma Wangdi); bottom left: *Pseudocalotes austeniana* (photo: Sherab Jamtsho); and bottom right: *Oligodon chinensis* (photo: Sherab Jamtsho).

Digital image vouchers were accessioned with the Lee Kong Chian Natural History Museum, National University of Singapore (ZRC). Species identifications were verified by Abhijit Das unless stated otherwise. Other abbreviations used include: SCL = straight carapace length of turtles; SVL = snout-vent length of frogs and squamates; and TBL = total body length of snakes. Map datum WGS 84 was used for all records.

RESULTS

A total of 48 new records of species previously unrecorded in Bhutan (comprising 22 amphibians, one turtle, 10 lizards, and 15 snakes) are reported here. Representative images are provided in Fig. 2.

AMPHIBIANS

Bufonidae

DUTTAPHRYNUS CHANDAI (Nagaland Montane Toad). PEMA GATSHEL DISTRICT: Nganglam (26.83755°N, 91.24987°E). 578 m elev. 12 February 2019. Dorji Nidup. ZRC (IMG) 1.197; photo voucher. New country record (Das et al. 2013), extending range from Nagaland State, northeast India by ca. 306 km. Amplecting pair on outskirts of town, 1400 h. SVL 68 mm.

DUTTAPHRYNUS NAGALANDENSIS (Nagaland Toad). TSIR-ANG DISTRICT: Tsirang Town (27.00240°N, 90.12205°E). 1585 m elev. 21 July 2019. 2020 h. Yeshi Phuntsho. ZRC (IMG) 1.198; photo voucher. New country record (Mathew and Sen 2010), extending range from Nagaland State, northeast India by ca. 423 km. In marshy habitat below town; one measured 48 mm SVL.

DUTTAPHRYNUS STOMATICUS (Marbled Toad). SAMDRUP JONGKHAR DISTRICT: Jomotshangkha: Langchenphu Village (26.89360°N, 92.098332°E). 330 m elev. 4 April 2019. G. S. Bhandari. ZRC (IMG) 1.199a–b; photo voucher. New country record (Daniel 1963), with nearest populations in adjacent Nepal and India. Many individuals seen. 2234 h. SVL ca. 69 mm.

Dicroglossidae

HOPLOBATRACHUS LITORALIS (Coastal Bull Frog). SAM-TSE DISTRICT: Samtse (26.88231°N, 89.09796°E). 346 m elev. 9 July 2018. Chogyal Tashi. ZRC (IMG) 1.200; photo voucher. New country record (Hasan et al. 2012), extending range to the north of Bangladesh by ca. 720 km. 1700 h. In roadside pool formed by monsoonal rain. 1700 h. SVL 100 mm.

NANORANA ERCEPEAE (Torrent Paa Frog). THIMPHU DIS-TRICT: Gidakom Forest Management Unit (27.43111°N, 89.56722°E). 2500 m elev. 5 March 2016. Thal Prasad Koirala. ZRC (IMG) 1.201; photo voucher. New country record (Dubois 1975), extending range east from Nepal by ca. 863 km. 1203 h. SVL 89 mm.

NANORANA MINICA (Nepal Paa Frog). BUMTHANG DISTRICT: Ura (27.46776°N, 90.90631°E). 3092 m elev. 6 August 2013. Pema Tobgay. ZRC (IMG) 1.202; photo voucher. New country record (Schleich et al. 2002), extending range east from Nepal by ca. 980 km. On road at 1015 h. SVL 50 mm.

Megophryidae

SCUTIGER BOULENGERI (Xizang Alpine Toad). LHUENTSE: Singye Dzong (27.97219°N, 91.29928°E). 3881 m elev. 23 September 2011. Jigme Tshelthrim Wangyal. ZRC (IMG) 1.203; photo voucher. New country record (Tian and Feng 1982), extending range south of China by ca. 818 km. 1509 h. Alpine and fir ecotone. SVL 49 mm.

SCUTIGER NYINGCHIENSIS (Nyingchi Lazy Toad). LHUENTSE DISTRICT: Singye Dzong (27.97219°N, 91.29928°E). 3,881 m elev. 10 July 2010. Jigme Tshelthrim Wangyal. ZRC (IMG) 1.204a–b; photo voucher. New country record (Schleich et al. 2002), extending range east from China by ca. 352 km. 0937 h. In alpine and fir ecotone. SVL 52 mm.

SCUTIGER SPINOSUS (Alpine Spiny Lazy Toad). TRONGSA DISTRICT: Yuduthang, base of Black Mountains (27.358833°N, 90.334639°E). 3,948 m elev. 3 October 2017. Phuentsho. ZRC (IMG) 1.205; photo voucher. New country record (Jiang et al. 2016), extending range southeast from China by ca. 341 km. 1000 h. Alpine and fir ecotone. SVL 52 mm.

Microhylidae

MICROHYLA MYMENSINGHENSIS (Mymensingh Narrowmouthed Frog). SAMDRUP JONGKHAR DISTRICT: Jomotshangkha: Langchenphu Village (26.89362°N, 92.09834°E). 330 m elev. 25 May 2019. G. S. Bhandari. ZRC (IMG) 1.206; photo voucher. New country record (Hasan et al. 2014), extending range north of Bangladesh by ca. 930 km. 1135 h. SVL 19 mm.

MICROHYLA NILPHAMARIENSIS (Nilphamari Narrowmouthed Frog). SAMDRUP JONGKHAR DISTRICT: Jomotshangkha: Langchenphu Village (26.89361°N, 92.09833°E). 329 m elev. 25 May 2019. G. S. Bhandari. ZRC (IMG) 1.207; photo voucher. New country record (Howlader et al. 2015), extending range north of Bangladesh by ca. 340 km. 2135 h. SVL 16.5 mm.

Ranidae

AMOLOPS WENSHANENSIS (Wenshan Torrent Frog). PUNAK-HA DISTRICT: Goenshari Rimchu (27.694890°N, 89.769082°E). 1400 m elev. 20 July 2019. Sonam Phuntsho. ZRC (IMG) 1.208; photo voucher. New country record (Yuan et al. 2018), extending range south of China by ca. 1586 km, a large extension presumably on account of the high range in the intervening area. 1000 h. Roadside drain in cool, broadleaf- forest. SVL 38 mm.

Rhacophoridae

CHIROMANTIS SIMUS (Annandale's Pigmy Tree Frog). ZHEM-GANG DISTRICT: Panbhang (26.850355°N, 90.96071°E). 300 m elev. 6 September 2018. Tshethup Tshering. ZRC (IMG) 1.209; photo voucher. New country record (Deuti et al. 2000), nearest populations in eastern India and Bangladesh ca. 116 km to the west. On wall of house. 1100 h. SVL 23 mm. Also, Samtse District, Samtse (26.88231°N, 89.09796°E). 346 m elev. 21 November 2017. Dee Dorjee. ZRC (IMG) 1.210; photo voucher. 1135 h. SVL 21 mm.

KURIXALUS NASO (Annandale's High-altitude Frog). SAM-DRUP JONGKHAR DISTRICT: Jomotshangkha: Tsangporong: Chukarpo or Diafam Khola (26.92382°N, 92.04843°E). 800 m elev. 18 April 2018. Dorji Wangdi and Lekey Chaida. ZRC (IMG) 1.211; photo voucher. New country record (Frost 2020), nearest locality is East Garo Hills, Meghalaya (Mathew and Sen 2009), ca. 333 km to the east. On stone inside stream that flows from Arunachal Pradesh at 1541 h. SVL 34 mm.

NASUTIXALUS JERDONII (Jerdon's Bush Frog). ZHEMGANG DISTRICT: Zhemgang (27.21812°N, 90.65982°E). 1,907 m elev. 29 August 2016. Om Nath Raika. ZRC (IMG) 1.212; photo voucher. New country record (Frost 2020). Closest records in adjacent northeastern India states; also recorded from northern Myanmar, and suspected to occur in Nepal (Khan et al. 2020). Calling from 1100–1600 h. SVL 39 mm.

POLYPEDATES TAENIATUS (Terai Tree Frog). SAMDRUP JONGKHAR DISTRICT: Jomotshangkha: Langchenphu Village (26.89360°N, 92.098332°E). 328 m elev. 25 May 2019. G. S. Bhandari. ZRC (IMG) 1.213; photo voucher. New country record (Ahmed and Dutta 2000; Hegde et al. 2009), earlier records from adjacent Nepal and India. Entered house during a hot day at 1210 h. SVL 45 mm.

RAORCHESTES ANNANDALII (Annandale's Bush Frog). SAMTSE DISTRICT: Deoralidara, Trading. Samtse. (26.86716°N, 89.24861°E) 1384 m elev. 20 July 2016. Bhakta Bahadur. Ghallay. ZRC (IMG) 1.214a–b; photo voucher. New country record (Boulenger 1906), ca. 96 km W of nearest record in northern West Bengal, at the type locality; also known from Assam State of India. Calling from *Clerodendrum* shrub at 2100 h from near farm. SVL 21 mm.

RAORCHESTES LONGCHUANENSIS (Longchuan Bush Frog). TRASHIYANGTSE DISTRICT: Choetenkora (27.60589°N, 91.49578°E). 1736 m elev. 7 July 2019. Lam Norbu. ZRC (IMG) 1.215; photo voucher. New country record, extending ca. 387 km NW of Bangladesh (Al-Razi et al. 2020). 1936 h. SVL 22 mm.

RAORCHESTES MENGLAENSIS (Mengla Bush Frog). TSIRANG DISTRICT: Mendrelgang (27.58626°N, 90.16875°E). 2100 m elev. 7 July 2019. Gyeltshen, Sangay Chophel, and Tshering Penjor. ZRC (IMG) 1.216; photo voucher. New country record (Edmonds and Brehm 2012), extending range by ca. 1338 km SE from China. On leaf near roadside farm. 2000 h. SVL 20 mm.

RAORCHESTES SHILLONGENSIS (Shillong Bush Frog). TSIR-ANG DISTRICT: Damphu (27.0024°N, 90.12221°E). 1585 m elev. 7 July 2019. Gyeltshen, Sangay Chophel, and Tshering Penjor. ZRC (IMG) 1.217; photo voucher. New country record (Boruah et al. 2018), extending range from northeast India by ca. 238 km. SVL of ca. 20 mm calling from the leaf at ca. 1900 h.

ZHANGIXALUS BURMANUS (Burmese Flying Frog). TSIRANG DISTRICT: Jareytar Village: Chitra Ghairo Marsh (27.03948°N, 90.19604°E). 2080 m elev. 13 April 2019. Yeshi Phuntsho and Cheten Dorji. ZRC (IMG) 1.218a–b; photo voucher. New country record (Ao et al. 2003), extending range from adjacent Assam in northeast India and Myanmar. In small, perennial stream within cool, broadleaf forest composed of *Castanopsis* sp., *Quercus lamellosa, Lithocarpus* sp., *Symplocos* sp., *Michelia doltshopa, Eurya acuminata, Viburnum* sp., and *Taxus* sp. The area also has several species of ferns and dwarf bamboo around a water hole where the species was found at 1100 h. SVL 55 mm.

ZHANGIXALUS SUFFRY (Suffry Red-webbed Tree Frog). TRONG-SA DISTRICT: Mangdichu (27.375°N, 90.52805°E). 1889 m elev. 11 September 2018. Karma Wangdi and Sangay Dorji. ZRC (IMG) 1.219a–b; photo voucher. New country record (Lalremsanga 2017), extending range from Assam in northeast India eastwards by ca. 437 km. Discovered while dredging river for dam construction at 1100 h. SVL 49 mm.

REPTILES

Geoemydidae

PANGSHURA SYLHETENSIS (Assam Roofed Turtle). CHUUKHA DISTRICT: Manas National Park (26.859114°N, 89.405847°E). 100 m elev. 14 February 2018. Sonam Rinzin. ZRC (IMG) 2.494; photo voucher. New country record (Das 1997; Rahman et al. 2015), extending range to the north bank of Manas River, a tributary of the Brahmaputra, in Assam State, and north of West Bengal State, eastern India. Currently maintained in captivity at the Phuntsholing Crocodile Centre, originally from Rinchendhing, 5 km from Centre. SCL 185 mm.

Agamidae

CALOTES IRAWADI (Irrawady Forest Lizard). TRONGSA DISTRICT: Bjizam (27.52036°N, 90.46031°E). 1896 m elev. 6 March 2011. Sherub. ZRC (IMG) 2.495; photo voucher. New country record, earlier known from Barail Range of Assam State (Das et al. 2009), extending range northwest ca. 690 km. Roadkill over bridge. 1211 h. SVL 94 mm. Another individual from same district recorded at Langthel Nangnag (27.39797°N, 90.49714°E). 1541 m elev. 13 July 2015. Kado Rinchen. ZRC (IMG) 2.496; photo voucher. 1423 h. SVL 10 cm.

CRISTIDORSA OTAI (Ota's Mountain Lizard). DAGANA DISTRICT: Zamtog. (27.088617°N, 89.852047°E). 1853 m elev. 15 July 2016. Chogyal Tashi. ZRC (IMG) 2.497; photo voucher. New country record (Mahony 2009), extending range northwest from Mizoram State, northeast India, by ca. 561 km. SVL 55 mm. Basking on a rock at 1409 h.

JAPALURA TRICARINATA (Three-keeled Mountain Lizard). MONGAR DISTRICT: Namling (27.3331°N, 91.0412°E). 2802 m elev. 20 November 2016. Tandin Wangchuk. ZRC (IMG) 2.498; photo voucher. SVL 50 mm. On roadside. 1100 h. Habitat moist cool broadleaf forest. TRONGSA DISTRICT: Trongsa (27.50027°N, 90.50806°E). 1900 m elev. 17 July 2018. Karma Wangdi. ZRC (IMG) 2.499; photo voucher. Perching on fence pole of farm. New country records (Wang et al. 2018). Extends range east from adjacent West Bengal and Sikkim states of India.

PSEUDOCALOTES AUSTENIANA (Godwin-Austin's False Blood-Sucker). TRASHIGANG DISTRICT: Wamrong Mochema (27.08711°N, 91.52225°E). 1943 m elev. 5 May 2019. Tshering Dorji. Verified by Kai Wang. ZRC (IMG) 2.500; photo voucher. SVL 88 mm. On roadside trying to negotiate slope. Second observation at Wamrong Tshozor (27.13342°N, 91.56685°E). 2001 m elev. 1100 h. 18 May 2019. Tshering Dorji. Verified by Kai Wang. ZRC (IMG) 2.501; photo voucher. SVL 90 mm, found near residence on road moving rapidly into bushes during day. Habitat falls in the cool broadleaf forest. ZHEMGANG DISTRICT: BUli-Nimshong roadside (27.14709°N, 90.83635°E). 1957 m elev. 20 April 2019. Sherab Jamtsho. Verified by Kai Wang. ZRC (IMG) 2.502; photo voucher. SVL 90 mm. In forest managed by local community. 1400 h. Cool broadleaf forest, dominated by Castanopsis sp. Schima sp., and Lithocarpus sp. Radhi (27.22288°N, 90.9297°E). 1642 m elev. 21 June 2019. Sherab Jamtsho. Verified by Kai Wang. ZRC (IMG) 2.503; photo voucher. SVL 93 mm on tree at 1937 h, in vegetation dominated by Castanopsis sp. Schima sp., and Lithocarpus sp. Nimshong (27.15466°N, 90.91532°E). 1753 m elev. 27 July 2019. Sherab Jamtsho. Verified by Kai Wang. ZRC (IMG) 2.504; photo voucher. Climbing small tree at 1700 h; habitat dominated by Castanopsis sp., Schima sp., Quercus spp., and Lithocarpus sp. Rondugang (27.15796°N, 90.89134°E). 1830 m elev. 28 July 2019. Vegetation dominated by Quercus sp. and Lithocarpus sp. 1200 h. SVL 920 mm. Sherab

Jamtsho. Verified by Kai Wang. ZRC (IMG) 2.505; photo voucher. New country records (Wang et al. 2019); the Wamrong Mochema locality extends range from Indian state of Assam by ca. 196 km.

Gekkonidae

CYRTODACTYLUS BHUPATHYI (Bhupathy's Bent-toed Gecko). SAMDRUP JONGKHAR DISTRICT: JOMOTShangkha: Langchenphu (26.89361°N, 92.09833°E) 340 m elev. 21 February 2019. G. S. Bhandari. ZRC (IMG) 2.506; photo voucher. New country record (Agarwal et al. 2018a) and extends range 360 km east of type locality. SVL 60 mm. In open cultivated area between the wet and dry land borders of a beetle nut and pineapple farm at about 1030 h, within warm broadleaf forest.

CYRTODACTYLUS GUBERNATORIS (Sikkimese Bent-toed Gecko). SAMTSE DISTRICT: Tendu, Bindhoo Khola (27.13046°N, 88.89079°E). 849 m elev. 10 October 2012. Sangay Gyaltshen. ZRC (IMG) 2.507; photo voucher. New country record (Agarwal et al. 2018a), and extends range east by ca. 63 km. Subadult, SVL 65 mm. Emerged from hollow trunk of *Morus macrua* (Kimbu) tree, which was felled for use as timber.

CYRTODACTYLUS CF. NAGALANDENSIS (Nagaland Bent-toed Gecko). SAMDRUP JONGKHAR DISTRICT: Jomotshangkha: Langchenphu (26.89583°N, 92.09639°E). 337.97 m elev. 27 August 2019. Shyam G. S. Bhandarai. ZRC (IMG) 2.508; photo voucher. New country record (Agarwal et al. 2018b), extends range northwest by ca. 326 km. Four individuals (one measured at 75 mm SVL), in shade of orchid bunch attached to bark of tree at 1136 h. Habitat warm broadleaf forest.

CYRTODACTYLUS SEPTENTRIONALIS (Banded Benttoed Gecko). PEMA GATSHEL DISTRICT: Dungmin (26.95846°N, 91.23519°E). 872 m elev. 6 July 2017. Nima Wangdi. ZRC (IMG) 2.509; photo voucher. New country record (Agarwal et al. 2018b), extends from Assam State, India east by ca. 88 km. Found inside store. SVL 70 mm. 1100 h.

HEMIDACTYLUS FLAVIVIRIDIS (Yellow-bellied House Gecko). WANGDIPHODRANG DISTRICT: Adha (27.26019°N, 90.05096°E) 780 m elev. 27 October 2016. Sangay Tshewang. Verified by Raju Vyas. ZRC (IMG) 2.510; photo voucher. New country record, with multiple populations to the east and south, in the Indian states of Assam and West Bengal (Purkayastha 2018). SVL 71 mm, TL 81 mm. On rock in the Chir Pine (*Pinus roxburghii*) forest at 1650 h.

Lacertidae

TAKYDROMUS SIKKIMENSIS (Sikkimese Long-tailed Lizard). PEMA GATSHEL DISTRICT: Nganglam: Norbugang: Rinchenzor (26.85908°N, 91.08631°E). 420 m elev. 18 January 2018. Gyeltshen. ZRC (IMG) 2.511; photo voucher. New country record (Bhupathy et al. 2009), extending range west of Sikkim State, eastern India by ca. 263 km. On pile of rocks in old house, basking at 1138 h in open area surrounded by orange trees (*Citrus sinensis*); scurried under flat stone on a pile of rocks. A few minutes later, a second individual was observed. SVL 85 mm TL 340 mm.

Colubridae

BLYTHIA RETICULATA (Blyth's Iridescent Snake). MONGAR DISTRICT: Yadhi-Mongar Highway (27.28818°N, 91.36915°E). 1423 m elev. 3 October 2009. Damber Singh. ZRC (IMG) 2.512; photo voucher. New country record (Wall 1908), extending range from the adjacent Indian state of Assam. Juvenile TBL 200 mm, on road at 0839 h. In Chir Pine (*Pinus roxburghii*) dominated forest.

COELOGNATHUS HELENA (Indian Trinket Snake). SAMDRUP JONGKHAR DISTRICT: Jomotshangkha Army Camp (26.92016°N, 92.09715°E). 260 m elev. 8 August 2019. Dorji Wangdi. ZRC (IMG) 2.513; photo voucher. Dead specimen. TBL 900 mm. 1600 h. CHUKHA DISTRICT: Phuntsholing (26.83770°N, 89.4493°E). 293 m elev. 17 November 2016. Karma T. Sonam. ZRC (IMG) 2.514; photo voucher. Roadkill. TBL 400 mm. New country record (Anderson 1871); the Jomotshangkha Army Camp record extends the range from adjacent Indian states of West Bengal and Assam.

ELAPHE HODGSONI (Himalayan Trinket Snake). BUMTHANG DISTRICT: Chamkhar Nangar Road (27.60492°N, 90.83059°E). 2688 m elev. 25 April 2019. Pema Dorji. Verified by Kai Wang. ZRC (IMG) 2.515; photo voucher. New country record (Günther 1860), extending range from adjacent Nepal and West Bengal State in India. TBL 180 mm. Along farm road at 1420 h, attempting to enter bush.

GONYOSOMA FRENATUS (Khasi Hills Trinket Snake). DAGA-NA DISTRICT: Thimphu-Lhamoizingkha Highway, below Kezari (26.7913°N, 89.70507°E). 565 m elev. 24 October 2018. Sonam Tashi. ZRC (IMG) 2.516; photo voucher. TBL 1300 mm. On roadside trying to negotiate retaining wall. PEMA GATSHEL DISTRICT: Norbugang Gewog (26.83859°N, 91.24969°E). 580 m elev. 8 August 2018. Lagay Tshering. ZRC (IMG) 2.517; photo voucher. TBL 1450 mm. On road, killed by locals. 1600 h. New country records (Gray 1853), the Thimphu-Lhamoizingkha Highway record extending range from adjacent Assam State, India, by ca. 235 km.

GONYOSOMA PRASINUM (Green Trinket Snake). CHUKHA DIS-TRICT: Phuntsholing Neleykha Village (26.9602°N, 91.7216°E). 893 m elev. 16 May 2018. Sherab Jamtsho. ZRC (IMG) 2.518; photo voucher. Inside *Artemisia* sp. and other bushes. Habitat is broadleaf forest on foothills of Himalayas. TSIRANG DISTRICT: Tsirang (26.9995°N, 90.12831°E). 1568 m elev. 2 July 2016. Ugyen Dechen. ZRC (IMG) 2.519; photo voucher. TBL 1100 mm. Dead on footpath at 1200 h. Evergreen forests of mid-Himalayan range. New country records (Zhao 2006), extending range east of India's northeastern states and south of China. TBL 1000 mm.

LIOPELTIS *RAPPI* (Himalayan Stripe-necked Snake). WANGDIPHODRANG DISTRICT: Taksha Range Office (27.18303°N, 90.07303°E). 560 m elev. 21 May 2016. Sangay Tshewang. ZRC (IMG) 2.520; photo voucher. SVL 470 mm crossing footpath above Taksha Range Office 1636 h. Habitat Chir Pine (*Pinus roxburghii*) forest. TSIRANG DISTRICT: Sergithang Menchuna village (27.08636°N, 90.16537°E). 890 m elev. 30 September 2014. Jigme Tshelthrim Wangyal. ZRC (IMG) 2.521; photo voucher. Near house at 1131 h. Montane forest of mid-Himalayas. New country records (Smith 1943), extending range from Assam State, India. *LYCODON ZAWI* (Zaw's Wolf Snake). LHUENTSE DISTRICT: Palangphu (27.33871°N, 91.21274°E). 886 m elev. 18 August 2009. Jigme Tshelthrim Wangyal. ZRC (IMG) 2.522; photo voucher. TBL 45 cm. On roadside. 1514 h. SAMDRUP JONGKHAR DISTRICT: Jomotshangkha (26.97888°N, 92.030833°E). 612 m elev. 22 February 2020. Lekey Chaida. Verified by H. T. Lalremsanga. ZRC (IMG) 2.523; photo voucher. Roadkill, TBL 650 mm. 1449 h. Habitat was Chir Pine (*Pinus roxburghii*) forest and broadleaf forest culmination zone. New country records (Dutta et al. 2013), extending range from adjacent Assam State in eastern India.

OLIGODON CHINENSIS (Chinese Kukri Snake). ZHEMGANG DISTRICT: Nimshong, Shingkhar (27.17°N, 90.92289°E). 1711 m elev. 2 September 2019. Sherab Jamtsho. ZRC (IMG) 2.524; photo voucher. New country record extending range from the mountains north of Kiu Kiang (Jiujiang Shi), Chang Jiang River, Jiangsi Province, China (Zhao 2006) by ca. 1985 km eastwards. The large range extension is suggestive of the occurrence of this rarely seen species in the intervening areas of northeastern India. Juvenile TBL. 300 mm. 1000 h in school compounds stonewall; vegetation included bamboos, *Cupressus* sp., *Salix* spp., dominated by *Artemisia* with *Bidens pilosa*.

OLIGODON VENUSTUS (Jerdon's Kukri Snake). TRONGSA DIS-TRICT: Langthel Tongtophey (27.32619°N, 90.58431°E,). 1081 m elev. 20 November 2016. Kado Rinchen. ZRC (IMG) 2.525; photo voucher. New country record (http://www.reptile-database.org; 16 April 2020), extending distribution from North Kanara region of Peninsular India. Roadkill, and ca. 2155 km NE from type locality. TBL. 300 mm. On footpath at 1200 h.

TRACHISCHIUM FUSCUM (Darjeeling Slender Snake). PUNAKHA DISTRICT: Thinleygang (27.5229°N, 89.80716°E). 1920 m elev. 15 May 2019. Kinley. Verified by Avrajjal Ghosh. ZRC (IMG) 2.526; photo voucher. New country record (Anderson 1871) extending range from adjacent West Bengal State, Assam, and Arunachal Pradesh. TBL. 450 mm. On farm near village at 1100 h, within broadleaf forest in the mid-Himalayas.

TRACHISCHIUM MONTICOLA (Assamese Slender Snake). ZHEM-GANG DISTRICT: Dhangkhar Pokto (27.22214°N, 90.66489°E). 1851 m elev. 8 June 2014. Kezang Wangmo. ZRC (IMG) 2.527; photo voucher. Dead specimen, TBL 200 cm. On footpath at 1650 h. A second specimen, TBL 220 mm from Nimshong, Layleygang (27.18256°N, 90.92197°E). 1800 m elev. 11 February 2018. 1112 h. Sherab Jamtsho. ZRC (IMG) 2.528; photo voucher. Habitat is broadleaf forest with *Lithocarpus* sp., *Rhus* sp., *Rhododendron* sp., *Castanopsis* sp., *Symplocus* sp., and *Quercus* species. Shrubs and herbs such as *Eupatorium* sp., ferns, *Rubus ellipticus*, and *Rubia* sp. were abundant. New country records (Boulenger 1890), extending range eastwards from the adjacent Indian state of Assam.

Elapidae

BUNGARUS WALLI (Wall's Krait). DAGANA DISTRICT: Lamoy Zhingkha, Majhigoan (26.70519°N, 89.85717°E). 105 m elev. 19 June 2019. Rinchen Tshewang, Verified by Avrajjal Ghosh. ZRC (IMG) 2.529; photo voucher. New country record (Wall 1907), extending range from Nepal, Bangladesh, and Uttar Pradesh in India. Habitat was agricultural land surrounded by Teak (*Tectina grandis*) plantation. The animal feigned death and escaped. Later, at the same locality, a roadkill was collected on 19 September 2019 and deposited at the Lamoy Zhingkha Range Office. Ca. 765 km west from type locality.

Natricidae

HEBIUS CLERKI (Clerk's Keelback). ZHEMGANG DISTRICT: Upper Phoseng (27.3577°N, 90.7109°E). 1475 m elev. 22 June 2019. Reta Bahadur Powrel. ZRC (IMG) 2.530; photo voucher. New country record (Guo et al. 2014), extending range from adjacent eastern states of India and southern China. Injured on path. TBL 950 mm. Habitat evergreen forests of mid-Himalayan range.

Pareidae

PAREAS MONTICOLA (Montane Snail-eating Snake). TSIRANG DISTRICT: Mendrelgang (27.58626°N, 90.16875°E). 2100 m elev. 14 December 2018. Gyeltshen. ZRC (IMG) 2.531; photo voucher. TBL 700 mm. 0700 h. In area surrounded by orange orchard. TASHIGANG DISTRICT: Thrimshing 27.12176°N, 91.60328°E). 1283 m elev. 28 August 2019. Ezheay Tzhoefyeel. ZRC (IMG) 2.532; photo voucher. TBL 650 mm. Dead along farm road at 1100 h. TASHIYANGTSE DIS-TRICT: Bumdeling Tramar (27.63991°N, 91.47471°E). 1759 m elev. 5 August 2008. Jigme Tshelthrim Wangyal. ZRC (IMG) 2.533; photo voucher. 0916 h. TBL 670 mm. Regurgitated by *Lycodon septentrionalis*. ZHEMGANG DISTRICT: Khomshar (27.13748°N, 90.91916°E). 1450 m elev. 13 October 2018. Sherab Jamtsho. ZRC (IMG) 2.534; photo voucher. Roadkill. TBL 750 mm. 1440 h. New country records (Wall 1908), extending range from adjacent Indian states and southern China.

Viperidae

PROTOBOTHROPS KAULBACKI (Kaulback's Pit Viper). TRASHI-GANG DISTRICT: Kangpara Maduwa (27.09191°N, 91.63512°E). 1250 m elev. 10 July 2018. Rinzin Namgay. ZRC (IMG) 2.535; photo voucher. TBL 1,380 mm. Crossing road at about 1300 h. SAMTSE DISTRICT: Sibsoo (Bara) (27.02252°N, 88.88499°E). 453 m elev. 15 June 2018. Tshogpa, Bara County Samtse. ZRC (IMG) 2.536; photo voucher. TBL 1423 mm. Dead in farm at 1400 h. New country records (Smith 1940), extending range from Arunachal Pradesh in India and China.

DISCUSSION

The advent of the mobile phone and widespread internet access has made it progressively easier for people to explore Bhutan's wildlife and wild places, leading to rapid accumulation of distributional records. Through the use of technology, combined with citizen science, we have added 48 new records of reptile and amphibian species to the Kingdom of Bhutan's inventory. For several species of amphibians (including Duttaphrynus chandai, D. nagalandensis, Scutiger boulengeri, S. nvingchiensis, S. spinosus, Amolops wenshanensis, Raorchestes longchuanensis, and R. menglaensis) and reptiles (Cyrtodactylus bhupathyi, C. gubernatoris, C. nagalandensis, C. septentrionalis, and Takydromus sikkimensis), the identifications are tentative, based on either images not always showing diagnostic features, and/or representing enormous range extensions. These records suggest the existence of the species in intervening areas or may represent cryptic species. This information should be useful for biodiversity specialists, and for taxonomists to consider when material becomes available in the future.

Our experience reveals that participatory science projects, albeit slow in execution, are cost effective and can lead to both public involvement and conservation education. One of the advantages of this approach is that there is no requirement for obtaining research permission to collect specimens, thus making the acquisition of records administratively easy. The Facebook group Amphibians and Reptiles of Bhutan-Search Group provides mutual support and encouragement among participants, including assistance with specimen identification and sharing of experience. The widespread use of electronic devices such as mobile phones and tablets, as well as faster Internet speeds, wider connectivity, and more inexpensive connections is enabling more people to become citizen scientists. Improvements in image quality and better knowledge of the country's fauna will likely lead to more accurate identification in the future and correction of previous identification errors. Although images cannot replace specimens for many research needs (see Lehn et al. 2007; Ceríaco et al. 2016), photo vouchers will play an increasingly important role in helping to improve knowledge of species ranges, behavior, and activities.

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LITERATURE CITED

AGARWAL, I., S. MAHONY, V. B. GIRI, R. CHAITANYA, AND A. M. BAUER. 2018a. Two new species of bent toed geckos, *Cyrtodactylus* Gray, 1827 (Squamata: Gekkonidae) from northeast India with comments on name-bearing types from the region. Zootaxa 4420:334–356.

, ____, ____, ____, ____, AND _____. 2018b. Six new *Cyrto-dactylus* (Squamata: Gekkonidae) from northeast India. Zootaxa 4524:501–535.

- AHMED, M. E, AND S. K. DUTTA. 2000. First record of *Polypedates tae-niatus* (Boulenger, 1906) from Assam, north-eastern India. Hamadryad 25:49–50.
- AL-RAZI, H., M. MARIA, S. HASAN, AND S. BIN MUZAFFAR. 2020. First record of *Raorchestes longchuanensis* Yang and Li, 1978 (Anura: Rhacophoridae) from northeastern Bangladesh suggests wide habitat tolerance. Amphib. Rept. Conserv. 14:119–131.
- AMBROSE-OJI, B., A. P. N. VAN DER JAGT, AND S. O'NEIL. 2014. Citizen Science as a Supporting Tool. The Research Agency of the Forestry Commission, Edinburgh. 17 pp.

- ANDERSON, J. 1871. On some Indian reptiles. Proc. Zool. Soc. London 1871:149–211
- Ao, J. M., S. Bordoloi, and A. Ohler. 2003. Amphibian fauna of Nagaland with nineteen new records from the state including five new records for India. Zoos' Print J. 18:1117–1125.
- BAUER, A. M., AND R. GÜNTHER. 1992. A preliminary report on the reptilian fauna of the Kingdom of Bhutan with description of a new species of scincid lizard (Reptilia: Scincidae). Asiatic Herpetol. Res. 4:23–36.
- BHUPATHY, S., B. CHETTRI, AND A. M. BAUER. 2009. Rediscovery and revalidation of *Takydromus sikkimensis* (Günther, 1888) (Squamata: Lacertidae) from Sikkim, India. J. Herpetol. 43:267–274.
- BORUAH, B., P. RAJ, S. K. DUTTA, AND A. DAS. 2018. Redescription and geographic distribution of *Raorchestes shillongensis* (Anura: Rhacophoridae) from Meghalaya, northeast India. Phyllomedusa 17:3–20.
- BOULENGER, G. A. 1906. Description of two new Indian frogs. J. Asiatic Soc. Bengal, Ser. 2, 2:385–386.
- ——. 1890. The Fauna of British India, Including Ceylon and Burma. Reptilia and Batrachia. Taylor & Francis, London. xviii + 541 pp.
- BUSTARD, H. R. 1980a. Status of the gharial (*Gavialus gangeticus* Gmelin) in Bhutan. J. Bombay Nat. Hist. Soc. 77:150.
- ——. 1980b. Extinction of the gharial (*Gavialus gangeticus*) in Bhutan. Brit. J. Herpetol. 6:68.
- Ceríaco, L. M. P., E. E. GUTIÉRREZ, A. DUBOIS, AND COLLEAGUES. 2016. Photography-based taxonomy is inadequate, unnecessary, and potentially harmful for biological sciences. Zootaxa 4196:435–445.
- DANIEL, J. C. 1963. Field guide to the amphibians of Western India, Part 2. J. Bombay Nat. Hist. Soc. 60:690–702.
- DAS, A., M. CHETIA, S. K. DUTTA, AND S. SENGUPTA. 2013 A new species of *Duttaphrynus* (Anura: Bufonidae) from northeast India. Zootaxa 3646:336–348
- —, U. SAIKIA, B. H. C. K. MURTHY, S. DEY, AND S. K. DUTTA. 2009. A herpetofaunal inventory of Barail Wildlife Sanctuary and adjacent regions, Assam, north-eastern India. Hamadryad 34:117–134.
- Das, I. 1997. Kachuga sylhetensis recorded from northern Bengal, with notes on turtles of Gorumara National Park, eastern India. Chelon. Conserv. Biol. 2:616–617.
- ——, AND J. PALDEN. 2000. A herpetological collection from Bhutan, with new country records. Herpetol. Rev. 31:256–258.
- —, A. A. TUEN, Y. M. PUI, AND J. J. ONG. 2014. The Bornean Frog Race: Raising conservation awareness on amphibians of Sarawak and Malaysia. Herpetol. Rev. 45:66–73.
- DEUTI, K., S. BISWAS, M. F. AHMED, AND S. K. DUTTA. 2000. Rediscovery of *Chirixalus simus* Annandale, 1915 (Anura: Rhacophoridae) from Assam and West Bengal, eastern India. Hamadryad 25:215–217.
- DEVICTOR, V., R. J. WHITTAKER, AND C. BELTRAME. 2010. Beyond scarcity: citizen science programmes as useful tools for conservation biogeography. Divers. Distrib. 16:354–362.
- DUBOIS, A. 1975. Un nouveau sous-genre (*Paa*) et trois nouvelles espèces du genre *Rana*. Remarques sur la phylogénies des Ranidés (Amphibiens, Anoures). Bull. Mus. Nat. d'Hist. Natur., Paris. Ser. 3, Zoologie 324:1093–1115.
- DUTTA, D., S. SENGUPTA, A. K. DAS, AND A. DAS. 2013. New distribution of records of *Lycodon zawi* (Serpentes: Colubridae) from northeast India. Herpetol. Notes 6:263–265
- EDMONDS, D., AND J. BREHM. 2012. *Raorchestes menglaensis*: coloration. Herpetol. Rev. 43:125.
- GOLDSTEIN, E. A., C. LAWTON, E. SHEEHY, AND F. BUTLER. 2014. Locating species range frontiers: a cost and efficiency comparison of citizen science and hair-tube survey methods for use in tracking an invasive squirrel. Wildl. Res. 41:64–75.
- GRAY, J. E. 1853. Descriptions of some undescribed species of reptiles collected by Dr. Joseph Hooker in the Khassia Mountains, East Bengal, and Sikkim Himalaya. Ann. Mag. Nat. Hist. (2) 12:386–392.
- GUNTHER, A. 1860. Contributions to a knowledge of the reptiles of the Himalaya mountains. I. Descriptions of the new species. II. List

of Himalayan reptiles, with remarks on their horizontal distribution. Proc. Zool. Soc. London 1860:148–175

- GUO, P., F. ZHU, Q. LIU, L. ZHANG, J.-X. LI, Y.-Y. HUANG, AND R. A. PY-RON. 2014. A taxonomic revision of the Asian keelback snakes, genus *Amphiesma* (Serpentes: Colubridae: Natricinae), with description of a new species. Zootaxa 3873:425–440.
- HASAN, M., M. M. ISLAM, M. KURAMOTO, A. KURABAYASHIU, AND M. SUMIDA. 2014 Description of two new species of *Microhya* (Anura: Microhylidae) from Bangladesh. Zootaxa 3755:401–418.

———, M. KURAMOTO, M. M. ISLAM, M. S. ALAM, M. R. KHAN, AND M. SUMI-DA. 2012. A new species of *Hoplobatrachus* (Anura, Dicroglossidae) from the coastal belt of Bangladesh. Zootaxa 3312:45–48.

- HEGDE, V. D., S. ROY, AND B. LAL. 2009. Range extension of a tree frog *Polypedates taeniatus* (Boulenger, 1906). Rec. Zool. Surv. India 109:111–112.
- Howlader, M. S. A., A. Nair, S. V. Gopalan, and J. Merilä. 2015. A new species of *Microhyla* (Anura: Microhylidae) from Nilphamari, Bangladesh. PLoS One 10:e0119825.
- JIANG, K., K. WANG, D.-H. ZOU, F. YAN, P.-P. LI, AND J. CHE. 2016. A new species of the genus *Scutiger* (Anura: Megophryidae) from Medog of southeastern Tibet, China. Zool. Res. 37:21–30.
- KHAN, M. M. R., J. CHEN, Y.-H. WU, H.-M. CHEN, Y.-H. LWIN, R. W. MUR-PHY, G.-G. LI, AND J. CHE. 2020. New country records for three species of frog from Myanmar including two genera (*Nasutixalus* and *Oreolalax*). Zootaxa 4742:531–542.
- KUSRINI, M. D., A. HAMIDY, L. D. PRASETYO, R. NUGRAHA, M. MUNIR, E. ARI-DA, M. RAHMANIA, A. RIYANTO, R. EPRILURAHMAN, D. SATRIA, AND I. A. A. JANIAWATI. 2018. Mobilizing citizen to document herpetofauna diversity in Indonesia. *In* J. C. Fernandez and C. Wibowo (eds.), Proceedings of SEAMEO BIOTROP Third International Conference on Tropical Biodiversity, pp. 26–35. Southeast Asian Regional Center for Tropical Biology, Bogor.
- LALREMSANGA, H. T. 2017. Geographic distribution: *Rhacophorus suffry*. Herpetol. Rev. 48:120–121.
- LEHN, C., I. DAS, M. R. J. FORSTNER, AND R. M. BROWN. 2007. Responsible vouchering in turtle research: an introduction and recommendations. *In* H. B. Shaffer, N. N. FitzSimmons, A. Georges, and A. G. J. Rhodin (eds.), Defining Turtle Diversity. Proceedings of a Workshop on Genetics, Ethics, and Taxonomy of Freshwater Turtles and Tortoises, Cambridge, Massachusetts, 8–12 August 2005. Chelon. Res. Monogr. 4:147–156.
- LIBERATORE, A., E. BOWKETT, C. J. MACLEOD, E. SPURR, AND N. LONGNECK-ER. 2018. Social media as a platform for a citizen science community of practice. Citizen Sci. Theor. Prac. 3:3. doi: http://doi. org/10.5334/cstp.108
- MAHONY, S. 2009. A new species of *Japalura* (Reptilia: Agamidae) from northeast India with a discussion of the similar species *Japalura sagittifera* Smith, 1940 and *Japalura planidorsata* Jerdon, 1870. Zootaxa 2212:41–61.
- MATHEW, R., AND N. SEN. 2009. On the occurrence of *Philautus namdaphaensis* Sarkar and Sanyal and *Rhacophorus naso* Annandale (Anura: Rhacophoridae) from Meghalaya, north eastern India. Cobra 2:14–16.

——, AND ——. 2010. Pictorial Guide to Amphibians of North East India. Zoological Survey of India, Kolkata. 144 pp.

- O'DONNELL, R. P., AND A. M. DURSO. 2014. Harnessing the power of a global network of citizen herpetologists by improving citizen science databases. Herpetol. Rev. 45:151–157.
- PURKAYASTHA, J. 2018. Urban biodiversity: an insight into the terrestrial vertebrate diversity of Guwahati, India. J. Threatened Taxa 10:12299–12316.

- RAHMAN, S. C., S. M. A. RASHID, R. DATTA, P. MRO, AND C. J. ROY. 2015. Status, exploitation, and conservation of freshwater turtles and tortoises in Chittagong Hill Tracts, Bangladesh. Chelon. Conserv. Biol. 14:130–135.
- Rowley, J. J. L., C. T. Callaghan, T. Cutajar, C. Portway, K. Potter, S. Mahony, D. F. Trembath, P. Flemons, and A. Woods. 2019. FrogID: citizen scientists provide validated biodiversity data on frogs of Australia. Herpetol. Conserv. Biol. 14:155–170.
- SCHLEICH, H. H., C. C. ANDERS, AND W. KÄSTLE. 2002. Species list with annotations. *In* H. H. Schleich and W. Kästle (eds.), Amphibians and Reptiles of Nepal: Biology, Systematics, Field Guide, pp. 78– 92. A.R.G. Gantner Verlag K.G., Ruggell.
- SMITH, M. A. 1940. The amphibians and reptiles obtained by Mr. Ronald Kaulback in Upper Burma. Rec. Indian Mus. 42:465–486.
- ——. 1943. The Fauna of British India, Ceylon and Burma, including the Whole of the Indo–Chinese Region. Vol. III. Serpentes. Taylor and Francis, London. xii + 583 pp. + 1 map.
- TIAN, W.-S., AND X.-Y. FENG. 1982. Comparative studies on M. petrohyoideus of some Chinese anurans. Acta Herpetol. Sin. N.S. (1):25–29.
- TULLOCH, A. I., H. P. POSSINGHAM, L. N. JOSEPH, J. SZABO, AND T. G. MAR-TIN. 2013. Realising the full potential of citizen science monitoring programs. Biol. Conserv. 165:128–138.
- WALL, F. 1907. A new krait from Oudh (Bungarus walli). J. Bombay Nat. Hist. Soc. 17:608–611
- ——. 1908. Notes on a collection of snakes from the Khasi Hills, Assam. J. Bombay Nat. Hist. Soc. 18:312–337
- WANG, K., P. CI, K. JIANG, S. WENG, C. D. SILER, AND J. CHE. 2019. Range extension of the rare agamid, *Pseudocalotes austeniana* (Annandale, 1908) (Reptilia, Sauria, Draconinae) in the East Himalaya, with comments on its ontogenetic shift. Check List 15:425–433.
- —, K. JIANG, V. DEEPAK, A. DAS, H. MIAN, J. CHE, AND C. D. SILER. 2018. On the occurrences of *Japalura kumaonensis* and *Japalura tricarinata* (Reptilia: Sauria: Draconinae) in China. Herpetologica 74:181–190.
- WANGYAL, J. T. 2011. Snakes and lizards from the Bumdeling Wildlife Sanctuary Region of Bhutan: review of herpetofaunal information and new country records. Herpetol. Rev. 42:117–122.
- ——. 2014. The status of herpetofauna of Bhutan. J. Bhutan Ecol. Soc. 1:20–39.
- ——, AND I. DAS. 2014. Status, distribution and conservation issues of the amphibians of the Himalayan country of Bhutan. *In* H. Heatwole and I. Das (eds.), Conservation Biology of Amphibians of Asia. Amphibian Biology. Vol. 11(3). Decline in the Eastern Hemisphere, pp. 194–200. Natural History Publications (Borneo) Sdn Bhd., Kota Kinabalu.
- ——, AND D. B. GURUNG. 2017. The current status of herpetofauna in Bhutan. *In* D. B. Gurung and O. Katel (eds.), An Introduction to the Biodiversity of Bhutan in the Context of Climate Change and Economic Development, pp. 39–55. Centre for Rural Development Studies. College of Natural Resources, Lobesa, Punakha. Kuensel Corporation Limited.
- ——, AND K. TENZIN. 2009. Snakes and Lizards Diversity in Bumdeling Wildlife Sanctuary. Kuensel Corporation Ltd., Thimphu. 103 pp.
- YUAN, Z., J.-Q. JIN, J. LI, B. L. STUART, AND J. WU. 2018. A new species of cascade frog (Amphibia: Ranidae) in the *Amolops monticola* group from China. Zootaxa 4415:498–512.
- ZHAO, E. M. 2006. The Snakes of China [in Chinese]. Hefei, China, Anhui Science & Technology Publ. House, Vol. I, 372 pp., Vol. II (color plates), 280 pp.