



ASSESSING TO PLAN: NEXT STEPS TOWARDS CONSERVATION ACTION FOR THREATENED SNAKES & LIZARDS OF MAINLAND SOUTH ASIA



Report from the IUCN Red List Assessment, Key Biodiversity Areas and Assess to Plan workshop. 5th - 10th September 2019, Karl Kubel Foundation, Coimbatore, Tamil Nadu, India



ACKNOWLEDGEMENTS

We would like to thank everyone who participated in the IUCN Red List assessment, Key Biodiversity Areas and Assess to Plan (A2P) workshop for snakes and lizards of mainland South Asia, and subsequently contributed to the completion of this workshop report. A full list of workshop participants is provided in **Appendix I** of this document and all are thanked for their time and contributions.

In particular, we would like to thank and acknowledge the authors of the country-specific sections (Part II of this report), on the reptile diversity and biogeography of mainland South Asia, as follows: Bhutan - **Wangyal, J. Tshelthrim**; Nepal – **Kul Prasad Limbu** and **Santosh Bhattarai**; Bangladesh - **Md. Kamrul Hasan** and **M. Monirul H. Khan**; India - **S. R. Ganesh** and **N. S. Achyuthan**

The workshop was funded by Rainforest Trust and The Rufford Foundation, with generous support from the IUCN Red List Committee, Conservation International and the Global Conservation Network (GCN). Workshop organisation and logistical support was carried out by Zoo Outreach Organization.

Cover photo: *Varanus flavescens*

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Recommended citation: Gibson C., Lees C., Tognelli M., Srinivasulu C. and Das A. (Eds.), 2021. Assessing to Plan: Next steps towards conservation action for threatened snakes and lizards of mainland South Asia. IUCN Conservation Planning Specialist Group, Apple Valley, MN, USA.

CONTENTS

EXECUTIVE SUMMARY.....	5
1. INTRODUCTION.....	6
1.1 The IUCN Red List of Threatened Species™	6
1.2 Multi-species conservation action planning	7
1.3 Assess to Plan (A2P)	7
2. WORKSHOP PROCESS.....	9
2.1 IUCN Red List assessment process.....	9
2.2 Key Biodiversity Area (KBA) process	9
2.3 Assess to Plan (A2P) process.....	10
3. WORKSHOP RESULTS.....	11
3.1 IUCN Red List Assessment	11
3.1.1 Summary of major threats to mainland South Asian reptiles	11
3.2 Key Biodiversity Areas.....	11
3.3 Assess to Plan.....	14
3.3.1 Allocation of threatened species to A2P conservation planning categories	14
3.3.2 Site-based conservation planning.....	14
3.3.3 Habitat-based conservation planning	15
3.3.4 Threat-based conservation planning	19
3.3.5 Single-species planning	20
3.3.6 Intensive care conservation planning	20
3.3.7 Allocation of Data Deficient species to A2P conservation planning categories	20
4. A2P NEXT-STEPS TO CONSERVATION ACTION.....	22
4.1 Site-based conservation planning.....	22
4.1.1 Bastar Plateau: Community workshop on wildlife and people.....	22
4.1.2 Shevaroy Hills and Kolli Hills: Community workshops for wildlife.....	23
4.1.3 Hampi: Habitat-friendly management practices.....	25
4.1.4 Amboli / Kaas / Chalkewadi: Multi-stakeholder management plan.....	27
4.2 Species endemic to northeast mainland South Asia.....	28
4.2.1 Threatened species endemic to Bhutan	28
4.2.2 Threatened species endemic to Nepal	29
4.2.3 Threatened species endemic to northeast India	30
4.2.4 Threatened species endemic to northeast India and Bangladesh	32

4.2.5 Threatened species endemic to northeast India and Bhutan	33
4.2.6 Threatened species endemic to northeast India, Bangladesh, Nepal & Pakistan.....	35
4.3 Species-focused recovery planning.....	36
4.3.1 Bringing stakeholders together to action-plan for the yellow monitor <i>Varanus flavescens</i>	36
4.3.2 Bringing stakeholders together to action-plan for Indian spiny-tailed lizard <i>Saara hardwickii</i>	39
5. CONCLUSIONS AND RECOMMENDATIONS.....	41
PART II: THE REPTILE DIVERSITY AND BIOGEOGRPHY OF MAINLAND SOUTH ASIA.....	42
1. Bhutan.....	43
1.1 Reptile diversity of Bhutan.....	43
1.2 Biogeography of Bhutan	44
2. Nepal	45
2.1 Reptile diversity of Nepal.....	46
2.2 Climate of Nepal.....	47
2.3 Biogeography of Nepal.....	48
2.4 Reptile habitats in Nepal.....	49
3. Bangladesh	49
3.1 Reptile diversity of Bangladesh.....	49
3.2 Key climatological, biogeographical zones and habitats of significance to reptiles of Bangladesh.....	50
4. India	51
4.1 Geology, habitats and reptile diversity	51
4.2 Western Ghats – geoclimatic summary and reptile diversity.....	52
4.3 The Andaman & Nicobar Islands – geography, climate and reptile diversity.....	54
REFERENCES.....	56
APPENDIX I: Participants of the IUCN Red List assessment, Key Biodiversity Area and Assess to Plan workshop for snakes and lizards of mainland South Asia.....	59
APPENDIX II: The 428 species assessed during the reptiles of mainland South Asia workshop, with IUCN Red List category and criteria.....	60
APPENDIX III: A2P matrix of threatened species (separate document accompanies report)	
APPENDIX IV: Summary of the 32 Key Biodiversity Areas (KBAs) proposed for the inclusion of 57 reptile species.....	70
APPENDIX V: Maps of the 32 Key Biodiversity Areas identified during the mainland South Asia Red List, KBA and A2P workshop.....	72
APPENDIX VI: Summary of next-steps for threatened species.....	74

EXECUTIVE SUMMARY

In September 2019, the IUCN/CI Biodiversity Assessment Unit held a workshop to assess 428 species of snakes and lizards from the mainland South Asia region, for inclusion on the IUCN Red List of Threatened Species™, as part of the Global Reptile Assessment. A preliminary Key Biodiversity Area (KBA) assessment process for this group of species was also completed during the workshop.

Additionally, the IUCN SSC Conservation Planning Specialist Group (CPSG) facilitated the Assess to Plan (A2P) process, with the aim of identifying next steps towards conservation action for all species categorised as threatened. This involved assessors initially allocating all species categorised as threatened to one or more of the five A2P action planning groups (site, habitat / ecosystem, threat, single-species, intensive care) during the assessment component of the workshop, depending on where the focus of next steps for conservation action were considered most appropriate. These groups were subsequently used to organise the focus of dedicated A2P sessions, which involved workshop participants contributing to additional, discursive review of the threats and conservation actions information contained within the draft Red List assessments to determine next steps for conservation action. Key stakeholders and collaborators not at the workshop, but who should be engaged with were identified, and one or more workshop participants present at each of the A2P sessions agreed to be the project champion, responsible for moving forward with the next steps, post workshop. Assess to Plan sessions were also carried out for species assessed as Data Deficient, to determine the underlying reasons why groups of species could not be assessed beyond data Deficient and what next steps could be taken to move these species out of the DD category.

Of the 428 species assessed (188 snakes and 240 lizards), 62 species (20 snakes and 42 lizards) were categorised as threatened (Critically Endangered, Endangered or Vulnerable) and 81 species (29 snakes and 52 lizards) were assessed as Data Deficient. Additionally, 24 species were assessed as Near Threatened and 261 species as Least Concern.

The Assess to Plan (A2P) process carried out by participants during the workshop determined that site-based conservation action planning was considered necessary 58 of the 62 threatened species. Habitat-based conservation action planning was 35 species dependant on and/or restricted to a specific habitat type (where the specific habitat type could occur at multiple sites). Seven A2P discussion sessions were held, four of which were site based (i. Bastar Plateau, ii. Shevaroy Hills and Kolli Hills, iii. Hampi, iv. Amboli / Kaas Chalkewadi), one of which focused on 10 threatened species endemic to Northeast mainland South Asia and two were focused on single species recovery planning. A total of 28 threatened species were included in detailed Assess to Plan discussion sessions, focused on planning the next steps to conservation actions for these species.

Full details of the A2P conservation action planning process and next steps for threatened snakes and lizards of mainland South Asia are presented in the following pages, along with Red List and Key Biodiversity Area results and conservation action planning summary tables for threatened species.

1. INTRODUCTION

In September 2019, the IUCN-Conservation International Biodiversity Assessment Unit (IUCN-CI BAU) held an IUCN Red List Assessment, Key Biodiversity Areas (KBA) and Assess to Plan (A2P) workshop for 428 reptile species from mainland South Asia. This initiative was carried out as part of the Global Reptile Assessment (GRA), which is being led by the IUCN-CI BAU and completed through a series of regional Red List assessment workshops. The geographic focus of this workshop consisted of Nepal, Bhutan, Bangladesh and India (including the Andaman and Nicobar Islands). The focal taxa comprised 188 snake and 240 lizard species from this region, which had not previously been assessed and/or had been newly described and thereby completed all remaining assessments for snakes and lizards from this region. Consequently, this workshop was not a comprehensive assessment of all snake and lizard species from the region. For example, IUCN-CI BAU held a workshop in 2011 that assessed 227 Indian endemic reptile species, most of which were from the Western and Eastern Ghats (Srinivasulu et al., 2014). These species were not reassessed during the 2019 workshop, and all species from the Western Ghats that were assessed this time were mostly species that had been newly described (since the 2011 workshop), or reassessments necessitated by taxonomic changes.

During the workshop, all species were assessed using the IUCN Red List Categories and Criteria and subsequently considered within the Key Biodiversity Area and Assess to Plan (A2P) processes. The workshop took place over six days, involving 21 participants, three Red List and KBA facilitators and two Assess to Plan facilitators. A full list of workshop participants is provided in Appendix I, and a list of the 428 species assessed is provided in Appendix II.

A comprehensive overview to the reptile diversity and biogeography for each of the geographic areas at the focus of this workshop has been compiled by a workshop participants and is presented in **Part II** (page 42) of this report.

1.1 THE IUCN RED LIST OF THREATENED SPECIES™

The IUCN Red List is a critical indicator of the health of the world's biodiversity. It is widely recognised as the most comprehensive, scientifically based source of information on the global status of fungi, plant, and animal species. IUCN Red List Categories and Criteria are applied to individual species assessments to determine their relative risk of extinction. Threatened species are those listed as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU). Classification of species into the threatened categories applies a set of five quantitative criteria based on biological factors related to extinction risk, including rate of population decline, population size, area of geographic distribution and degree of population and distribution fragmentation.

In addition to information on abundance, distribution and population trends, the IUCN Red List assessment process includes identification of the threats posed to species, requiring assessors to attribute those that have contributed to the IUCN category assigned and encouraging them to indicate those having the highest impact. Further, the assessment process collects information on conservation actions in place and on what further conservation actions or research is thought to be needed.

Species that are either close to meeting the threatened thresholds or would be threatened were it not for ongoing conservation interventions are classified as Near Threatened (NT). Taxa evaluated as having a low risk of extinction are classified as Least Concern (LC). Also highlighted within the IUCN Red List are taxa that cannot be evaluated due to inadequate information to make a direct or indirect assessment of extinction risk based on distribution and/or population status and are therefore assessed as Data Deficient (DD). This category does not necessarily mean that a species is *not*

threatened, only that the risk of extinction cannot be assessed with the information available (IUCN 2012).

1.2 MULTI-SPECIES CONSERVATION ACTION PLANNING

IUCN's Species Survival Commission (SSC) has adopted an 'Assess–Plan–Act cycle' and a goal that 'every species that needs conservation attention is covered by an effective plan of action'. However, with more than a quarter of all species on the IUCN Red List assessed as threatened with extinction, there are too many species to address with single-species conservation planning.

As the planning arm of IUCN SSC, the Conservation Planning Specialist Group (CPSG) is committed to enabling the rapid progression of threatened species from assessment, through conservation planning, and into effective action.

Species conservation action planning considers not only what action is needed but how it will be done, when, by whom and with what resources. Once these have been agreed among stakeholders, prospects for species can be expected to improve.

Species conservation action planning often benefits from a stakeholder inclusive environment in which species specialists collaborate with government agencies, relevant conservation NGOs, community groups, and the private sector, to establish a way forward that all groups can support and, ideally, benefit from.

These stakeholder-inclusive projects are resource intensive. Given the large number of species that need conservation attention through planning, it would be more efficient if each action planning process or event could address adequately the needs of multiple species. This is achievable for groups whose conservation needs overlap significantly, such as those sharing the same threatened environment or those targeted by threats that are taxon-specific, such as disease or over-harvesting for trade.

For the best results, multi-species groupings for planning should be chosen carefully, based on the best available species-specific knowledge. The IUCN Red List of Threatened Species™ includes much of the required level of species-specific data for creating good multi-species groupings for planning and action. These data can be freely accessed from the on-line Red List website. Planning for the conservation of multiple threatened taxa benefits from viewing these data across many species at once, to help identify those likely to benefit from the same kinds of conservation activity performed either in the same places or involving the same groups of stakeholders. The Assess to Plan (A2P) process and associated tools have been developed to support this.

1.3 ASSESS TO PLAN (A2P)

Assess to Plan (A2P) has been formulated as an intermediate step to link single-species status assessment through to stakeholder-inclusive, multi-species conservation action planning. The aim of A2P is to use analysis of Red List data to identify groups of species with characteristics that have overlapping conservation needs that can be planned for and acted on together; and with the input of local specialists, to identify next steps towards action for these species groups, and who the individuals or agencies best placed to take these steps are.

A2P is designed to work either as an integral part of IUCN's Red Listing framework - combining Red List workshops with the A2P process - or as a stand-alone process for groups of species with existing Red List assessments.

Key Red List data gathered on Threatened species are collated and organised in a single A2P Matrix to enable viewing across multiple taxa simultaneously and illustrate overlaps among species in distribution, preferred habitats and major threats.

These overlaps form the basis for grouping species with shared conservation planning and action needs, that can be expected to respond favourably to the same kinds of conservation action taken either in the same areas and/or by the same groups of conservation actors.

A2P involves facilitated discussions between species experts, conservation practitioners and local stakeholders to determine logical multi-species groupings for planning (Table 1.) and practical, achievable pathways through which the conservation needs of these species groups can be met. Next steps towards this are recommended, along with potential champions for the work.

The primary outputs of the Assess to Plan process are presented in a report, which provides the recommended next steps for the conservation of groups of threatened species, along with who will take those steps.

Table 1. Typically, A2P discussions focus on the following five A2P multi-species groupings (species can occur in multiple groups):

A2P conservation planning category	Description
	<p>SITES: definable sites or areas that are significant for multiple species of interest, requiring site-based planning and action for localised threat mitigation, management and/or protection</p>
	<p>HABITATS & ECOSYSTEMS: species dependent on the same, specific habitat type which is subject to a common threat or set of threats (the specific habitat type could occur at multiple sites).</p>
	<p>THREATS: major threatening processes that are not anchored to specific sites, but which affect multiple species either because they are inherently connected to them or because they are widespread (e.g. invasive species, disease, over-harvesting).</p>
	<p>SPECIES-FOCUSED RECOVERY PLANS: the conservation needs of some taxa do not align well with others and they may require their own plan. In other instances, they may align so well with the needs of other species and are sufficiently high-profile to be able to act as “umbrella” species for the purpose of planning and action.</p>
	<p>INTENSIVE CARE: groups of species for which threat mitigation alone may not prevent extinction in the wild because it will take too long, or because species viability is too compromised to allow for unassisted recovery. Grouping these taxa for further assessment and action can be a valuable next step.</p>

2. WORKSHOP PROCESS

2.1 IUCN RED LIST ASSESSMENT PROCESS

The first four days of the workshop were dedicated to assessing species for the IUCN Red List of Threatened Species™ (IUCN Red List).

The 428 reptile species to be assessed were arranged into working sets, based either on geographic areas, or taxonomic groups (Table 2), to enable assessors to work in groups focusing on their specific areas of expertise. During the workshop, participants divided into three working groups (each group with an IUCN Red List facilitator) to complete draft global Red List assessments for every species. Experts contributed their data, information and knowledge on individual species and the Red List facilitator compiled the draft assessment documentation. All experts in a working group worked together and debated the information compiled on each species. They then reviewed the assessment documentation against the IUCN Red List Categories and Criteria and agreed the most appropriate category to apply. Movement of experts between working groups was encouraged to ensure each participant was able to contribute to and review assessments for all species within their taxonomic and geographic areas of expertise. All assessments were completed by group consensus and experts involved were listed as assessors or reviewers on the final draft assessment. Post workshop, all draft assessments were reviewed by the IUCN-CI Biodiversity Assessment Unit team, with final pre-submission review carried out by the Red List Authority Coordinator for snakes and lizards. Any outstanding queries were followed up with experts for resolution, prior to submission for publication on the IUCN Red List.

Table 2. Working sets for Red List assessment groups

Working set	No. of species
1. Nepal, Bhutan (occurs in one or both of these countries only)	12
2. Andaman and Nicobar (occurs in this island group only)	34
3. Western Ghats (endemic to, or significant proportion of population occurs in this area)	67
4. Indian endemics	77
5. Regional endemics (distributed in ≥ 2 countries within mainland South Asia region)	60
6. Non-endemic snakes (focus on specific families)	31
7. Non-endemic lizards (focus on specific families)	28
8. Widespread (global distribution includes areas outside of 'mainland South Asia region')	119
Total number of species	428

2.2 KEY BIODIVERSITY AREA (KBA) PROCESS

During the last two days of the workshop, after the provisional IUCN Red List assessment was completed (in which 428 reptile species were assessed), a preliminary identification of KBAs was conducted following the Guidelines for using the Global Standard for the Identification of Key Biodiversity Areas v 1.0 (KBA Standard and Appeals Committee 2019). All potential KBA trigger species (i.e. those meeting the KBA standards for threatened species (A1) and geographically restricted species (B1-2) (IUCN 2016), were identified during the Red List assessment process. The spatial distribution of trigger species was then overlaid with the layers of existing KBAs and existing Protected Areas (PAs) to see if they fall wholly within or overlap with their boundaries. Whenever trigger species fell wholly within or overlapped with existing KBAs, they were included within these KBAs, provided

they met the corresponding KBA criteria, sub-criteria and thresholds. If trigger species fell wholly within or overlapped existing PAs that were not already identified as KBAs, the boundaries of these PAs were designated as new KBAs, provided the trigger species met the corresponding KBA criteria, sub-criteria, and thresholds. Finally, if the trigger species distribution did not overlap with any existing KBA or PA, a new KBA site was delineated. In all cases, the experts attending the workshop were consulted to ascertain the presence of the trigger species within a site, provide information and data to support the compliance with the KBA criteria and meeting the relevant thresholds, and help with the delineation of practical KBA boundaries. During this process, all KBA sites were evaluated for their ecological significance and manageability, according to the Guidelines (for detailed information about the process, see KBA Standard and Appeals Committee 2019).

2.3 ASSESS TO PLAN (A2P) PROCESS

The A2P process began during the four days of Red Listing, where workshop participants provisionally assigned all species assessed as threatened to one (or more) of the five broad A2P multi-species planning groups (Table 1, Section 1.3 above), depending on their most critical conservation action planning needs.

An A2P Matrix was created for the 62 species assessed as threatened over the course of the Red List workshop (Appendix III, separate attachment). The matrix provided an overview of habitats, threats, use and trade, conservation actions needed, conservation actions in place and research actions needed, as selected within the coded sections of each species' Red List assessment, by the Red List assessors. Within the matrix, species were ordered by their range of restrictedness within the region (those species with the most restricted distribution listed first moving up to species that may occur through the region listed last). The A2P matrix allowed experts to view the threats and conservation actions needed across all threatened species within that region simultaneously and helped identify any obvious species groups for the A2P process.

Additionally, during the Red List assessment workshop participants also trialled grouping species assessed as Data Deficient (DD) to "DD A2P categories". The aim of this was to identify the core reasons we do not currently have enough information to assess these species beyond Data Deficient and group them according to these reasons. These groups will assist with the co-ordination and prioritisation of subsequent next steps to fill knowledge gaps and move these species out of the Data Deficient Red List category.

Once the Red List assessment component of the workshop had been completed and all threatened species had been provisionally allocated to A2P categories, "species groups" were then identified within each of the five A2P categories.

Facilitated Assess to Plan discussion sessions were held for the groups identified, which were run concurrently to the Key Biodiversity Area assessment process. Workshop participants were free to move between the KBA and A2P processes, depending on where their expertise was most required.

The A2P sessions involved group discussions with relevant species experts to identify the required conservation planning actions needed and the potential key collaborators and stakeholders involved in taking the next steps for the actions identified. The aim of A2P discussions was that, by the end of the workshop, all species considered during the A2P process would be assigned to at least one multi-species group, with each group having recommended conservation planning actions and a workshop participant who would lead on taking these actions forward, post workshop.

3. WORKSHOP RESULTS

3.1 IUCN RED LIST ASSESSMENT

A total of 428 species (240 lizards and 188 snakes) were assessed during the Red List workshop. Of these, 62 species (42 lizards and 20 snakes) were categorised as threatened (CR, EN, VU). Eighty-one species (52 lizards and 29 snakes) were assessed as Data Deficient. Additionally, 24 species (9 lizards and 15 snakes) were assessed as Near Threatened and 261 species (137 lizards and 124 snakes) as Least Concern. The IUCN Red List categories assigned to species during the workshop are provided in Appendix II. **It should be noted the IUCN Red List of Threatened Species™ website should always be consulted for the final species assessment category and documentation.**

3.1.1 SUMMARY OF MAJOR THREATS TO MAINLAND SOUTH ASIAN REPTILES

During the assessment process, experts identified the main overarching threats lizards and snakes of the region to be habitat loss, fragmentation, alteration, and degradation attributed to multiple human activities. Major drivers include habitat clearance for agriculture (including tea, coffee and cotton). Thirty-nine of the threatened species (63%) are impacted by annual and perennial non-timber crops, particularly from both agro-industry (20 species) and small-holder farming (19 species). The second largest driver of habitat loss is due to residential and commercial development, which was considered a threat to 32 (51%) of the 62 threatened species. Of these, development for houses and urban areas impacts 24 species and tourism and recreational area development impacts 11 species. Roads and railroads are the third biggest driver in terms of numbers of species impacted (16 species). Wood and pulp plantations (e.g., eucalyptus for paper) - mostly at the agro-industry scale; logging and wood harvesting, and mining and quarrying are the main drivers of habitat loss and fragmentation impacting a significant number of the species listed as threatened. Additionally, collection of species for intentional use and/or persecution, (particularly of snakes) is considered a threat to at least seven species.

Species were most often assessed as threatened due to the cumulative effect of numerous factors impacting their populations and/or fragmenting or reducing their distributional range.

3.2 KEY BIODIVERSITY AREAS

During the workshop, 149 species were preliminary identified as Key Biodiversity Area (KBA) trigger species. Of these, 56 species had been assessed as threatened during the Red List assessment process and 92 were range-restricted species (geographic ranges $\leq 10,000$ km²). Thirty-two KBAs were identified (13 of which were newly delineated and 19 were existing KBAs) for the proposed addition of 57 trigger species, including 46 of the 56 threatened species (for which adequate information was available, as required by the KBA process), plus 2 Near Threatened and 9 Data Deficient species. Twenty-nine of the 32 KBA sites are located in India, two are in Nepal and one is in Bangladesh.

Table 4 (below) provides a list of the 32 KBA sites, along with the country they are located in, their area in km² and the number of trigger species occurring within each site. The map (Figure 1 below) shows the location of each of the 32 KBAs within the South Asia region. The KBA locations are numbered to correspond with the site number in Table 4. An additional table (Appendix IV) contains more detailed information for the 32 KBAs (including names of the reptile species occurring within each of them and their Red List categories) and individual maps for each of the 32 KBA's are provided in Appendix V.

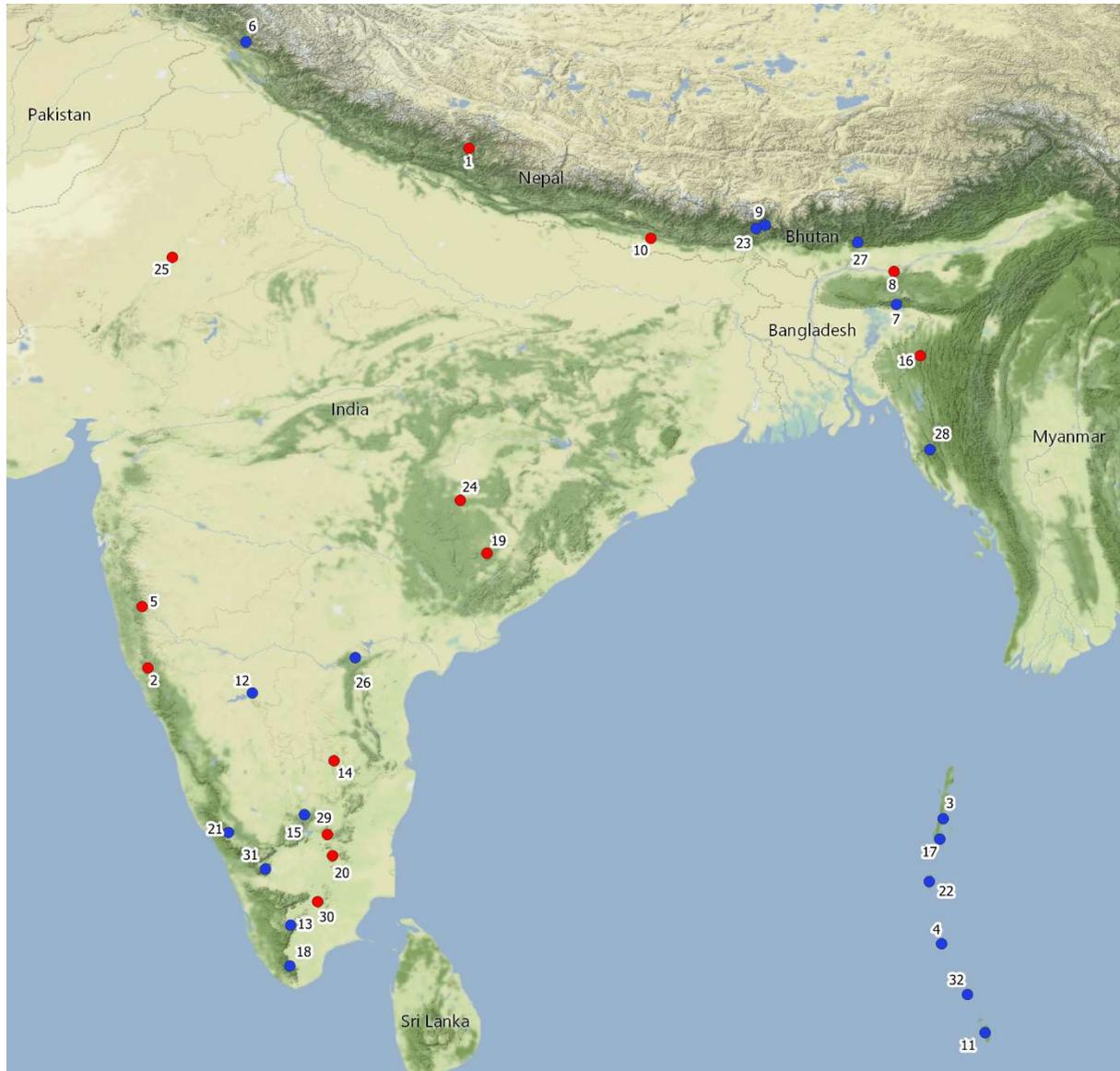
Fifty-four of the 57 species occur within just one of the 32 KBA sites and 3 threatened species (*Cnemaspis yercaudensis*, *Coryphophylax brevicaudus*, and *Gekko nicobarensis*) occur within two of the KBA sites identified.

The maximum number of species occurring within one KBA site is five. Two KBAs (Amboli Reserve Forest and Shevaroy Hills) have five species within them. Two KBA sites (Kolli Hills and Tillangchong, Camorta, Katchal, Nancowry and Trinkat) have four species, four sites have three species, six sites have two species and the remaining 18 KBAs have one species within each of them (Appendix IV).

Table 4. Names, country location, area in km² and number of trigger species included for the 32 Key Biodiversity Area sites identified during the workshop. The sites flagged with an asterisk (*) indicate newly delineated proposed KBA sites, triggered by reptile species. Non-flagged sites are existing KBAs, for which the inclusion of trigger reptile species has been proposed.

Site	KBA site name	Country	Area km ²	No. of species
1	Agaupaani *	Nepal	2.0	1
2	Amboli Reserve Forest *	India	6.7	5
3	Baratang-Rafters Creek	India	191.5	2
4	Car Nicobar	India	119.8	3
5	Chalkewadi-Sadawaghapur Plateau *	India	196.0	2
6	Chamba Valley	India	1520.5	1
7	Cherapunjee Cliffs, Gorges, and Sacred Groves	India	163.1	1
8	Deepor Beel Bird Sanctuary-Extension *	India	12.3	1
9	Fambong Lho Wildlife Sanctuary-Himalayan Zoological Park-Raitey Chu Reserve Forest	India	112.3	1
10	Gauri Danda *	Nepal	2.5	1
11	Great Nicobar-Little Nicobar	India	1070.9	3
12	Hampi and Daroji Bear Sanctuary	India	10.9	2
13	High Wavy Mountains	India	143.1	2
14	Horsley Konda *	India	19.1	1
15	Hosur Forest Division	India	949.6	1
16	Jampui Hills *	India	43.9	1
17	Kadakachang	India	12.8	2
18	Kalakad Mundanthurai Tiger Reserve	India	817.8	3
19	Kanger Valley National Park *	India	197.2	1
20	Kolli Hills *	India	466.3	4
21	Kottiyoor Reserve Forest	India	38.5	1
22	Little Andaman	India	559.6	1
23	Maenam Wildlife Sanctuary	India	170.4	1
24	Malajkudum *	India	173.8	1
25	Pushkar *	India	3.1	1
26	Rajiv Gandhi Wildlife Sanctuary	India	5183.1	2
27	Royal Manas National Park	Bhutan	1057.0	1
28	Sangu Matamuhari Wildlife Sanctuary	Bangladesh	763.5	1
29	Shevaroy Hills *	India	433.2	5
30	Sirumalai Reserve Forest *	India	283.3	1
31	Siruvani Foothills	India	276.2	3
32	Tillangchong, Camorta, Katchal, Nancowry and Trinkat	India	349.2	4

Figure 1. The locations of the 32 Key Biodiversity Areas identified during the Red List, KBA and A2P workshop. The individual KBA locations are numbered to correspond with the site number in Table 4 (above). Blue points indicate existing (adopted) KBAs, and red points indicate sites newly delineated during the workshop.



3.3 ASSESS TO PLAN

3.3.1 ALLOCATION OF THREATENED SPECIES TO A2P CONSERVATION PLANNING CATEGORIES

During the Red List assessment process, experts allocated all species provisionally assessed as threatened (Critically Endangered, Endangered or Vulnerable) to one or more of the five A2P conservation planning categories (refer to Table 1, section 1.3 above, for definitions of these five categories), according to the conservation planning direction(s) considered most needed for each of these species.

Table 5 (below) provides a summary of the number of species allocated to each of the five A2P conservation planning categories for the 62 threatened species. The table in Appendix VI provides full details on which of the five A2P conservation planning categories each of the 62 threatened species were allocated to.

Table 5. Number of threatened species allocated to each of the A2P conservation planning categories (n=62).

	Site 	Habitat 	Threat 	Single species 	Intensive care 
No. of species	58	32	7	2	1

Site-based conservation planning was recommended for 58 of the 62 species assessed as threatened. Habitat-based conservation planning was recommended for 32 species dependant on and/or restricted to a specific habitat type (where the specific habitat type could occur at multiple sites); conservation planning around specific threats was recommended for seven species; two species (*Varanus flavescens* and *Saara hardwickii*) were identified as needing single species recovery planning and it was recommended that the feasibility of intensive management should be investigated for one Critically Endangered species (*Sitana fusca*).

Two of the threatened species (*Trimeresurus labialis* and *Naja sagittifera*) were allocated to three A2P conservation planning groups, both identified as needing site, habitat and specific threat-based conservation planning. Thirty-four species were allocated to two A2P conservation planning groups. Of these, 29 species have been identified as needing site and habitat-based conservation action planning; site and specific-threat based planning is recommended for 4 species and one species has been identified as needing planning for potential intensive care, alongside site-based conservation action planning. Twenty-six species were allocated to just one of the planning categories; of these 22 species were identified as most needing conservation planning at certain sites, one species (*Sitana visiri*) needs conservation planning focused solely on its primary habitat, conservation planning around addressing a specific threat is the most needed planning focus for one species and single species recovery planning is recommended for two species. (Appendix VI).

3.3.2 SITE-BASED CONSERVATION PLANNING

Site-based conservation planning was recommended for 58 species assessed as threatened. Of these, 46 species were included within one or more of the 32 Key Biodiversity Areas identified during the KBA process (Appendices IV and V). Planning conservation actions for species within these KBA areas may prove to be an effective way to prioritise where to target conservation action. Additionally, conservation measures initiated in these areas may be beneficial to other threatened taxa.

During the A2P sessions, it was identified that five specific locations would benefit initial planning discussions, as multiple reptile species assessed as threatened during the workshop occurred in these areas.

These sites are:

- Bastar Plateau
- Shevaroy Hills and Kolli Hills
- Hampi
- Amboli / Kaas Chalkewadi

The outcomes of the A2P discussion for these 5 sites are presented in Section 4.1 of this report.

Additionally, an A2P session was held for 10 threatened species endemic to Northeast mainland South Asia. The outcomes of this A2P session are presented in Section 4.2 of this report.

3.3.3 HABITAT-BASED CONSERVATION PLANNING

Habitat-based conservation planning was recommended for 32 of the species assessed as threatened (Appendix VI). These species are all dependent on specific habitat types, or requirements and either do not occur or survive in, or are not known from, other habitat types. Additionally, single species conservation planning was recommended for *Varanus flavescens*, however the habitat requirements for this species is included within this section, as this will form an integral part of the conservation planning for this species. Thirteen specific habitat types were identified across the 33 species requiring specific habitat-based conservation planning. Table 6 (below) provides information on these habitat types and the numbers and names of species allocated to each of the habitat types identified. Due to time restraints during the workshop, A2P sessions were not held for these habitat groups. However, site-based conservation planning was also recommended for 31 of these species, therefore it is recommended that their specific habitat requirements are considered during site-based conservation planning for the relevant KBAs or other sites of primary importance in which these species occur (Appendix VI).

Table 6. Habitat based multi-species planning groups.

Habitat type	No. of species	Species names	Rationale
Rocky areas (e.g. inland cliffs, mountain peaks).	2	<i>Cnemaspis adii</i>	Only known from a temple complex. All specimens have been found on rocks and rock walls of the old temple ruins. This species has not been found following renovation of individual temple sites and there is no evidence of recolonization.
		<i>Cnemaspis assamensis</i>	Found in rocky outcrops. The type-locality has been modified as a result of urban expansion and tourist development, including the removal of stones on which this species depends. Has not been found in recent, extensive recent surveys.
Subtropical/tropical moist montane forest	6	<i>Cnemaspis kottiyoorensis</i>	Species appears to be restricted to evergreen forested areas
		<i>Uropeltis dindigalensis</i>	Fossorial species. Only recorded from this habitat.

Habitat type	No. of species	Species names	Rationale
		<i>Uropeltis shorttii</i>	Fossorial species. Occurs in an area largely given over to coffee and silver oak cultivation, with remnants of tropical evergreen and riparian forest, which represent humid refugia. Species is not able to persist in largely human-modified habitats.
		<i>Cnemaspis yercaudensis</i>	There is very little natural vegetation (tropical montane forest) remaining in the area this species occurs, and it is highly fragmented. Species more common within forest than outside.
		<i>Microauris aurantolabium</i>	Rainforests and shola forests occurring at an altitude of 1,000-1,400 m asl. Habitat is highly fragmented. Species will not survive in cleared areas, It is a high canopy species that requires tall, mature forest and will not persist in even moderately disturbed areas.
		<i>Monilesaurus acanthocephalus</i>	Arboreal to semi-arboreal lizard. The forest at the type-locality is largely confined to narrow rows of trees between tea plantations. It is not present in the actual tea plantation. There is a need to limit additional conversion of suitable habitat to tea plantations
Subtropical/tropical moist lowland forest	12	<i>Trimeresurus labialis</i>	Arboreal viper – requires forest habitat with large trees.
		<i>Boiga andamanensis</i>	Arboreal snake associated with tropical evergreen and tropical moist deciduous forest. Appears to be a forest obligate species.
		<i>Calliophis castoe</i>	Burrowing snake species associated with tropical semi-evergreen forest, and tropical wet evergreen forest. Forest obligate species.
		<i>Cnemaspis flaviventralis</i>	Associated with tropical moist forest, where it is found on tree trunks, in leaf litter, on rock surfaces, under rocks, on boulders or in tree holes.
		<i>Cyrtodactylus adleri</i>	Arboreal species. Inhabits undisturbed primary tropical moist forest, where it has been found in loose soil under logs and on saplings. Appears to be a forest obligate species, not found in disturbed areas.
		<i>Dibamus nicobaricum</i>	Burrowing species. Tropical evergreen forest, especially in areas with loose soil, where it can be found under boulders, logs etc. Generally not found in modified habitats.
		<i>Gekko nicobarensis</i>	Arboreal gecko typically associated with primary tropical evergreen forest.

Habitat type	No. of species	Species names	Rationale
			Forest obligate species, does not appear to be present in other habitat types.
		<i>Melanophidium khairei</i>	Fossorial species. Mainly encountered in semi-evergreen forest.
		<i>Naja sagittifera</i>	This cobra is rarely encountered close to human habitation, being mainly found in forested habitats.
		<i>Coryphophylax brevicaudus</i>	Semi-arboreal to terrestrial in habits, and only recorded in primary evergreen and semi-evergreen forests.
		<i>Pseudocalotes andamanensis</i>	Canopy species found in primary tropical evergreen moist forest and semi-evergreen forests. It is not been recorded in modified habitats and appears to be a forest obligate species.
		<i>Tropidophorus assamensis</i>	Associated with forest streams, mainly inhabiting bryophyte covered rocks and boulders. Main threat to the species is the extraction of rocks and boulders from streams.
Subtropical/tropical dry deciduous forest	2	<i>Rhinophis goweri</i>	Fossorial species: protection of suitable habitat within the species restricted range is needed.
		<i>Cnemaspis shevaroyensis</i>	Species seems to prefer areas of dark a cool spots during the day.
Subtropical / tropical dry deciduous forest and scrubland	1	<i>Cyrtodactylus speciosus</i>	Associated with dry deciduous forest and scrubland at the foot of hills.
Subtropical/tropical dry scrubland	3	<i>Eutropis ashwamedhi</i>	Predominately rocky scrubland. Has been collected from below large, flat rocks. Threats include habitat alteration and degradation due to mining and quarrying. It is necessary to initiate steps towards preservation of the habitat of this endemic species.
		<i>Sitana schleichi</i>	Subtropical/tropical dry grasslands / scrublands within the Shuklaphantah National Park. Does not occur in bare areas. Prescribed burnings occur within the park to maintain the grassland habitats for herbivores. The species has not been recorded recently and fire may have a more significant impact on the population than presently understood.
		<i>Cyrtopodion aravallense</i>	Rocky outcrops in scrubland. Location is subject to heavy stone quarrying and species is restricted to an area subject to rapid urban development. Any future development or disturbance that affects the rock boulders where

Habitat type	No. of species	Species names	Rationale
			the species occurs could rapidly drive it to extinction.
Rocky areas within subtropical / tropical dry shrubland	1	<i>Hemidactylus yajurvedi</i>	Confined to small, isolated hillocks within an agricultural landscape – highly fragmented. Unlikely that a hillock would be recolonized should a localized impact eliminate a subpopulation. Plantations abutting hillocks shade the rocks and reduce the already restricted area of suitable habitat, and support a less diverse insect fauna which may reduce the quality of prey resources.
Subtropical/tropical dry grassland and coastal/supratidal - coastal sand dunes	2	<i>Sitana marudhamneydhal</i>	Coastal sand dunes and grassland habitats. There is a need to maintain and conserve remaining patches of suitable arid grasslands. Provision for the conservation of this species should be made during agricultural projects in the area.
		<i>Sitana visiri</i>	Associated with coastal sand dunes and grassland plains. Despite legal protection against land conversion, recent expansion of agriculture; Eucalyptus plantations, and urbanization has been converting grassland in this area over the last decade and the rate of conversion is increasing. Species is unlikely to persist in Eucalyptus plantations. Much of the remaining grassland could be lost within the next decade. Mitigating the rate of grassland conversion is urgently required.
High altitude subtropical/tropical grassland	1	<i>Trimeresurus strigatus</i>	Small rocky patches in grassland. Rarely seen in disturbed areas.
Subtropical/tropical seasonally wet/flooded grasslands and inland wetlands	1	<i>Varanus flavescens</i>	Only present in marshy areas and proposed conservation measures include protection of wetlands and marshy areas.
Freshwater marshland	1	<i>Xenochrophis cerasogaster</i>	This aquatic snake inhabits freshwater marshland with abundant emergent vegetation. In India, these marshland habitats are threatened by substantial drainage, pollution and conversion of wetlands into urban and agricultural land.
Temperate forest	1	<i>Trachischium guentheri</i>	Semi-fossorial. Found in temperate montane forest with rocky slopes. Threatened through conversion of primary habitat to intensive agriculture.

3.3.4 THREAT-BASED CONSERVATION PLANNING

Threat-based conservation planning with regards to a specific threat was recommended for 7 species assessed as threatened (see Table 7 below and Appendix VI). Additionally, single species conservation planning was recommended for *Varanus flavescens* and *Saara hardwickii*, however they are also included in this section, as this addressing direct, targeted threats to these species will form an integral part of the conservation planning for these species, alongside conservation actions for specific habitats and at key sites.

Persecution, particularly of snakes, was identified as being a specific threat impacting the greatest number of species, within the threats-based conservation action planning group. An inherent fear of snakes results in a tendency for people to kill snakes if they encounter them, particularly as it is not possible for people to distinguish between venomous and non-venomous species. This means that generally, any snake encountered is highly likely to be killed, due to a fear of snake bites from venomous snakes. Conservation actions identified for these species include campaigns and educational programmes to raise awareness of the threatened status of these species, cultivate a positive connection between people and snakes and practical snake-human conflict resolution such as how to avoid snakes and what to do in case of a snake bite.

Unsustainable levels of hunting and/or collecting specific species was identified as a major threat impacting three species (Table 7). Single-species action planning was recommended for two of these species (*Varanus flavescens* and *Saara hardwickii*) and these are discussed in detail, in section 4.3 of this report. Harvest and trade management are identified as the primary conservation actions needed for *Elaphe taeniura*, which is threatened by overharvesting for food, skin and the international pet trade throughout some parts of its range.

Two species were identified as being threatened through predation by exotic predators. *Elaphe taeniura* is predated by animals such as weasels and peacocks. Juveniles and eggs of *Varanus flavescens* are often predated by introduced predators such as domestic cats.

Invasive species was identified as a significant threat to one species. Populations of *Ophisops pushkarensis* have been observed to decline in the presence of *Prosopis juliflora*; an invasive plant that alters microhabitat conditions. Invasive species management is recommended as conservation action needed for this threatened snake species.

Table 7. Threat based multi-species planning bundles.

Threat type	No. of species	Species names
Persecution	6	<i>Trimeresurus labialis</i> , <i>Naja sagittifera</i> , <i>Trimeresurus cantori</i> , <i>Trimeresurus mutabilis</i> , <i>Oligodon juglandifer</i> , <i>Varanus flavescens</i>
Invasive species	1	<i>Ophisops pushkarensis</i>
Predation by exotic predators	2	<i>Elaphe taeniura</i> , <i>Varanus flavescens</i>
Overharvesting for direct use (including for oil, skin, meat, traditional medicine, international pet trade, school and demonstrations in university science classes)	3	<i>Elaphe taeniura</i> , <i>Saara hardwickii</i> , <i>Varanus flavescens</i>

3.3.5 SINGLE-SPECIES PLANNING

Single species planning was recommended for two species (*Varanus flavescens* and *Saara Hardwickii*), due to the complex and unique combination of conservation actions needed by each species, which may vary in priority across the full extent of their geographic range. A2P planning sessions were held for both of these species during the workshop and the outcomes are presented in Section 4.3 of this report.

3.3.6 INTENSIVE CARE CONSERVATION PLANNING

One species (*Sitana fusca*) was allocated to the intensive care A2P conservation planning group, as it was recommended that the feasibility of translocating the species could potentially be considered as part of the effective conservation of this species.

Site-based conservation planning was also recommended for *Sitana fusca*. This Critically Endangered species is the only species to have triggered the newly delineated KBA site 'Gauri Danda' in Nepal. The conservation needs of this species and next steps for action were discussed as part of the 'Species endemic to Bhutan or Nepal' A2P planning session and further details are presented in Section 4.2 of this report.

3.3.7 ALLOCATION OF DATA DEFICIENT SPECIES TO A2P CONSERVATION PLANNING CATEGORIES

Of the 428 species assessed during the IUCN Red List workshop, 81 species (almost 20%) were assessed as Data Deficient (Appendix II).

A taxon is assessed as Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status, even after consideration of any existing background information concerning the deterioration of habitat and/or other causal factors etc. Listing taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. Therefore, the implications of listing in the Data Deficient category indicates that no assessment of extinction risk has been made, and until an assessment can be made, it may be appropriate to give species assessed as Data Deficient the same degree of attention as threatened taxa, at least until their status can be assessed (IUCN 2012).

During the Red List assessment process, each time a species was assessed as DD, experts were asked to explain the underlying reasons that describe **why** we are unable to gather adequate information on the species to assess their conservation status beyond Data Deficient. Information gathering from the 81 Data Deficient species resulted in seven A2P DD categories being identified, (with two categories being further split into sub-categories). The seven A2P conservation planning groups for Data Deficient species, established by workshop participants during the Red List assessment process is presented in Table 8 below. The categorisation of species into the A2P DD conservation planning groups may be useful in planning and/or prioritising future work and/or research on species assessed as Data Deficient.

Table 8. Summary of the seven A2P conservation planning groups for Data Deficient species. Categories ‘1’ and ‘2’ have sub-categories within their overarching explanation for a DD Red List category.

Data Deficient A2P groups	
1. Hard to survey for	a. Difficult habitats to access (e.g., arboreal / fossorial)
	b. Remote location – logistically difficult to get to
2. Very recently described	a. Only very recently discovered
	b. Newly described from old specimens
	c. Taxonomic re-classification
3. Taxonomy uncertain or hard to identify in the field	
4. Known only from historic specimen(s)	
5. Area has not been re-surveyed / needs targeted surveys	
6. Area(s) surveyed extensively, but species not found	
7. Poor museum curation (specimens in bad condition)	

It was recognised amongst workshop participants that it was extremely difficult to obtain funding to carry out research on poorly known species, to enable additional data to be collected on them. The workshop group suggested re-badging A2P DD category 4: ‘Known only from historic specimen(s)’ as a campaign for ‘Lost Species’. Mounting a campaign for Lost species, underpinned by a compelling description of campaign scope and details on the species we have lost track of over time could potentially increase interest in, and attract funding to enable experts to dedicate time and resources to research working on these species.

4. A2P NEXT STEPS TO CONSERVATION ACTION

4.1 SITE-BASED CONSERVATION PLANNING

4.1.1

BASTAR PLATEAU COMMUNITY WORKSHOP ON WILDLIFE AND PEOPLE

RATIONALE:

Bastar Plateau is an important area for wildlife and contains a number of threatened species. There is an opportunity to elevate awareness of this within the local community and enlist the help of community members in protecting and managing the biodiversity of the area. This has the potential to benefit not just the plateau's wildlife but also its people.

GOALS:

- Elevate local support for wildlife of the plateau.
- Generate media support and political will.
- Ensure the workshop appeals to all community sectors including children and the elderly.
- Cover all affected species but make sure reptiles do not get lost in this.
- Base workshop discussions around shared values of humans and wildlife (healthy environment, clean water, etc).
- Discuss both community needs (food security, income, leisure) and threats to wildlife (unregulated development, man-made fires, hunting and trade).

TARGETED OUTCOMES:

- Improved education and awareness among local community members.
- Community-based population monitoring of wildlife.
- Policy changes resulting in governance changes in the area.

REPTILE SPECIES INCLUDED (FROM THIS WORKSHOP):

- *Hemidactylus kangerensis* (EN)
- *Hemidactylus yajurvedi* (EN)

A2P PROJECT LEADS:

M. Suraj with Neha Samuel and Nova Nature Welfare Society

POTENTIAL COLLABORATORS AND STAKEHOLDERS:

- Educators: education NGOs and relevant government officers
- Local community and local government committees
- Forest Department
- Species experts
- Other government departments

4.1.2

SHEVAROY HILLS AND KOLLI HILLS COMMUNITY WORKSHOPS FOR WILDLIFE

RATIONALE:

The Shevaroy and Kolli Hills are important areas for wildlife. They are of special evolutionary importance and are home to several threatened species. They are under pressure from intense urbanisation. There is an opportunity to elevate awareness of the importance of these areas among the local communities and to enlist their help in protecting and managing the local biodiversity. This has the potential to benefit not just the local wildlife but also its people.

GOALS:

Run two workshops, one for each area and each with the following goals:

- Elevate local support for wildlife.
- Generate media support and political will.
- Broaden to other species but make sure reptiles do not get lost in this.
- Base workshop discussions around shared values of humans and wildlife (healthy environments, clean water, etc).

TARGETED OUTCOMES:

- Improved education and awareness among local community members.
- Community-based population monitoring/management of wildlife.

REPTILE SPECIES INCLUDED (FROM THIS WORKSHOP):

Shevaroy Hills

- *Hemiphyllodactylus aurantiacus* (CR)
- *Cnemaspis thackerayi* (CR)
- *Cnemaspis shevaroyensis* (CR)
- *Uropeltis shorttii* (CR)
- *Cnemaspis yercaudensis* (EN)

Kolli Hills

- *Hemiphyllodactylus kolliensis* (CR)
- *Rhinophis goweri* (CR)
- *Cnemaspis yercaudensis* (EN)
- *Hemidactylus kolliensis* (DD)



Hemiphyllodactylus aurantiacus © S. R. Ganesh



Cnemaspis thackerayi © S. R. Ganesh



Cnemaspis shevaroyensis © S. R. Ganesh



Hemidactylus kolliensis © S. R. Ganesh



Rhinophis goweri © S. R. Ganesh



Cnemaspis yercaudensis © S. R. Ganesh



Uropeltis shorttii © S. R. Ganesh

A2P PROJECT LEADS:

Sanjay Molur, S. R. Ganesh, Eric Ramanujam

POTENTIAL COLLABORATORS AND STAKEHOLDERS:

Shevaroy Hills

- Pondicherry University
- Salem Naturalist Society
- Shevaroy Planters Association
- Yercaud International School, Shevaroy
- Urban planners and local administration
- Conservation and species experts
- Tamil Nadu Forest Department

Kolli Hills

- Pondicherry University
- M. S. Swaminathan Foundation
- F.R.L.H.T. Bangalore
- Urban planners and local administration
- Conservation and species experts
- Tamil Nadu Forest Department

4.1.3

HAMPI: HABITAT-FRIENDLY MANAGEMENT PRACTICES

RATIONALE:

Hampi and Daroji Bear Sanctuary is an existing Key Biodiversity Area. As well as being home to two threatened reptile species assessed at this workshop, it is an important area for wildlife, including the Indian smooth-coated otter and the sloth bear, as well as two new reptile taxa currently being described. Furthermore, it is considered an evolutionary hotspot of large-bodied tuberculated geckos.

Hampi is a UNESCO World Heritage Site, located in east-central Karnataka. Hampi's ruins from the 14th century are spread over 4,100 hectares (16 sq mi) and it contains 1,600 surviving remains from the last great Hindu kingdom in South India that includes forts, riverside features, royal and sacred complexes, temples, shrines, pillared halls, mandapas, memorial structures, water structures and others (UNESCO, 2021). Hampi is also an active archaeological site as well as a tourist site.

The two threatened species of gecko found here inhabit rocky areas and temple ruins are an important part of their range. Renovation activities in the temple may remove shelter sites by filling cracks within temple walls and the use of lime in restoration may reduce habitat suitability. In particular, Critically Endangered *Cnemaspis adii* has not been recorded at temples following renovation and whitewashing and due to its restricted distribution and its reliance on rock walls of the temples, this is considered to be a major threat at a scale that could result in the extinction of this gecko. Increased light pollution from light installations resulting from renovation may impact these species.

GOALS:

- Elevate local support for wildlife of Hampi.
- Working with key stakeholders (including temple authorities, local communities, resorts and species experts), increase awareness and produce a plan improved management of key sites that balances restoration with conservation.

TARGETED OUTCOMES:

- Increased awareness of wildlife and threatened species living at the site (including an understanding of key habitat importance).
- Species needs are incorporated into the UNESCO World Heritage Site management plan.
- Improved management of key sites that balances restoration with conservation.

REPTILE SPECIES INCLUDED (FROM THIS WORKSHOP):

- *Cnemaspis adii* (CR)
- *Hemidactylus siva* (EN)



Cnemaspis adii © S.R Ganesh



Hemidactylus siva © S.R Ganesh

A2P PROJECT LEADS:

Sanjay Molur (planning and facilitation lead) and Chelmala Srinivasulu (KBA and implementation lead)

POTENTIAL COLLABORATORS AND STAKEHOLDERS:

- Temple Authorities
- World Heritage Site managers
- Tourism authorities
- Tourist resorts [wildlife-based]
- Local communities: [7 towns / villages: Village Head's, BMPs]
- Karnataka Forest Department

4.1.4

AMBOLI / KAAS / CHALKEWADI: MUTLI-STAKEHOLDER MANAGEMENT PLAN

RATIONALE:

These areas in the Western Ghats are 'Eco-hotspots' that are home to numerous endemic threatened species of fauna (particularly fish, amphibians and butterflies), unique species assemblages and unique, complex habitats with diverse microhabitats. High altitude lateritic plateaus are rich in floral diversity. The distinct plant communities depend primarily on soil and moisture availability. Due to their high seasonality, at certain times of year the areas are covered in wildflowers, however at other times they look barren and therefore the land is generally devalued. Despite their ecological importance, these isolated plateaus are highly neglected and subjected to multiple anthropogenic pressures. Amboli is a popular tourist destination, where the main attractions are the high rainfall, numerous waterfalls and mist during monsoons. These sites are important for water, for human consumption. However, tourism has driven an increase in infrastructure development and water extraction has increased to meet demand. Water is extracted up through the rocky plateau. However, water extraction on the plateau is causing the water table to lower, resulting in springs to dry up and causing water shortages in the lower elevation areas surrounding the plateau, where the villages are. Additional pressures come from laterite mining on the rocky plateau, for construction and the development of a high-density wind farm at Chalkewadi. The development of solar installations in between windmills is also proposed. The network of temporary and permanent roads created to erect and operate the windfarm caused habitat fragmentation and increased roadkill. Roads also initiated erosional features all along the plateau surface (Karandikar et al., 2015). Protected Areas do not cover the plateau (only the adjoining areas at lower elevations) and these areas need immediate conservation.

GOALS:

- Work with villages and other stakeholders who are striving to conserve water, to plan and implement improved habitat protection and management of wildlife in these areas.
- Incorporate species' needs into wider "Rock Outcrops of India" project which includes campaigning to list area as a Biodiversity Heritage Site under Biodiversity Act 2002.

TARGETED OUTCOMES:

- An integrated site management and biodiversity conservation plan created through a multi-stakeholder engagement process.
- Threatened species are incorporated into the 'Rock Outcrops of India' project.
- Area is listed as a Biodiversity Heritage Site.

REPTILE SPECIES INCLUDED (FROM THIS WORKSHOP):

Amboli

- *Calliophis castoe* (EN)
- *Cnemaspis flaviventralis* (EN)
- *Melanophidium khairei* (EN)
- *Cnemaspis amboliensis* (DD)
- *Hemidactylus varadgirii* (DD)

Chalkewadi

- *Hemidactylus sataraisensis* (CR)
- *Sarada superba* (CR)

A2P PROJECT LEADS:

Varad Giri, Sanjay Thakur and Aparna Watve

POTENTIAL COLLABORATORS AND STAKEHOLDERS:

- Local villages (Amboli: 8, Kaas: 7, Chalkewadi: 15)
- Electricity department, private windmill and solar companies
- Maharashtra Forest Department
- Tourism authorities and tourist resorts (local / homestays/ tenting facilities)
- Rock Outcrops of India and other NGOs

4.2 SPECIES ENDEMIC TO NORTHEAST MAINLAND SOUTH ASIA

Contributors: Santosh Bhattarai, Abhijit Das, Kamrul Hasan, Kul Prasad Limbu, Sangay Tshewang, Jigme T. Wangyal.

An A2P discussion session was held for 10 threatened species, which are endemic to north east region of mainland South Asia (Table 9). Due to time constraints at the workshop, this session was limited to these 10 species, however there are additional species that were assessed as threatened during the workshop, which are endemic to north east mainland South Asia (Appendix VI).

Table 9. Threatened species endemic to the north east region of mainland South Asia that were the focus of an A2P discussion group during the workshop.

Endemic to Bhutan	Scincidae	<i>Eutropis quadratilobus</i> (EN)
Endemic to Nepal	Agamidae	<i>Sitana fusca</i> (CR)
	Agamidae	<i>Japalura dasi</i> (VU)
Endemic to Sikkim, India	Lacertidae	<i>Takydromus sikkimensis</i> (EN)
Endemic to Assam, India	Colubridae	<i>Oligodon erythrorhachis</i> (VU)
Endemic to Meghalaya, India ¹	Agamidae	<i>Calotes paulus</i> (EN)
India (Assam and Mizoram) and Bangladesh	Scincidae	<i>Tropidophorus assamensis</i> (VU)
India (Assam) and Bhutan	Gekkonidae	<i>Cnemaspis assamensis</i> (VU)
India (Sikkim and West Bengal) and Bhutan	Colubridae	<i>Oligodon juglandifer</i> (VU)
India (Assam, Uttar Pradesh and West Bengal), Bangladesh, Nepal and Pakistan	Natricidae	<i>Xenochrophis cerasogaster</i> (VU)

4.2.1 THREATENED SPECIES ENDEMIC TO BHUTAN

EUTROPIS QUADRATILOBUS (EN)

SPECIES SUMMARY:

This skink species is endemic to southern Bhutan, where it has a very restricted distribution (AOO = 4km²). It is only known from a river valley, west of Samtsee at 450m asl. It occurs in subtropical / tropical montane forest, where it has been found on the lowest terrace of the river valley bank. The only known area where the species occurs is being impacted by dredging of the river for extraction of large boulders by large companies (for which local people benefit through employment). River boulders are extracted for use in construction and are exported to India (where river boulder extraction partially illegal) and Bangladesh (where extraction is illegal). Large boulders maintain habitat integrity and their removal causes the water holding capacity to change, including loss of water during the dry season, which may impact drinking water availability for people.

It is likely that the species is being affected through habitat loss and degradation, as boulder extraction reduces the diversity of micro-habitats and micro-habitat complexity, increases the risk of flash floods and also increases the risk of the land drying out of the wet season.

OBSTACLES TO CONSERVATION:

In Bhutan, Key Biodiversity Area sites have been identified for mammals and birds, but there is no overlap with the geographic range of this skink, and this species was not identified as a KBA trigger species during this workshop.

CONSERVATION OPPORTUNITIES AND NEXT-STEPS:

- Recommended conservation planning actions needed at specific site (known locality of species).

¹ Known with certainty only from Meghalaya state, northeast India. Reported collections from Sikkim and Tibet are questionable and require further confirmation (Giri et al., 2019).

<ul style="list-style-type: none"> • The species has been proposed for inclusion in the Forest and Nature Conservation Act of Bhutan (1995). • Raise awareness of IUCN listing at policy level. In Bhutan, the status of a species assessed for IUCN Red List of Threatened Species is important. A Red List assessment as globally Endangered with extinction for will be significant for policy makers importance will be elevated due to a threatened status. • Establish Standard Operating Procedures for boulder extraction companies. Providing direction on where and when to, or where and when to avoid dredging and boulder extraction processes would help mitigate direct threats posed by these activities on this species.
A2P PROJECT LEADS:
Jigme T. Wangyal , Department of Forest and Park Services, Bhutan.
POTENTIAL COLLABORATORS AND STAKEHOLDERS:
<ul style="list-style-type: none"> • Companies working in dredging and boulder extraction • Department of Forest and Park Services • Local community • Policy makers

4.2.2 THREATENED SPECIES ENDEMIC TO NEPAL

SITANA FUSCA (CR)
SPECIES SUMMARY:
This agamid lizard species is endemic to central Nepal. It has a very restricted distribution (AOO = 4km ²) and is only known from Gauri Danda Road Camp. It occurs in dry forest habitat, which has been continually degrading over the past 20 years due to urban expansion, and remaining habitat is severely fragmented. Additionally, the imminent development of an international airport is being planned, which will be constructed at the location this species is known from.
OBSTACLES TO CONSERVATION:
<ul style="list-style-type: none"> • The species has not been found during intensive surveys of the area since it was discovered. • Imminent plans to develop an international airport where this species is known from, will create further habitat loss and degradation at a large scale.
CONSERVATION OPPORTUNITIES AND NEXT-STEPS:
<ul style="list-style-type: none"> • Recommended conservation planning actions needed at specific site (known locality of species) and also intensive-care management, if feasible. • Species triggered newly delineated KBA 'Gauri Danda'. • Proposal for inclusion in the National Parks and Wildlife Conservation Act (1973). • List species on the Ministry of Forestry Department National Parks and Wildlife Protected List. • Urgent survey to establish current status and distribution. • If found, assess feasibility of translocation to other areas with suitable habitat to secure the species before construction of the international airport commences.
A2P PROJECT LEADS:
Santosh Bhattarai and Kul Prasad Limbu
POTENTIAL COLLABORATORS AND STAKEHOLDERS:
<ul style="list-style-type: none"> • National Trust for Nature Conservation, Nepal • Amphibian and Reptile Conservation Society of Nepal • <i>Ex situ</i> partners • Connect with groups working on other species that are threatened by international airport development plans

JAPALURA DASI (VU)**SPECIES SUMMARY:**

This lizard is only known from Agaupaani village, Bajura District, in far western Nepal. A relocation of the state capital city into the jungle is causing extensive forest clearance. Although this will not affect the species directly, a national highway is being constructed, which will go directly through this species' habitat.

OBSTACLES TO CONSERVATION:

- It is only known from six specimens, all of which were collected in 1997, however there have been no surveys in the area since.
- Known locality is outside of a Protected Area.
- The area is a major illegal trade route for wildlife (e.g. leopards and red pandas).
- Many other Japalura species inhabit adjacent habitats, so it's not thought that the possibility of relocation is possible, but it may be worth considering a translocation feasibility assessment.

CONSERVATION OPPORTUNITIES AND NEXT-STEPS:

- Based on the potential threat of the highway construction, studies should be conducted to assess possible mitigation actions.
- The known locality of this species is connected to the Khaptad National Park by a 2km-wide strip of forest, at Tham and it is possible this species occurs within the park.
- Surveys are required to confirm distribution and status.
- The threatened Red List assessment for this species may elevate interest and increase funding potential for distribution research work.
- Raise awareness of this species among local communities.
- Connect efforts on this species to broader conservation education and Citizen Science programs in this area.
- Connect with other megafauna conservation programmes in the area (e.g., leopards, leopard cats, red panda).
- KBA site identified: Agaupaani.

A2P PROJECT LEADS:

Santosh Bhattarai and Kul Prasad Limbu

POTENTIAL COLLABORATORS AND STAKEHOLDERS:

- National Trust for Nature Conservation

4.2.3 THREATENED SPECIES ENDEMIC TO NORTHEAST INDIA**TAKYDROMUS SIKKIMENSIS (EN)****SPECIES SUMMARY:**

Takydromus sikkimensis is a unique long tailed lizard endemic to the Eastern Himalayan foothills in Sikkim, India. The species is frequently observed in and around Dalep village on the banks of the Teesta River at about 550 m asl, near Singtam, South Sikkim, India . It inhabits semideciduous forest inhabiting rocks, boulders, grass including agricultural fields. Limited low-lying habitat of *T. sikkimensis* is getting degraded and highly threatened from hydroelectric projects (Bhupathy et al., 2009). A large number of dams have already been constructed along the Teesta river basin and many more are proposed (Rahaman and Mamun, 2020). Dams proposed at lower elevation areas of the Teesta Valley might further endanger this species by submerging the low-lying habitats in which it survives. Thus, proper scientific evaluation involving multiple stakeholders is important to understand impact of such dams on the population of *T. sikkimensis*, along with many other low elevation dwelling herpetofauna. The new listing of this species as Endangered on the IUCN Red List

of Threatened Species will increase the significance of the species' importance and if a dam does go ahead, mitigation measures will be needed. Additionally, the species will need to be proposed for listing on the Indian Wildlife (Protection) Act, 1972.

OBSTACLES TO CONSERVATION:

- Hydroelectric project and dam development.
- Poor ecological knowledge of the species.

CONSERVATION OPPORTUNITIES AND NEXT-STEPS:

- With its new threat status, local researchers can generate seed grants to study the distribution and ecology of the species that will help in species conservation and management.
- Prioritise awareness of the endemic lizard with local people and enlist community support in its conservation and protection.
- Propose listing of the species on the Indian Wildlife (Protection) Act, 1972.
- With its new threat status, the species can be a candidate flagship species, representing the lowland forest dwelling biodiversity of Sikkim, which is threatened from dam development.
- Develop a mitigation plan for the conservation of this species, in the event of dam construction to safeguard the species population.

A2P PROJECT LEADS:

Abhijit Das

POTENTIAL COLLABORATORS AND STAKEHOLDERS:

- Wildlife Institute of India
- Ministry of Environment, Forests and Climate Change
- Conservation organisations such as WWF
- Sikkim University

OLIGODON ERYTHORHACHIS (VU)

SPECIES SUMMARY:

This is very rare, range restricted species of snake, known only from three localities in Arunachal Pradesh. Only three specimens (one at each of the three localities) have been collected in the last 100 years, with one of those being roadkill. Two localities lie within Protected Areas. This rare species appears to be a habitat specialist, requiring moist dipterocarp Hollong-Maki forest. Outside of Protected Areas, this habitat type has been largely destroyed and/or is in various states of degradation due to increasing urban development and roads. Additionally, illegal logging and illegal encroachment for settlement are significant issues in this area.

OBSTACLES TO CONSERVATION:

- Limited resources.

CONSERVATION OPPORTUNITIES AND NEXT-STEPS:

- Carryout a study directed only at this species to confirm species distribution and habitat.

A2P PROJECT LEADS:

Abhijit Das

POTENTIAL COLLABORATORS AND STAKEHOLDERS:

- Wildlife Institute of India
- Arunachal Pradesh Forest Department

CALOTES PAULUS (EN)**SPECIES SUMMARY:**

This lizard is considered endemic to the Khasi Hills in Meghalaya state, northeast India. It is a habitat specialist and occurs in the sub-tropical broadleaf forest of Meghalaya plateau. The main threats to this species are related to habitat loss, degradation and fragmentation caused by urban expansion and tourism-associated development. Increasing human populations are leading to an increasing amount of domestic waste and rubbish dumps. This in turn is driving an increase of cats and dogs in the area, who pose a threat to this lizard (which has not previously been exposed to these subsidised predators), through predation.

OBSTACLES TO CONSERVATION:

- The species has been recorded in one or two small community forest reserves (1 - 1.5 km²), but it mainly occurs outside of them. These forest reserves may not support viable populations of this lizard.

CONSERVATION OPPORTUNITIES AND NEXT-STEPS:

- The threatened Red List status will trigger more scientific research and funding opportunities may increase.
- Include this species in Meghalaya Biodiversity Action Plan for research in its distribution and abundance.
- Researchers to connect with communities to raise awareness of the presence of this threatened lizard and the importance of protecting it.
- Enlist support from local communities and landowners. Instil a sense of pride and guardianship over the species occurring in their area and no-where else in the world.

A2P PROJECT LEADS:

Abhijit Das

POTENTIAL COLLABORATORS AND STAKEHOLDERS:

- Wildlife Institute of India
- University students
- Local communities and landowners

4.2.4 THREATENED SPECIES ENDEMIC TO NORTHEAST INDIA AND BANGLADESH**TROPIDOPHORUS ASSAMENSIS (VU)****SPECIES SUMMARY:**

This skink is known from Assam and Mizoram in India, and Sylhet and Chittagong Hill Tract in Bangladesh. It is associated with streams in lowland, evergreen forests, where it mainly inhabits bryophyte-covered rocks and boulders. Extraction of rocks and boulders from streams (which is illegal in Bangladesh and partially illegal in India), illegal logging and subsequent deforestation, leading to lower water flow downstream are the main threats to this species. The areas this species occurs in are remote and there is little to no enforcement of laws or policies.

OBSTACLES TO CONSERVATION:

- Inadequate action.
- Protected Areas are not well managed in Bangladesh (or within some areas of India). Some of these areas (e.g. Sangu-Matamuhari Wildlife Sanctuary in Bangladesh) are less accessible due to remoteness and are affected by external activities.
- There are no flagship species in the areas this species occurs, meaning they are a low priority for conservation and protection.

CONSERVATION OPPORTUNITIES AND NEXT-STEPS:

- Survey to map distribution and key habitat (in forest boulder streams).
- Raise awareness of taxon importance in local communities.
- Connect with NGOs working on freshwater turtles in the area.

A2P PROJECT LEADS:

Kamrul Hasan and M. Monirul H. Khan

POTENTIAL COLLABORATORS AND STAKEHOLDERS:

- Abhijit Das and Avrajjal Ghosh (KBA contacts)
- Non-governmental organisations: e.g., Help Earth (Assam); AARANYAK (Assam); ARANNAYK Foundation (Bangladesh)
- IUCN SSC Freshwater Turtle Specialist Group

4.2.5 THREATENED SPECIES ENDEMIC TO NORTHEAST INDIA AND BHUTAN

***CNEMASPIS ASSAMENSIS* (VU)**

SPECIES SUMMARY:

This species is known from the terai region of Brahmaputra River in Assam and from Royal Manas National Park, Bhutan. The discovery of this day gecko is biogeographically significant as all other day geckos are known from much further south. It occurs on rocky slopes and large trees associated with rocky habitat, in subtropical evergreen forest / tropical semi-evergreen forest. It is also found in clearings and near human settlements, in rocky outcrops. The population first discovered is located near Guwahati city, which is the gateway to the northeast Indian region. This type-locality has been modified as a result of urban expansion and tourist development, including the removal of stones on which this species depends, and it has not been found here in extensive recent surveys. Although it is somewhat tolerant of habitat modification, urban expansion and associated farming are presumed to be a threat to the subpopulation in the surrounding area - which represents the largest of the three confirmed subpopulations and is expected to contain the majority of the entire species' population. Illegal mining also poses a threat to this species. The type-locality of this relict species needs to remain intact. The remaining two subpopulations are found in protected areas.



Cnemaspis assamensis © Indraneil Das

OBSTACLES TO CONSERVATION:

- Low profile, small cryptic species and not likely to be a conservation priority.

CONSERVATION OPPORTUNITIES AND NEXT-STEPS:

- Notify Assam Forest Department about the threatened status of this species.
- Include the species in Indian Wildlife (Protection) Act, 1972.
- Use elevated importance of species to help mitigate mining threat.
- Raise community awareness of threatened species presence near Guwahati.
- KBA site identified: Royal Manas National Park.

A2P PROJECT LEADS:

Jayaditya Purkayastha

POTENTIAL COLLABORATORS AND STAKEHOLDERS:

- Abhijit Das (KBA)
- Wildlife Institute of India
- AARANYAK
- Guwahati University
- Assam Forest Department

OLIGODON JUGLANDIFER (VU)**SPECIES SUMMARY:**

This snake species is known from near Gopaldhara in Darjeeling District, West Bengal and Sikkim in India, and in Wangdue Phodrang, Jigme Singye Wangchuck National Park, and near Wamrong in central Bhutan. It is a montane forest species but does occur in secondary forest and can be found in forests patches along edges of roads and farmland. Threats to this species include persecution and roadkill.

OBSTACLES TO CONSERVATION:

- Interest in snake conservation is very low, many people fear them.

CONSERVATION OPPORTUNITIES AND NEXT-STEPS:

- Campaign to raise awareness of the species' threatened status and the fact that it is not venomous.
- Investigate international collaborators (reptile NGOs).
- KBA site identified: Fambong Lho Wildlife Sanctuary-Himalayan Zoological Park-Raitey Chu Reserve Forest.

A2P PROJECT LEADS:

Jigme T. Wangyal and Sangay Tshewang

POTENTIAL COLLABORATORS AND STAKEHOLDERS:

- Pratyush Mohapatra (KBA)
- Department of Forest and Park Services, Bhutan
- Amphibians and Reptiles of Bhutan Research Group
- WWF (Bhutan) and WWF (India)
- Forest and Environment Department, Sikkim
- International reptile conservation organisations

4.2.6 THREATENED SPECIES ENDEMIC TO NORTHEAST INDIA, BANGLADESH, NEPAL & PAKISTAN

XENOCHROPHIS CERASOGASTER (VU)

SPECIES SUMMARY:

This aquatic snake species has a narrow distributional range across India, Nepal, Pakistan and Bangladesh. It inhabits freshwater marshland with abundant emergent vegetation. Substantial drainage and pollution of marshland habitats are threats to this species. There is a need to protect freshwater marshland habitat for this snake in its range.



Xenochrophis cerasogaster © M. Monirul H. Khan

OBSTACLES TO CONSERVATION:

- Interest in snake conservation is very low, many people fear them.

CONSERVATION OPPORTUNITIES AND NEXT-STEPS:

- Researchers to engage with local community to include provisions for species within indigenous fish conservation management plan.
- Incorporate into working plan for RAMSAR sites.
- Raise awareness of the threatened status of this species in local communities.
- Ensure inclusion of this snake alongside other species, in marshland-directed forums.
- Connect with NGOs and individuals working on other marshland species (e.g., fishing cat, *Varanus flavescens*).
- Research microhabitat with goal of triggering site-specific management planning.
- KBA site identified: Deepor Beel Bird Sanctuary-Extension.

A2P PROJECT LEADS:

Abhijit Das

POTENTIAL COLLABORATORS AND STAKEHOLDERS:

- Pratyush Mohapatra, M. Monirul H. Khan and Avrajjal Ghosh (KBA)
- Tiasa Adhya (The Fishing Cat Project, Kolkata)
- Ministry of Forest and Environment, Bangladesh
- Assam Forest Department

4.3 SPECIES-FOCUSED RECOVERY PLANNING

4.3.1 BRINGING STAKEHOLDERS TOGETHER TO ACTION PLAN FOR THE YELLOW MONITOR *VARANUS FLAVESCENS* (EN)

SPECIES SUMMARY:

The distribution of this species is confined to, and wide-ranging on, the Indo-Gangetic Plain south of the Himalayas in eastern Pakistan, northern India up to River Mahanadi in South (Odisha), Nepal, south central Bhutan, and Bangladesh. Its distribution mainly follows the major river systems of the Indus, Ganges and Brahmaputra. It predominantly occurs in lowland marshy habitats. It also occurs in modified habitats such as canals and agricultural fields.



Varanus flavescens © Indraneil Das

THREATS:

- Over exploited for its skin and meat (international, national and local trade – regional variation).
- Used in traditional medicine.
- Recreational killing, poaching and persecution (perception that it is a dangerous species) in range countries (India, Bangladesh and Nepal).
- Locate and hunted by dogs during popular festivals in West Bengal and Odisha.
- Consumption of eggs in some localities. (In Bangladesh, hunting for meat, skin or consumption of eggs is very rare. Only few tribal communities of Bangladesh consume this species).
- Predated by domestic cats and dogs (juveniles and eggs).
- Frequently found in road kills.
- Human population pressure on habitats.
- Loss of marshy and wetland habitats due to encroachment, land filling, and pollution – specifically from the use of pesticides in agricultural fields.
- Habitat degradation from mechanized agricultural practices, using heavy machinery in marginal habitats (degradation of breeding habitats in Bangladesh).



V. flavescens with poacher
© Pratyush P. Mohapatra

OBSTACLES TO OVERCOMING THREATS:
<ul style="list-style-type: none"> • Populations occur close to settlements and outside of protected areas. • Formal protection has helped reduce some threats at a regional level (trade in skins), whilst other threats (such as roadkill incidents, poaching for meat and habitat loss and degradation) have increased. • Lack of knowledge of protected status locally. • Lack of scientific studies on the status, habitat suitability and population trend of this species. • Difficulty in determining origin of confiscated animals. • Lack of conservation awareness among the general population.
CONSERVATION ACTIONS NEEDED
<p>Proposed conservation actions needed include:</p> <ul style="list-style-type: none"> • Identification of key wetland and marshy habitats outside of Protected Areas and safeguarding these as Conservation Reserves. • Stringent enforcement of wildlife protection laws and village-level awareness. • Identification of origin and scientific rehabilitation of confiscated animals. • Education and awareness, and coordination among law enforcement agencies.
RATIONALE FOR SINGLE SPECIES RECOVERY PLAN
<p><i>Varanus flavescens</i> is recommended for single species recovery planning because:</p> <ul style="list-style-type: none"> • This species is impacted by multiple threats (e.g., illegal trade, poaching, persecution and habitat loss and degradation) that are complex and vary regionally across the species' range. • Its distributional range overlaps with one of the highest human densities in the world, making conservation challenging. • Compared to other <i>Varanus</i> species of the region, this species has restricted distribution and the feasibility and practicality of the project is considered manageable. • It is distinctive, highly recognisable and could act as a flagship for other monitor species in the region and an umbrella species for wetland species. • This species could act as a flagship species for highlighting the importance of marshland habitats in northeast mainland South Asia (for example, by combining with other species experts and conservation organisations focusing on taxa that occupy the same habitats, such as fishes, amphibians, other reptile species, birds, otters and fishing cats) as well as highlight the ill-informed persecution of reptiles (and other wildlife) in the region.
POTENTIAL KBA SITES:
<ul style="list-style-type: none"> • Nepal: Koshi Tappu, Chitwan • India: Valmiki Tiger Reserve, Raiganj Wildlife Sanctuary • Bangladesh: Chalan Beel • Overlaps with <i>Xenochrophis cerasogaster</i> in Deepor Beel Bird Sanctuary-Extension
A2P PROJECT LEADS:
Sanjay Molur (ZOO Outreach Organisation) and Kamrul Hasan in collaboration with IUCN SSC Monitor Lizard Specialist Group and IUCN Bangladesh
POTENTIAL COLLABORATORS AND STAKEHOLDERS

- Varanid experts – IUCN SSC Monitor Lizard Specialist Group
- Representatives for other species that use the same habitat (e.g., fishing cat, otters, birds)
- Forest Departments of countries within this species' range
- Education institutions and advocacy organisations
- Conservation organisations
- TRAFFIC
- Wildlife Crime Control Bureau (India)
- Wildlife Crime Control Unit (Bangladesh)
- Wildlife Conservation Network (Nepal)
- Wildlife Institute of India, Dehradun
- Law enforcement agencies from range countries
- Community Groups (identified through existing NGO networks and contacts)
- Biodiversity Monitoring Protection Communities

4.3.2 BRINGING STAKEHOLDERS TOGETHER TO ACTION PLAN FOR THE INDIAN SPINY-TAILED LIZARD, *SAARA HARDWICKII* (VU)

SPECIES SUMMARY:

The distribution of this species is relatively widespread in northwestern India, ranging from along the Indus Valley in eastern Pakistan south as far as Las Bela in Baluchistan. It is characteristic of hard-soiled, arid and thorny scrubland areas of the Indo-Gangetic Plain and is not found in habitats with a stony or sandy substrate. The species is associated with areas of sparse, xerophytic grass and bushes, favouring slightly elevated situations which are unlikely to be flooded.



Saara hardwickii © Indraneil Das

THREATS:

This species is widely collected throughout its range and is used for several purposes including:

- Targeted for its oil, for use in traditional medicine (aphrodisiac).
- Local consumption of meat.
- In Pakistan it is used as bait to capture birds for falconry
- International and local pet trade

Additional threats come from habitat loss and alteration particularly due to:

- Greening of deserts, agricultural and urban expansion
- Expansion of invasive species *Prosopis*, which promotes habitat incursion by people
- Salt pan industry expansion
- Bromine extraction (pumping bromine rich water)

Roadkill is also considered to be a minor threat to the species

OBSTACLES TO OVERCOMING THREATS:

- It is difficult to convince local communities that the purported medicinal properties of the species are questionable and are not currently verified.
- The 'greening' of deserts is a Government of India projects under its policy on providing water and agricultural land in Thar dessert
- *Prosopis* plantation through large-scale afforestation programmes is a government initiative
- Among certain local communities, there is a perception that it is ok to collect the species from the wild to keep as pets
- Demarcation of Protected Area boundaries is unclear

CONSERVATION ACTIONS NEEDED

Proposed conservation actions needed include protection of arid and thorny scrubland habitats, ground level enforcement of wildlife protection laws, education and awareness, coordination among law enforcement agencies.

RATIONALE FOR SINGLE SPECIES RECOVERY PLAN

Saara hardwickii is recommended for single species recovery planning because:

- It has multiple threatening processes (relating to intentional biological resource use, illegal trade, and habitat loss and degradation) that are complex and vary regionally across the species' range.
- It is a good indicator species for the health of arid and thorny scrubland habitats (such as *Varanus griseus*).

- The feasibility and practicality of the project is considered as manageable.
- It is distinctive, highly recognisable and could act as a flagship for other monitor species in the region and an umbrella species for other taxa occurring in arid and thorny scrubland habitats.
- Focusing on this species for recovery planning would provide opportunities to highlight the decline of arid and thorny scrubland habitats in northeast mainland South Asia (for example, by combining with other species experts and conservation organisations focusing on taxa that occupy the same habitats, such as Indian wild ass, great Indian bustard, Houbara bustard, vultures, flamingoes, etc.).

POTENTIAL KBA SITES:

- Kachchh Biosphere Reserve
- Indian Wild Ass Sanctuary
- Kachchh Great Indian Bustard Sanctuary
- Potentially other Protected Areas in India and Pakistan

A2P PROJECT LEADS:

Rajendra Vajubhai Vyas, Sanjay Molur (ZOO Outreach Organisation), Chelmala Srinivasulu

POTENTIAL COLLABORATORS AND STAKEHOLDERS – SUGGESTIONS FOR CONTRIBUTIONS

- Local communities
- Species collectors
- Rajasthan Forest Department
- Gujarat Forest Department
- Salt pan industry
- Bromine extractors
- NGO's and other agencies including educational groups that focus on other charismatic species found within the range of this lizard (e.g., wild ass, great Indian bustard, Houbara bustard, vultures, flamingoes)
- Irrigation Department (agriculture)
- Education institutions and advocacy organisations
- Conservation organisations
- Biodiversity Monitoring Protection Communities
- Law enforcement agencies from range countries

5. CONCLUSIONS AND RECOMMENDATIONS

- i. Following the threatened status assessment of 428 species of reptiles from the mainland South Asia region, the conservation needs of the 62 species assessed as threatened were considered during the Red List assessment, Key Biodiversity Area assessment and Assess to Plan workshop.
- ii. Facilitated Assess to Plan discussion sessions focused planning the next steps to conservation actions for 28 of these threatened species.
- iii. Forty-six of the 62 threatened species (which qualified as trigger species), were proposed for the inclusion in one or more of 32 Key Biodiversity Areas identified during the workshop.
- iv. The maximum number of threatened species that were considered in an Assess to Plan 'Site' planning discussion session was five and the maximum number of species occurring within one KBA site was also five.
- v. The number of species grouped for conservation planning was considered relatively low, due to a combination of factors including i) the large geographical focal area of the workshop (covering Nepal, Bhutan, Bangladesh and India including the Andaman and Nicobar Islands), ii) this workshop was not a comprehensive assessment of all snake and lizard species from the region, with the 428 taxa assessed being species that had not been assessed during previous Global Reptile assessment workshops and/or had been newly described since previous workshops were held. For example, IUCN-CI BAU held a workshop in 2010 that assessed 227 Indian endemic reptile species, most of which were from the Western and Eastern Ghats. These species were not reassessed during the 2019 workshop (Srinivasulu et al., 2014).
- vi. This resulted in a lower distributional overlap between the species assessed than would have occurred if all threatened snake and lizard species from the region were considered at the same time.
- vii. The workshop group recommended that a combined reassessment and conservation planning workshop for all species from the Western and Eastern Ghats (which is an area of high diversity and endemism of reptile species) would be an effective priority for future multi-species planning work in this region. Additionally, it would be beneficial to include participants with specialist expertise in conservation, policy and management to work with species experts in conservation planning for the region.

PART II:
THE REPTILE DIVERSITY AND BIOGEOGRAPHY OF
MAINLAND SOUTH ASIA

1. BHUTAN

Wangyal, J. Tshelthrim

1.1 REPTILE DIVERSITY OF BHUTAN

Sitting on the lap of the eastern Himalayas, Bhutan is a small Kingdom comparable to Europe's Switzerland in size, and is sandwiched between the two Asian giants, India and China. Zoogeographically classified as part of the Oriental region (Bauer and Gunther, 1992) and being in between the two large countries, the Kingdom has both Indo-Malayan and Chinese components of biodiversity. Further, being driven by the principles of Gross National Happiness (GNH), which identifies environmental conservation as one of the pillars of GNH, the country's approach to conservation is rather wholistic than specific. As such, protection and management of its forest ecosystems as a whole is considered more relevant than other approaches of conservation. If the forests are conserved, the species occupying the forest ecosystems are conserved. Therefore, about 51.4% of the country is in a protected area network (DoFPS, 2018) in the form of five national parks, four wildlife sanctuaries, a strict nature reserve, seven biological corridors and a botanical park (Figure 1). Lack of information on certain taxa, for example reptiles, can be attributed to the kind of approach Bhutan adopts in conserving its nature and environment besides a religion and culture that fear reptiles.

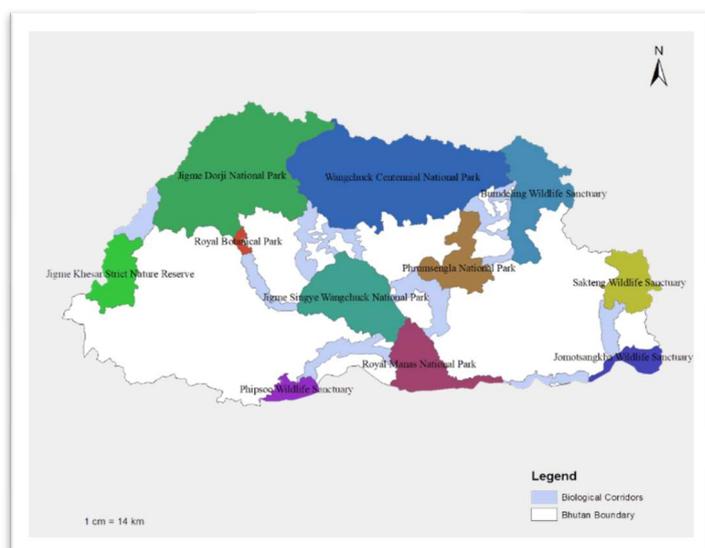


Figure 1. Protected Area map of Bhutan. National Parks, Wildlife Sanctuaries and other categories are labelled on the map.

The history of recording reptiles started with the Natural History Museum, Basel when they were allowed to collect specimens from west and south western Bhutan in 1972. Collection attempts by Zoological Survey of India in the mid and late 1960s did not yield much, as they reported just five species in 1975, including a new species of lizard *Calotes bhutanensis*. Bustard (1980a, 1980b) talked specifically about *Gavialis gangeticus* (Gmelin, 1789) in Bhutan, but this species is no longer found in the wild. However, there was a jump in the number of reptile species for the country in 1992, when Bauer and Gunther borrowed the 1972 collection and reported a total of 23 species including a new species of skink, *Eutropis quadratilobus* and past records by Biswas (1975). Terming Bhutan as “zoological terra incognita in south central Asia”, Bauer and Gunther (1992) made a long list of species that could be found in Bhutan, which were mostly confirmed later by Wangyal and Tenzin (2009), Wangyal (2011, 2012, 2013), Wangyal et al., (2012), with small earlier collection by Das and Palden

(2000). The review works of Wangyal and Gurung (2017) puts Bhutan's reptile diversity at 69 snake species, 28 lizards and 6 testudines, including one latest rare snake *Boiga quincunciata* (Wall, 1908) reported from Samdrup Jongkhar District (Chaida et al., 2020) and the two species included in this report. Furthermore, new additions (15 species of snakes, 10 species of lizards, and one species of turtle – Assam roofed turtle *Phangsura sylhetensis* (Jerdon, 1870) are due to be reported from Bhutan.

1.2 BIOGEOGRAPHY OF BHUTAN

Bhutan is mostly a precipitous country, and its elevations range from 97 m (Drangme Chhu basin) to over 7000 m above sea level (asl). Jhomo Lhari (7314 m asl), the country's highest peak, overlooks Chumbi Valley towards the west with as many as 19 other peaks exceeding elevations of 7000 m asl. The almost permanently snow-capped Great Himalayan Range has peaks exceeding 7500 m asl and extends along the Bhutan-China border in the north and forms many glaciated mountain peaks with an arctic climate at the highest altitudes. The snow-fed rivers drain the alpine areas in the north providing ample pastures for livestock reared by a small population of people that follow transhumance (the habit of the montane population moving with their livestock, between summer and winter pastures). Bhutan is part of the inner Himalayas with those southward spurs of the Great Himalayan Range. The Black Mountains (locals call it Mount Jowo Dhurshing), in central Bhutan facilitates formation of a watershed between two major river systems, the Mo Chhu and the Drangme Chhu. The peaks of the Black Mountains measures anything between 1500 m and 2700 m asl and it is from here that the fast-flowing rivers shoot out from spectacular gorges in the lower parts of montane areas. The forests of the central Bhutan are most valuable in terms of production but not necessarily the herpetofauna. Eastern Bhutan is separated by yet another southward spur and the Drangme Chhu river system plays an important role in the management of human population as well as biodiversity. Western Bhutan is fertile, and a lot of cultivation take places in the valleys adjoining major river systems. Down south, the Southern Hills, or Siwalik Hills are the Himalayan foothills, which have dense deciduous forest, alluvial lowland river valleys amalgamated with mountains that reach ca. 1500 m asl. The foothills culminate into subtropical plains and it is here where the diversity of reptiles increase exponentially (Figure 2).

By way of vegetation, Bhutan is divided into 11 forest types mainly based on the types of plant species the mountains and the valleys support (Grierson and Long, 1983; DoFPS, 2018). The majority of forest types fall under cool broadleaved forest (26%) followed by warm broadleaved forest (18%), fir forest (9%), subtropical forest (6%), blue pine forest (4%), chir pine forest (3%), hemlock forest (2%), while evergreen oak forest, spruce forest and juniper-rhododendron scrub make up 1% each (DoFPS, 2018).

Although no specific studies have been conducted to correlate the reptile-vegetation association, species occurrence reports come mostly from sub-tropical, warm broadleaved and the evergreen oak forests, followed by chir pine, blue pine and cool broadleaved forests. There are reports of *Pseudoxenodon* species, *Herpetoreas* species and *Asymblepharus* species from fir and spruce forests too. An analysis of the recent report (which is under discussion) show decreasing diversity with increase in altitude (Figure 3), with this correlation very much supported by Chettri et al., (2010) who studied the relationship between reptile diversity and altitude in Sikkim Himalayas in India, where the conditions are similar to Bhutan. The prime conservation area for Bhutan's reptile species will be the low-lying foothills and the mid-level altitudes between 1500 to 2000 m asl.



Figure 2. The Siwalik landscape, the foothills of the Himalayas is home to a number of herpetofauna. (© Karma Wangdi).

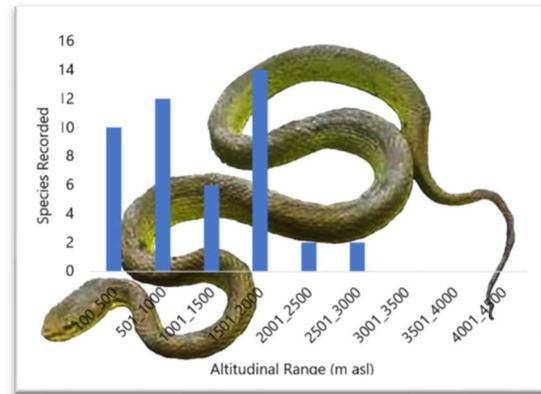


Figure 3. Decreasing diversity with increasing Himalayas altitude (*Trimeresurus salazar* from Rangjung, (Photo: Trashigang District, Bhutan, behind the graph).

2. NEPAL

Kul Prasad Limbu and Santosh Bhattarai

Lying at the centre of the Himalayan Arc, Nepal is landlocked by China on the north and India on the east, south and west. The country lies between the latitudes of 26°22' and 30°27' N, and longitudes of 80°40' and 88°12' E. It stretches 885 km from east to west, with an average width of only about 193 km. It is a small country richly endowed with geographical diversity. Nepal, with an area of 147,516 km², hills and mountains cover about 86% of the total land area; the remaining 14% is composed of flat lowland of the Tarai, which are less than 300 m in elevation. In addition to having the world's deepest valley, Kali Gandaki, the altitudinal variation is extreme, ranging from 60 m in the southern plains to 8848.86 m of the world's highest mountain Mount Everest, within a distance of only 160 km. The country's major rivers are the Koshi, Narayani, Karnali and Mahakali.

Nepal's population is 26.5 million, with an annual growth rate of 1.35 per annum and 54,27,302 individual households (Central Bureau of Statistics, 2012). In Nepal, 50.3% of the population live in the Tarai, 43% in the hills and 6.7% in the mountains. Administrative divisions of Nepal include seven provinces and 77 districts.

With the enforcement of National Park and Wildlife Conservation (NPWC) Act in 1973, Nepal has provided a legal base for managing protected areas. Since then, Nepal has established 12 National Parks, one Wildlife Reserve, one Hunting Reserve, six Conservation Areas and 13 Buffer Zones, covering 23.39% of its area - equivalent to 34,419 km². The significant challenges in protected area management are degradation of habitats, wildlife crime, human encroachment, and human-wildlife conflict. The NPWC Act provides complete protection to three reptiles species; Asiatic Rock Python (*Python molurus*), Gharial (*Gavialis gangeticus*) and Yellow Monitor (*Varanus flavescens*). As a signatory to the Convention on Biological Diversity at the Earth Summit (1992), Nepal has fulfilled its commitment and developed a National Biodiversity Strategy and Action Plan. Among the reptiles, the Government of Nepal has produced the first Gharial Conservation Action Plan (2018-2022), guiding the holistic efforts towards conserving the Critically Endangered species *in-situ* and *ex-situ* environments. This plan focuses on enhancing scientific knowledge through research on Gharial. Nepal currently has ten sites designated as Wetlands of International Importance (Ramsar Sites), with a surface area of 60561 km². Nepal is also a signatory of the Convention on International Trade in

Endangered Species of Wild Flora and Fauna (CITES) since 1975. Altogether, there are 29 species of Nepal's reptiles listed in CITES, including eight species on Appendix I and 21 species on Appendix II.

2.1 REPTILE DIVERSITY OF NEPAL

Nepal occupies about 0.1% of the global area but harbours 1.1% of the world's faunal diversity due to its unique topographical features. Nevertheless, reptile biodiversity has not been comprehensively studied in terms of area coverage across Nepal. The scientific study of Nepalese reptiles started with Brian H. Hodgson, who occupied the British Residence from 1820 to 1822 and 1824 to 1843. Many scientists described his collection without precise locality information. Lawrence W. Swan and Alan E. Leviton provided the first zoogeographical analysis with a description of Nepal's 53 species (Swan and Leviton, 1962). Since then, many herpetologists have contributed to adding to the species list. The publication of "*Amphibians and reptiles of Nepal*" by Schleich and Kastle (2002) is a significant milestone in the herpetology of Nepal.

Three orders of reptiles, i.e., Crocodylia (crocodiles), Testudines (turtles), and Squamata (lizards and snakes), are present in Nepal. Order Crocodylia has two families, Crocodylidae and Gavialidae. Crocodiles are the largest species among the reptiles found in Nepal. Mugger crocodile (*Crocodylus palustris*) and Gharial (*Gavialis gangeticus*) are the only species in both the families.

Nepal is rich in diversity of elusive turtle species. It harbours 16 species belonging to three families. Critically Endangered Yellow-headed tortoise (*Indotestudo elongata*) is the single species in family Testudinidae. Family Geoemydidae includes 11 species including two Critically Endangered species - Three-striped roofed turtle (*Batagur dhongoka*) and Red-crowned roofed turtle (*Batagur kachuga*). Four species of softshell turtles represent the family Trionychidae. Narrow-headed soft-shelled turtle (*Chitra indica*) is the Critically Endangered and the largest turtle of Nepal.

Order Squamata dominates Nepal's reptilian fauna, divided into two sub-orders, Sauria (lizards) and Serpentes (snakes). Sauria comprises six families - Agamidae, Anguidae, Eublepharidae, Gekkonidae, Scincidae and Varanidae. Research into the distribution of endemic taxa is of great importance for the conservation of the species. Within the family Agamidae, there are 11 species. All the agamids in Nepal are oviparous except the live-bearing, Theobald's toad-headed agama (*Phrynocephalus theobaldi*). Nepal's physiography represents a good number of endemic lizards (Kastle et al., 2013). Agaupaani forest agama (*Japalura dasi*), Dark sitana (*Sitana fusca*), Suklaphanta sitana (*Sitana schleichi*) and Siwalik sitana (*Sitana sivalensis*) are the Nepalese endemic agamids. Indian glass snake (*Dopacia gracillis*) is the only species in family Anguidae. Common Leopard Gecko (*Eublepharis macularius*) is a newly recorded species representing the family Eublepharidae (Rawat et al., 2019). The family Gekkonidae includes 10 species of geckos; endemic species include Striped gecko (*Cyrtodactylus markuscombaii*), Stoll's gecko (*Cyrtodactylus martinstollii*) and Nepalese rock gecko (*Cyrtodactylus nepalensis*). Fifteen species of skinks represent the family Scincidae. Three species - Mahabharat ground skink (*Asymblepharus mahabharatus*), Nepal ground skink (*Asymblepharus nepalensis*) and Large ground skink (*Scincella capitanea*) are endemic to Nepal. Three monitor species represent the family Varanidae (Bhattarai et al., 2020).

The diversity of snakes in Nepal is richer than that of other groups of reptiles. Serpentes in Nepal is represented by nine families - Pythonidae (two species), Erycidae (two species), Colubridae (45 species), Psammophididae (one species), Pseudaspididae (one species), Elapidae (10 species), Typhlopidae (four species), Homalopsidae (2 species) and Viperidae (7 species) (Swan and Leviton, 1962; Kastle et al., 2013; Sharma et al., 2013; Bhattarai et al., 2017; Rawat et al., 2020; Sah et al., 2020; Uetz et al., 2020). According to Sharma et al. (2013), 18 species of venomous snakes in Nepal are medically significant. Burmese python (*Python bivittatus*) is the largest non-venomous species in Nepal. Family Erycidae comprises Common sand boa (*Eryx conicus*) and Indian sand boa (*Eryx johnii*). Calamaria reed snake (*Liopeltis calamaria*) (Bhattarai et al., 2017) and Laudankia vine snake (*Ahaetulla laudankia*) (Rawat et al., 2020) are recorded as new colubrid species for Nepal. Sand snake (*Psammophis condanarus*) and Common mock viper (*Psammodynastes pulverulentus*) are single species from the families Psammophididae and Pseudaspididae respectively. The family Elapidae comprises of venomous snakes like cobras, coral snakes and krait. King cobra (*Ophiophagus hannah*) is the largest venomous snake globally. In contrast, Blind snakes in the family Typhlopidae are the smallest snake in the country. Common smooth water snake (*Enhydris enhydris*) and Siebold's smooth water snake (*Ferania sieboldii*) represent the family Homalopsidae. Russell's viper (*Daboia russelii*) is the only true viper in the family Viperidae.



Oligodon kheriensis (Coral red kukri snake) © Kul Prasad Limbu

2.2 CLIMATE OF NEPAL

Topographic variation is the prime factor for the country's climate, habitat, vegetation, flora and fauna. Bearing this constraint in mind, Nepal harbours the most extended elevational gradient on Earth. As a result of altitudinal variation with ascending zones from the lowlands to snow-capped mountains, a wide range of climatic conditions exists in Nepal. Therefore, the country possesses marked differences in rainfall and temperature on its eastern and western parts.

Rainfall is the crucial factor determining the composition of floral and faunal diversity. In the plains and lower Himalayas throughout Nepal, 77% of the annual precipitation occurs in summer monsoon rains (Ministry of Forests and Environment, 2019). It arrives early June in the east and mid to late June in the west. However, Nepal's eastern part receives more monsoon rainfall as it gradually declines while moving to the west. Monsoon precipitation is lowest over Mustang (<200 mm) and highest over Kaski and Parbat (>2000 mm) districts of Nepal (Department of Hydrology and Meteorology, 2017). The post-monsoon season lasts from October to November. Only Jhapa, Morang, Sunsari and Kaski districts of Nepal receive more than 100 mm of post-monsoon rainfall. In the winter season, winter rains are more common in the western hills than the eastern part. The weather remains relatively dry

in Nepal's most lowland areas from April to June, making pre-monsoon season the 'hottest season' of the year. Average annual precipitation for all districts shows that Mustang receives the lowest rainfall (<400 mm). In contrast, Kaski, Parbat, Tanahu, Lamjung, Nuwakot, Sindhupalchok, Sankhuwasabha, Ilam and Jhapa are the wetter districts of Nepal having more than 2000mm of rainfall annually.

Increase in altitude leads to a decrease in temperatures. The average temperature decreases by 6.5°C for every 1000 m gain in altitude. Therefore, Nepal's spatial distribution of annual mean temperatures differs with elevation throughout the year. The high Himalaya region has the lowest average annual maximum temperature of 5°C to 10°C. In contrast, the lowland Tarai region has the highest average annual maximum temperature of more than 30°C. The annual maximum temperature trend in Nepal is 0.056°C/yr. In Humla, Mugu, Dolpa, Mustang and Manang district, average annual minimum temperature generally remains less than 0°C whilst it reaches 15°C to 20°C in southern districts (Surkhet, Tanahun, Makwanpur, Sindhuli and Udaypur). All Nepal minimum temperature trend is increasing at the rate of 0.02°C/year, which is significant during the monsoon season only. The average mean temperature of Nepal from 1981 to 2010 is 12.1°C. January is generally the coldest month of the year in Nepal. In summary, the average temperature change is projected to be 1.07°C warmer for 2016 to 2045 (Ministry of Forests and Environment, 2019).

2.3 BIOGEOGRAPHY OF NEPAL

The Himalayas were formed 35 million years ago through a collision of the Indian plate with the Eurasian plate, resulting in Nepal's complex biogeography. Furthermore, Nepal occupies a central location within a 3000 km arc of the Himalayas. It functions as a transition between two biogeographical realms; the Palaearctic and Indo-Malayan region. Thus, in general, Nepal supports a remarkable faunal diversity. Physiographically, the country is divided into five larger units, from south to north, the: (1) Tarai (67–300 m) (2) Siwaliks (700–1500 m) (3) Middle mountains (1500–2700 m) (4) High mountains (600–3500 m) and (5) High Himalaya (above 4000 m). The altitudinal variation is extreme with diverse climate. Therefore, altitudinal limits are the most convenient to define bioclimatic zones in Nepal. According to Dobremez (1976), Nepal's bioclimatic zone is categorised into; Tropical (up to 1000 m), Sub-tropical (1000 m to 2000 m), Temperate (2000 m to 3000 m), Sub-alpine (3000 m to 4000 m) and Alpine (4000 m to 5000 m). The majority of Nepal's reptile fauna is confined to the tropical zone (Schleich and Kastle, 2002).

Crocodiles, turtles and pythons are limited to the tropical zone. Diversity of the agamids is higher in the temperate zone in comparison to other zones. Nepalese geckos inhabit both tropical and sub-tropical zone. Skinks are well documented from lowlands up to the temperate region. Glacier skink (*Asymblepharus ladacensis*) is recorded at the altitude of 2590 m to 5490 m. Bengal monitor (*Varanus bengalensis*) is reported in the Tarai and midlands of all parts, up to 2040 m. In Serpentes, a most diversified group, colubrids have been observed from Tarai to High Mountains. One of the rarest snake species worldwide, Coral-red kukri snake (*Oligodon kheriensis*) inhabit Tarai of Nepal (Pandey et al., 2016). Among the elapids, Monocled cobra (*Naja kaouthia*) can be found at elevations of up to 2800 m and the iconic King cobra (*Ophiophagus hannah*) is confirmed from 41 districts of Nepal (Devkota et al., 2020). The vipers are probably the more advanced snakes in terms of evolution. Their distribution in Nepal ranges from the tropical to the alpine zone. The Himalayan pit viper (*Gloydius himalayanus*) is the highest elevational (4876 m) recorded snake of Nepal. In summary, 122 species of reptiles occur in the tropical zone, 90 species in the sub-tropical zone, 52 species in the temperate zone, 16 species in the sub-alpine zone, four species in the alpine zone and one species above 5000 m. Therefore, it can be concluded that reptilian faunal species richness decreases with increasing elevation.

2.4 REPTILE HABITATS IN NEPAL

Reptiles live in a wide range of habitats. While crocodiles and turtles inhabit the wetland areas, all the lizards are terrestrial. They are found in the forest as well as in the arid areas. The majority of snakes are terrestrial; however, some species are adapted to live in the water. Nepal harbours 29% forest area, 12% grassland, 21% farmland and 2.6% water bodies. Broadly, reptile habitat in Nepal can be categorised into a terrestrial and aquatic habitat.

Terrestrial habitat in Nepal includes forest and grassland. Nepal's forest cover is estimated to be 59620 km², i.e., 40.36% of the country's area (Department of Forest Research and Survey, 2015). Physiographically, Middle mountain is very rich in forest, with 37.80% of the total forest of Nepal. Remaining forest of Nepal occurs in High Mountains and High Himalaya (32.25%), Siwalik (23.04%) and Tarai (6.90%). Stainton (1972) described 35 types of forest in Nepal based on altitude levels and different types of climate. These forests are more than trees and economic resource. They are home to diverse species diversity. The forests of Tarai are the habitats of a large number of reptile species. Among them, the world's largest venomous snake, King cobra (*Ophiophagus hannah*) and one of the largest gecko, Tokay gecko (*Gekko gecko*) are noteworthy. The endemic Nepal ground skink (*Asymblepharus nepalensis*) resides in the wet oak forest of Middle Mountain. Grassland provides habitat to various reptile species. About 17500 km² (i.e., 12%) of the country's area is covered by grassland in Nepal. The distribution of grassland is higher in High Himalaya and High mountains accounting for 79.83% of Nepal's total grassland area. These high-altitude grasslands are home to unique assemblages of birds and mammals. However, most of the reptiles are confined to the grassland of Tarai, Siwalik and Middle Mountains. Pythons are reported frequently from the grasslands of Tarai.

Nepal is very rich for different types of aquatic habitats. Rivers are probably the most extensive and visible wetlands in Nepal. Major rivers (Koshi, Narayani, Karnali and Mahakali) of the country originate in the Himalayas. Some of these rivers are home to Mugger crocodile (*Crocodylus palustris*) and Gharial (*Gavialis gangeticus*). Lakes and ponds are distributed from lowlands to the High Himalaya region. The majority of Nepal's turtle species are found in these aquatic water bodies. Common smooth water snake (*Enhydris enhydris*) and Asiatic water snake (*Fowlea piscator*) are frequently encountered species that inhabit ponds, slow-flowing rivers, marshes and even irrigated paddy fields. Other species associated with Nepal's wetlands are Yellow monitor (*Varanus flavescens*), Water monitor lizard (*Varanus salvator*) and Burmese python (*Python bivittatus*).

3. BANGLADESH

Md. Kamrul Hasan and M. Monirul H. Khan

3.1 REPTILE DIVERSITY OF BANGLADESH

Bangladesh is a small and densely populated country, but very rich in reptile diversity due to its hot and humid climate as well as diverse ecosystems. A total of 147 species of reptile are recorded from Bangladesh, 38 (26%) of them are nationally threatened under different categories (IUCN Bangladesh, 2015). Among the recorded reptile species, order Squamata has the highest number (115 species) followed by Testudines (30 species) and Crocodylia (two species). About 73% species of turtles and tortoises (22 out of 30 species) are nationally threatened – 14 species are Critically Endangered, four Endangered and four Vulnerable. The Marsh crocodile (*Crocodylus palustris*) is extinct in the wild in Bangladesh. The remaining two species of the order Crocodylia are also nationally threatened. The

Gharial (*Gavialis gangeticus*) is Critically Endangered and Estuarine crocodile (*Crocodylus porosus*) is Endangered. Among the 80 species of snakes (including 12 sea snakes), eight (10%) are nationally threatened; one is Critically Endangered, two are Endangered and five are Vulnerable. About 17% of lizard species (six out of 35 species) are threatened in the country. Bangladesh is home to 27 globally threatened reptiles (IUCN, 2018), of which six are Critically Endangered, eight Endangered and 13 Vulnerable. The country still supports viable populations of the globally Critically Endangered River terrapin (*Batagur baska*), Bengal roof turtle (*Batagur kachuga*), Arakan forest turtle (*Heosemys depressa*), Black softshell turtle (*Nilssonina nigricans*), Hawksbill sea turtle (*Eretmochelys imbricata*) and Gharial (*Gavialis gangeticus*). Among the other globally threatened species, the globally Endangered Elongated tortoise (*Indotestudo elongata*), Asian giant tortoise (*Manouria emys*), Three-striped roofed turtle (*Batagur dhongoka*), Keeled box turtle (*Cuora mouhotii*), Sylhet roofed turtle (*Pangsuma sylhetensis*), Narrow-headed softshell turtle (*Chitra indica*), Cantor's giant softshell turtle (*Pelochelys cantorii*) and Green sea turtle (*Chelonia mydas*) are notable. Habitat destruction, illegal hunting and poaching for consumption as well as trade are the major threats to reptiles in Bangladesh. Although, all reptile species are protected by the Wildlife (Conservation and Security) Act of 2012, proper implementation of law and mass awareness is necessary for the conservation of reptiles and their habitats.

3.2 KEY CLIMATOLOGICAL, BIOGEOGRAPHICAL ZONES AND HABITATS OF SIGNIFICANCE TO REPTILES OF BANGLADESH

Bangladesh is located at the crossroads of the Indo-Himalayan and Indo-Chinese sub-regions in the Oriental region and is the transitional zone for the flora and fauna of the subcontinent and that of the Southeast Asia (Stanford, 1991; Feeroz, 2013). The country is also a part of the Indo-Burma Biodiversity Hotspot, demanding high conservation priorities on a global aspect (Myers et al., 2000). Due to its zoogeographical location, Bangladesh plays a significant role in terms of the animal migration, or the staging ground for wildlife movements of the region (Reza and Hasan, 2019).

Bangladesh has 14290 km² of forest cover, which is about 11% of the total land area of the country. Bangladesh hosts four major types of forests: a) mixed-evergreen, b) deciduous, c) freshwater swamp and d) mangrove. The mixed-evergreen forests cover 6800 km² of land and situated in the northeast and southeast parts of Bangladesh. The moist deciduous forests cover about 1200 km² hectares. The mangrove forests cover an area of 8017 km² along the coast of the Bay of Bengal. The freshwater swamp forests consist of flood-tolerant evergreen trees of about 10 to 12 m height, which are situated in the northeast of Bangladesh (Reza and Hasan, 2019). The wetland areas cover about 19.65% of Bangladesh (29000 km²). Furthermore, during the rainy season more than 50% of the area of the country turns into seasonal wetlands. Bangladesh has 106,613 km² of marine area, comprising 12 nautical miles of territorial sea (Khan, 2018).

The reptile habitats of the country include forests, bush and bamboo dominated areas, wetlands, homestead, agricultural lands and marine areas. The forests of the country primarily support about 70% of the country reptile species (103 species), while wetlands and marine areas support about 20% (29 species) and 12% (17 species), respectively. Approximately 48% of the country's reptile species (70 species) are confined to forest habitats (Reza et al., 2014). The forests and wetlands of Bangladesh support 22 species of globally threatened reptiles. The sandy shores along the vast coastal areas of the country act as breeding grounds for marine turtles.

Despite many conservation initiatives in the country, reptile habitats have been shrinking at an alarming rate, mainly due to various anthropogenic activities. Despite these threats to reptile habitats,

the remaining forests and wetlands support a good number of the country's reptiles. Forest and wetlands must be protected for the conservation of reptiles and their habitats in Bangladesh.

4. INDIA

S. R. Ganesh and N. S. Achyuthan

4.1 GEOLOGY, HABITATS AND REPTILE DIVERSITY

India is one of the few countries in Asia that has a very eventful and dynamic geological history. About 65 million years ago, in the Cretaceous Period, India was a southerly, insular landmass, wedged between Madagascar and Australia, forming part of Gondwana. Due to plate tectonics and continental drift, the Indian plate drifted and collided on to the mainland Asian plate, a part of the then Laurasia, giving rise to the world's tallest mountain range - the Himalaya. This transition of India (termed the 'Trans-Tethys migration'), through the volatile Reunion hotspot, resulted in historical volcanic activities such as the Deccan trap formation. The Himalaya more or less marks the southern boundary of Palearctic, shielding the Indian peninsula from the cold weather of the temperate north. Thus, the Indian peninsula experiences a warm tropical climate and is hence bestowed with a high biodiversity.

India's positioning on the biogeographic cross-roads of the Afro-Tropical / Ethiopian, Central Asian and the Oriental realms translates into the presence of many discrete ecoregions in the country. These are: the Western Ghats, the Eastern Ghats, the Deccan plateau, the Coastal Plains, the Northern Plains, the Thar Desert, the Himalayas, Northeast India and the Andaman Nicobar Islands. These ecoregions have starkly contrasting abiotic and biotic characterisations. The herpetological biogeographic affinities of the Thar Desert region are largely from the Sahara-Arabian / Afro-tropical; that of the Western Himalaya is largely Central Asian / Mongolian; whereas that of the rest of the India is largely Oriental. Further, it has been established that while the affinities of Northeast India and the Andaman islands are Indo-Chinese, and that of the Western Ghats and the Nicobar islands are Indo-Malayan. The Western Ghats is characterized by largely autochthonous biota, sometimes shared only with the adjacent island of Sri Lanka. The Coastal Plains, the Deccan plateau and much of the Eastern Ghats are typically characterised by largely South Asian biota.

There are three discrete high rainfall (> 200 cm per year) regions, namely the Western Ghats, the lower Himalaya/ Northeast and the Andaman and Nicobar Islands. High humidity enables the formation of dense tropical rainforest and evergreen forests in most of these regions. Subtropical and temperate forests occur in the Himalayan slopes. Cold desert occurs above the tree-line of the higher peaks in general and the Western Himalaya in particular. Hot desert prevails in the Thar Desert and generally in the Northwestern Frontier and parts of the Deccan plateau that experience < 50 cm annual rainfall. Most of the subcontinent experiences 100–150 cm rainfall and the Eastern Ghats, the Central Indian highlands are covered with deciduous vegetation. Thinly wooded scrubland and dry-evergreen vegetation occurs in most of the Indian peninsula. India is distinctly seasonal with southwest and northeast monsoons causing the precipitation.

India has a high reptile diversity (670+ species and counting!). Half of these are snakes (ca. 320 spp.), while there are over 310 lizard species, 40 chelonians and three crocodylians. This staggering reptile diversity is largely a product of the vastly diverse abiotic and geo-edaphic factors and the resulting ecoregions present. Several families of snakes: Typhlopidae, Gerrhopilidae, Uropeltidae, Pythonidae, Erycidae, Acrochordidae, Viperidae, Homaposidae, Pareiidae, Lamprophiidae, Elapidae, Natricidae and Colubridae are present. Many families of lizards: Dibamidae, Gekkonidae, Agamidae, Chameleonidae, Varanidae, Anguidae, Scincidae and Lacertidae are present. Chelonians are represented by the families Testudinidae, Cheloniidae, Bataguridae and Trionychidae. Crocodylians are

represented by the families Crocodylidae and Gavialidae. Among these some families such as Gekkonidae, Scincidae, Agamidae, Uropeltidae Viperidae, Elapidae, Natricidae and especially Colubridae are highly diverse, with several dozen species. Family Uropeltidae is remarkable in that all species from of six out of seven genera are exclusively Indian in distribution and the species belonging to the genus *Rhinophis* occur both in peninsular India and Sri Lanka.

The Ethiopian / Afro-tropical elements include taxa such as *Saara*, *Acanthodactylus*, *Cyrtopodion*, *Chalcides*, *Eublepharis*, *Ophisops*, *Echis*, *Daboia*, *Eryx*, *Psammophis* and *Eristicophis*. The Mongolian / Central Asian elements includes *Asemblypharus*, *Bufoinceps*, *Phrynocephalus*, *Laudakia*, *Gloydus* and *Platyceps*. The typical Oriental elements dominate this assemblage, with many examples from disparate regions. Examples include the genera *Cyrtodactylus*, *Hemiphyllodactylus*, *Draco*, *Bronchocela*, *Pseudocalotes*, *Japalura*, *Dasia*, *Trimeresurus*, *Chrysopelea* and *Ophiophagus*. Typical South Asian elements are: *Calotes*, *Sitana*, *Psammophilus*, *Barkudia* and *Sepsophis*. As stated earlier the Western Ghats has its own distinctive and endemic radiation of reptiles: *Davidogecko*, *Salea*, *Monilesaurus*, *Microauris*, *Kaestlea*, *Ristella*, *Melanophidium*, *Plectrurus*, *Teretrurus*, *Platyplectrurus* and *Xylophis* and *Vijayachelys*.

The riparian floodplains of the North support a diverse group of aquatic reptiles (turtles, terrapins and Gharial). The rocky terrain of the Deccan and the Eastern Ghats support a multitude of exclusively rock-dwelling lizard assemblages. The three evergreen forest ecoregions support a unique reptile assemblage including highly arboreal ones like the gliding lizard, the gliding gecko and the gliding snake. The desert regions support arid and xeric-adapted reptiles such as spiny-tailed lizard, sand-fish skinks and side-winder horned vipers.

India's history of scientific herpetological studies dates back to the very start of binominal nomenclature. Some 13 species of Indian reptiles were named by Carl Linnaeus in 1758. Altogether some 25 species were described in the 18th century. The bulk of the fauna, consisting over 410 species (60%) were described in the 19th century. Subsequently, in the 20th century, about 90 species (13%) were discovered, most of them before the country's independence. Around 120+ species are recent descriptions that were formally described and named only after the turn of the century. Thus, a good 17% of India's reptile discoveries were the fruition of the efforts of scientists over the last two decades.

4.2 WESTERN GHATS – GEOCLIMATIC SUMMARY AND REPTILE DIVERSITY

The Western Ghats or 'Sahyadris' is a mountain range situated in southwestern India. Historically, it was once part of a volcanic passive margin, along with the eastern ridge of Madagascar, when India was adjacent to it. This mountain range extending 1600 km northwest to southeast along the west coast of India, from 8°–21° N, is geologically heterogeneous and is separated thrice by intervening low-altitude 'gaps'. The three gaps are the Goa Gap – the youngest and northernmost (13 km wide at 15°N lat. formed 65–80 Mya), the Palghat Gap – the widest and most influential (40 km wide at 10°N lat. formed 500 Mya) and the Sencottah Gap – the narrowest and southernmost (7.5 km wide at 9°N lat. formed 500 Mya). These three gaps divide the Ghats into Southern (8°–10° N), Central (11°–14° N) and Northern (15°–21° N) Western Ghats.

The three sections of the Ghats are natural formations that evolved due to differing geoclimatic features such as annual rainfall, average mountain height, relief features and dominant forest types. The Southern and Central Western Ghats have complex topographical relief features and have the tallest of all peaks south of the Himalaya. But the Northern Western Ghats is quite the opposite, consisting of rather even, gentle and drier, lower ranges, with the exception of a few sparse peaks. Due to its position abutting the coast, the Western Ghats has two distinct slopes or versants – the western or windward slope and the eastern or leeward slope. Understandably, the windward slope is

much wetter even in low elevations, compared to that of the eastern slope. The rain-shadow area of the leeward side results in drier forests along the low elevations, with naturally-patchy wet forests in taller peak, due to orographic rainfall.

Some massifs rise steeply from near sea level (ca. 100 m) to a high-elevation (> 1800 m) montane zone as a series, one after the other, from the southern tip, near the Goa Gap. This topographic variation created varied habitats from lowland rain forests to high-elevation montane shola grasslands in the wet zone and deciduous or woodland habitats in the low, eastern fringes. Additionally, the north-south orientation of the Western Ghats stretching for such a long line also implies that its differing latitudinal positioning cause a marked gradient in precipitation and wet season. Meanwhile, wetter conditions prevail in the Southern and parts of Central Western Ghats, especially in the higher (> 900 m) windward slopes and drier conditions prevail with increasing distance northwards or eastwards, progressively.

Agasthyamalai, Ashambu and Tirunelveli hills (8°N), Sivagiri, Cardamom hills, High Wavy mountains (9°N), High Ranges, Anaimalai, Palni (10°N) form the Southern Western Ghats. North of the Palghat Gap, the Nilgiri–Waynad (11°N), the Brahmagiri-Coorg and Nishanimotte–Thadiyendamol ranges (12°N), the Baba Budan Giri–Kudremukh (13°N) and the Kodachadri–Mookambika Hill (14°N) ranges are the chief hill ranges that constitute the Central Western Ghats. North of this, the Ghats taper lower and drier. While the southern sections of the Ghats experience both the southwest and the northeast monsoons (June–December), the northern parts only receive the southwest monsoon. It is the last remaining stretch of the tropical rainforests in Peninsular India. As the Western Ghats harbours a unique endemic radiation of biota it is recognised as a global biodiversity hotspot.

The Western Ghats has a high reptile diversity and more importantly, endemism. Several genera of reptiles are endemic to this region. These include the cane turtle (*Vijayachelys*), the gekkonid lizard (*Dravidogecko*), the agamid lizards (*Salea*, *Microauris*), the cat skinks (*Ristella*), the shieldtail snakes (*Melanophidium*, *Plectrurus*, *Teretrurus*, *Platyplectrurus* and *Brachyophidium*), wood snakes (*Xylophis*) and vine snake (*Proahaetulla*). One genus of brackish water snake (*Dieurostus*) occurs only in the Malabar Coast, just west of the Ghats. Two lizard genera *Monilesaurus* and *Kaestlea* are shared only with the Eastern Ghats. One genus of uropeltid snake (*Uropeltis*) is shared only with other peninsular Indian hill ranges (i.e. the Eastern Ghats and Satpuras), while another (*Rhinophis*), in addition to being shared with the Eastern Ghats, is predominantly present in Sri Lanka. Two genera, one each of a lizard (*Otocryptis*) and a snake (*Hypnale*) are shared only with Sri Lanka.

Species-level endemism is high - up to 70%. Over 200 species of reptiles inhabit the Western Ghats, with over 170 species being endemic. Some of the distinctly Indo-Malayan elements in the Western Ghats reptile fauna include genera such as the tree skink (*Dasia*), and the pitviper (*Tropidolaemus*). Some other genera such as the geckoes (*Cyrtodactylus*, *Hemiphyllodactylus*), the gliding lizard (*Draco*), the gliding snake (*Chrysopelea*) and the pitviper (*Trimeresurus*) are typical Southeast Asian elements that are, in addition to the Western Ghats, also present in the Eastern Ghats and Satpuras. Whereas many are 'widespread' genera of reptiles such as *Cnemaspis*, *Hemidactylus*, *Calotes*, *Eutropis*, *Sphenomorphus*, *Indotyphlops*, *Gerrhopilus*, *Hebius*, *Dendrelaphis*, *Ahaetulla*, *Oligodon* and *Boiga*, which are represented by species endemic to the Western Ghats. Recent studies suggest that at least two narrow-endemic, monotypic genera *Microauris* and *Proahaetulla* are ancestors of their respective closely-related taxa. This stresses the biogeographic importance of the Western Ghats in generating and sustaining endemic diversity in South Asia.

Apart from the aforementioned works, a good amount of the recent endemic reptile discoveries from the Western Ghats have added much to this fauna. These include ecologically diverse taxa such as

rock-dwelling geckoes, arboreal agamids and snakes, aquatic snakes and burrowing snakes. Examples include some new species of *Cnemaspis* (*C. aijiae*, *C. amba*, *C. amboliensis*, *C. anamudiensis*, *C. anandani*, *C. australis*, *C. chengodumalaensis*, *C. flaviventralis*, *C. girii*, *C. heteropholis*, *C. kolhapurensis*, *C. koynaensis*, *C. kottiyoorensis*, *C. limayei*, *C. maculicollis*, *C. magnifica*, *C. mahabali*, *C. monticola*, *C. nilagirica*, *C. palakkadensis*, *C. ranganaensis*, and *C. zacharyi*) and *Hemidactylus* (*H. aaronbaueri*, *H. acanthopholis*, *H. paaragowli*, *H. sahgali*, *H. sataragensis*, *H. vanam*, and *H. varadgirii*), two new species of *Hemiphyllodactylus* (*H. nilgiriensis* and *H. peninsularis*), six new species of *Dravidogecko* (*D. douglasadamsi*, *D. janakiae*, *D. meghamalaiensis*, *D. septentrionalis*, *D. smithi*, and *D. tholpalli*), two new species of skinks *Dasia johnsinghi* and *Subdoluseps nilgiriensis*, two species of agamids *Monilesaurus montanus* and *M. acanthocephalus*, the snakes *Ahaetulla borealis*, *A. farnsworthi*, *A. malabarica*, *A. sahyadrensis*, *A. travancorica*, *Boiga thackerayi*, *Calliophis castoe*, *Dendrelaphis ashoki*, *D. girii*, *Melanophidium khairi*, *Proahaetulla antiqua*, *Rhabdops aquaticus*, *Rhinophis karinthandani*, *R. melanoleucus*, *Uropeltis bhupathyi*, *U. rajendrani*, *Xylophis deepaki* and *X. mosaicus*, to name a few. Further surveys will no doubt increase the reptile diversity of the Western Ghats.

4.3 THE ANDAMAN & NICOBAR ISLANDS – GEOGRAPHY, CLIMATE AND REPTILE DIVERSITY

The Andaman and Nicobar Islands are a ~700 km long arc strip of islands situated between 6.7°–13.7° N in the Bay of Bengal. These Islands are a continuation of the Arkan-Yoma mountain ranges from Myanmar to the Andaman Sea to its east and the Bay of Bengal to its west. However, the Barren and Narcondam Islands have a volcanic origin. The Andaman Island group (10°–13.7°N) is separated by the Ten Degree channel that runs parallel to the latitude. This channel serves as one of the major physical geographical barriers, that in turn works as a major biogeographical barrier between the island groups. The Andaman Islands are a collection of around 212–274 Islands (depending on the reference and the definition of an island, some rocky outcrops can or cannot be defined as islands). With the north-western most Narcondam Island being isolated from the rest of the Andaman Islands, Little Coco Island (Myanmar) is situated at around 40 km from the northernmost Landfall Island of the Andamans. The North Andaman, Middle Andaman, South Andaman, Rutland and Baratang islands are separated by relatively smaller passages and straits such as the Duncan passage, Humphrey strait and Middle strait, to name a but a few. Little Andaman is separated from the other Andaman Islands by 50 km with smaller islands scattered between them.

The Nicobar Island group is situated further south of the Ten Degree channel, around 150 km from Little Andaman. The Nicobar Island group (6.7°–9°N) consist of 22 islands, with Car Nicobar, Nancowry, Katchal, Tillachong, Chowra and Great Nicobar being some of the largest. The southernmost point of the Nicobar Islands is around 180km from the northern tip of Sumatra. Some of the islands possess high points, the highest being Saddle Peak (733 m asl) on North Andaman Island, followed by Narcondam (713 m asl), Thullier Peak (642 m asl) on Great Nicobar Island, Sound Peak (515 m asl), Mount Angelica (469 m asl) and Mount Baker (371 m asl) on Middle Andaman Island, Mt. Harriet (362 m asl) on South Andaman Island, and Kala Pahad (435 m asl) on Rutland Island.

The climate of the Andaman and Nicobar Islands exhibit a tropical to sub-tropical climate, average temperature ranges of 21–25°C in the winter and 27–33°C in the summer and humidity varying from 79-89%. Monsoons happen year-round, with the northeast monsoon occurring between November and May, continued by the southwest monsoons until September, delivering around 350 cm of rain every year. This high rainfall enables the island groups to support dense tropical forests, mangroves, deciduous forests and montane forests. Around twelve forest types are known from these islands, with some apparently unique to this archipelago. Around 80% of the islands are covered with forests.

The terrestrial herpetological diversity of the Andaman and Nicobar Islands are represented by the families Typhlopidae, Pythonidae, Homalopsidae, Elapidae, Viperidae, Natricidae, Colubridae, in snakes; Agamidae, Dibamidae, Gekkonidae, Varanidae and Scincidae in lizards; Dermochelyidae and Chelonidae in turtles and one Crocodylid. Andaman and Nicobar endemics (~33 species) are represented by the genera *Argyrophis* (*A. oatseii*), *Gherropilus* (*G. andamanensis*), *Boiga* (*B. wallachi* and *B. andamanensis*), *Bungarus* (*B. andamanensis*), *Dendrelaphis* (*D. andamanensis* and *D. humayuni*), *Fowlea* (*F. tytleri*), *Hebius* (*H. nicobariense*) *Lycodon* (*L. tiwarii* and *L. hypsirhinoides*), *Trimeresurus* (*T. andersonii*, *T. mutabilis*, *T. labialis* *T. cantori* and *T. davidi*), *Naja* (*N. sagittifera*) *Oligodon* (*O. woodmasoni*) and *Gongylosoma* (*G. nicobarensis*) in snakes, and *Cyrtodactylus* (*C. rubidus*, *C. adleri*, *C. nicobaricus* and *C. camortensis*), *Cnemaspis* (*C. wicksii*, *C. nicobaricus* and *C. andersonii*), *Coryphophylax* (*C. subcristatus* and *C. brevicaudus*), *Bronchocela* (*B. rubrigularis* and *B. danieli*), *Pseudocalotes* (*P. andamanensis*), *Dibamus* (*D. nicobaricum*), *Gekko* (*G. nicobarensis* and *G. verreauxi*), *Phelsuma* (*P. andamanensis*), *Pseudocalotes* (*P. andamanensis*), *Eutropis* (*E. tytleri*, *E. andamanensis* and *E. dattaroyi*), *Lipinia* (*L. macrotympa*), *Scincella* (*S. macrotis*) and *Dasia* (*D. nicobarensis*) in lizards. Recent studies prove that the previously assumed widespread *Eutropis rugifera* to be reported from the Nicobar Islands represent an endemic species – *Eutropis dattaroyi* (Amarasinghe et al., 2020). Considering the relative isolation and geographical barriers, other widely distributed species such as representatives of *Ptyas*, *Hemidactylus*, *Gehyra*, *Gekko*, *Ophiophagus*, *Malayopython*, *Xenopeltis* to name a few, are a subject of future or ongoing investigation, which might also result in more endemic species to the island group.

The Andaman and Nicobar Island groups have a major difference between them with respect to their biogeographic affinities – Andaman Islands showing affinities to Myanmar (genera *Naja*, *Ophiophagus*, *Bungarus*, *Pseudocalotes*, *Gekko* (*Gekko*) etc.), and the Nicobar Islands showing affinities to the Sundaic archipelago (genera *Gekko* (*Ptychozoon*), *Bronchocela*, *Dibamus*, *Xenopeltis*, *Malayopython*, *Hypsiscopus* etc.) separated by the influential Ten Degree submarine channel, more or less resembling the Isthmus of Kra of the Siamese peninsula. Curiously, the predominantly Afro-Malagasy gekkonid genus *Phelsuma* has a representative in the Andaman islands, perhaps a result of pre-India collision dispersal via the Tethys Sea.

The brackish / marine aquatic herpetofauna also exhibit a high diversity, with around 20 species of snakes of the genera *Hydrophis*, *Laticauda*, *Cantoria*, *Cerebrus* and *Achrochordus*; five species of sea turtles of the genera *Eretmochelys*, *Dermochelys*, *Lepidochelys*, *Caretta* and *Chelonia* and one species of *Crocodylus* (*C. porosus*). The genus *Varanus* is represented by only one species (*V. salvator*), which is both terrestrial and aquatic. Out of the five species of sea turtles found in the region, four are known to have regular nesting sites spread throughout the islands. None of the aforementioned genera are endemic to the region, although further molecular studies could change future taxonomic and conservation perspectives.

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APPENDIX I

Participants of the IUCN Red List assessment, Key Biodiversity Area and Assess to Plan workshop for snakes and lizards of mainland South Asia

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Varad B. Giri	
Wangyal, J. Tshelthrim	Jigme Khesar Strict Nature Reserve

APPENDIX II

The 428 species assessed during the reptiles of mainland South Asia workshop, with IUCN Red List category and criteria

FAMILY	SPECIES NAME	RED LIST CATEGORRY	RED LIST CRITERIA
GEKKONIDAE	<i>Cnemaspis adii</i>	CR	B1ab(iii)
GEKKONIDAE	<i>Cnemaspis anaikattiensis</i>	CR	B1ab(iii)
GEKKONIDAE	<i>Cnemaspis kottiyooensis</i>	CR	B1ab(iii)
GEKKONIDAE	<i>Cnemaspis shevaroyensis</i>	CR	B1ab(iii)
GEKKONIDAE	<i>Cnemaspis thackerayi</i>	CR	B1ab(iii)
GEKKONIDAE	<i>Cyrtodactylus chamba</i>	CR	B1ab(iii)
GEKKONIDAE	<i>Cyrtodactylus montanus</i>	CR	B1ab(iii)
GEKKONIDAE	<i>Hemidactylus sataransensis</i>	CR	B1ab(iii)+2ab(iii)
GEKKONIDAE	<i>Hemiphyllodactylus aurantiacus</i>	CR	B1ab(iii)
GEKKONIDAE	<i>Hemiphyllodactylus kolliensis</i>	CR	B1ab(iii)
UROPELTIDAE	<i>Rhinophis goweri</i>	CR	B1ab(iii)
AGAMIDAE	<i>Sarada superba</i>	CR	B1ab(iii)
AGAMIDAE	<i>Sitana fusca</i>	CR	B1ab(iii)+2ab(iii)
VIPERIDAE	<i>Trimeresurus labialis</i>	CR	B1ab(iii,v)+2ab(iii,v)
UROPELTIDAE	<i>Uropeltis dindigalensis</i>	CR	B1ab(iii)
UROPELTIDAE	<i>Uropeltis shorttii</i>	CR	B1ab(iii)
COLUBRIDAE	<i>Boiga andamanensis</i>	EN	B1ab(iii)
ELAPIDAE	<i>Calliophis castoe</i>	EN	B1ab(iii)
AGAMIDAE	<i>Calotes paulus</i>	EN	B1ab(iii)
GEKKONIDAE	<i>Cnemaspis flaviventralis</i>	EN	B1ab(iii)
GEKKONIDAE	<i>Cnemaspis yercaudensis</i>	EN	B1ab(iii,iv)
GEKKONIDAE	<i>Cyrtodactylus adleri</i>	EN	B1ab(iii)
GEKKONIDAE	<i>Cyrtodactylus jeyporensis</i>	EN	B1ab(iii)+2ab(iii)
GEKKONIDAE	<i>Cyrtodactylus rishivalleyensis</i>	EN	B1ab(iii)
GEKKONIDAE	<i>Cyrtodactylus speciosus</i>	EN	B1ab(iii)
DIBAMIDAE	<i>Dibamus nicobaricum</i>	EN	B1ab(iii)
SCINCIDAE	<i>Eutropis ashwamedhi</i>	EN	B1ab(iii)
SCINCIDAE	<i>Eutropis quadratilobus</i>	EN	B2ab(iii)
GEKKONIDAE	<i>Gekko nicobarensis</i>	EN	B2ab(iii)
GEKKONIDAE	<i>Hemidactylus kangerensis</i>	EN	B1ab(iii)
GEKKONIDAE	<i>Hemidactylus scabriceps</i>	EN	B2ab(iii,iv)
GEKKONIDAE	<i>Hemidactylus siva</i>	EN	B1ab(iii)
GEKKONIDAE	<i>Hemidactylus yajurvedi</i>	EN	B1ab(iii)
UROPELTIDAE	<i>Melanophidium bilineatum</i>	EN	B1ab(iii)
UROPELTIDAE	<i>Melanophidium khairi</i>	EN	B1ab(iii)
AGAMIDAE	<i>Microauris aurantolabium</i>	EN	B1ab(iii)
AGAMIDAE	<i>Monilesaurus acanthocephalus</i>	EN	B1ab(iii)+2ab(iii)
ELAPIDAE	<i>Naja sagittifera</i>	EN	B1ab(iii,v)
LACERTIDAE	<i>Ophisops pushkarensis</i>	EN	B1ab(iii)
COLUBRIDAE	<i>Proahaetulla antiqua</i>	EN	B1ab(iii)+2ab(iii)

FAMILY	SPECIES NAME	RED LIST CATEGORY	RED LIST CRITERIA
AGAMIDAE	<i>Sitana marudhamneydhal</i>	EN	B1ab(iii)+2ab(iii)
AGAMIDAE	<i>Sitana schleichi</i>	EN	B1ab(v)+2ab(v)
LACERTIDAE	<i>Takydromus sikkimensis</i>	EN	B1ab(iii)
VIPERIDAE	<i>Trimeresurus cantori</i>	EN	B1ab(iii)+2ab(iii)
VIPERIDAE	<i>Trimeresurus mutabilis</i>	EN	B1ab(iii)+2ab(iii)
VIPERIDAE	<i>Trimeresurus strigatus</i>	EN	B1ab(iii)
UROPELTIDAE	<i>Uropeltis madurensis</i>	EN	B1ab(iii)+2ab(iii)
VARANIDAE	<i>Varanus flavescens</i>	EN	A2cd
GEKKONIDAE	<i>Cnemaspis assamensis</i>	VU	B1ab(iii)
AGAMIDAE	<i>Coryphophylax brevicaudus</i>	VU	B1ab(iii)
GEKKONIDAE	<i>Cyrtopodion aravallense</i>	VU	D2
COLUBRIDAE	<i>Elaphe taeniura</i>	VU	A2d
AGAMIDAE	<i>Japalura dasi</i>	VU	D2
UROPELTIDAE	<i>Melanophidium punctatum</i>	VU	B1ab(iii)
COLUBRIDAE	<i>Oligodon erythrorhachis</i>	VU	B1ab(iii)
COLUBRIDAE	<i>Oligodon juglandifer</i>	VU	B1ab(iii)
AGAMIDAE	<i>Pseudocalotes andamanensis</i>	VU	B1ab(iii)
AGAMIDAE	<i>Saara hardwickii</i>	VU	A2cd
AGAMIDAE	<i>Sitana visiri</i>	VU	B1ab(iii)
NATRICIDAE	<i>Trachischium guentheri</i>	VU	B1ab(iii)
SCINCIDAE	<i>Tropidophorus assamensis</i>	VU	B1ab(iii)
NATRICIDAE	<i>Xenochrophis cerasogaster</i>	VU	A2c
COLUBRIDAE	<i>Ahaetulla dispar</i>	NT	N/A
ELAPIDAE	<i>Bungarus andamanensis</i>	NT	N/A
GEKKONIDAE	<i>Cyrtodactylus fasciolatus</i>	NT	N/A
GEKKONIDAE	<i>Cyrtodactylus srilekhae</i>	NT	N/A
HOMALOPSIDAE	<i>Dieurostus dussumieri</i>	NT	B1b(iii)
AGAMIDAE	<i>Draco norvillii</i>	NT	B1a
BOIDAE	<i>Eryx conicus</i>	NT	N/A
BOIDAE	<i>Eryx johnii</i>	NT	N/A
BOIDAE	<i>Eryx whitakeri</i>	NT	N/A
SCINCIDAE	<i>Eutropis bibronii</i>	NT	N/A
NATRICIDAE	<i>Hebius xenura</i>	NT	N/A
GEKKONIDAE	<i>Hemiphyllodactylus arakuensis</i>	NT	N/A
AGAMIDAE	<i>Japalura kumaonensis</i>	NT	B1b(iii)
COLUBRIDAE	<i>Lycodon gammiei</i>	NT	B1b(iii)
COLUBRIDAE	<i>Lycodon mackinnoni</i>	NT	B1ab(iii)
ELAPIDAE	<i>Naja oxiana</i>	NT	N/A
COLUBRIDAE	<i>Oligodon erythrogaster</i>	NT	B1ab(iii)
COLUBRIDAE	<i>Oligodon woodmasoni</i>	NT	B1a
COLUBRIDAE	<i>Ptyas korros</i>	NT	N/A
PYTHONIDAE	<i>Python molurus</i>	NT	N/A
NATRICIDAE	<i>Rhabdops olivaceus</i>	NT	B1b(iii)

FAMILY	SPECIES NAME	RED LIST CATEGORY	RED LIST CRITERIA
AGAMIDAE	<i>Sitana thondalu</i>	NT	B1ab(iii)
SCINCIDAE	<i>Sphenomorphus apalpebratus</i>	NT	D2
VARANIDAE	<i>Varanus bengalensis</i>	NT	N/A
SCINCIDAE	<i>Ablepharus grayanus</i>	LC	N/A
SCINCIDAE	<i>Ablepharus pannonicus</i>	LC	N/A
LACERTIDAE	<i>Acanthodactylus blanfordii</i>	LC	N/A
LACERTIDAE	<i>Acanthodactylus cantoris</i>	LC	N/A
LACERTIDAE	<i>Acanthodactylus micropholis</i>	LC	N/A
ACROCHORDIDAE	<i>Acrochordus granulatus</i>	LC	N/A
GEKKONIDAE	<i>Agamura persica</i>	LC	N/A
COLUBRIDAE	<i>Ahaetulla anomala</i>	LC	N/A
COLUBRIDAE	<i>Ahaetulla laudankia</i>	LC	N/A
COLUBRIDAE	<i>Ahaetulla nasuta</i>	LC	N/A
COLUBRIDAE	<i>Ahaetulla prasina</i>	LC	N/A
COLUBRIDAE	<i>Ahaetulla pulverulenta</i>	LC	N/A
GEKKONIDAE	<i>Altiphylax stoliczkai</i>	LC	N/A
NATRICIDAE	<i>Amphiesma stolatum</i>	LC	N/A
COLUBRIDAE	<i>Argyrogena fasciolata</i>	LC	N/A
TYPHLOPIDAE	<i>Argyrophis diardii</i>	LC	N/A
SCINCIDAE	<i>Asymblepharus himalayanus</i>	LC	N/A
SCINCIDAE	<i>Asymblepharus ladacensis</i>	LC	N/A
NATRICIDAE	<i>Atretium schistosum</i>	LC	N/A
COLUBRIDAE	<i>Boiga beddomei</i>	LC	N/A
COLUBRIDAE	<i>Boiga ceylonensis</i>	LC	N/A
COLUBRIDAE	<i>Boiga cyanea</i>	LC	N/A
COLUBRIDAE	<i>Boiga flaviviridis</i>	LC	N/A
COLUBRIDAE	<i>Boiga forsteni</i>	LC	N/A
COLUBRIDAE	<i>Boiga gokool</i>	LC	N/A
COLUBRIDAE	<i>Boiga multifasciata</i>	LC	N/A
COLUBRIDAE	<i>Boiga multomaculata</i>	LC	N/A
COLUBRIDAE	<i>Boiga nuchalis</i>	LC	N/A
COLUBRIDAE	<i>Boiga ochracea</i>	LC	N/A
COLUBRIDAE	<i>Boiga quincunciata</i>	LC	N/A
COLUBRIDAE	<i>Boiga siamensis</i>	LC	N/A
COLUBRIDAE	<i>Boiga trigonata</i>	LC	N/A
AGAMIDAE	<i>Bronchocela cristatella</i>	LC	N/A
AGAMIDAE	<i>Bronchocela danieli</i>	LC	N/A
AGAMIDAE	<i>Bufoinceps laungwalaensis</i>	LC	N/A
ELAPIDAE	<i>Bungarus bungaroides</i>	LC	N/A
ELAPIDAE	<i>Bungarus caeruleus</i>	LC	N/A
ELAPIDAE	<i>Bungarus lividus</i>	LC	N/A
ELAPIDAE	<i>Bungarus niger</i>	LC	N/A
ELAPIDAE	<i>Bungarus sindanus</i>	LC	N/A

FAMILY	SPECIES NAME	RED LIST CATEGRY	RED LIST CRITERIA
ELAPIDAE	<i>Bungarus walli</i>	LC	N/A
GEKKONIDAE	<i>Bunopus tuberculatus</i>	LC	N/A
ELAPIDAE	<i>Calliophis melanurus</i>	LC	N/A
ELAPIDAE	<i>Calliophis nigrescens</i>	LC	N/A
AGAMIDAE	<i>Calotes calotes</i>	LC	N/A
AGAMIDAE	<i>Calotes emma</i>	LC	N/A
AGAMIDAE	<i>Calotes jerdoni</i>	LC	N/A
AGAMIDAE	<i>Calotes maria</i>	LC	N/A
AGAMIDAE	<i>Calotes minor</i>	LC	N/A
AGAMIDAE	<i>Calotes mystaceus</i>	LC	N/A
AGAMIDAE	<i>Calotes versicolor</i>	LC	N/A
SCINCIDAE	<i>Chalcides ocellatus</i>	LC	N/A
COLUBRIDAE	<i>Chrysopelea ornata</i>	LC	N/A
COLUBRIDAE	<i>Chrysopelea taprobanica</i>	LC	N/A
GEKKONIDAE	<i>Cnemaspis ajijae</i>	LC	N/A
GEKKONIDAE	<i>Cnemaspis anamudiensis</i>	LC	N/A
GEKKONIDAE	<i>Cnemaspis anandani</i>	LC	N/A
GEKKONIDAE	<i>Cnemaspis maculicollis</i>	LC	N/A
COLUBRIDAE	<i>Coelognathus helenae</i>	LC	N/A
COLUBRIDAE	<i>Coronella brachyura</i>	LC	N/A
AGAMIDAE	<i>Coryphophylax subcristatus</i>	LC	N/A
AGAMIDAE	<i>Cristidorsa planidorsata</i>	LC	N/A
GEKKONIDAE	<i>Crossobamon evermanni</i>	LC	N/A
GEKKONIDAE	<i>Crossobamon orientalis</i>	LC	N/A
GEKKONIDAE	<i>Cyrtodactylus collegalensis</i>	LC	N/A
GEKKONIDAE	<i>Cyrtodactylus rubidus</i>	LC	N/A
GEKKONIDAE	<i>Cyrtodactylus tripuraensis</i>	LC	N/A
GEKKONIDAE	<i>Cyrtodactylus varadgirii</i>	LC	N/A
GEKKONIDAE	<i>Cyrtopodion agamuroides</i>	LC	N/A
GEKKONIDAE	<i>Cyrtopodion kachhense</i>	LC	N/A
GEKKONIDAE	<i>Cyrtopodion potohareense</i>	LC	N/A
GEKKONIDAE	<i>Cyrtopodion scabrum</i>	LC	N/A
VIPERIDAE	<i>Daboia russelii</i>	LC	N/A
SCINCIDAE	<i>Dasia olivacea</i>	LC	N/A
COLUBRIDAE	<i>Dendrelaphis andamanensis</i>	LC	N/A
COLUBRIDAE	<i>Dendrelaphis bifrenalis</i>	LC	N/A
COLUBRIDAE	<i>Dendrelaphis biloreatus</i>	LC	N/A
COLUBRIDAE	<i>Dendrelaphis cyanochloris</i>	LC	N/A
COLUBRIDAE	<i>Dendrelaphis humayuni</i>	LC	N/A
COLUBRIDAE	<i>Dendrelaphis pictus</i>	LC	N/A
ANGUIDAE	<i>Dopasia gracilis</i>	LC	N/A
AGAMIDAE	<i>Draco maculatus</i>	LC	N/A
VIPERIDAE	<i>Echis carinatus</i>	LC	N/A

FAMILY	SPECIES NAME	RED LIST CATEGRY	RED LIST CRITERIA
COLUBRIDAE	<i>Eirenis persicus</i>	LC	N/A
COLUBRIDAE	<i>Elaphe cantoris</i>	LC	N/A
COLUBRIDAE	<i>Elaphe hodgsonii</i>	LC	N/A
LACERTIDAE	<i>Eremias acutirostris</i>	LC	N/A
LACERTIDAE	<i>Eremias fasciata</i>	LC	N/A
LACERTIDAE	<i>Eremias persica</i>	LC	N/A
VIPERIDAE	<i>Eristicophis macmahoni</i>	LC	N/A
BOIDAE	<i>Eryx tataricus</i>	LC	N/A
EUBLEPHARIDAE	<i>Eublepharis hardwickii</i>	LC	N/A
EUBLEPHARIDAE	<i>Eublepharis macularius</i>	LC	N/A
EUBLEPHARIDAE	<i>Eublepharis satpuraensis</i>	LC	N/A
SCINCIDAE	<i>Eumeces blythianus</i>	LC	N/A
SCINCIDAE	<i>Eumeces schneideri</i>	LC	N/A
SCINCIDAE	<i>Eurylepis taeniolatus</i>	LC	N/A
SCINCIDAE	<i>Eutropis andamanensis</i>	LC	N/A
SCINCIDAE	<i>Eutropis carinata</i>	LC	N/A
SCINCIDAE	<i>Eutropis dissimilis</i>	LC	N/A
SCINCIDAE	<i>Eutropis macularia</i>	LC	N/A
SCINCIDAE	<i>Eutropis novemcarinata</i>	LC	N/A
SCINCIDAE	<i>Eutropis quadricarinata</i>	LC	N/A
SCINCIDAE	<i>Eutropis rudis</i>	LC	N/A
SCINCIDAE	<i>Eutropis tytleri</i>	LC	N/A
GEKKONIDAE	<i>Gehyra mutilata</i>	LC	N/A
GEKKONIDAE	<i>Gekko smithii</i>	LC	N/A
GEKKONIDAE	<i>Gekko verreauxi</i>	LC	N/A
VIPERIDAE	<i>Gloydus himalayanus</i>	LC	N/A
NATRICIDAE	<i>Hebius clerki</i>	LC	N/A
NATRICIDAE	<i>Hebius khasiense</i>	LC	N/A
GEKKONIDAE	<i>Hemidactylus chipkali</i>	LC	N/A
GEKKONIDAE	<i>Hemidactylus flaviviridis</i>	LC	N/A
GEKKONIDAE	<i>Hemidactylus frenatus</i>	LC	N/A
GEKKONIDAE	<i>Hemidactylus garnotii</i>	LC	N/A
GEKKONIDAE	<i>Hemidactylus hemchandrai</i>	LC	N/A
GEKKONIDAE	<i>Hemidactylus imbricatus</i>	LC	N/A
GEKKONIDAE	<i>Hemidactylus leschenaultii</i>	LC	N/A
GEKKONIDAE	<i>Hemidactylus parvimaaculatus</i>	LC	N/A
GEKKONIDAE	<i>Hemidactylus persicus</i>	LC	N/A
GEKKONIDAE	<i>Hemidactylus platyurus</i>	LC	N/A
GEKKONIDAE	<i>Hemidactylus robustus</i>	LC	N/A
GEKKONIDAE	<i>Hemidactylus sahgali</i>	LC	N/A
GEKKONIDAE	<i>Hemidactylus sushilduttai</i>	LC	N/A
GEKKONIDAE	<i>Hemidactylus triedrus</i>	LC	N/A
GEKKONIDAE	<i>Hemidactylus whitakeri</i>	LC	N/A

FAMILY	SPECIES NAME	RED LIST CATEGROY	RED LIST CRITERIA
GEKKONIDAE	<i>Hemiphyllodactylus jnana</i>	LC	N/A
GEKKONIDAE	<i>Hemiphyllodactylus typus</i>	LC	N/A
NATRICIDAE	<i>Herpetoreas platyceps</i>	LC	N/A
VIPERIDAE	<i>Hypnale hypnale</i>	LC	N/A
TYPHLOPIDAE	<i>Indotyphlops braminus</i>	LC	N/A
TYPHLOPIDAE	<i>Indotyphlops jerdoni</i>	LC	N/A
TYPHLOPIDAE	<i>Indotyphlops porrectus</i>	LC	N/A
AGAMIDAE	<i>Japalura andersoniana</i>	LC	N/A
AGAMIDAE	<i>Japalura major</i>	LC	N/A
AGAMIDAE	<i>Japalura tricarinata</i>	LC	N/A
AGAMIDAE	<i>Japalura variegata</i>	LC	N/A
AGAMIDAE	<i>Laudakia agrorensis</i>	LC	N/A
AGAMIDAE	<i>Laudakia melanura</i>	LC	N/A
AGAMIDAE	<i>Laudakia nupta</i>	LC	N/A
AGAMIDAE	<i>Laudakia tuberculata</i>	LC	N/A
GEKKONIDAE	<i>Lepidodactylus lugubris</i>	LC	N/A
COLUBRIDAE	<i>Liopeltis calamaria</i>	LC	N/A
COLUBRIDAE	<i>Liopeltis rappi</i>	LC	N/A
COLUBRIDAE	<i>Lycodon aulicus</i>	LC	N/A
COLUBRIDAE	<i>Lycodon fasciatus</i>	LC	N/A
COLUBRIDAE	<i>Lycodon flavicollis</i>	LC	N/A
COLUBRIDAE	<i>Lycodon hysirhinoides</i>	LC	N/A
COLUBRIDAE	<i>Lycodon jara</i>	LC	N/A
COLUBRIDAE	<i>Lycodon nympa</i>	LC	N/A
COLUBRIDAE	<i>Lycodon septentrionalis</i>	LC	N/A
COLUBRIDAE	<i>Lycodon striatus</i>	LC	N/A
COLUBRIDAE	<i>Lycodon tiwarii</i>	LC	N/A
SCINCIDAE	<i>Lygosoma albopunctata</i>	LC	N/A
SCINCIDAE	<i>Lygosoma bowringii</i>	LC	N/A
SCINCIDAE	<i>Lygosoma punctata</i>	LC	N/A
COLUBRIDAE	<i>Lytorhynchus maynardi</i>	LC	N/A
COLUBRIDAE	<i>Lytorhynchus paradoxus</i>	LC	N/A
VIPERIDAE	<i>Macrovipera lebetina</i>	LC	N/A
LACERTIDAE	<i>Mesalina brevirostris</i>	LC	N/A
LACERTIDAE	<i>Mesalina watsonana</i>	LC	N/A
GEKKONIDAE	<i>Microgecko persicus</i>	LC	N/A
AGAMIDAE	<i>Monilesaurus montanus</i>	LC	N/A
LEPTOTYPHLOPIDAE	<i>Myriopholis macrorhyncha</i>	LC	N/A
ELAPIDAE	<i>Naja naja</i>	LC	N/A
COLUBRIDAE	<i>Oligodon albocinctus</i>	LC	N/A
COLUBRIDAE	<i>Oligodon arnensis</i>	LC	N/A
COLUBRIDAE	<i>Oligodon catenatus</i>	LC	N/A
COLUBRIDAE	<i>Oligodon cinereus</i>	LC	N/A

FAMILY	SPECIES NAME	RED LIST CATEGROY	RED LIST CRITERIA
COLUBRIDAE	<i>Oligodon cyclurus</i>	LC	N/A
COLUBRIDAE	<i>Oligodon dorsalis</i>	LC	N/A
COLUBRIDAE	<i>Oligodon kheriensis</i>	LC	N/A
COLUBRIDAE	<i>Oligodon taeniolatus</i>	LC	N/A
SCINCIDAE	<i>Ophiomorus blanfordi</i>	LC	N/A
SCINCIDAE	<i>Ophiomorus brevipes</i>	LC	N/A
SCINCIDAE	<i>Ophiomorus raithmai</i>	LC	N/A
SCINCIDAE	<i>Ophiomorus tridactylus</i>	LC	N/A
LACERTIDAE	<i>Ophisops elegans</i>	LC	N/A
LACERTIDAE	<i>Ophisops jerdonii</i>	LC	N/A
LACERTIDAE	<i>Ophisops kutchensis</i>	LC	N/A
LACERTIDAE	<i>Ophisops leschenaultii</i>	LC	N/A
LACERTIDAE	<i>Ophisops microlepis</i>	LC	N/A
COLUBRIDAE	<i>Oreocryptophis porphyraceus</i>	LC	N/A
VIPERIDAE	<i>Ovophis monticola</i>	LC	N/A
AGAMIDAE	<i>Paralaudakia badakhshana</i>	LC	N/A
AGAMIDAE	<i>Paralaudakia himalayana</i>	LC	N/A
PAREIDAE	<i>Pareas monticola</i>	LC	N/A
GEKKONIDAE	<i>Phelsuma andamanense</i>	LC	N/A
AGAMIDAE	<i>Phrynocephalus clarkorum</i>	LC	N/A
AGAMIDAE	<i>Phrynocephalus luteoguttatus</i>	LC	N/A
AGAMIDAE	<i>Phrynocephalus maculatus</i>	LC	N/A
AGAMIDAE	<i>Phrynocephalus ornatus</i>	LC	N/A
AGAMIDAE	<i>Phrynocephalus scutellatus</i>	LC	N/A
AGAMIDAE	<i>Phrynocephalus theobaldi</i>	LC	N/A
COLUBRIDAE	<i>Platyceps karelini</i>	LC	N/A
COLUBRIDAE	<i>Platyceps rhodorachis</i>	LC	N/A
COLUBRIDAE	<i>Platyceps ventromaculatus</i>	LC	N/A
VIPERIDAE	<i>Protobothrops himalayanus</i>	LC	N/A
VIPERIDAE	<i>Protobothrops mucrosquamatus</i>	LC	N/A
PSEUDASPIDIDAE	<i>Psammodynastes pulverulentus</i>	LC	N/A
PSAMMOPHIIDAE	<i>Psammophis condanarus</i>	LC	N/A
PSAMMOPHIIDAE	<i>Psammophis leithii</i>	LC	N/A
PSAMMOPHIIDAE	<i>Psammophis lineolatus</i>	LC	N/A
PSAMMOPHIIDAE	<i>Psammophis schokari</i>	LC	N/A
AGAMIDAE	<i>Pseudocalotes austeniana</i>	LC	N/A
VIPERIDAE	<i>Pseudocerastes persicus</i>	LC	N/A
COLUBRIDAE	<i>Ptyas doriae</i>	LC	N/A
COLUBRIDAE	<i>Ptyas mucosa</i>	LC	N/A
COLUBRIDAE	<i>Ptyas nigromarginatus</i>	LC	N/A
AGAMIDAE	<i>Ptyctolaemus gularis</i>	LC	N/A
NATRICIDAE	<i>Rhabdophis himalayanus</i>	LC	N/A
NATRICIDAE	<i>Rhabdophis plumbicolor</i>	LC	N/A

FAMILY	SPECIES NAME	RED LIST CATEGORY	RED LIST CRITERIA
NATRICIDAE	<i>Rhabdophis subminiatus</i>	LC	N/A
NATRICIDAE	<i>Rhabdops aquaticus</i>	LC	N/A
COLUBRIDAE	<i>Rhadinophis frenatum</i>	LC	N/A
COLUBRIDAE	<i>Rhadinophis prasina</i>	LC	N/A
GEKKONIDAE	<i>Rhinogecko femoralis</i>	LC	N/A
GEKKONIDAE	<i>Rhinogecko misonnei</i>	LC	N/A
AGAMIDAE	<i>Saara asmussi</i>	LC	N/A
AGAMIDAE	<i>Sarada darwini</i>	LC	N/A
AGAMIDAE	<i>Sarada deccanensis</i>	LC	N/A
SCINCIDAE	<i>Scincella capitanea</i>	LC	N/A
SCINCIDAE	<i>Scincella reevesii</i>	LC	N/A
SCINCIDAE	<i>Scincella sikimensis</i>	LC	N/A
SCINCIDAE	<i>Sepsophis punctatus</i>	LC	N/A
SIBYNOPHIIDAE	<i>Sibynophis collaris</i>	LC	N/A
SIBYNOPHIIDAE	<i>Sibynophis sagittarius</i>	LC	N/A
SIBYNOPHIIDAE	<i>Sibynophis subpunctatus</i>	LC	N/A
ELAPIDAE	<i>Sinomicrurus maccllelandi</i>	LC	N/A
AGAMIDAE	<i>Sitana laticeps</i>	LC	N/A
AGAMIDAE	<i>Sitana ponticeriana</i>	LC	N/A
AGAMIDAE	<i>Sitana sivalensis</i>	LC	N/A
AGAMIDAE	<i>Sitana spinaecephalus</i>	LC	N/A
NATRICIDAE	<i>Smithophis bicolor</i>	LC	N/A
COLUBRIDAE	<i>Spalerosophis arenarius</i>	LC	N/A
COLUBRIDAE	<i>Spalerosophis atriceps</i>	LC	N/A
COLUBRIDAE	<i>Spalerosophis diadema</i>	LC	N/A
SCINCIDAE	<i>Sphenomorphus courcyanum</i>	LC	N/A
SCINCIDAE	<i>Sphenomorphus dussumieri</i>	LC	N/A
SCINCIDAE	<i>Sphenomorphus indicus</i>	LC	N/A
SCINCIDAE	<i>Sphenomorphus maculatus</i>	LC	N/A
LACERTIDAE	<i>Takydromus khasiensis</i>	LC	N/A
LACERTIDAE	<i>Takydromus sexlineatus</i>	LC	N/A
SPHAERODACTYLIDAE	<i>Teratoscincus microlepis</i>	LC	N/A
NATRICIDAE	<i>Trachischium fuscum</i>	LC	N/A
NATRICIDAE	<i>Trachischium laeve</i>	LC	N/A
NATRICIDAE	<i>Trachischium monticola</i>	LC	N/A
AGAMIDAE	<i>Trapelus agilis</i>	LC	N/A
AGAMIDAE	<i>Trapelus megalonyx</i>	LC	N/A
VIPERIDAE	<i>Trimeresurus andersonii</i>	LC	N/A
VIPERIDAE	<i>Trimeresurus erythrurus</i>	LC	N/A
VIPERIDAE	<i>Trimeresurus septentrionalis</i>	LC	N/A
VIPERIDAE	<i>Trimeresurus tibetanus</i>	LC	N/A
VARANIDAE	<i>Varanus griseus</i>	LC	N/A
VARANIDAE	<i>Varanus salvator</i>	LC	N/A

FAMILY	SPECIES NAME	RED LIST CATEGROY	RED LIST CRITERIA
COLUBRIDAE	<i>Wallaceophis gujaratensis</i>	LC	N/A
NATRICIDAE	<i>Xenochrophis piscator</i>	LC	N/A
NATRICIDAE	<i>Xenochrophis sanctijohannis</i>	LC	N/A
NATRICIDAE	<i>Xenochrophis schnurrenbergi</i>	LC	N/A
NATRICIDAE	<i>Xenochrophis trianguligerus</i>	LC	N/A
NATRICIDAE	<i>Xenochrophis tyleri</i>	LC	N/A
COLUBRIDAE	<i>Argyrogena vittacaudata</i>	DD	N/A
TYPHLOPIDAE	<i>Argyrophis bothriorhynchus</i>	DD	N/A
SCINCIDAE	<i>Asymblepharus mahabharatus</i>	DD	N/A
SCINCIDAE	<i>Asymblepharus nepalensis</i>	DD	N/A
SCINCIDAE	<i>Asymblepharus tragbulense</i>	DD	N/A
NATRICIDAE	<i>Blythia hmuifang</i>	DD	N/A
AGAMIDAE	<i>Bronchocela rubrigularis</i>	DD	N/A
ELAPIDAE	<i>Calliophis beddomei</i>	DD	N/A
AGAMIDAE	<i>Calotes bhutanensis</i>	DD	N/A
AGAMIDAE	<i>Calotes zolaiking</i>	DD	N/A
GEKKONIDAE	<i>Cnemaspis agarwali</i>	DD	N/A
GEKKONIDAE	<i>Cnemaspis amba</i>	DD	N/A
GEKKONIDAE	<i>Cnemaspis amboliensis</i>	DD	N/A
GEKKONIDAE	<i>Cnemaspis andersonii</i>	DD	N/A
GEKKONIDAE	<i>Cnemaspis girii</i>	DD	N/A
GEKKONIDAE	<i>Cnemaspis koynaensis</i>	DD	N/A
GEKKONIDAE	<i>Cnemaspis limayeii</i>	DD	N/A
GEKKONIDAE	<i>Cnemaspis mahabali</i>	DD	N/A
GEKKONIDAE	<i>Cnemaspis wicksi</i>	DD	N/A
AGAMIDAE	<i>Cristidorsa otai</i>	DD	N/A
GEKKONIDAE	<i>Cyrtodactylus bhupathyi</i>	DD	N/A
GEKKONIDAE	<i>Cyrtodactylus gubernatoris</i>	DD	N/A
GEKKONIDAE	<i>Cyrtodactylus guwahatiensis</i>	DD	N/A
GEKKONIDAE	<i>Cyrtodactylus himalayanus</i>	DD	N/A
GEKKONIDAE	<i>Cyrtodactylus himalayicus</i>	DD	N/A
GEKKONIDAE	<i>Cyrtodactylus jaintaensis</i>	DD	N/A
GEKKONIDAE	<i>Cyrtodactylus kazirangaensis</i>	DD	N/A
GEKKONIDAE	<i>Cyrtodactylus khasiensis</i>	DD	N/A
GEKKONIDAE	<i>Cyrtodactylus lawderanus</i>	DD	N/A
GEKKONIDAE	<i>Cyrtodactylus markuscombaii</i>	DD	N/A
GEKKONIDAE	<i>Cyrtodactylus martinstolli</i>	DD	N/A
GEKKONIDAE	<i>Cyrtodactylus nagalandensis</i>	DD	N/A
GEKKONIDAE	<i>Cyrtodactylus nepalensis</i>	DD	N/A
GEKKONIDAE	<i>Cyrtodactylus septentrionalis</i>	DD	N/A
GEKKONIDAE	<i>Cyrtopodion mansarulum</i>	DD	N/A
SCINCIDAE	<i>Dasia johnsinghi</i>	DD	N/A
SCINCIDAE	<i>Dasia nicobarensis</i>	DD	N/A

FAMILY	SPECIES NAME	RED LIST CATEGRY	RED LIST CRITERIA
SCINCIDAE	<i>Eumeces cholistanensis</i>	DD	N/A
GERRHOPILIDAE	<i>Gerrhopilus andamanensis</i>	DD	N/A
GERRHOPILIDAE	<i>Gerrhopilus oligolepis</i>	DD	N/A
COLUBRIDAE	<i>Gongylosoma nicobariensis</i>	DD	N/A
NATRICIDAE	<i>Hebius lacrima</i>	DD	N/A
NATRICIDAE	<i>Hebius nicobariense</i>	DD	N/A
NATRICIDAE	<i>Hebius parallelum</i>	DD	N/A
NATRICIDAE	<i>Hebius pealii</i>	DD	N/A
GEKKONIDAE	<i>Hemidactylus acanthopholis</i>	DD	N/A
GEKKONIDAE	<i>Hemidactylus chikhaldaraensis</i>	DD	N/A
GEKKONIDAE	<i>Hemidactylus kolliensis</i>	DD	N/A
GEKKONIDAE	<i>Hemidactylus malcolmsmithi</i>	DD	N/A
GEKKONIDAE	<i>Hemidactylus paaragowli</i>	DD	N/A
GEKKONIDAE	<i>Hemidactylus sankariensis</i>	DD	N/A
GEKKONIDAE	<i>Hemidactylus vanam</i>	DD	N/A
GEKKONIDAE	<i>Hemidactylus varadgirii</i>	DD	N/A
GEKKONIDAE	<i>Hemidactylus vijayraghavani</i>	DD	N/A
NATRICIDAE	<i>Herpetoreas sieboldii</i>	DD	N/A
HOMALOPSIDAE	<i>Homalopsis hardwickii</i>	DD	N/A
TYPHLOPIDAE	<i>Indotyphlops loveridgei</i>	DD	N/A
TYPHLOPIDAE	<i>Indotyphlops meszoelyi</i>	DD	N/A
TYPHLOPIDAE	<i>Indotyphlops tenuicollis</i>	DD	N/A
AGAMIDAE	<i>Japalura sagittifera</i>	DD	N/A
AGAMIDAE	<i>Laudakia dayana</i>	DD	N/A
AGAMIDAE	<i>Laudakia nuristanica</i>	DD	N/A
SCINCIDAE	<i>Lipinia macrotympana</i>	DD	N/A
COLUBRIDAE	<i>Lycodon gracilis</i>	DD	N/A
LEPTOTYPHLOPIDAE	<i>Myriopholis blanfordii</i>	DD	N/A
COLUBRIDAE	<i>Oligodon melaneus</i>	DD	N/A
COLUBRIDAE	<i>Oligodon melanozonatus</i>	DD	N/A
AGAMIDAE	<i>Salea gularis</i>	DD	N/A
SCINCIDAE	<i>Scincella macrotis</i>	DD	N/A
AGAMIDAE	<i>Sitana gokakensis</i>	DD	N/A
AGAMIDAE	<i>Sitana kalesari</i>	DD	N/A
NATRICIDAE	<i>Smithophis atemporalis</i>	DD	N/A
XENODERMIDAE	<i>Stoliczka khasiensis</i>	DD	N/A
LACERTIDAE	<i>Takydromus haughtonianus</i>	DD	N/A
NATRICIDAE	<i>Trachischium sushantai</i>	DD	N/A
NATRICIDAE	<i>Trachischium tenuiceps</i>	DD	N/A
VIPERIDAE	<i>Trimeresurus arunachalensis</i>	DD	N/A
VIPERIDAE	<i>Tropidolaemus huttoni</i>	DD	N/A
UROPELTIDAE	<i>Uropeltis arcticeps</i>	DD	N/A
UROPELTIDAE	<i>Uropeltis bhupathyi</i>	DD	N/A
UROPELTIDAE	<i>Uropeltis ceylanica</i>	DD	N/A

APPENDIX IV

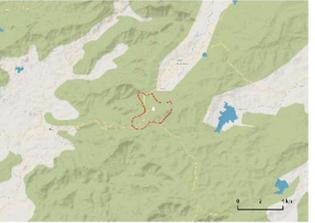
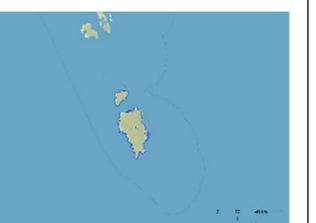
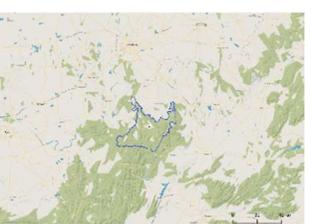
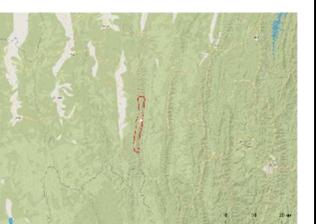
Summary of the 32 Key Biodiversity Areas (KBAs) proposed for the inclusion of 57 reptile species.

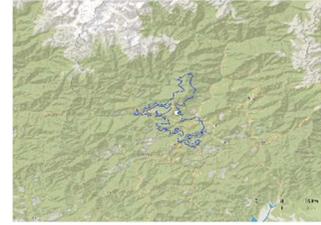
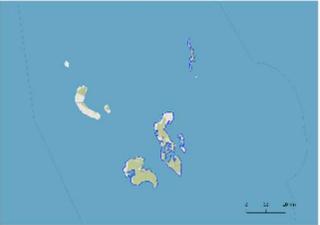
No.	KBA name	Country	New or existing KBA	No. of species	Species names	RL cat
1	Agaupaani	Nepal	New	1	<i>Japalura dasi</i>	VU
2	Amboli Reserve Forest	India	New	5	<i>Calliophis castoe</i>	EN
					<i>Cnemaspis flaviventralis</i>	EN
					<i>Melanophidium khairi</i>	EN
					<i>Cnemaspis amboliensis</i>	DD
					<i>Hemidactylus varadgirii</i>	DD
3	Baratang-Rafters Creek	India	Existing	2	<i>Boiga andamanensis</i>	EN
					<i>Naja sagittifera</i>	EN
4	Car Nicobar	India	Existing	3	<i>Trimeresurus labialis</i>	CR
					<i>Gekko nicobarensis</i>	EN
					<i>Dasia nicobarensis</i>	DD
5	Chalkewadi-Sadawaghapur Plateau	India	New	2	<i>Hemidactylus sataraensis</i>	CR
					<i>Sarada superba</i>	CR
6	Chamba Valley	India	Existing	1	<i>Cyrtodactylus chamba</i>	CR
7	Cherapunjee Cliffs, Gorges, and Sacred Groves	India	Existing	1	<i>Calotes paulus</i>	EN
8	Deepor Beel Bird Sanctuary-Extension	India	New	1	<i>Xenochrophis cerasogaster</i>	VU
9	Fambong Lho Wildlife Sanctuary-Himalayan Zoological Park-Raitey Chu Reserve Forest	India	Existing	1	<i>Oligodon juglandifer</i>	VU
10	Gauri Danda	Nepal	New	1	<i>Sitana fusca</i>	CR
11	Great Nicobar-Little Nicobar	India	Existing	3	<i>Cyrtodactylus adleri</i>	EN
					<i>Dibamus nicobaricum</i>	EN
					<i>Lipinia macrotympana</i>	DD
12	Hampi and Daroji Bear Sanctuary	India	Existing	2	<i>Cnemaspis adii</i>	CR
					<i>Hemidactylus siva</i>	EN
13	High Wavy Mountains	India	Existing	2	<i>Monilesaurus acanthocephalus</i>	EN
					<i>Uropeltis madurensis</i>	EN
14	Horsley Konda	India	New	1	<i>Cyrtodactylus rishivalleyensis</i>	EN
15	Hosur Forest Division	India	Existing	1	<i>Cyrtodactylus srilekhae</i>	NT
16	Jampuii Hills	India	New	1	<i>Cyrtodactylus montanus</i>	CR

No.	KBA name	Country	New or existing KBA	No. of species	Species names	RL cat
17	Kadakachang	India	Existing	2	<i>Coryphophylax brevicaudus</i>	VU
					<i>Pseudocalotes andamanensis</i>	VU
18	Kalakkad Mundanthurai Tiger Reserve	India	Existing	3	<i>Proahaetulla antiqua</i>	EN
					<i>Dasia johnsinghi</i>	DD
					<i>Hemidactylus acanthopholis</i>	DD
19	Kanger Ghati National Park	India	New	1	<i>Hemidactylus kangerensis</i>	EN
20	Kolli Hills	India	New	4	<i>Hemiphyllodactylus kolliensis</i>	CR
					<i>Rhinophis goweri</i>	CR
					<i>Cnemaspis yercaudensis</i>	EN
					<i>Hemidactylus kolliensis</i>	DD
21	Kottiyoor Reserve Forest	India	Existing	1	<i>Cnemaspis kottiyooensis</i>	CR
22	Little Andaman	India	Existing	1	<i>Coryphophylax brevicaudus</i>	VU
23	Maenam Wildlife Sanctuary	India	Existing	1	<i>Takydromus sikkimensis</i>	EN
24	Malajkudum	India	New	1	<i>Hemidactylus yajurvedi</i>	EN
25	Pushkar	India	New	1	<i>Ophisops pushkarensis</i>	EN
26	Rajiv Gandhi Wildlife Sanctuary	India	Existing	2	<i>Eutropis ashwamedhi</i>	EN
					<i>Sitana thondalu</i>	NT
27	Royal Manas National Park	Bhutan	Existing	1	<i>Cnemaspis assamensis</i>	VU
28	Sangu Matamuhari Wildlife Sanctuary	Bangladesh	Existing	1	<i>Tropidophorus assamensis</i>	VU
29	Shevaroy Hills	India	New	5	<i>Cnemaspis shevaroyensis</i>	CR
					<i>Cnemaspis thackerayi</i>	CR
					<i>Hemiphyllodactylus aurantiacus</i>	CR
					<i>Uropeltis shorttii</i>	CR
					<i>Cnemaspis yercaudensis</i>	EN
30	Sirumalai Reserve Forest	India	New	1	<i>Uropeltis dindigalensis</i>	CR
31	Siruvani Foothills	India	Existing	3	<i>Cnemaspis anaikattiensis</i>	CR
					<i>Cyrtodactylus speciosus</i>	EN
					<i>Uropeltis bhupathyi</i>	DD
32	Tillangchong, Camorta, Katchal, Nancowry and Trinkat	India	Existing	4	<i>Gekko nicobarensis</i>	EN
					<i>Trimeresurus cantori</i>	EN
					<i>Trimeresurus mutabilis</i>	EN
					<i>Bronchocela rubrigularis</i>	DD

APPENDIX V. MAPS OF THE 32 KEY BIODIVERSITY AREAS IDENTIFIED DURING THE MAINLAND SOUTH ASIA RED LIST, KBA AND A2P WORKSHOP

The KBA locations are numbered to correspond with the site number in Table 4, and the location of each KBA site is shown in Figure 1 (Section 3.2) of this report. KBA sites outlined in blue below indicate existing (adopted) KBAs and KBA outlined in red indicate sites newly delineated during the workshop.

<p>1. Agaupaani</p> 	<p>2. Amboli Reserve Forest</p> 	<p>3. Baratang-Rafters Creek</p> 	<p>4. Car Nicobar</p> 	<p>5. Chalkewadi-Sadawaghapur Plateau</p> 	<p>6. Chamba Valley</p> 
<p>7. Cherapunjee Cliffs, Gorges, and Sacred Groves</p> 	<p>8. Deepor Beel Bird Sanctuary-Extension</p> 	<p>9. Fambong Lho Wildlife Sanctuary-Himalayan Zoological Park-Raitey Chu Reserve Forest</p> 	<p>10. Gauri Danda</p> 	<p>11. Great Nicobar-Little Nicobar</p> 	<p>12. Hampi and Daroji Bear Sanctuary</p> 
<p>13. High Wavy Mountains</p> 	<p>14. Horsley Konda</p> 	<p>15. Hosur Forest Division</p> 	<p>16. Jampui Hills</p> 	<p>17. Kadakachang</p> 	<p>18. Kalakad Mundanthurai Tiger Reserve</p> 

<p>19. Kanger Valley National Park</p> 	<p>20. Kolli Hills</p> 	<p>21. Kottiyoor Reserve Forest</p> 	<p>22. Little Andaman</p> 	<p>23. Maenam Wildlife Sanctuary</p> 	<p>24. Malajkudum</p> 
<p>25. Pushkar</p> 	<p>26. Rajiv Gandhi Wildlife Sanctuary</p> 	<p>27. Royal Manas National Park</p> 	<p>28. Sangu Matamuhari Wildlife Sanctuary</p> 	<p>29. Shevaroy Hills</p> 	<p>30. Sirumalai Reserve Forest</p> 
<p>31. Siruvani Foothills</p> 	<p>32. Tillangchong, Camorta, Katchal, Nancowry and Trinkat</p> 				

APPENDIX VI. SUMMARY OF NEXT STEPS FOR THREATENED SPECIES

The following table lists the next steps for species identified as threatened at the reptile workshop in India. Not all species are covered by a next step due either to time constraints or other confounding factors. A2P planning pathways are shown (categorised as site, habitat, threat, single-species and intensive care). Some species were assigned more than one planning target. Species information (summarised from the Red List assessment) relevant to each A2P planning pathway recommended is provided next to each species. The KBA site indicated for species is also provided, along with species-specific planning targets and next-steps identified from the A2P workshop sessions that were held. Species information relevant to A2P planning pathways selected for the species that were not able to be discussed (again, due to time constraints) are also provided, to assist future discussion. An initiator or contact point for each identified next step and/or KBA site indicated is provided in the last column of the table.

SPECIES	IUCN RL CATEGORY	A2P PLANNING PATHWAYS					SPECIES INFORMATION AND IDENTIFIED NEXT-STEPS FOR THREATENED SPECIES CONSERVATION ACTION	INITIATORS, CONTACTS AND POTENTIAL COLLABORATORS
		Site	Habitat	Threat	Single species	Intensive care		
<i>Cnemaspis adii</i>	CR	X	X				<p>SITE: Hampi World Heritage Site, Bellary District, Karnataka, India. HABITAT: All specimens found active on rocks and rock walls of the old temple ruins.</p> <p>KBA SITE IDENTIFIED: Hampi and Daroji Bear Sanctuary.</p> <p>A2P NEXT STEPS:</p> <ul style="list-style-type: none"> With stakeholders (including temple authorities, local communities, resorts and species experts), increase awareness and plan improved management of key sites. 	Chelmala Srinivasulu (KBA and implementation lead), Sanjay Molur (planning and facilitation lead).
<i>Cnemaspis anaikattiensis</i>	CR	X					<p>SITE: Anaikatti Hills, Western Ghats, India.</p> <p>KBA SITE IDENTIFIED: Siruvani.</p>	Surya Narayanan and Achyuthan Srikanthan (KBA)
<i>Cnemaspis kottiyooensis</i>	CR	X	X				<p>SITE: Kerala, Western Ghats. known from the Kottiyoor Wildlife Sanctuary. HABITAT: Montane evergreen tropical forest. Predominantly ground-dwelling. Habitat for this species outside of protected areas needs to be protected.</p> <p>KBA SITE IDENTIFIED: Kottiyoor Reserve Forest.</p>	B.H. Channakeshava Murthy, Surya Narayanan (KBA)
<i>Cnemaspis shevaroyensis</i>	CR	X	X				<p>SITE: Kottachedu Kari Raman Temple, Valavaendhi, Keerakaad, and Pattipadi Velur below Yercaud, lower slopes of the Shevaroy Hills, Salam District, Tamil Nadu. HABITAT: Conservation of suitable areas of deciduous forest habitat is recommended.</p> <p>KBA SITE IDENTIFIED: Shevaroy Hills.</p>	S.R. Ganesh (KBA)

SPECIES	IUCN RL CATEGORY	A2P PLANNING PATHWAYS					SPECIES INFORMATION AND IDENTIFIED NEXT-STEPS FOR THREATENED SPECIES CONSERVATION ACTION	INITIATORS, CONTACTS AND POTENTIAL COLLABORATORS
		Site	Habitat	Threat	Single species	Intensive care		
<i>Cnemaspis thackerayi</i>	CR	X					SITE: Grange resort in Yercaud town, at 1,390 m asl. in the isolated Shevaroy Hills, Salam District, Tamil Nadu. KBA SITE IDENTIFIED: Shevaroy Hills.	S.R. Ganesh (KBA)
<i>Cyrtodactylus chamba</i>	CR	X					SITE: Chamba, Chamba District, Himachal Pradesh, India. KBA SITE IDENTIFIED: Chamba Valley	Sanjay Molur (KBA)
<i>Cyrtodactylus montanus</i>	CR	X					SITE: Phuldungsei village, southern Jampui Hills, Kanchanpur subdivision, North Tripura District, Tripura State, India. This is an area of high diversity for amphibians and reptiles, and protection is urgently required to ensure the survival of this and other species. KBA SITE IDENTIFIED: Jampui Hills.	Pratyush P. Mohapatra (KBA)
<i>Hemidactylus sataraiensis</i>	CR	X					SITE: Chalkewadi Plateau, Satara District, Maharashtra, Western Ghats. KBA SITE IDENTIFIED: Chalkewadi-Sadawaghapur Plateau. A2P NEXT STEPS: <ul style="list-style-type: none"> Work with stakeholders to plan and implement improved protection and management of wildlife in this area. Incorporate species' needs into wider "Rock Outcrops of India" project which includes campaigning to list area as a Biodiversity Heritage Site under Biodiversity Act 2007. 	Varad Giri, Sanjay Thakur, Aparna Watve with collaborators
<i>Hemiphyllodactylus aurantiacus</i>	CR	X					SITE: Yercaud, Shevaroy Hills, Eastern Ghats of Tamil Nadu. KBA SITE IDENTIFIED: Shevaroy Hills. A2P NEXT STEPS: <ul style="list-style-type: none"> Engage local community and other stakeholders in species-focused, area-based management planning workshops for wildlife in Shevaroy Hills. 	Sanjay Molur, S.R. Ganesh, Eric Ramanujam S.R. Ganesh (KBA)
<i>Hemiphyllodactylus kolliensis</i>	CR	X					SITE: Selur Nadu, Kolli Hills, Namakkal District, Semmedu. KBA SITE IDENTIFIED: Kolli Hills.	S.R. Ganesh (KBA)
<i>Rhinophis goweri</i>	CR	X	X				SITE: Bodamalai Hills and adjacent Kolli Hills, Eastern Ghats, Tamil Nadu. HABITAT: Fossorial species, mixed deciduous forest at high elevations, mid-elevation dry evergreen forest. Protection of suitable habitat within the species restricted range is needed. KBA SITE IDENTIFIED: Kolli Hills.	S.R. Ganesh (KBA)

SPECIES	IUCN RL CATEGORY	A2P PLANNING PATHWAYS					SPECIES INFORMATION AND IDENTIFIED NEXT-STEPS FOR THREATENED SPECIES CONSERVATION ACTION	INITIATORS, CONTACTS AND POTENTIAL COLLABORATORS
		Site	Habitat	Threat	Single species	Intensive care		
<i>Sarada superba</i>	CR	X					<p>SITE: Chalkewadi, Satara District, Maharashtra. KBA SITE IDENTIFIED: Chalkewadi-Sadawaghapur Plateau.</p> <p>A2P NEXT STEPS:</p> <ul style="list-style-type: none"> Work with stakeholders to plan and implement improved protection and management of wildlife in this area. Incorporate species' needs into wider "Rock Outcrops of India" project which includes campaigning to list area as a Biodiversity Heritage Site under Biodiversity Act 2007. 	<p>Aparna Watve with collaborators</p> <p>Varad Giri, Sanjay Thakur (KBA)</p>
<i>Sitana fusca</i>	CR	X				X	<p>SITE: Gauri Danda Road Camp, central Nepal, 0.8 km north of the road Janakpur-Bardibas. KBA SITE IDENTIFIED: Gauri Danda</p> <p>A2P NEXT STEPS</p> <ul style="list-style-type: none"> Urgent survey to establish current status and distribution. If found, assess translocation feasibility. List species on Ministry of Forestry Dept. National Parks and Wildlife Protected List. 	<p>Kul Prasad Limbu, Santosh Bhattarai. ARCO Nepal; NTNC and <i>ex situ</i> partners</p>
<i>Trimeresurus labialis</i>	CR	X	X	X			<p>SITE: Car Nicobar Island. HABITAT: Subtropical/tropical moist lowland forest. Car Nicobar is heavily populated and habitat loss is ongoing. General habitat protection is required. THREAT: Persecution and roadkill. There is a need to undertake public awareness programmes to reduce killing of this viper. KBA SITE IDENTIFIED: Car Nicobar.</p>	<p>Pratyush P. Mohapatra (KBA) Not discussed during A2P sessions. S.R. Chandramouli is recommended contact for conservation next steps for this taxon.</p>
<i>Uropeltis dindigalensis</i>	CR	X	X				<p>SITE: Sirumalai Hills, Tamil Nadu. HABITAT: Subtropical/tropical moist montane forest. There is a need to conserve areas of suitable natural habitat for this already range-restricted species. KBA SITE IDENTIFIED: Sirumalai Reserve Forest.</p>	<p>S.R. Ganesh (KBA) Not discussed during A2P sessions. S.R. Ganesh is recommended contact for conservation next steps for this taxon.</p>

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		Site	Habitat	Threat	Single species	Intensive care		
<i>Uropeltis shorttii</i>	CR	X	X				SITE: Shevaroy Hills, southern Eastern Ghats. HABITAT: Fossorial species; occurs in areas largely dominated by coffee and silver oak cultivation, with remnants of tropical evergreen and riparian forest which represent humid refugia. Species is not able to persist in largely human-modified habitats. Suitable habitat protection needed, especially within the higher elevations of Yercaud. KBA SITE IDENTIFIED: Shevaroy Hills.	S.R. Ganesh (KBA)
<i>Boiga andamanensis</i>	EN	X	X				SITE: North, Middle and South Andaman Islands. HABITAT: tropical evergreen and tropical moist deciduous forest. May be a forest obligate species. There is a need to conserve areas of suitable forest habitat. KBA SITE IDENTIFIED: Baratang-Rafters Creek.	Pratyush P. Mohapatra, Chelmala Srinivasulu (KBA)
<i>Calliophis castoe</i>	EN	X	X				SITE: Endemic to the Western Ghats. HABITAT: burrowing snake associated with tropical semi-evergreen and tropical wet evergreen forests. It is a forest obligate species and there is a need to protect habitat in parts of its range. KBA SITE IDENTIFIED: Amboli. A2P NEXT STEPS: <ul style="list-style-type: none"> Work with stakeholders to plan and implement improved protection and management of wildlife in this area. 	Varad Giri, Sanjay Thakur, Aparna Watve with collaborators
<i>Calotes paulus</i>	EN	X					SITE: Khasi Hills in Meghalaya state in northeast India. KBA SITE IDENTIFIED: Cherapunjee Cliffs, Gorges, and Sacred Groves. A2P NEXT STEPS: <ul style="list-style-type: none"> Researchers to connect with communities and raise awareness of this threatened lizard (enlisting community landowner support is critical). Update Meghalaya Biodiversity Action Plan to include this species. 	Abhijit Das
<i>Cnemaspis flaviventralis</i>	EN	X	X				SITE: Amboli, Sindhudurg District (Maharashtra), Tilarī Nagar, Kolhapur District (Maharashtra) and Mhadei, Goa District. HABITAT: Protection of suitable areas of subtropical/tropical moist lowland forest within the range of this species is recommended. KBA SITE IDENTIFIED: Amboli.	Varad Giri, Sanjay Thakur, Aparna Watve with collaborators

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		Site	Habitat	Threat	Single species	Intensive care		
							<p>A2P NEXT STEPS:</p> <ul style="list-style-type: none"> Work with stakeholders to plan and implement improved protection and management of wildlife in this area. 	
<i>Cnemaspis yercaudensis</i>	EN	X	X				<p>SITE: Tamil Nadu: Yercaud Town, Shevaroy Hills, Salem District; and Kolli Hills and Pachamalai Hills. HABITAT: There is very little natural vegetation (tropical montane forest) remaining in this area, and it is highly fragmented. The species is more common within forest than outside. Habitat protection of remnant natural vegetation is urgently needed. KBA SITES IDENTIFIED: i) Kolli Hills and ii) Shevaroy Hills.</p>	S.R. Ganesh (KBA)
<i>Cyrtodactylus adleri</i>	EN	X	X				<p>SITE: endemic to Nicobar Archipelago: Great Nicobar, Kondul, Menchal, Little Nicobar, Pilo Milo. HABITAT: Arboreal species, inhabits undisturbed primary tropical moist forest. It appears to be a forest obligate species, not found in disturbed areas. KBA SITE IDENTIFIED: Great Nicobar-Little Nicobar.</p>	Pratyush P. Mohapatra (KBA)
<i>Cyrtodactylus jeyporensis</i>	EN	X					<p>SITE: Eastern Ghats, India. Deomali, Jeypore in Koraput District, Odisha and Galikonda, Visakhapatnam District, Andhra Pradesh. Ecological studies are needed to ascertain the status and distribution of this species. Habitat protection from forest fire involving the local forest department is required. NO KBA SITE IDENTIFIED.</p>	Not discussed during A2P sessions. Pratyush P. Mohapatra, Ishan Agarwal and Avrajjal Ghosh are recommended contacts for conservation next steps for this taxon.
<i>Cyrtodactylus rishivalleyensis</i>	EN	X					<p>SITE: Horsley Hills, Chittoor District (and Sri Venkateshwara National Park) Andhra Pradesh, India. KBA SITE IDENTIFIED: Horsely Konda.</p> <p>A2P NEXT STEPS:</p> <ul style="list-style-type: none"> Connect species needs at 1st (historic) site to existing biodiversity projects in PA through Biolab Tirupati. Mobilise community support for protection at 2nd (current) site through Rishivalley School Group. 	Sanjay Molur with Rishivalley School Group and collaborators
<i>Cyrtodactylus speciosus</i>	EN	X	X				<p>SITE: Erode and Coimbatore, Tamil Nadu. HABITAT: Dry deciduous forest and scrubland at the foot of hills. Habitat protection is needed. KBA SITE IDENTIFIED: Siruvani.</p>	Surya Narayanan and A. Srikanthan (KBA)

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		Site	Habitat	Threat	Single species	Intensive care		
<i>Dibamus nicobaricum</i>	EN	X	X				<p>SITE: Great Nicobar Island, Camorta and Katchall Islands and possibly Little Nicobar. HABITAT: Burrowing species found in tropical evergreen forest, especially in areas with loose soil, where it can be found under boulders, logs and other ground cover. It has generally not been found in modified habitats. Conservation of suitable habitat is needed. KBA SITE IDENTIFIED: Great Nicobar-Little Nicobar.</p>	Pratyush P. Mohapatra (KBA)
<i>Eutropis ashwamedhi</i>	EN	X	X				<p>SITE: Palnadu Basin of Andhra Pradesh, India. HABITAT: Predominately rocky scrubland and rocky scrub forest. It is necessary to initiate steps towards preservation of the habitat of this endemic species. KBA SITE IDENTIFIED: Rajiv Gandhi Wildlife Sanctuary</p>	Chelmala Srinivasulu (KBA)
<i>Eutropis quadratilobus</i>	EN	X					<p>SITE: Known only from the type-locality, a river valley west of Samtsee in Bhutan. NO KBA SITE IDENTIFIED.</p> <p>A2P NEXT STEPS:</p> <ul style="list-style-type: none"> Establish Standard Operating Procedures (when and where to dredge). Raise awareness of IUCN listing at policy level. 	Jigme T. Wangyal, Department of Forest and Park Services, Bhutan.
<i>Gekko nicobarensis</i>	EN	X	X				<p>SITE: Car Nicobar, Katchall, Camorta, Tillanchong, Chowra, Nancowry, Bompak, Teressa and Trinkat Islands. HABITAT: Primary tropical evergreen forest: forest obligate species and does not appear to be present in other types of habitat. KBA SITES IDENTIFIED: i) Car Nicobar and ii) Tillanchong, Camorta, Katchal, Nancowry and Trinkat</p>	Achyuthan Srikanthan (KBA) Not discussed during A2P sessions. S.R. Chandramouli is recommended contact for conservation next steps for this taxon.
<i>Hemidactylus kangerensis</i>	EN	X					<p>SITE: Bastar Plateau, Chhatisgarh, India. KBA SITE IDENTIFIED: Kanger Ghati National Park</p> <p>A2P NEXT STEPS:</p> <ul style="list-style-type: none"> Elevate local support for wildlife of Bastar Plateau through community biodiversity management planning workshop focused on values shared by people and wildlife. 	M. Suraj (also for KBA), Pratyush P. Mohapatra and B.H.C.K. Murthy
<i>Hemidactylus scabriceps</i>	EN	X					<p>SITE: Tamil Nadu, India. NO KBA SITE IDENTIFIED.</p>	Not discussed during A2P sessions. S.R. Ganesh is

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		Site	Habitat	Threat	Single species	Intensive care		
								recommended contact for conservation next steps for this taxon.
<i>Hemidactylus siva</i>	EN	X					<p>SITE: Śiva temple ruins of Hampi World Heritage Site, Bellary District, Karnataka, India. Also Sandur, and Anegundi. Hampi is in a cultural UNESCO World Heritage Site, however it is an active archaeological site as well as a tourist site. Activities within this area are likely to threaten this species. It is recommended that the species needs are incorporated into the World Heritage Site management plan.</p> <p>KBA SITE IDENTIFIED: Hampi and Daroji Bear Sanctuary.</p> <p>A2P NEXT STEPS:</p> <ul style="list-style-type: none"> With stakeholders (including temple authorities, local communities, resorts and species experts), increase awareness and plan improved management of key sites. 	<p>Chelmala. Srinivasulu (KBA and implementation lead)</p> <p>Sanjay Molur (planning and facilitation lead).</p>
<i>Hemidactylus yajurvedi</i>	EN	X	X				<p>SITE: Chattisgarh State, India. HABITAT: Large boulder outcrops and scrub vegetation surrounded by cultivated land near Saranpal village; flat cultivated land with rocky boulders and scrub vegetation, and shelters in rocky crevices in shaded situations. Mainly found on cliffs and other vertical surfaces, including tree trunks, where it is active at night and in the evening; shelters beneath boulders by day. It has been found in caves, and close to villages with suitable rocky habitats. KBA SITE IDENTIFIED: Malajkudum.</p> <p>A2P NEXT STEPS:</p> <p>Elevate local support for wildlife of Bastar Plateau through community biodiversity management planning workshop focused on values shared by people and wildlife.</p>	<p>M. Suraj (also for KBA), Pratyush P. Mohapatra and B.H.C.K. Murthy</p>
<i>Melanophidium bilineatum</i>	EN	X					<p>SITE: Western Ghats, India. Restrictions on further development and tourism are required urgently. NO KBA SITE IDENTIFIED.</p>	<p>Not discussed during A2P sessions. S.R. Ganesh is recommended contact for conservation next steps for this taxon.</p>

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<i>Melanophidium khairei</i>	EN	X	X				<p>SITE: Restricted range in the Western Ghats of northern Karnataka, Goa and southern Maharashtra, India. HABITAT: Fossorial species found mainly in semi-evergreen forest, including forest edges in Amboli.</p> <p>KBA SITE IDENTIFIED: Amboli.</p> <p>A2P NEXT STEPS:</p> <ul style="list-style-type: none"> Work with stakeholders to plan and implement improved protection and management of wildlife in this area. 	Varad Giri, Sanjay Thakur, Aparna Watve with collaborators
<i>Microauris aurantolabium</i>	EN	X	X				<p>SITE: Known only from the Kalakkad-Mundunthurai Tiger Reserve and Peppara Wildlife Sanctuary, Agasthyamalai Hills in southern Western Ghats. HABITAT: Tropical moist montane forests and shola forests occurring at 1,000-1,400 m asl.</p> <p>NO KBA SITE IDENTIFIED.</p>	Not discussed during A2P sessions. S.R. Ganesh and S.R. Chandramouli are recommended contacts for conservation next steps for this taxon.
<i>Monilesaurus acanthocephalus</i>	EN	X	X				<p>SITE: Known only from areas above 1,500 m asl. in the Megamalai Hills, southern Western Ghats. HABITAT: Diurnal, arboreal to semi-arboreal lizard known from disturbed high-elevation evergreen forest and along the edge of forest adjoining tea estates. The forest at the type-locality is largely confined to narrow rows of trees between tea plantations and the species is not present in the actual tea plantations. There is a need to limit additional conversion of suitable habitat to tea plantations.</p> <p>KBA SITE IDENTIFIED: High Wavy Mountains.</p>	S.R. Ganesh (KBA) Not discussed during A2P sessions. S.R. Ganesh and S.R. Chandramouli are recommended contacts for conservation next steps for this taxon.
<i>Naja sagittifera</i>	EN	X	X	X			<p>SITE: North, Middle and South Andaman islands. HABITAT: Occurs at elevations of 0-500 m asl. Associated with tropical moist forest, evergreen forest and deciduous forest. It is rarely encountered close to human habitation. THREAT: Impacted through habitat conversion to agricultural land and plantations, urbanisation, persecution by people and roadkill. There is a need to raise awareness of this medically important species with the public and forest habitat conservation is recommended.</p> <p>KBA SITE IDENTIFIED: Baratang-Rafters Creek.</p>	Pratyush P. Mohapatra, Chelmala Srinivasulu, S.R. Chandramouli.

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<i>Ophisops pushkarensis</i>	EN	X		X			<p>SITE: Pushkar, Rajasthan and Jessore, Gujarat in India. HABITAT: Rocky and sandy open scrub habitats in arid areas. THREAT: The invasive <i>Prosopis</i> represents a threat to this species and populations have been observed to decline in the presence of <i>Prosopis</i>. The invasive plant alters microhabitat conditions, including increasing shade. Invasive species management is recommended.</p> <p>KBA SITE IDENTIFIED: Pushkar.</p>	Rajendra Vajubhai Vyas, Pratyush P. Mohapatra (KBA)
<i>Proahaetulla antiqua</i>	EN	X					<p>SITE: Extreme south of the Western Ghats in India high elevation wet forest, at elevations above 1,200 m asl. KBA SITE IDENTIFIED: Kalakad-Mundanthurai Tiger Reserve.</p>	S.R. Ganesh, Surya Narayanan (KBA)
<i>Sitana marudhamneydhal</i>	EN	X	X				<p>SITE: Multiple locations in south India; from Mayiladumparai in Kallidaikurichi, Tirunelveli District, and Kanyakumari, Kanyakumari District, Tamil Nadu, and Tuticorin District, where it occurs from 0 - 80 m asl. HABITAT: The species is found in coastal sand dunes, grassland habitats, open areas dominated with <i>Prosopis juliflora</i> and plains in southern Tamil Nadu. There is a need to maintain and conserve remaining patches of suitable arid grasslands for this species. Provision for the conservation of this species should be made during any agricultural projects in the area. NO KBA SITE IDENTIFIED.</p>	Not discussed during A2P sessions. S.R. Ganesh and Surya Narayanan are recommended contacts for conservation next steps for this taxon.
<i>Sitana schleichi</i>	EN	X	X				<p>SITE: Endemic to Nepal, restricted to Shuklaphanta National Park. HABITAT: Subtropical/tropical dry grasslands within the park and does not occur in bare areas. There are prescribed burnings in the park to maintain the grassland habitats for herbivores. The species has not been recorded recently and fire may have a more significant impact on the population than presently understood. NO KBA SITE IDENTIFIED.</p> <p>A2P NEXT STEPS:</p> <ul style="list-style-type: none"> • Work with stakeholders to plan and implement improved protection and management of this species in Shuklaphanta National Park, buffer zone and adjoining areas. • Further research on genetics and niche separation with <i>Sitana sivalensis</i> is recommended. • Survey to confirm distribution outside of the Shuklaphanta National Park 	Santosh Bhattarai NTNC and collaborators

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<i>Takydromus sikkimensis</i>	EN	X					<p>SITE: Endemic to northeastern India, where it occurs in the Teesta Valley, Sikkim. KBA SITE IDENTIFIED: Maenam Wildlife Sanctuary.</p> <p>A2P NEXT STEPS:</p> <ul style="list-style-type: none"> Propose for inclusion in Wildlife Protection Act (India). Enlist community support in protecting species. Mitigate threat from dams through Ministry of Environment and Forest environment clearance process. 	Abhijit Das (Wildlife Institute of India)
<i>Trimeresurus cantori</i>	EN	X		X			<p>SITE: Endemic to the Nicobar Islands (Nancowry, Camorta, Trinkat, Katchal, Tarasa, Tilanchong, Bompoka, Chowra, Teressa). THREAT: Local persecution and roadkill. There is a need to raise awareness with people concerning conflict with this species. KBA SITE IDENTIFIED: Tillangchong, Camorta, Katchal, Nancowry and Trinkat.</p>	Pratyush P. Mohapatra (KBA) Not discussed during A2P sessions. S.R. Chandramouli is recommended contact for conservation next steps for this taxon.
<i>Trimeresurus mutabilis</i>	EN	X		X			<p>SITE: Endemic to India Central Nicobar Islands (Bompoka, Camorta, Chowra, Katchal, Nancowry, Teressa and Trinkat). THREAT: Local persecution and roadkill. There is a need to raise awareness with people concerning conflict with this species. KBA SITE IDENTIFIED: Tillangchong, Camorta, Katchal, Nancowry and Trinkat.</p>	Pratyush P. Mohapatra (KBA) Not discussed during A2P sessions. S.R. Chandramouli is recommended contact for conservation next steps for this taxon.
<i>Trimeresurus strigatus</i>	EN	X	X				<p>SITE: Endemic to the Nilgiri Hills, Southern Western Ghats. HABITAT: Small rocky patches in grassland (reports from tea estate workers indicate that it is very rarely seen in disturbed areas). Habitat restoration is needed to protect this species. NO KBA SITE IDENTIFIED.</p>	Not discussed during A2P sessions. S.R. Ganesh is recommended contact for conservation next steps for this taxon.

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		Site	Habitat	Threat	Single species	Intensive care		
<i>Uropeltis madurensis</i>	EN	X					<p>SITE: Meghamalai Wildlife Sanctuary and Srivillipathur Wildlife Sanctuary, both in Tamil Nadu. KBA SITE IDENTIFIED: High Wavy Mountains.</p>	<p>S.R. Ganesh, Avrajjal Ghosh and Varad Giri (KBA) Not discussed during A2P sessions. S.R. Ganesh is recommended contact for conservation next steps for this taxon.</p>
<i>Varanus flavescens</i>	EN				X		<p>SITE: Confined to and wide-ranging on the Indo-Gangetic Plain south of the Himalayas in eastern Pakistan, northern India, Nepal, south central Bhutan, and Bangladesh. Its distribution mainly follows the major river systems of the Indus, Ganges and Brahmaputra. HABITAT: Predominantly marshland (but also in a number of humid habitats, including riverbanks, canals and rice fields). THREATS: Heavily exploited for its skin and meat. Used in traditional medicine. Recreational killing in combination with persecution are also major threats in India and Nepal. Juveniles are often predated by domestic cats. The eggs are also consumed when found. The species is hunted during popular hunting festivals in West Bengal. It is also frequently found in road kills. The species is largely confined to marshy and wetland habitats, which are under severe pressure from encroachment, land filling, and pollution. In Nepal it is restricted to small patches of habitat as a result of encroachment, poaching and persecution. Although this species has been reported from agricultural areas, mechanized agricultural practices, using heavy machinery, threaten subpopulations living in marginal habitats. In Bangladesh, agricultural activities are causing the degradation of breeding habitats. Conservation measures proposed include protection of wetlands and marshy areas, ground level enforcement of wildlife protection laws, identification of origin and rehabilitation of confiscated animals, education and awareness, coordination among law enforcement agencies.</p> <p>A2P NEXT STEPS:</p> <ul style="list-style-type: none"> Recommended for single species planning 	<p>Sanjay Molur, Kamrul Hasan and Pratyush P. Mohapatra with collaborators</p> <p>Connect with IUCN SSC Monitor Lizard Specialist Group</p>

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		Site	Habitat	Threat	Single species	Intensive care		
							<ul style="list-style-type: none"> Opportunities to highlight decline of lowland marshlands and ill-informed persecution of reptiles 	
<i>Cnemaspis assamensis</i>	VU	X	X				<p>SITE: Brahmaputra River, Assam and from Royal Manas National Park, Bhutan. HABITAT: Subtropical evergreen forest / tropical semi-evergreen forest. Also found in clearings and near human settlements, in rocky outcrops. KBA SITE IDENTIFIED: Royal Manas National Park.</p> <p>A2P NEXT STEPS:</p> <ul style="list-style-type: none"> Include under Government Protected Species Act. Use elevated importance of species to help mitigate mining threat. Raise community awareness of threatened species presence near Guwahati. 	<p>Jayaditya Purkayastha; Wildlife Institute of India; Guwahati University</p> <p>Abhijit Das (KBA)</p>
<i>Coryphophylax brevicaudus</i>	VU	X	X				<p>SITE: Andaman Islands: South, Little, Middle and North Andaman; Rutland, Alexandria Tarmugli, Havelock and Neil islands. HABITAT: Primary evergreen and semi-evergreen forests. There is a need to maintain areas of suitable forest habitat for this species. KBA SITES IDENTIFIED: i) Kadakachang and ii) Little Andaman.</p>	Pratyush P. Mohapatra (KBA)
<i>Cyrtopodion aravallense</i>	VU	X	X				<p>SITE: Delhi Ridge near Jawaharlal Nehru Campus. HABITAT: Rocky outcrops in scrubland dominated by <i>Acacia nilotica</i>. NO KBA SITE IDENTIFIED.</p>	Pratyush P. Mohapatra
<i>Elaphe taeniura</i>	VU			X			<p>THREATS: This species is heavily collected for food, skin, and for the international pet trade, although there is no trade in India. In the Southern Ryukyus, factors causing the recent population decline of this snake include an increase in roadkill due to the development of a paved road system, and predation by exotic predators such as weasels and peacocks.</p>	Not discussed during A2P sessions. Jayaditya Purkayastha is recommended contact for conservation next steps for this taxon.
<i>Japalura dasi</i>	VU	X					<p>SITE: Agaupani village in Bajura District, Nepal. There is highway under construction that passes near this locality and it is very likely that the development will affect the population of this species. The known locality is connected to the Khaptad National Park by a 2km-wide strip of forest at Tham and it is possible the species occurs within the park. Based on the potential threat of the highway construction, studies should be conducted to assess possible mitigation actions. KBA SITE IDENTIFIED: Agaupaani.</p>	Santosh Bhattarai and Kul Prasad Limbu

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		Site	Habitat	Threat	Single species	Intensive care		
							<p>A2P NEXT STEPS:</p> <ul style="list-style-type: none"> Survey to confirm distribution and status. Connect efforts on this species to broader conservation education and Citizen Science programs in this area. 	
<i>Melanophidium punctatum</i>	VU	X					<p>SITE: Endemic to the Western Ghats in Tamil Nadu and Kerala, India. NO KBA SITE IDENTIFIED.</p>	Chelmala Srinivasulu
<i>Oligodon erythrorhachis</i>	VU	X					<p>SITE: Namsang, Jeyapore District, Assam; Chessa, Papum Pare District, Arunachal Pradesh and from Manas Tiger Reserve in Assam. NO KBA SITE IDENTIFIED.</p> <p>A2P NEXT STEPS:</p> <ul style="list-style-type: none"> Directed study on distribution and habitat. 	Abhijit Das
<i>Oligodon juglandifer</i>	VU	X		X			<p>SITE: Darjeeling District near Gopaldhara in West Bengal and Sikkim in India, and in Wangdue Phodrang, Jigme Singye Wangchuck National Park, and near Wamrong in central Bhutan. THREAT: Persecution. KBA SITE IDENTIFIED: Fambong Lho Wildlife Sanctuary-Himalayan Zoological Park-Raitey Chu Reserve Forest.</p> <p>A2P NEXT STEPS:</p> <ul style="list-style-type: none"> Campaign to raise awareness of the species' threatened status and the fact that it is not venomous. Investigate international collaborators (reptile NGOs). 	<p>Jigme T. Wangyal and Sangay Tshewang; Department of Forest and Park Services, Bhutan.</p> <p>Pratyush P. Mohapatra (KBA).</p>
<i>Pseudocalotes andamanensis</i>	VU	X	X				<p>SITE: South, Middle, North, and Little Andaman Islands, Long Island, and Ritchie's Archipelago. It is a lowland species, 0-300 m asl. HABITAT: Canopy species found in primary tropical evergreen moist forest and semi-evergreen forests. It is not been recorded in modified habitats and appears to be a forest obligate species. Habitat conservation is needed for this species. KBA SITE IDENTIFIED: Kadakachang.</p>	Pratyush Mohapatra (KBA) Not discussed during A2P sessions. S.R. Chandramouli is recommended contact for conservation next steps for this taxon.

SPECIES	IUCN RL CATEGORY	A2P PLANNING PATHWAYS					SPECIES INFORMATION AND IDENTIFIED NEXT-STEPS FOR THREATENED SPECIES CONSERVATION ACTION	INITIATORS, CONTACTS AND POTENTIAL COLLABORATORS
		Site	Habitat	Threat	Single species	Intensive care		
<i>Saara hardwickii</i>	VU				X		<p>SITE: Widespread in northwestern India, ranging from along the Indus Valley in eastern Pakistan south as far as Las Bela. Occurs marginally in northeastern Afghanistan. HABITAT: It is characteristic of hard-soiled areas of the Indo-Gangetic Plain and is not found in habitats with a stony or sandy substrate. Associated with areas of sparse, xerophytic grass and bushes, favouring slightly elevated situations which are unlikely to be flooded.</p> <p>THREAT: Widely killed and exploited for several purposes including its oil – for traditional medicine. In India and Pakistan, it is collected for use in school and university demonstrations of vertebrate anatomy, and in Punjab as bait to capture birds for falconry. It is in the international pet trade and it is locally consumed. Road kills are also considered a minor threat. Also likely to be impacted by general threats from specific habitat loss.</p> <p>A2P NEXT STEPS:</p> <ul style="list-style-type: none"> • Recommended for single species planning. • Opportunity to highlight decline of thorny scrublands 	Rajendra Vajubhai Vyas, Sanjay Molur, Chelmala Srinivasulu
<i>Sitana visiri</i>	VU		X				<p>SITE: Endemic southern plains of Tamil Nadu south of the Cauvery River, India. HABITAT: Associated with coastal sand dunes (<i>Prosopis juliflora</i> - invasive plant dominated areas), and grassland plains in southern Tamil Nadu. Agricultural development and sheep grazing is widespread in the area. Grassland is also being converted by <i>eucalyptus</i> plantations, and urbanization. It is suggested that much of the remaining grassland will be lost within the next decade. Mitigating the rate of grassland conversion is urgently required.</p> <p>NO KBA SITE IDENTIFIED.</p>	Not discussed during A2P sessions. Surya Narayanan is recommended contact for conservation next steps for this taxon.
<i>Trachischium guentheri</i>	VU	X	X				<p>SITE: Darjeeling and Sikkim region in India; possibly Bangladesh, Nepal and Bhutan. Recently been confirmed in Zhangmu, Nyalam County, Tibet. Occurs around 1,800 m asl.</p> <p>HABITAT: Semi-fossorial species, primarily found in temperate montane forest with rocky slopes. Conversion of habitat to intensive agricultural use (e.g. tea plantations) and roadkill are threats to this species. There is a need to maintain suitable areas of natural habitat for this species. NO KBA SITE IDENTIFIED.</p>	Not discussed during A2P sessions. Jayaditya Purkayastha and Abhijit Das are recommended contacts for conservation next steps for this taxon.
<i>Tropidophorus assamensis</i>	VU	X	X				<p>SITE: Assam and Mizoram, India, and Sylhet and Chittagong Hill Tract, Bangladesh.</p> <p>HABITAT: Associated with subtropical/tropical moist forest streams, mainly inhabiting</p>	Kamrul Hasan, M. Monirul H. Khan,

SPECIES	IUCN RL CATEGORY	A2P PLANNING PATHWAYS					SPECIES INFORMATION AND IDENTIFIED NEXT-STEPS FOR THREATENED SPECIES CONSERVATION ACTION	INITIATORS, CONTACTS AND POTENTIAL COLLABORATORS
		Site	Habitat	Threat	Single species	Intensive care		
							<p>bryophyte covered rocks and boulders. Extraction of rocks and boulders from streams, illegal logging and subsequent deforestation, leading to lower water flow downstream are the main threats to this species. KBA SITE IDENTIFIED: Sangu Matamuhari Wildlife Sanctuary.</p> <p>A2P NEXT STEPS:</p> <ul style="list-style-type: none"> • Survey to map distribution and key habitat (in forest boulder streams). • Raise awareness of taxon importance in local communities. • Connect with NGOs working on freshwater turtles. 	NGOs: e.g., Help Earth (Assam); AARANYAK (Assam); ARANMYAK (Bangladesh); IUCN SSC Freshwater Turtle SG. Abhijit Das and Avrajjal Ghosh (KBA)
<i>Xenochrophis cerasogaster</i>	VU	X	X				<p>SITE: Narrow distributional range across; India, Nepal, Pakistan and Bangladesh. HABITAT: Aquatic snake inhabits freshwater marshland with abundant emergent vegetation. Substantial drainage and pollution of marshland habitats in India. There is a need to protect freshwater marshland habitat for this snake in India.</p> <p>KBA SITE IDENTIFIED: Deepor Beel Bird Sanctuary-Extension.</p> <p>A2P NEXT STEPS:</p> <ul style="list-style-type: none"> • Researchers to engage with local community to include provisions for species within indigenous fish conservation management plan • Incorporate into working plan for RAMSAR site • Raise awareness of the threatened status of this species in local communities • Ensure inclusion of this snake alongside other species, in marshland-directed forums • Connect with NGOs and individuals working on other species (e.g., fishing cat) • Research microhabitat with goal of triggering site-specific management planning. 	Abhijit Das, Tiasa Adhya, (Fishing Cat Project); Pratyush P. Mohapatra, M. Monirul H. Khan and Avrajjal Ghosh (KBA).
TOTALS		58	32	7	2	1		