

**Editors' Note:** The introductory material for every BCPP CAMP Report is the same. Therefore we have given it in a smaller typeset to fit in one page. Readers who are familiar with these Reports can go directly to the section on the following page which deals specifically with Amphibians.

## Convention on Biological Diversity

The Convention on Biological Diversity adopted in Nairobi in its provisions are expressed as of May 1992 and signed by more than 150 states in June 1992 at Rio de Janeiro, came into force officially in December 1993. The Convention is a "framework agreement" in that oals and policies (as opposed to "obligations"), leaving the implementation of its provisions up to individual parties (the states) at the national level. In the Convention, the importance of non-governmental organisations in implementing the provisions was specifically mentioned.

Articles in the Convention cover objectives, terminology, principles, legislation, cooperation and strategy as applied to various issues and methodology. One of the very basic methods of organising conservation action is prioritisation. Article 7 of the Convention deals with Identification and Monitoring, calling on parties to identify components of biological diversity important for its conservation and sustainable use. Components of an "indicative list" include:

- \* Ecosystems and habitats
- \* Species and communities, and
- \* Described genomes and genes of social, scientific and economic value.

Knowledge of species and communities can reveal crucial facts necessary to the management of ecosystems and habitats as well as to the identification of important genomes and genes. Identification, listing and prioritisation of species are one of the important tasks in conservation. In India, it is well known by biologists across many taxon groups that species information has many gaps. In many instances, the species has not been surveyed or studied since its description, perhaps in the 18th or 19th century. Even species, which have been studied more recently in the 20th century, require constant attention due to the fact that the very fabric of the earth is changing so rapidly. It is common knowledge today that the ecosystems and habitats which sustain species are deteriorating exponentially as a result of population expansion, industrialisation, and the build-up of habits resulting from decades and centuries of thinking the Earth and its resources were unlimited. Awareness of this fact is, of course, the *raison d'être* for the Convention on Biological Diversity itself.

## Biodiversity Conservation Prioritisation Project – Endangered Species Component

The Biodiversity Conservation Prioritisation Project (BCPP) is an attempt to amalgamate the knowledge of government, academics, enthusiasts, and other knowledgeable persons of India to meet obligations of the Convention on Biological Diversity. This Project was funded by the Biodiversity Support Program, a consortium of organisations, USAID, World Resources

Institute and the Nature Conservancy, and coordinated by World Wide Fund for Nature. It consists of three segments, sites, species and strategies for biodiversity conservation. The overall aim of the species segment is to list out species which need to be conserved for their biodiversity value in order of priority, under categories of medicinal and economic value, wild relatives of domesticated and cultivated species and other endangered fauna, flora and micro-organisms.

An Endangered Species Subgroup decided to use the IUCN criteria to assess the conservation status of a large part of Indian species diversity. A workshop "process" called the Conservation Assessment and Management Plan (CAMP) developed by the Conservation Breeding Specialist Group, SSC, IUCN was selected by the subgroup as the methodology to use for conducting the assessments. CBSG, India, a Regional Network of the Conservation Breeding Specialist Group was asked to conduct the "CAMP" workshops on the basis of their experience and expertise. The IUCN Red List criteria are central to the CAMP process.

## IUCN Red List

Earlier efforts to monitor the earth's resources and activate conservation measures include the Red Data Books of IUCN, now called the World Conservation Union. The IUCN Red Data Books have provided a guide for species conservation status for the last three decades. A few years ago, it was felt that both the categories and methodology used by individuals compiling the Red Data Books needed review. Over a seven-year period, the IUCN Criteria for Endangerment used in compiling Red Data Books, were examined, revised, reviewed and improved over six different iterations. The present system, the IUCN Red List Categories, 1994, is more objective, numerate, and consistent for all groups. The revised IUCN Red List Categories provide a methodology for assessment and categorisation, which can be applied, to any group of organisms (except microorganisms). The revised IUCN Red List criteria is being used now by conservation actioners and scientists all over the world and is considered the best possible method available today for assessing the conservation status of species.

## Conservation Assessment and Management Plan

One of the great difficulties of carrying out basic tasks such as identification and monitoring, creation of management and action plans and recovery programmes for species, is coordinating the great mass and variety of specialist knowledge and agency authority. Much time and energy is wasted in duplication of effort, territorial and ownership disputes, and inability to find and adhere to a common ground. The business community, realising the importance of effective communication and teamwork, has developed a broad spectrum of management strategies and tools which are used daily to manage time and human interaction. More and more, the conservation community is recognising the importance of using some of these tools to achieve their goals, rapidly and effectively. The Conservation Breeding Specialist Group (CBSG) of the Species Survival Commission of IUCN has pioneered the use of some these tools in well-planned strategic problem-solving and task -performance exercises. CBSG calls these exercises "processes" because — in the contemporary conservation scenario — nothing is static except the fact of change itself.

The Conservation Action and Management Plan Workshop was developed by CBSG for the purpose of prioritising species for conservation action including ex situ component. Over the last decade, CBSG has conducted dozens of CAMP workshops for literally hundreds of species, using (and thereby testing) the then current iteration of the IUCN Red List Categories as their basic methodology to glean a status ranking. The IUCN Red List guidelines and criteria are used in all CAMP workshops to assess and assign a category to each species.

For the CAMP Workshop CBSG has developed a Taxon Data Sheet and a Spreadsheet format which includes parameters necessary to assess the IUCN status as well as provide other useful information necessary for creating management and action plans. The spreadsheet organises the information in a concise manner so that it is accessible at a glance. The information in this Report is organised on spreadsheets in the Report section, followed by the individual Taxon Data Sheets. A CAMP Workshop also utilises principles of management psychology to guide human interaction. A set of Guidelines for Group Interaction is presented to the workshop participants who agree as a group to work accordingly in order to complete the task. Objective Facilitators (persons trained in management skills and the workshop process) are used to lead and guide the workshop so that individual and professional bias does not affect group decisions and to assist in maintaining the integrity and focus of the workshop.

CAMP Workshops bring together a variety of specialists and enthusiasts from academic, government, managerial, and even the commercial sector to evaluate taxa for setting priorities for conservation action. The fear of loss and hope of recovery of species drives CAMP Workshops. Individuals part with unpublished information in order to contribute to a body of information which will provide strategic guidance for application of intensive management and information gathering. CAMP Workshops results are, or should be, dynamic, leading to specific conservation activities in forest, market, classroom, courtroom — locally and nationally as well as on the international stage.

## Conservation of Indian amphibians

Recent reports of dramatic decline in amphibian populations all over the world has created an appropriate sense of alarm. The need for intensive, concentrated and expeditious action led the Species Survival Commission to initiate a special Task Force to document amphibian declines and the factors leading to decline. The Declining Amphibian Population Task Force (DAPTF) was established in 1991 to network amphibian field biologists and to document amphibian status all over the world. There are many regional groups working under the auspices of DAPTF, some of the more active ones in Canada, Australia, Ukraine and India. India is the first country in the world, however, to assess systematically the status of all of its described amphibians. This assessment took place in the CAMP workshop organised by Utkal University and DAPTF – South Asia under the auspices of the Biodiversity Conservation Prioritisation Project. This exercise is the first time a signatory to the Convention on Biodiversity has assessed all species of a group of organisms in their countries.

While there are a number of renowned amphibian researchers in India, the size of the task is so formidable in this large tropical country that it far exceeds the strength of current qualified manpower. While other countries are studying amphibian decline as a result of subtle environmental factors, in India even basic information on distribution is lacking. Therefore, the results of this workshop relate to the more obvious threats such as habitat destruction and human interference. Negative population trends due to changes in environmental conditions or parasites cannot be evaluated unless good information about population exists in the first instant. Furthermore, taxonomic confusion still persists in the checklist of Indian amphibians. The 1996 IUCN Red Data Book lists only 3 species of amphibians as being threatened in India. The Indian Red Data Book of 1994 (Zoological Survey of India) lists only 1 species – *Tylototriton verrucosus* as being threatened. These low numbers in the Red Data Books are not, however, indicative of the level of security of India's amphibian fauna. They are, rather, an indication of lack of communication and collaboration between agencies and organisations in the country! ZOO/ CBSG, India had begun to network Indian amphibian researchers sometime before the CAMP workshop and found the level of knowledge of amphibian workers about other amphibian workers to be poor indeed. According to the directory of amphibian researchers produced from the network, more than 100 active researchers are listed within India.

The CAMP workshop was conducted with a view to bring together as many of the country's known and current as well as retired amphibian field biologists, so that the full depth of knowledge regarding population trends and status of all Indian amphibians could be utilised fully.

## Goals of the workshop on amphibians of India

1. To assess the conservation status and assign an IUCN Red List category to the amphibian fauna of India using current population, habitat and threat information from participants.
2. To provide information about the species which would be useful in drawing up Action Plans and Management Plans, including recommendations for *in situ* and *ex situ* management; research, survey and monitoring; cultivation; investigation of limiting factors; taxonomic and other specific research, education and husbandry.
3. To organise special issue working groups at the workshop to discuss issues and problems which arise out of the interaction between participants so that the opinions and decisions of the amphibian community of India may form part of the CAMP Report.

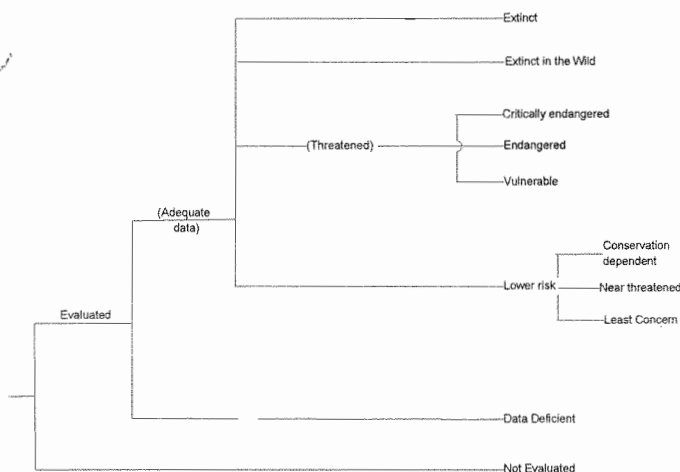
4. To produce a Conservation Assessment and Management Plan Draft Report for evaluated species, which after review and comment by workshop participants, would be distributed to all agencies, organisations and individuals relevant to amphibian conservation.

## Results and discussion

Since 1991 the IUCN Red List Categories have undergone a series of revisions to enhance their applicability to organisms other than mammals and to reflect the development of the new conservation sciences, population dynamics and conservation biology of the last two decades. The current version of the IUCN Red List Criteria is the version, which was ratified in December 1994 by the IUCN General Assembly. This version has far more objective and scientific criteria for assessment as well as detailed guidelines on how to use the criteria in deriving the category of threat status. The categories can be divided into 5 divisions as illustrated in the list and figure below.

1. Extinct (Extinct and Extinct in the Wild),
2. Threatened (Critically Endangered, Endangered and Vulnerable),
3. Non-threatened (Lower Risk -- near threatened, conservation dependent and least concern),
4. Data Deficient and
5. Not Evaluated

Structure of the Categories



## Methodology

Red Data Books in the past have been a compilation of information by one person or a group of persons, usually from temperate countries, who have access to all available literature on distribution and ecological information with reference to a particular species. The status according to old IUCN categories was derived based on the individual's perception of the status as understood from literature. Later, this exercise was broadened to include some range country representatives from different continental regions if the exercise was global in scope, such as the IUCN Red Data Books. In India national exercises such as the Indian Red Data Books relied on some specialists from the different regions of India. In both cases specialists were asked to participate in providing more information on a taxon, information that was gathered by post and evaluated by the coordinator at a central office. There are many different methods in deriving status categories by different groups both internationally (such as those done by BirdLife International, World Conservation Monitoring Centre and the different Specialist Groups of the IUCN) and nationally (such as – for India – Botanical Survey of India or Zoological Survey of India). However the different exercises were coordinated, all the above methods of deriving status for a Red Data Book or other species review follow the IUCN Red List categories.

The methodology for assessment of threat adopted in India at the Conservation Assessment and Management Plan workshops is quite different in that it depends upon interaction between specialists. The objective of assembling data is the same but in a CAMP Workshop every attempt is made to assemble a representative group of field biologists with direct field experience of the species and their habitat. Information is collected from several sources on the target taxa and in an interactive process of small working groups, this information and the personal field experience of participants is discussed extensively until the group reaches a consensus on every fact. A questionnaire called a Taxon Data Sheet, based on IUCN guidelines for deriving status as well as some additional questions, is provided and used to record this consensually processed information. The advantages of being able to have discussions on the different information provided by various field biologists as opposed to one person compiling data is, or should be, self-evident. Among the advantages of accruing better quality and quantity of information, the payoff resulting from participant "buy in" of the process is most worthwhile. In a national assessment this can have very positive effects on future research.

The Conservation Assessment and Management Plan for Indian amphibians was aimed to cover all amphibian taxa of India which number about 205. An interactive discussion was held in which workshop participants selected four categories of amphibian taxa: 1. Endemic taxa of Western Ghats, 2. Endemic taxa of northeastern India and rest of India including Andaman and Nicobar islands, 3. Non-endemic taxa found in southern India and 4. Non-endemic taxa found in other parts of India including Andaman and Nicobar islands.

Since this was the first All India exercise in amphibian status evaluation, it also provided researchers an opportunity to discuss checklists and taxonomy with other amphibian field biologists and taxonomists in India. A Special Issue Working Group was formed to discuss differences and recent views in taxonomy. Apart from this, other special issue working groups for amphibian conservation included education, captive breeding and future actions for field studies.

## Assessment

Of the total of 205 amphibian taxa considered, 126 of these are endemic to India, and 76 non-endemic. Three taxa were not evaluated.

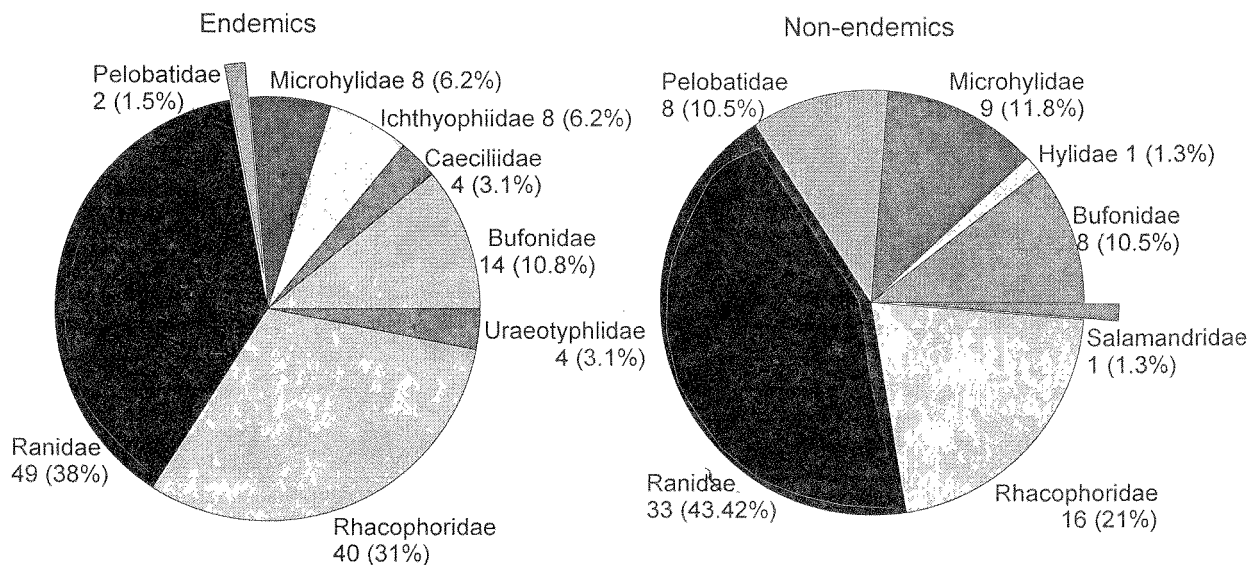
The IUCN categories are stated to work best at the global level. Guidelines for regional or national assessments are being discussed but have not been developed to date. In the absence of national or regional guidelines, however, the current Red List Criteria were used even for national assessments. Certain of the criteria are not so straightforward when applied to a national or regional population, however, it was found that any anomaly was "conservative" in favour of the species. In other words, some of the non-endemic taxa may have been given a higher category than their population status actually deserves. The alternative, however, was to leave off assessing non-endemic taxa until specific national / regional guidelines are developed, a process which could take years. In India, "wildlife" definition and legislation applies to all wildlife occurring naturally in India with no prejudice towards endemic species. While endemicity enhances the conservation value of a species, other considerations – legislative, ecosystemic, etc - are also valid. A biodiversity inventory should include all species.

## Results

A total of 205 taxa were assessed at the workshop. A definite number could not be attributed to the check-list of Indian amphibians because some taxa considered were found not to occur in India or their occurrence in India was regarded as doubtful due to erroneous identification. Taxonomic confusion added to the difficulty in compiling a complete check list. The assessments were restricted to only previously described taxa and not ones that were being described at the time of the workshop or in press.

A total of 10 families are represented among Indian amphibians of which family Ranidae is the most represented followed by Rhacophoridae and Bufonidae. One taxon each represents families Hylidae and Salamandridae (both non-endemics).

### Families of amphibians represented in India



Number of endemics = 129

Number of non-endemics = 76

Table 1. Checklist of Indian amphibians assessed at the workshop

| Species                                           | IUCN  | Species                                                       | IUCN  |
|---------------------------------------------------|-------|---------------------------------------------------------------|-------|
| <b>Bufonidae</b>                                  |       | <i>Megophrys boettgeri</i> (Boulenger)                        | LR-nt |
| <i>Ansonia kamplei</i> Ravichandan & Pillai *     | DD    | <i>Megophrys kempii</i> (Annandale)                           | EN    |
| <i>Ansonia ornata</i> Günther *                   | EN    | <i>Megophrys lateralis</i> (Anderson)                         | DD    |
| <i>Ansonia rubigina</i> Pillai & Pattabhiraman *  | EN    | <i>Megophrys montana</i> (Kuhl & van Hasselt)                 | EN    |
| <i>Bufo abatus</i> Ahl *                          | DD    | <i>Megophrys parva</i> (Boulenger)                            | LR-nt |
| <i>Bufo beddomii</i> Günther *                    | LRlc  | <i>Megophrys robusta</i> (Boulenger) *                        | EN    |
| <i>Bufo brevirostris</i> Rao *                    | DD    | <i>Scutiger nyingchinesis</i> (Fei)                           | LR-nt |
| <i>Bufo camortensis</i> Mansukhani & Sarkar *     | VU    | <i>Scutiger occidentalis</i> Dubois *                         | DD    |
| <i>Bufo fergusonii</i> (Boulenger)                | LR-lc | <i>Scutiger sikimmensis</i> (Blyth)                           | LR-nt |
| <i>Bufo himalayanus</i> (Günther)                 | LR-nt | <b>Ranidae</b>                                                |       |
| <i>Bufo hololius</i> (Günther) *                  | LR-nt | <i>Amolops afghanus</i> (Günther)                             | LR-nt |
| <i>Bufo koynayensis</i> Soman *                   | EN    | <i>Amolops formosus</i> (Günther)                             | LR-nt |
| <i>Bufo latastii</i> (Boulenger)                  | LR-lc | <i>Amolops gerbillus</i> (Annandale)                          | LR-nt |
| <i>Bufo melanostictus</i> (Schneider)             | VU    | <i>Amolops monticola</i> (Anderson)                           | EN    |
| <i>Bufo microtympaum</i> (Boulenger)              | LR-nt | <i>Chaparana sikimensis</i> (Jerdon)                          | LR-nt |
| <i>Bufo parietalis</i> Boulenger *                | LRnt  | <i>Euphyctis cyanophlyctis</i> (Schneider)                    | LR-nt |
| <i>Bufo silentvalleyensis</i> Pillai *            | VU    | <i>Euphyctis ghoshii</i> (Chanda) *                           | EN    |
| <i>Bufo stomaticus</i> Lütken                     | LR-nt | <i>Euphyctis hexadactylus</i> (Lesson)                        | LR-nt |
| <i>Bufo stuarti</i> (Smith)                       | LR-nt | <i>Hoplobatrachus crassus</i> (Jerdon)                        | LR-nt |
| <i>Bufo viridis</i> Laurenti                      | DD    | <i>Hoplobatrachus tigerinus</i> (Daudin)                      | VU    |
| <i>Bufoides meghalayanus</i> (Yazdani & Chanda) * | CR    | <i>Indirana beddomii</i> Günther *                            | VU    |
| <i>Pedostibes kempii</i> (Boulenger) *            | CR    | <i>Indirana brachytarsus</i> (Günther) *                      | VU    |
| <i>Pedostibes tuberculosus</i> Günther *          | VU    | <i>Indirana diplostictus</i> (Günther) *                      | VU    |
| <b>Caeciliidae</b>                                |       | <i>Indirana gundia</i> Dubois *                               | DD    |
| <i>Gegeneophis carnosus</i> (Beddome) *           | VU    | <i>Indirana leithii</i> (Boulenger) *                         | LR-nt |
| <i>Gegeneophis fulleri</i> (Alcock) *             | VU    | <i>Indirana leptodactylus</i> (Boulenger) *                   | VU    |
| <i>Gegeneophis ramaswamii</i> Taylor *            | EN    | <i>Indirana phrynoderma</i> *                                 |       |
| <i>Indotyphlus battersbyi</i> Taylor *            | CR    | <i>Indirana semipalmatus</i> (Boulenger) *                    | VU    |
| <b>Hylidae</b>                                    |       | <i>Indirana tenuilingua</i> (Rao) *                           | DD    |
| <i>Hyla annectans</i> Jerdon                      | LR-nt | <i>Limnonectes andamanensis</i> (Stoliczka) *                 | LR-lc |
| <b>Ichthyophiidae</b>                             |       | <i>Limnonectes brevipalmatus</i> (Peters) *                   | LR-nt |
| <i>Ichthyophis beddomei</i> Peters *              | VU    | <i>Limnonectes cancrivorus</i> (Gravenhorst)                  | LR-lc |
| <i>Ichthyophis bombayensis</i> Taylor *           | EN    | <i>Limnonectes doriae</i> (Boulenger)                         | VU    |
| <i>Ichthyophis longicephalus</i> Pillai *         | VU    | <i>Limnonectes keralensis</i> (Dubois) *                      | LR-nt |
| <i>Ichthyophis malabarensis</i> Taylor *          | VU    | <i>Limnonectes khasiensis</i> (Anderson) *                    | DD    |
| <i>Ichthyophis peninsularis</i> Taylor *          | VU    | <i>Limnonectes limnocharis</i> (Gravenhorst)                  | VU    |
| <i>Ichthyophis sikkimensis</i> (Taylor) *         | VU    | <i>Limnonectes mawphlangensis</i> (Pillai & Chanda) *         | CR    |
| <i>Ichthyophis subterrestris</i> Taylor *         | VU    | <i>Limnonectes murthii</i> Pillai *                           | EN    |
| <i>Ichthyophis tricolor</i> Taylor *              | EN    | <i>Limnonectes mysorensis</i> Rao *                           | CR    |
| <b>Microhylidae</b>                               |       | <i>Limnonectes nilagirica</i> (Jerdon) *                      | EN    |
| <i>Kaloula baleata</i> ghoshii Cherchi *          | VU    | <i>Limnonectes sauriceps</i> (Rao) *                          | DD    |
| <i>Kaloula taprobanica</i> (Parker)               | LR-nt | <i>Limnonectes shompenorum</i> Das *                          | EN    |
| <i>Melanobatrachus indicus</i> Beddome *          | VU    | <i>Limnonectes syhadrensis</i> (Annandale)                    | LR-nt |
| <i>Microhyla berdmorei</i> (Blyth)                | LR-nt | <i>Micrixalus fuscus</i> (Boulenger) *                        | LR-nt |
| <i>Microhyla chakrapani</i> Pillai *              | VU    | <i>Micrixalus gadgili</i> Pillai & Pattabiraman *             | EN    |
| <i>Microhyla heymonsi</i> Vogt                    | EN    | <i>Micrixalus nudis</i> Pillai *                              | VU    |
| <i>Microhyla ornata</i> (Deumeril & Bibron)       | LR-lc | <i>Micrixalus phyllophilus</i> (Jerdon) *                     | VU    |
| <i>Microhyla rubra</i> Jerdon                     | LR-nt | <i>Micrixalus saxicola</i> (Jerdon) *                         | LR-nt |
| <i>Micryletta inornata</i> (Boulenger)            | EN    | <i>Micrixalus silvaticus</i> (Boulenger) *                    | VU    |
| <i>Ramanella anamalaiensis</i> Rao *              | DD    | <i>Micrixalus thampii</i> Pillai *                            | EN    |
| <i>Ramanella minor</i> Rao *                      | DD    | <i>Nyctibatrachus aliciae</i> Inger, Shaffer, Koshy & Bakde * | VU    |
| <i>Ramanella montana</i> Jerdon *                 | LRnt  | <i>Nyctibatrachus beddomii</i> (Boulenger) *                  | LR-nt |
| <i>Ramanella mormorata</i> Rao *                  | VU    | <i>Nyctibatrachus deccanensis</i> Dubois *                    | VU    |
| <i>Ramanella triangularis</i> (Günther) *         | VU    | <i>Nyctibatrachus humayuni</i> Bhaduri & Kripalani *          | EN    |
| <i>Ramanella variegata</i> (Stoliczka)            | LR-nt | <i>Nyctibatrachus kempholeysensis</i> (Rao) *                 | DD    |
| <i>Uperodon globulosus</i> (Günther)              | LR-nt | <i>Nyctibatrachus major</i> Boulenger *                       | LR-nt |
| <i>Uperodon systoma</i> (Schneider)               | LR-nt | <i>Nyctibatrachus minor</i> Inger, Shaffer, Koshy & Bakde *   | VU    |
| <b>Pelobatidae</b>                                |       | <i>Nyctibatrachus sanctipalustris</i> Rao *                   | EN    |
| <i>Leptobranchium hasseltii</i> Tschudii          | EN    | <i>Nyctibatrachus sylvaticus</i> Rao *                        | DD    |

| Species                                               | IUCN  |
|-------------------------------------------------------|-------|
| <i>Ocidozyga lima</i> (Gravenhorst)                   | DD    |
| <i>Paa annandalii</i> (Boulenger)                     | EN    |
| <i>Paa blanfordii</i> (Boulenger)                     | LR-nt |
| <i>Paa hazarensis</i> (Dubois & Khan)                 | DD    |
| <i>Paa liebighii</i> (Günther)                        | LR-nt |
| <i>Paa minica</i> (Dubois)                            | DD    |
| <i>Paa sternostigmata</i> (Murray)                    | DD    |
| <i>Paa vicina</i> (Stoliczka)                         | DD    |
| <i>Philautus nasutus</i> (Günther)                    | NE    |
| <i>Phrynoglossus borealis</i> (Annandale) *           | EN    |
| <i>Rana alticola</i> (Boulenger)                      | LR-nt |
| <i>Rana assamensis</i> (Sclater)                      | LR-nt |
| <i>Rana aurantiaca</i> (Boulenger) *                  | LR-nt |
| <i>Rana chalconota</i> (Schlegel)                     | EN    |
| <i>Rana curtipes</i> Jerdon *                         | LR-nt |
| <i>Rana danieli</i> Pillai & Chanda *                 | LR-nt |
| <i>Rana erythraea</i> (Schlegel)                      | LR-nt |
| <i>Rana garoensis</i> Boulenger *                     | EN    |
| <i>Rana khare</i> (Kiyasetuo & Khare) *               | EN    |
| <i>Rana leptoglossa</i> (Cope, 1868)                  | EN    |
| <i>Rana livida</i> (Blyth)                            | LR-nt |
| <i>Rana malabarica</i> Tschudi *                      | LR-nt |
| <i>Rana nicobarensis</i> (Stoliczka)                  | LR-nt |
| <i>Rana nigrovittata</i> (Blyth)                      | EN    |
| <i>Rana senchalensis</i> Chanda *                     | CR    |
| <i>Rana taipehensis</i> Van Denburg                   | LR-nt |
| <i>Rana travancorica</i> Annandale *                  | DD    |
| <i>Taylorana hascheana</i> Stoliczka                  | DD    |
| <i>Tomopterna dobsonii</i> *                          | NE    |
| <i>Tomopterna leucorhynchus</i> Rao *                 | DD    |
| <i>Tomopterna parambukulamana</i> Rao *               | DD    |
| <i>Tomopterna rolandae</i> (Dubois)                   | LR-nt |
| <i>Tomopterna rufescens</i> (Jerdon) *                | LR-nt |
| <b>Rhacophoridae</b>                                  |       |
| <i>Chirixalus doriae</i> Boulenger                    | EN    |
| <i>Chirixalus dudhwaensis</i> Ray *                   | VU    |
| <i>Chirixalus simus</i> Annandale                     | EN    |
| <i>Chirixalus vittatus</i> (Boulenger)                | EN    |
| <i>Limnonectes mawlyndipi</i> (Chanda) *              | CR    |
| <i>Nytilaxalus moloch</i> (Annandale)                 | EN    |
| <i>Philautus andersonii</i> (Ahl)                     | EN    |
| <i>Philautus annandalii</i> (Boulenger)               | LR-nt |
| <i>Philautus beddomii</i> (Günther) *                 | VU    |
| <i>Philautus bombayensis</i> (Annandale) *            | EN    |
| <i>Philautus chalazodes</i> Günther *                 | VU    |
| <i>Philautus charius</i> Rao *                        | LR-nt |
| <i>Philautus cherrapunjiae</i> Roonwall & Kripalani * | EN    |
| <i>Philautus crnri</i> Dutta *                        | DD    |
| <i>Philautus elegans</i> Rao *                        | DD    |

| Species                                                 | IUCN  |
|---------------------------------------------------------|-------|
| <i>Philautus flaviventris</i> (Boulenger) *             | DD    |
| <i>Philautus garo</i> (Boulenger) *                     | CR    |
| <i>Philautus glandulosus</i> (Jerdon) *                 | VU    |
| <i>Philautus hassanensis</i> Dutta *                    | DD    |
| <i>Philautus kempiae</i> (Boulenger) *                  | CR    |
| <i>Philautus kottigeharensis</i> Rao *                  | DD    |
| <i>Philautus leucorhinus</i> (Lichtenstein & Martens) * | LR-nt |
| <i>Philautus melanensis</i> Rao *                       | DD    |
| <i>Philautus namdaphaensis</i> Sarkar & Sanyal *        | VU    |
| <i>Philautus narainensis</i> Rao *                      | DD    |
| <i>Philautus nobeli</i> (Ahl) *                         | DD    |
| <i>Philautus parkeri</i> (Ahl) *                        | DD    |
| <i>Philautus pulcherimus</i> (Ahl) *                    | VU    |
| <i>Philautus shillongensis</i> Pillai & Chanda *        | CR    |
| <i>Philautus shyamrupus</i> Chanda & Ghosh *            | VU    |
| <i>Philautus signatus</i> (Boulenger) *                 | VU    |
| <i>Philautus swamianus</i> Rao *                        | DD    |
| <i>Philautus temporalis</i> Günther *                   | EN    |
| <i>Philautus travancoricus</i> (Boulenger) *            | DD    |
| <i>Philautus variabilis</i> (Günther) *                 | LR-nt |
| <i>Polypedates cruciger</i> (Blyth) *                   | VU    |
| <i>Polypedates insularis</i> Das *                      | EN    |
| <i>Polypedates leucomystax</i> (Gravenhorst)            | LR-lc |
| <i>Polypedates maculatus himalayensis</i> (Annandale)   | EN    |
| <i>Polypedates maculatus maculatus</i> (Gray)           | LR-lc |
| <i>Rhacophorus appendiculatus</i> (Günther)             | DD    |
| <i>Rhacophorus bipunctatus</i> Ahl                      | LR-nt |
| <i>Rhacophorus bisacculus</i> Taylor, E.H.              | EN    |
| <i>Rhacophorus calcadensis</i> Ahl *                    | DD    |
| <i>Rhacophorus jerdonii</i> (Günther) *                 | VU    |
| <i>Rhacophorus lateralis</i> Boulenger *                | EN    |
| <i>Rhacophorus malabaricus</i> Jerdon *                 | LR-nt |
| <i>Rhacophorus maximus</i> (Günther)                    | LR-nt |
| <i>Rhacophorus namdaphaensis</i> Sarkar & Sanyal *      | VU    |
| <i>Rhacophorus naso</i> Annandale *                     | DD    |
| <i>Rhacophorus nigropalmatus</i> Boulenger              | DD    |
| <i>Rhacophorus pleurostictus</i> (Günther) *            | VU    |
| <i>Rhacophorus reinwardtii</i> Kuhl & van Hasselt       | LR-nt |
| <i>Rhacophorus taeniatus</i> Boulenger *                | LR-nt |
| <i>Rhacophorus tuberculatus</i> (Anderson) *            | LRnt  |
| <i>Theloderma asper</i> (Boulenger)                     | DD    |
| <b>Salamandridae</b>                                    |       |
| <i>Pleurodeles verrucosus</i> (Anderson)                | EN    |
| <b>Uraeotyphlidae</b>                                   |       |
| <i>Uraeotyphlus malabaricus</i> (Beddome) *             | EN    |
| <i>Uraeotyphlus menoni</i> Annandale *                  | VU    |
| <i>Uraeotyphlus narayani</i> Seshachar *                | VU    |
| <i>Uraeotyphlus oxyurus</i> (Dumeril & Bibron) *        | VU    |

Table 2. Basis of criteria for assessing endemic and non-endemic amphibians of India

| Species                            | IUCN  | Endemic to              | Threatened due to       | Criteria   |
|------------------------------------|-------|-------------------------|-------------------------|------------|
| <b>AMPHIBIANS ENDEMIC TO INDIA</b> |       |                         |                         |            |
| <i>Ansonia krambei</i>             | DD    | Western Ghats           | -                       | --         |
| <i>Ansonia ornata</i>              | EN    | Western Ghats           | Restricted distribution | B1, 2c     |
| <i>Ansonia rubigina</i>            | EN    | Western Ghats           | Restricted distribution | B1, 2c, 3b |
| <i>Bufo abatus</i>                 | DD    | Eastern India           | -                       | --         |
| <i>Bufo beddomii</i>               | LRlc  | Western Ghats           | -                       | --         |
| <i>Bufo brevirostris</i>           | DD    | Western Ghats           | -                       | --         |
| <i>Bufo camortensis</i>            | VU    | Andaman & Nicobar       | Population restriction  | D2         |
| <i>Bufo hololius</i>               | LR-nt | Western & Eastern Ghats | -                       | --         |



| Species                           | IUCN  | Endemic to         | Threatened due to                                  | Criteria           |
|-----------------------------------|-------|--------------------|----------------------------------------------------|--------------------|
| <i>Bufo koynayensis</i>           | EN    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Bufo parietalis</i>            | LRnt  | Western Ghats      | -                                                  | --                 |
| <i>Bufo silentvalleyensis</i>     | VU    | Western Ghats      | Population restriction                             | D2                 |
| <i>Bufoides meghalayanus</i>      | CR    | Northeastern India | Restricted distribution                            | B1, 2a, 2b, 2c     |
| <i>Chirixalus dudhwaensis</i>     | VU    | Northern India     | Population restriction                             | D2                 |
| <i>Euphlyctis ghoshi</i>          | EN    | Northeastern India | Restricted distribution                            | B1, 2a, 2b, 2c     |
| <i>Gegeneophis carnosus</i>       | VU    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Gegeneophis fulleri</i>        | VU    | Northeastern India | Restricted distribution                            | B1, 2a, 2c         |
| <i>Gegeneophis ramaswamii</i>     | EN    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Ichthyophis beddomei</i>       | VU    | Western Ghats      | Population reduction;<br>Restricted distribution   | A1a, 1c;<br>B1, 2c |
| <i>Ichthyophis bombayensis</i>    | EN    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Ichthyophis longicephalus</i>  | VU    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Ichthyophis malabarensis</i>   | VU    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Ichthyophis peninsularis</i>   | VU    | Western Ghats      | Restricted distribution;<br>Population restriction | B1, 2c;<br>D2      |
| <i>Ichthyophis sikkimensis</i>    | VU    | Northeastern India | Restricted distribution                            | B1, 2c             |
| <i>Ichthyophis subterrestris</i>  | VU    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Ichthyophis tricolor</i>       | EN    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Indirana beddomii</i>          | VU    | Western Ghats      | Population reduction                               | A1a, 1c            |
| <i>Indirana brachytarsus</i>      | VU    | Western Ghats      | Restricted distribution                            | B1, 2b             |
| <i>Indirana diplostictus</i>      | VU    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Indirana gundia</i>            | DD    | Western Ghats      | -                                                  | --                 |
| <i>Indirana leithii</i>           | LR-nt | Western Ghats      | -                                                  | --                 |
| <i>Indirana leptodactylus</i>     | VU    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Indirana phrynoderma</i>       | NE    |                    |                                                    |                    |
| <i>Indirana semipalmatus</i>      | VU    | Western Ghats      | Population reduction;<br>Restricted distribution   | A1a, 1c;<br>B1, 2c |
| <i>Indirana tenuilingua</i>       | DD    | Western Ghats      | -                                                  | --                 |
| <i>Indotyphlus battersbyi</i>     | CR    | Western Ghats      | Restricted distribution                            | B1, 2b, 2c         |
| <i>Kaloula baleata ghoshi</i>     | VU    | Andaman & Nicobar  | Population restriction                             | D2                 |
| <i>Limnonectes andamanensis</i>   | LR-lc | Andaman & Nicobar  | -                                                  | --                 |
| <i>Limnonectes brevipalmatus</i>  | LR-nt | Western Ghats      | -                                                  | --                 |
| <i>Limnonectes keralensis</i>     | LR-nt | Western Ghats      | -                                                  | --                 |
| <i>Limnonectes khasiensis</i>     | DD    | Northeastern India | -                                                  | --                 |
| <i>Limnonectes mawlyndipi</i>     | CR    | Northeastern India | Restricted distribution                            | B1, 2a, 2c         |
| <i>Limnonectes mawphlangensis</i> | CR    | Northeastern India | Restricted distribution                            | B1, 2a, 2c         |
| <i>Limnonectes murthii</i>        | EN    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Limnonectes mysorensis</i>     | CR    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Limnonectes nilagirica</i>     | EN    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Limnonectes sauriceps</i>      | DD    | Western Ghats      | -                                                  | --                 |
| <i>Limnonectes shompenorum</i>    | EN    | Andaman & Nicobar  | Restricted distribution                            | B1, 2a, 2b, 2c     |
| <i>Megophrys robusta</i>          | EN    | Eastern India      | Restricted distribution                            | B1, 2c             |
| <i>Melanobatrachus indicus</i>    | VU    | Western Ghats      | Restricted distribution;<br>Population restriction | B1, 2c, 3c;<br>D2  |
| <i>Micrixalus fuscus</i>          | LR-nt | Western Ghats      | -                                                  | --                 |
| <i>Micrixalus gadgili</i>         | EN    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Micrixalus nudis</i>           | VU    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Micrixalus phyllophilus</i>    | VU    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Micrixalus saxicola</i>        | LR-nt | Western Ghats      | -                                                  | --                 |
| <i>Micrixalus silvaticus</i>      | VU    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Micrixalus thampii</i>         | EN    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Microhyla chakrapani</i>       | VU    | Andaman & Nicobar  | Population restriction                             | D2                 |
| <i>Nyctibatrachus aliciae</i>     | VU    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Nyctibatrachus beddomii</i>    | LR-nt | Western Ghats      | -                                                  | --                 |
| <i>Nyctibatrachus deccanensis</i> | VU    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>Nyctibatrachus humayuni</i>    | EN    | Western Ghats      | Restricted distribution                            | B1, 2c             |
| <i>N. kempholeyensis</i>          | DD    | Western Ghats      | -                                                  | --                 |
| <i>Nyctibatrachus major</i>       | LR-nt | Western Ghats      | -                                                  | --                 |
| <i>Nyctibatrachus minor</i>       | VU    | Western Ghats      | Restricted distribution;<br>Population restriction | B1, 2c;<br>D2      |

| Species                               | IUCN  | Endemic to         | Threatened due to                                  | Criteria          |
|---------------------------------------|-------|--------------------|----------------------------------------------------|-------------------|
| <i>Nyctibatrachus sanctipalustris</i> | EN    | Western Ghats      | Restricted distribution                            | B1, 2c            |
| <i>Nyctibatrachus sylvaticus</i>      | DD    | Western Ghats      | -                                                  | --                |
| <i>Pedostibes kempi</i>               | CR    | Northeastern India | Restricted distribution                            | B1, 2a, 2b, 2c    |
| <i>Pedostibes tuberculosus</i>        | VU    | Western Ghats      | Restricted distribution                            | B1, 2c            |
| <i>Philautus beddomii</i>             | VU    | Western Ghats      | Restricted distribution                            | B1, 2c            |
| <i>Philautus bombayensis</i>          | EN    | Western Ghats      | Restricted distribution                            | B1, 2c            |
| <i>Philautus chalazodes</i>           | VU    | Western Ghats      | Restricted distribution;<br>Population restriction | B1, 2c;<br>D2     |
| <i>Philautus charius</i>              | LR-nt | Western Ghats      | -                                                  | --                |
| <i>Philautus cherrapunjiae</i>        | EN    | Northeastern India | Restricted distribution                            | B1, 2a, 2c        |
| <i>Philautus crnri</i>                | DD    | Western Ghats      | -                                                  | --                |
| <i>Philautus elegans</i>              | DD    | Western Ghats      | -                                                  | --                |
| <i>Philautus flaviventris</i>         | DD    | Western Ghats      | -                                                  | --                |
| <i>Philautus garo</i>                 | CR    | Northeastern India | Restricted distribution                            | B1, 2b, 2c        |
| <i>Philautus glandulosus</i>          | VU    | Western Ghats      | Restricted distribution                            | B1, 2c            |
| <i>Philautus hassanensis</i>          | DD    | Western Ghats      | -                                                  | --                |
| <i>Philautus kempiae</i>              | CR    | Northeastern India | Restricted distribution                            | B1, 2a, 2b, 2c    |
| <i>Philautus kottigeharensis</i>      | DD    | Western Ghats      | -                                                  | --                |
| <i>Philautus leucorhinus</i>          | LR-nt | Western Ghats      | -                                                  | --                |
| <i>Philautus melanensis</i>           | DD    | Western Ghats      | -                                                  | --                |
| <i>Philautus namdaphaensis</i>        | VU    | Northeastern India | Restricted distribution;<br>Population restriction | B1, 2c;<br>D2     |
| <i>Philautus narainensis</i>          | DD    | Western Ghats      | -                                                  | --                |
| <i>Philautus nobeli</i>               | DD    | Western Ghats      | -                                                  | --                |
| <i>Philautus parkeri</i>              | DD    | Western Ghats      | -                                                  | --                |
| <i>Philautus pulcherimus</i>          | VU    | Western Ghats      | Restricted distribution                            | B1, 2c            |
| <i>Philautus shillongensis</i>        | CR    | Northeastern India | Restricted distribution                            | B1, 2a, 2b, 2c    |
| <i>Philautus shyamrupus</i>           | VU    | Northeastern India | Restricted distribution;<br>Population restriction | B1, 2c;<br>D2     |
| <i>Philautus signatus</i>             | VU    | Western Ghats      | Restricted distribution                            | B1, 2c            |
| <i>Philautus swamianus</i>            | DD    | Western Ghats      | -                                                  | --                |
| <i>Philautus temporalis</i>           | EN    | Western Ghats      | Restricted distribution                            | B1, 2c            |
| <i>Philautus travancoricus</i>        | DD    | Western Ghats      | -                                                  | --                |
| <i>Philautus variabilis</i>           | LR-nt | Western Ghats      | -                                                  | --                |
| <i>Phrynoglossus borealis</i>         | EN    | Northeastern India | Restricted distribution                            | B1, 2c            |
| <i>Polypedates cruciger</i>           | VU    | Western Ghats      | Restricted distribution;<br>Population restriction | B1, 2c;<br>D2     |
| <i>Polypedates insularis</i>          | EN    | Andaman & Nicobar  | Restricted distribution                            | B1, 2a, 2b, 2c    |
| <i>Ramanella anamalaiensis</i>        | DD    | Western Ghats      | -                                                  | --                |
| <i>Ramanella minor</i>                | DD    | Western Ghats      | -                                                  | --                |
| <i>Ramanella montana</i>              | LR-nt | Western Ghats      | -                                                  | --                |
| <i>Ramanella mormorata</i>            | VU    | Western Ghats      | Restricted distribution;<br>Population restriction | B1, 2b, 2c;<br>D2 |
| <i>Ramanella triangularis</i>         | VU    | Western Ghats      | Restricted distribution;<br>Population restriction | B1, 2c;<br>D2     |
| <i>Rana aurantiaca</i>                | LR-nt | Western Ghats      | -                                                  | --                |
| <i>Rana curtipes</i>                  | LR-nt | Western Ghats      | -                                                  | --                |
| <i>Rana danieli</i>                   | LR-nt | Northeastern India | -                                                  | --                |
| <i>Rana garoensis</i>                 | EN    | Northeastern India | Restricted distribution                            | B1, 2a, 2b, 2c    |
| <i>Rana khare</i>                     | EN    | Northeastern India | Restricted distribution                            | B1, 2c            |
| <i>Rana malabarica</i>                | LR-nt | India              | -                                                  | --                |
| <i>Rana senchalensis</i>              | CR    | Northeastern India | Restricted distribution                            | B1, 2a, 2b, 2c    |
| <i>Rana travancorica</i>              | DD    | Western Ghats      | -                                                  | --                |
| <i>Rhacophorus calcadensis</i>        | DD    | Western Ghats      | -                                                  | --                |
| <i>Rhacophorus jerdonii</i>           | VU    | Northeastern India | Restricted distribution;<br>Population restriction | B1, 2c;<br>D2     |
| <i>Rhacophorus lateralis</i>          | EN    | Western Ghats      | Restricted distribution                            | B1, 2c            |
| <i>Rhacophorus malabaricus</i>        | LR-nt | Western Ghats      | -                                                  | --                |
| <i>Rhacophorus namdaphaensis</i>      | VU    | Northeastern India | Restricted distribution;<br>Population restriction | B1, 2c;<br>D2     |
| <i>Rhacophorus naso</i>               | DD    | Western Ghats      | -                                                  | --                |
| <i>Rhacophorus pleurostictus</i>      | VU    | Western Ghats      | Restricted distribution                            | B1, 2c            |

| Species                                              | IUCN  | Endemic to               | Threatened due to                                  | Criteria       |
|------------------------------------------------------|-------|--------------------------|----------------------------------------------------|----------------|
| <i>Rhacophorus taeniatus</i>                         | LR-nt | Northern India           | -                                                  | --             |
| <i>Rhacophorus tuberculatus</i>                      | LRnt  | Northeastern India       | -                                                  | --             |
| <i>Scutiger occidentalis</i>                         | DD    | Northern India           | -                                                  | --             |
| <i>Tomopterna dobsonii</i>                           | NE    |                          |                                                    |                |
| <i>Tomopterna leucorhynchus</i>                      | DD    | Western Ghats            | -                                                  | --             |
| <i>Tomopterna parambikulamana</i>                    | DD    | Western Ghats            | -                                                  | --             |
| <i>Tomopterna rufescens</i>                          | LR-nt | Western Ghats            | -                                                  | --             |
| <i>Uraeotyphlus malabaricus</i>                      | EN    | Western Ghats            | Restricted distribution                            | B1, 2c         |
| <i>Uraeotyphlus menoni</i>                           | VU    | Western Ghats            | Restricted distribution;<br>Population restriction | B1, 2c;<br>D2  |
| <i>Uraeotyphlus narayani</i>                         | VU    | Western Ghats            | Restricted distribution                            | B1, 2c         |
| <i>Uraeotyphlus oxyurus</i>                          | VU    | Western Ghats            | Restricted distribution                            | B1, 2c         |
| <b>AMPHIBIANS OCCURRING IN INDIA BUT NOT ENDEMIC</b> |       |                          |                                                    |                |
| <i>Amolops afghanus</i>                              | LR-nt | Eastern & Northern India | -                                                  | --             |
| <i>Amolops formosus</i>                              | LR-nt | Northeastern India       | -                                                  | --             |
| <i>Amolops gerbillus</i>                             | LR-nt | NE & Eastern India       | -                                                  | --             |
| <i>Amolops monticola</i>                             | EN    | Eastern India            | Restricted distribution                            | B1, 2b, 2c     |
| <i>Bufo fergusonii</i>                               | LR-lc | Western Ghats            | -                                                  | --             |
| <i>Bufo himalayanus</i>                              | LR-nt | Eastern & NE India       | -                                                  | --             |
| <i>Bufo latastii</i>                                 | LR-lc | Northern India           | -                                                  | --             |
| <i>Bufo melanostictus</i>                            | VU    |                          | Population reduction                               | A1a, 1c, 1d    |
| <i>Bufo microtypanum</i>                             | LR-nt | Western Ghats            | -                                                  | --             |
| <i>Bufo stomaticus</i>                               | LR-nt | India                    | -                                                  | --             |
| <i>Bufo stuarti</i>                                  | LR-nt | Northeastern India       | -                                                  | --             |
| <i>Bufo viridis</i>                                  | DD    | Northern, Western India  | -                                                  | --             |
| <i>Chaparana sikimensis</i>                          | LR-nt | Eastern, NE India        | -                                                  | --             |
| <i>Chirixalus doriae</i>                             | EN    | Northeastern India       | Restricted distribution                            | B1, 2c         |
| <i>Chirixalus simus</i>                              | EN    | Northeastern India       | Restricted distribution                            | B1, 2a, 2b, 2c |
| <i>Chirixalus vittatus</i>                           | EN    | Northeastern India       | Restricted distribution                            | B1, 2c         |
| <i>Euphyctis cyanophlyctis</i>                       | LR-nt | India                    | -                                                  | --             |
| <i>Euphyctis hexadactylus</i>                        | LR-nt | Peninsular India         | -                                                  | --             |
| <i>Hoplobatrachus crassus</i>                        | LR-nt | India                    | -                                                  | --             |
| <i>Hoplobatrachus tigerinus</i>                      | VU    | India                    | Population reduction                               | A1d            |
| <i>Hyla annectans</i>                                | LR-nt | Northeastern India       | -                                                  | --             |
| <i>Kaloula taprobanica</i>                           | LR-nt | India                    | -                                                  | --             |
| <i>Leptobrachium hasseltii</i>                       | EN    | Northeastern India       | Restricted distribution                            | B1, 2a, 2b, 2c |
| <i>Limnonectes cancrivorus</i>                       | LR-lc | Andaman & Nicobar        | -                                                  | --             |
| <i>Limnonectes doriae</i>                            | VU    | Andaman & Nicobar        | Population restriction                             | D2             |
| <i>Limnonectes limnocharis</i>                       | VU    | India                    | Population reduction                               | A1a, 1c        |
| <i>Limnonectes syhadrensis</i>                       | LR-nt | Eastern & Western India  | -                                                  | --             |
| <i>Megophrys boettgeri</i>                           | LR-nt | Northeastern India       | Population restriction                             | --             |
| <i>Megophrys kempii</i>                              | EN    | Northeastern India       | Restricted distribution                            | B1, 2a, 2b, 2c |
| <i>Megophrys lateralis</i>                           | DD    | Northeastern India       | -                                                  | --             |
| <i>Megophrys montana</i>                             | EN    | Northeastern India       | Restricted distribution                            | B1, 2a, 2b, 2c |
| <i>Megophrys parva</i>                               | LR-nt | Eastern & NE India       | -                                                  | --             |
| <i>Microhyla berdmorei</i>                           | LR-nt | Northeastern India       | -                                                  | --             |
| <i>Microhyla heymonsi</i>                            | EN    | Andaman & Nicobar        | Restricted distribution                            | B1, 2a, 2b, 2c |
| <i>Microhyla ornata</i>                              | LR-lc | India                    | -                                                  | --             |
| <i>Microhyla rubra</i>                               | LR-nt | Peninsular India         | -                                                  | --             |
| <i>Micryletta inornata</i>                           | EN    | Andaman & Nicobar        | Restricted distribution                            | B1, 2a, 2b, 2c |
| <i>Nytixalus moloch</i>                              | EN    | Northeastern India       | Restricted distribution                            | B1, 2a, 2b, 2c |
| <i>Occidozyga lima</i>                               | DD    | Eastern India            | -                                                  | --             |
| <i>Paa annandalii</i>                                | EN    | Eastern India            | Restricted distribution                            | B1, 2a, 2b, 2c |
| <i>Paa blanfordii</i>                                | LR-nt | Northern & Eastern India | -                                                  | --             |
| <i>Paa hazarensis</i>                                | DD    | Northern India           | -                                                  | --             |
| <i>Paa liebigii</i>                                  | LR-nt | Eastern & NE India       | -                                                  | --             |
| <i>Paa minica</i>                                    | DD    | Northern India           | -                                                  | --             |
| <i>Paa sternostignata</i>                            | DD    | Northern India           | -                                                  | --             |
| <i>Paa vicina</i>                                    | DD    | Northern India           | -                                                  | --             |
| <i>Philautus andersonii</i>                          | En    | Northeastern India       | Restricted distribution                            | B1, 2a, 2b, 2c |

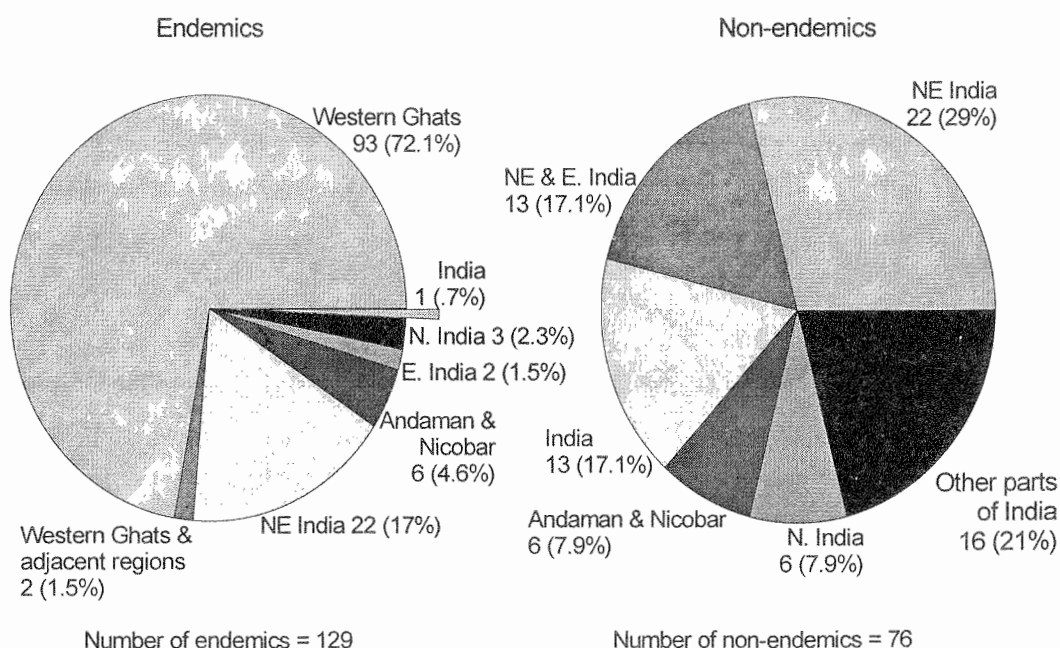


| Species                                   | IUCN  | Endemic to                | Threatened due to       | Criteria       |
|-------------------------------------------|-------|---------------------------|-------------------------|----------------|
| <i>Philautus annandalii</i>               | LR-nt | Eastern & NE India        | -                       | --             |
| <i>Philautus nasutus</i>                  | NE    | Southern India            | -                       | --             |
| <i>Pleurodeles verrucosus</i>             | EN    | Eastern & NE India        | Population reduction    | A1a, 1c        |
| <i>Polypedates leucomystax</i>            | LR-lc | East, NE, Southern India  | -                       | --             |
| <i>Polypedates maculatus himalayensis</i> | EN    | Northeastern India        | Restricted distribution | B1, 2a, 2b, 2c |
| <i>Polypedates maculatus maculatus</i>    | LR-lc | India                     | -                       | --             |
| <i>Ramanella variegata</i>                | LR-nt | India                     | -                       | --             |
| <i>Rana alticola</i>                      | LR-nt | Eastern & NE India        | -                       | --             |
| <i>Rana assamensis</i>                    | LR-nt | Eastern & NE India        | -                       | --             |
| <i>Rana chalconota</i>                    | EN    | Andaman & Nicobar         | Restricted distribution | B1, 2a, 2b, 2c |
| <i>Rana erythraea</i>                     | LR-nt | Eastern, NE & A & N Isles | -                       | --             |
| <i>Rana leptoglossa</i>                   | EN    | Northeastern India        | Restricted distribution | B1, 2a, 2b, 2c |
| <i>Rana livida</i>                        | LR-nt | Eastern & NE India        | -                       | --             |
| <i>Rana nicobarensis</i>                  | LR-nt | Eastern, NE & A & N Isles | -                       | --             |
| <i>Rana nigrovittata</i>                  | EN    | Northeastern India        | Restricted distribution | B1, 2b, 2c     |
| <i>Rana taipehensis</i>                   | LR-nt | North, Eastern & NE India | -                       | --             |
| <i>Rhacophorus appendiculatus</i>         | DD    | Northeastern India        | -                       | --             |
| <i>Rhacophorus bipunctatus</i>            | LR-nt | Northeastern India        | -                       | --             |
| <i>Rhacophorus bisacculus</i>             | EN    | Northeastern India        | Restricted distribution | B1, 2a, 2b, 2c |
| <i>Rhacophorus maximus</i>                | LR-nt | Eastern & N India         | -                       | --             |
| <i>Rhacophorus nigropalmatus</i>          | DD    |                           | -                       | --             |
| <i>Rhacophorus reinwardtii</i>            | LR-nt | Eastern & NE India        | -                       | --             |
| <i>Scutiger nyingchinesis</i>             | LR-nt | Northern India            | -                       | --             |
| <i>Scutiger sikimensis</i>                | LR-nt | Eastern & NE India        | -                       | --             |
| <i>Taylorana hascheana</i>                | DD    | Andaman & Nicobar         | -                       | --             |
| <i>Theloderma asper</i>                   | DD    | Northeastern India        | -                       | --             |
| <i>Tomopterna rolandae</i>                | LR-nt | India                     | -                       | --             |
| <i>Uperodon globulosus</i>                | LR-nt | India                     | -                       | --             |
| <i>Uperodon systoma</i>                   | LR-nt | India                     | -                       | --             |

Endemic amphibians constitute 63% (129 taxa) of the total amphibian fauna of India while non-endemics make up the other 37% (76 taxa).

The Table below illustrates the distribution of endemic and non-endemic taxa in India.

### Distribution of amphibians in India



## Criteria for threat

Totally 109 taxa (53% of all Indian amphibians) are threatened in India of which 87 are endemic (63.7% of endemic amphibians are threatened) and 22 non-endemic (28.9% of non-endemic amphibians are threatened). As two-thirds of the taxa are endemic, the criteria for threat assessment is heavily skewed towards restricted distribution. One-hundred and seven taxa of the 129 endemic taxa are found in less than 10 locations. This high percentage of limited locations to which the taxa are confined is the reason for a majority of the endemic taxa to qualify for "criterion B", for restricted distribution. Seventy-eight percent (68 taxa) of the threatened taxa (87 taxa) qualify for criterion B. The same is observed even for non-endemics as 77% (17 taxa) of the threatened taxa (22 taxa) qualify for criterion B.

## Threats

Loss of habitat and human interference are the two most common threats facing amphibians in India. Fragmentation of habitat is also a significant factor. Lack of consistent studies on population dynamics for most of the species preclude confident statements or even inference of reduction in population. Therefore, population reduction criterion has been applied only for five taxa. Assessment have been made mostly on the state of the habitat currently and knowledge of the habitat over years with respect to species distribution. Reduction in

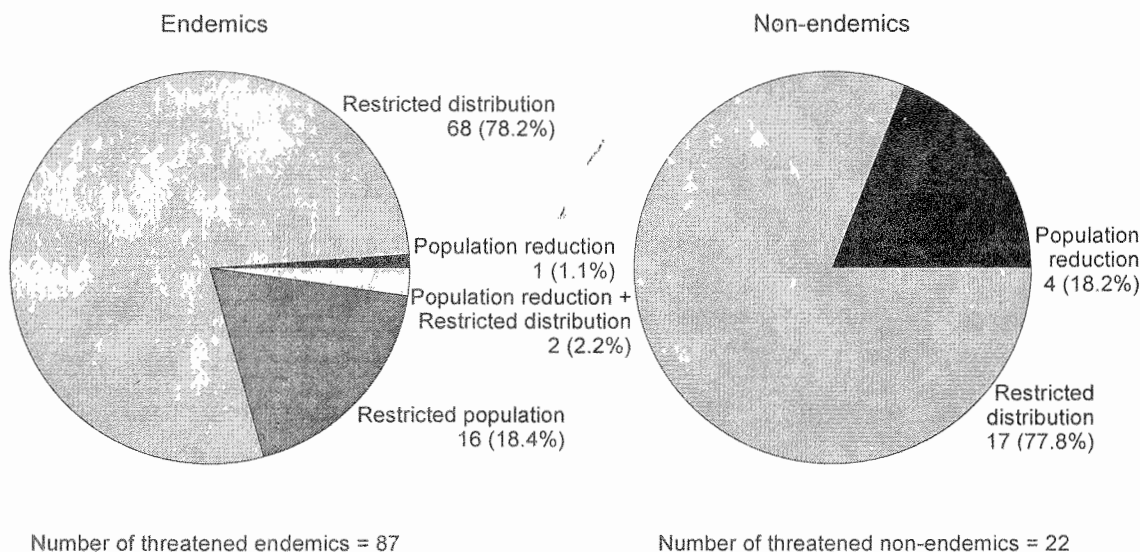
the extent of occurrence, area of occupancy or quality of habitat has been easier to determine because of the threats to the taxa. Hence, threat assessments combined with limited locations for various taxa have been based on this.

Human interference (man-made fires, logging, grazing, etc.) has taken a large toll of amphibian populations. Dramatic losses of habitat has taken place which has led to reduction in areas of occupancy, distributional ranges and habitat structure. Pesticides and pollution is a matter of concern with respect to amphibians but is not yet well studied or documented.

Most of the researchers confirmed that amphibian survival is susceptible to changes in the water and soil conditions. These could also be added to the list of threats after more systematic study and monitoring to fully understand the effects.

Although it has been documented in other countries that excessive ultra violet radiation and parasites have had an adverse effect on amphibians, due to lack of studies in India, however, these effects cannot be documented and threats in this exercise are more direct than abstract.

### Criteria used for assessing endemic and non-endemic taxa



### Threats affecting amphibian taxa

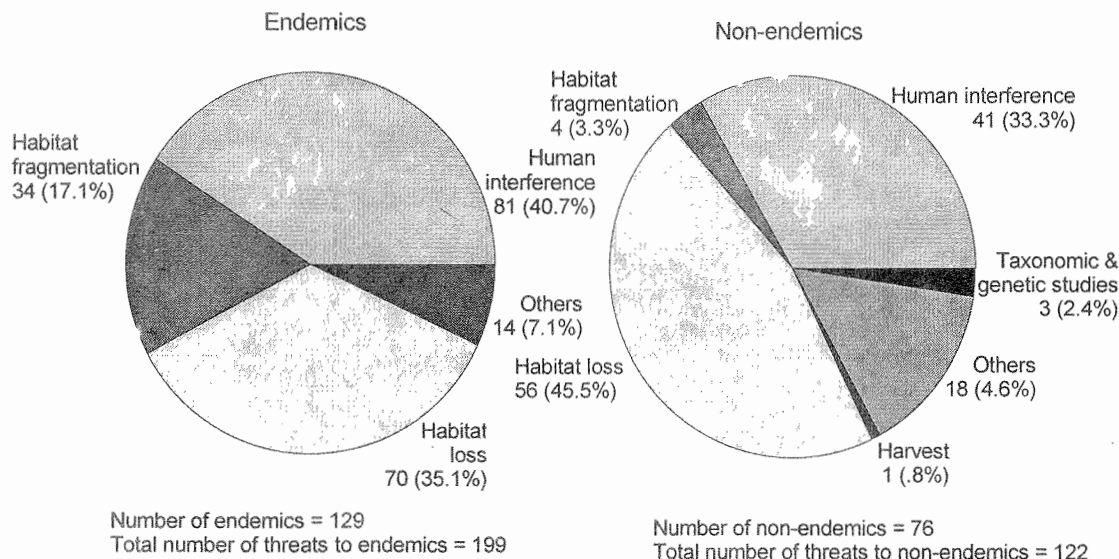


Table 3. Threat and status information

| Species                            | Threats                                                                        | IUCN  |
|------------------------------------|--------------------------------------------------------------------------------|-------|
| <b>AMPHIBIANS ENDEMIC TO INDIA</b> |                                                                                |       |
| <i>Ansonia krambei</i>             | Unknown                                                                        | DD    |
| <i>Ansonia ornata</i>              | Human interference                                                             | EN    |
| <i>Ansonia rubigina</i>            | Human interference, Loss of habitat                                            | EN    |
| <i>Bufo abatus</i>                 | Unknown                                                                        | DD    |
| <i>Bufo beddomii</i>               | Human interference                                                             | LR-lc |
| <i>Bufo brevirostris</i>           | Human interference                                                             | DD    |
| <i>Bufo camortensis</i>            | No                                                                             | VU    |
| <i>Bufo hololius</i>               | Loss of habitat, Human interference                                            | LR-nt |
| <i>Bufo koynayensis</i>            | Human interference, Loss of habitat                                            | EN    |
| <i>Bufo parietalis</i>             | Loss of habitat, Fragmentation, Human interference                             | LR-nt |
| <i>Bufo silentvalleyensis</i>      | Unknown                                                                        | VU    |
| <i>Bufoides meghalayanus</i>       | Loss of habitat, Human interference                                            | CR    |
| <i>Chirixalus dudhwaensis</i>      | Unknown                                                                        | VU    |
| <i>Euphyctis ghoshi</i>            | Loss of habitat                                                                | EN    |
| <i>Gegeneophis carnosus</i>        | Human interference                                                             | VU    |
| <i>Gegeneophis fulleri</i>         | Loss of habitat, Human interference                                            | VU    |
| <i>Gegeneophis ramsawamii</i>      | Loss of habitat, Human interference                                            | EN    |
| <i>Ichthyophis beddomei</i>        | Human interference, Edaphic factors, Pollution, Loss of habitat, Fragmentation | VU    |
| <i>Ichthyophis bombayensis</i>     | Edaphic factors, Loss of habitat, Human interference                           | EN    |
| <i>Ichthyophis longicephalus</i>   | Human interference                                                             | VU    |
| <i>Ichthyophis malabarensis</i>    | Human interference, Edaphic factors, Loss of habitat, Fragmentation            | VU    |
| <i>Ichthyophis peninsularis</i>    | Loss of habitat, Human interference                                            | VU    |
| <i>Ichthyophis sikkimensis</i>     | Loss of habitat, Human interference                                            | VU    |
| <i>Ichthyophis subterrestris</i>   | Human interference                                                             | VU    |
| <i>Ichthyophis tricolor</i>        | Human interference, Loss of habitat, Fragmentation                             | EN    |
| <i>Indirana beddomii</i>           | Loss of habitat, Fragmentation, Human interference                             | VU    |
| <i>Indirana brachytarsus</i>       | Loss of habitat, Fragmentation, Human interference                             | VU    |
| <i>Indirana diplostictus</i>       | Loss of habitat                                                                | VU    |
| <i>Indirana gundia</i>             | Loss of habitat                                                                | DD    |
| <i>Indirana leithii</i>            | Loss of habitat, Fragmentation, Human interference                             | LR-nt |
| <i>Indirana leptodactylus</i>      | Human interference, Fragmentation                                              | VU    |
| <i>Indirana phrynoderma</i>        |                                                                                | NE    |
| <i>Indirana semipalmatus</i>       | Loss of habitat, Fragmentation                                                 | VU    |
| <i>Indirana tenuilingua</i>        | Unknown                                                                        | DD    |
| <i>Indotyphlus battersbyi</i>      | Human interference, Loss of habitat                                            | CR    |
| <i>Kaloula baleata ghoshi</i>      | No                                                                             | VU    |
| <i>Limnonectes andamanensis</i>    | No                                                                             | LR-lc |
| <i>Limnonectes brevipalmatus</i>   | Loss of habitat, Fragmentation, Human interference                             | LR-nt |
| <i>Limnonectes keralensis</i>      | Human interference, Pollution, Fragmentation                                   | LR-nt |
| <i>Limnonectes khasiensis</i>      | Unknown                                                                        | DD    |
| <i>Limnonectes mawlyndipi</i>      | Loss of habitat                                                                | CR    |
| <i>Limnonectes mawphlangensis</i>  | Loss of habitat, Human interference                                            | CR    |
| <i>Limnonectes murthii</i>         | Human interference                                                             | EN    |
| <i>Limnonectes mysorensis</i>      | Human interference, Loss of habitat                                            | CR    |
| <i>Limnonectes nilagirica</i>      | Loss of habitat, Human interference                                            | EN    |
| <i>Limnonectes sauriceps</i>       | Unknown                                                                        | DD    |
| <i>Limnonectes shompenorum</i>     | Loss of habitat, Human interference                                            | EN    |
| <i>Megophrys robusta</i>           | Loss of habitat                                                                | EN    |
| <i>Melanobatrachus indicus</i>     | Human interference                                                             | VU    |
| <i>Micrixalus fuscus</i>           | Loss of habitat, Fragmentation, Human interference                             | LR-nt |
| <i>Micrixalus gadgili</i>          | Loss of habitat, Human interference, Fragmentation                             | EN    |
| <i>Micrixalus nudis</i>            | Human interference, Loss of habitat, Fragmentation                             | VU    |
| <i>Micrixalus phyllophilus</i>     | Loss of habitat, Fragmentation, Human interference                             | VU    |
| <i>Micrixalus saxicola</i>         | Loss of habitat, Human interference, Fragmentation                             | LR-nt |
| <i>Micrixalus silvaticus</i>       | Loss of habitat, Human interference, Fragmentation                             | VU    |
| <i>Micrixalus thampii</i>          | Human interference, Pollution, Loss of habitat                                 | EN    |
| <i>Microhyla chakrapani</i>        | No                                                                             | VU    |
| <i>Nyctibatrachus aliciae</i>      | Human interference                                                             | VU    |
| <i>Nyctibatrachus beddomii</i>     | Loss of habitat, Human interference, Fragmentation                             | LR-nt |

| Species                               | Threats                                                                  | IUCN  |
|---------------------------------------|--------------------------------------------------------------------------|-------|
| <i>Nyctibatrachus deccanensis</i>     | Human interference                                                       | VU    |
| <i>Nyctibatrachus humayuni</i>        | Human interference, Pollution, Loss of habitat, Fragmentation            | EN    |
| <i>Nyctibatrachus kempholeyensis</i>  | Unknown                                                                  | DD    |
| <i>Nyctibatrachus major</i>           | Pollution, Edaphic factors, Human interference, Siltation, Fragmentation | LR-nt |
| <i>Nyctibatrachus minor</i>           | Human interference, Pollution,                                           | VU    |
| <i>Nyctibatrachus sanctipalustris</i> | Human interference, Loss of habitat, Fragmentation                       | EN    |
| <i>Nyctibatrachus sylvaticus</i>      | Unknown                                                                  | DD    |
| <i>Pedostibes kemp</i>                | Loss of habitat, Human interference                                      | CR    |
| <i>Pedostibes tuberculosus</i>        | Human interference, Fragmentation                                        | VU    |
| <i>Philautus beddomii</i>             | Loss of habitat, Human interference, Fragmentation                       | VU    |
| <i>Philautus bombayensis</i>          | Human interference, Fragmentation                                        | EN    |
| <i>Philautus chalazodes</i>           | Human interference, Fragmentation                                        | VU    |
| <i>Philautus charius</i>              | Loss of habitat, Fragmentation, Human interference                       | LR-nt |
| <i>Philautus cherrapunjiae</i>        | Loss of habitat, Human interference                                      | EN    |
| <i>Philautus crnri</i>                | Unknown                                                                  | DD    |
| <i>Philautus elegans</i>              | Unknown                                                                  | DD    |
| <i>Philautus flaviventris</i>         | Unknown                                                                  | DD    |
| <i>Philautus garo</i>                 | Loss of habitat, Human interference                                      | CR    |
| <i>Philautus glandulosus</i>          | Human interference, Loss of habitat, Fragmentation                       | VU    |
| <i>Philautus hassanensis</i>          | Unknown                                                                  | DD    |
| <i>Philautus kempiae</i>              | Loss of habitat, Human interference                                      | CR    |
| <i>Philautus kottigeharensis</i>      | Unknown                                                                  | DD    |
| <i>Philautus leucorhinus</i>          | Loss of habitat, Human interference, Fragmentation                       | LR-nt |
| <i>Philautus melanensis</i>           | Unknown                                                                  | DD    |
| <i>Philautus namdaphaensis</i>        | Loss of habitat, Human interference                                      | VU    |
| <i>Philautus narainensis</i>          | Unknown                                                                  | DD    |
| <i>Philautus nobeli</i>               | Unknown                                                                  | DD    |
| <i>Philautus parkeri</i>              | Unknown                                                                  | DD    |
| <i>Philautus pulcherimus</i>          | Human interference                                                       | VU    |
| <i>Philautus shillongensis</i>        | Loss of habitat, Human interference                                      | CR    |
| <i>Philautus shyamrupus</i>           | Loss of habitat                                                          | VU    |
| <i>Philautus signatus</i>             | Pollution                                                                | VU    |
| <i>Philautus swamianus</i>            | Unknown                                                                  | DD    |
| <i>Philautus temporalis</i>           | Human interference                                                       | EN    |
| <i>Philautus travancoricus</i>        | Unknown                                                                  | DD    |
| <i>Philautus variabilis</i>           | Human interference, Loss of habitat                                      | LR-nt |
| <i>Phrynoglossus borealis</i>         | Loss of habitat                                                          | EN    |
| <i>Polypedates cruciger</i>           | Human interference, Loss of habitat                                      | VU    |
| <i>Polypedates insularis</i>          | Loss of habitat, Human interference                                      | EN    |
| <i>Ramanella anamalaiensis</i>        | Unknown                                                                  | DD    |
| <i>Ramanella minor</i>                | Unknown                                                                  | DD    |
| <i>Ramanella montana</i>              | Loss of habitat, Human interference, Fragmentation                       | LR-nt |
| <i>Ramanella mormorata</i>            | Loss of habitat, Human interference                                      | VU    |
| <i>Ramanella triangularis</i>         | Human interference, Fragmentation, Loss of habitat                       | VU    |
| <i>Rana aurantiaca</i>                | Human interference                                                       | LR-nt |
| <i>Rana curtipes</i>                  | Human interference, Loss of habitat, Road kills                          | LR-nt |
| <i>Rana danieli</i>                   | Loss of habitat, Human interference                                      | LR-nt |
| <i>Rana garoensis</i>                 | Loss of habitat                                                          | EN    |
| <i>Rana khare</i>                     | Loss of habitat                                                          | EN    |
| <i>Rana malabarica</i>                | Loss of habitat, Fragmentation, Human interference                       | LR-nt |
| <i>Rana senchalensis</i>              | Loss of habitat                                                          | CR    |
| <i>Rana travancorica</i>              | Unknown                                                                  | DD    |
| <i>Rhacophorus calcadensis</i>        | Unknown                                                                  | DD    |
| <i>Rhacophorus jerdoni</i>            | Loss of habitat, Human interference                                      | VU    |
| <i>Rhacophorus lateralis</i>          | Human interference                                                       | EN    |
| <i>Rhacophorus malabaricus</i>        | Loss of habitat, Human interference                                      | LR-nt |
| <i>Rhacophorus namdaphaensis</i>      | Loss of habitat                                                          | VU    |
| <i>Rhacophorus naso</i>               | Unknown                                                                  | DD    |
| <i>Rhacophorus pleurostictus</i>      | Loss of habitat, Human interference                                      | VU    |
| <i>Rhacophorus taeniatus</i>          | Loss of habitat, Human interference                                      | LR-nt |
| <i>Rhacophorus tuberculatus</i>       | Loss of habitat                                                          | LR-nt |
| <i>Scutiger occidentalis</i>          | Unknown                                                                  | DD    |
| <i>Tomopterna dobsonii</i>            |                                                                          | NE    |

| Species                                              | Threats                                                                                            | IUCN  |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------|
| <i>Tomopterna leucorhynchus</i>                      | Unknown                                                                                            | DD    |
| <i>Tomopterna parambikulamana</i>                    | Unknown                                                                                            | DD    |
| <i>Tomopterna rufescens</i>                          | Human interference, Loss of habitat, Fragmentation                                                 | LR-nt |
| <i>Uraeotyphlus malabaricus</i>                      | Loss of habitat, Human interference                                                                | EN    |
| <i>Uraeotyphlus menoni</i>                           | Human interference                                                                                 | VU    |
| <i>Uraeotyphlus narayani</i>                         | Human interference, Loss of habitat, Fragmentation                                                 | VU    |
| <i>Uraeotyphlus oxyurus</i>                          | Human interference, Fragmentation                                                                  | VU    |
| <b>AMPHIBIANS OCCURRING IN INDIA BUT NOT ENDEMIC</b> |                                                                                                    |       |
| <i>Amolops afghanus</i>                              | Loss of habitat, Human interference                                                                | LR-nt |
| <i>Amolops formosus</i>                              | Loss of habitat, Pollution, Human interference                                                     | LR-nt |
| <i>Amolops gerbillus</i>                             | Loss of habitat, Human interference                                                                | LR-nt |
| <i>Amolops monticola</i>                             | Loss of habitat, Human interference                                                                | EN    |
| <i>Bufo fergusonii</i>                               | No                                                                                                 | LR-lc |
| <i>Bufo himalayanus</i>                              | Loss of habitat, Human interference                                                                | LR-nt |
| <i>Bufo latastii</i>                                 | No                                                                                                 | LR-lc |
| <i>Bufo melanostictus</i>                            | Hunting for medicine, Loss of habitat, Human interference, Pesticides                              | VU    |
| <i>Bufo microtympanum</i>                            | Loss of habitat, Human interference, Fragmentation                                                 | LR-nt |
| <i>Bufo stomaticus</i>                               | Human interference                                                                                 | LR-nt |
| <i>Bufo stuarti</i>                                  | Loss of habitat, Human interference                                                                | LR-nt |
| <i>Bufo viridis</i>                                  | Unknown                                                                                            | DD    |
| <i>Chaparana sikimensis</i>                          | Loss of habitat, Human interference                                                                | LR-nt |
| <i>Chirixalus doriae</i>                             | Loss of habitat, Human interference                                                                | EN    |
| <i>Chirixalus simus</i>                              | Loss of habitat                                                                                    | EN    |
| <i>Chirixalus vittatus</i>                           | Loss of habitat, Human interference                                                                | EN    |
| <i>Euphlyctis cyanophlyctis</i>                      | Pesticides, Human interference, Loss of habitat, Poisoning, Fragmentation, Pollution               | LR-nt |
| <i>Euphlyctis hexadactylus</i>                       | Trade, Loss of habitat, Pesticides, Hunting, Pollution                                             | LR-nt |
| <i>Hoplobatrachus crassus</i>                        | Human interference, Loss of habitat, Predation                                                     | LR-nt |
| <i>Hoplobatrachus tigerinus</i>                      | Pollution, Pesticides, Hunting for medicine, Trade for parts, Hunting for food, Human interference | VU    |
| <i>Hyla annectans</i>                                | Loss of habitat, Human interference, Fragmentation                                                 | LR-nt |
| <i>Kaloula taprobanica</i>                           | Loss of habitat                                                                                    | LR-nt |
| <i>Leptobrachium hasseltii</i>                       | Loss of habitat, Human interference                                                                | EN    |
| <i>Limnonectes cancrivorus</i>                       | No                                                                                                 | LR-lc |
| <i>Limnonectes doriae</i>                            | No                                                                                                 | VU    |
| <i>Limnonectes limnocharis</i>                       | Loss of habitat, Human interference, Pesticides, Fragmentation, Hunting, Decline in prey species   | VU    |
| <i>Limnonectes syhadrensis</i>                       | Loss of habitat, Human interference                                                                | LR-nt |
| <i>Megophrys boettgeri</i>                           | Loss of habitat, Human interference                                                                | LR-nt |
| <i>Megophrys kempii</i>                              | Loss of habitat, Human interference                                                                | EN    |
| <i>Megophrys lateralis</i>                           | Loss of habitat                                                                                    | DD    |
| <i>Megophrys montana</i>                             | Loss of habitat, Human interference                                                                | EN    |
| <i>Megophrys parva</i>                               | Loss of habitat, Human interference                                                                | LR-nt |
| <i>Microhyla berdmorei</i>                           | Loss of habitat, Human interference                                                                | LR-nt |
| <i>Microhyla heymonsi</i>                            | Loss of habitat                                                                                    | EN    |
| <i>Microhyla ornata</i>                              | No                                                                                                 | LR-lc |
| <i>Microhyla rubra</i>                               | Loss of habitat, Human interference                                                                | LR-nt |
| <i>Micryletta inornata</i>                           | Loss of habitat, Human interference                                                                | EN    |
| <i>Nytixalus moloch</i>                              | Loss of habitat, Human interference                                                                | EN    |
| <i>Occidozyga lima</i>                               | Unknown                                                                                            | DD    |
| <i>Paa annandalii</i>                                | Loss of habitat, Human interference                                                                | EN    |
| <i>Paa blanfordii</i>                                | Loss of habitat                                                                                    | LR-nt |
| <i>Paa hazarensis</i>                                | Unknown                                                                                            | DD    |
| <i>Paa liebigii</i>                                  | Loss of habitat, Human interference                                                                | LR-nt |
| <i>Paa minica</i>                                    | Loss of habitat                                                                                    | DD    |
| <i>Paa sternostagnata</i>                            | Unknown                                                                                            | DD    |
| <i>Paa vicina</i>                                    | Loss of habitat                                                                                    | DD    |
| <i>Philautus andersonii</i>                          | Loss of habitat, Human interference                                                                | En    |
| <i>Philautus annandalii</i>                          | Loss of habitat                                                                                    | LR-nt |
| <i>Philautus nasutus</i>                             | Human interference                                                                                 | NE    |
| <i>Pleurodeles verrucosus</i>                        | Loss of habitat, Trade, Human interference, Edaphic factors                                        | EN    |
| <i>Polypedates leucomystax</i>                       | No                                                                                                 | LR-lc |
| <i>Polypedates maculatus himalayensis</i>            | Loss of habitat, Human interference                                                                | EN    |



| Species                                | Threats                             | IUCN  |
|----------------------------------------|-------------------------------------|-------|
| <i>Polypedates maculatus maculatus</i> | Unknown                             | LR-lc |
| <i>Ramanella variegata</i>             | Loss of habitat                     | LR-nt |
| <i>Rana alticola</i>                   | Loss of habit, Human interference   | LR-nt |
| <i>Rana assamensis</i>                 | Loss of habitat, Human interference | LR-nt |
| <i>Rana chalconota</i>                 | Loss of habitat, Human interference | EN    |
| <i>Rana erythraea</i>                  | Loss of habitat, Human interference | LR-nt |
| <i>Rana leptoglossa</i>                | Loss of habitat, Human interference | EN    |
| <i>Rana livida</i>                     | Loss of habitat, Human interference | LR-nt |
| <i>Rana nicobarensis</i>               | Loss of habitat, Human interference | LR-nt |
| <i>Rana nigrovittata</i>               | Loss of habitat, Human interference | EN    |
| <i>Rana taipehensis</i>                | Loss of habitat                     | LR-nt |
| <i>Rhacophorus appendiculatus</i>      | Unknown                             | DD    |
| <i>Rhacophorus bipunctatus</i>         | Loss of habitat                     | LR-nt |
| <i>Rhacophorus bisacculus</i>          | Loss of habitat                     | EN    |
| <i>Rhacophorus maximus</i>             | Loss of habitat                     | LR-nt |
| <i>Rhacophorus nigropalmatus</i>       | Unknown                             | DD    |
| <i>Rhacophorus reinwardtii</i>         | Loss of habitat                     | LR-nt |
| <i>Scutiger nyingchinesis</i>          | Unknown                             | LR-nt |
| <i>Scutiger sikimensis</i>             | Loss of habitat                     | LR-nt |
| <i>Taylorana hascheana</i>             | Unknown                             | DD    |
| <i>Theloderma asper</i>                | Unknown                             | DD    |
| <i>Tomopterna rolandae</i>             | Loss of habitat                     | LR-nt |
| <i>Uperodon globulosus</i>             | Loss of habitat                     | LR-nt |
| <i>Uperodon systoma</i>                | Loss of habitat                     | LR-nt |

### Data quality

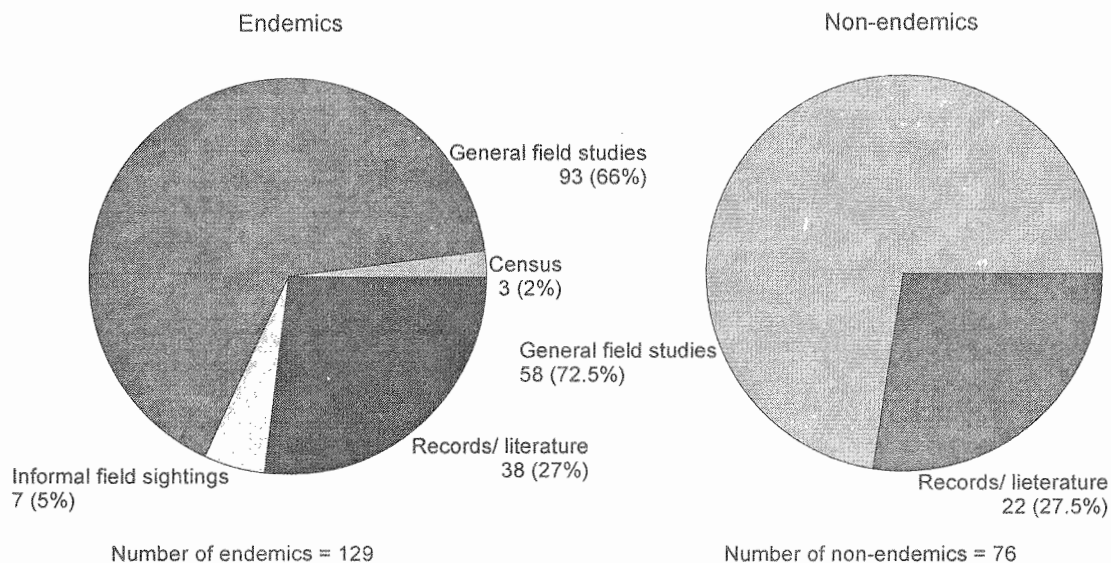
There is a tendency among scientists to be very conservative in their approach unless a very systematic study has been done and the results published. Initially, it was feared that it would not be possible to assess many of the Indian amphibians as a result. It was felt that not much was known on Indian amphibians because of lack of extensive monitoring or field studies. However, most of the assessments could be based primarily on the habitat structure and enough information was available. This was due to studies conducted in those areas either for amphibians or for other taxa. Therefore, participants based 66% of assessments for endemics and 72.5 % for non-endemics on General field studies.

In almost all of the remaining assessments for all amphibians, particularly where information regarding the validity of the species was not available (e.g. C.R.N. Rao and Ahl species) information was obtained only from records and literature.

The IUCN guidelines for assessment clearly suggest a "conservative" approach in favour of the taxa, e.g.

"... the absence of high quality data should not deter attempts at applying the criteria, as methods involving estimation, inference and projection are emphasized to be acceptable throughout. Inference and projection may be based on extrapolation of current or potential threats into the future (including dependence on other taxa), so factors related to population abundance or distribution (including dependence on other taxa), so long as these can reasonably be supported. Suspected or inferred patterns in either the recent past, present or near future can be based on any of a series of related factors, and these factors should be specified. Taxa at risk from threats posed by future events of low probability but with severe consequences (catastrophes) should be identified by the criteria (e.g. small distribution, few locations). Some threats need to be identified particularly early, and appropriate actions taken, because their effects may be irreversible, or nearly so (pathogens, invasive organisms, hybridization)".

### Data quality



An exercise to determine the status of any taxon, particularly in the first instant, should not be de-railed by a lack of hard information. Thorough, all-encompassing hard data is impossible to gather for even a single taxon. The time required to gather such detailed information actually could delay conservation measures for threatened taxa. For many groups of organisms there is not even a complete checklist, so any effort to put together what is known by ALL people studying these groups is a valid starting point from which other, more complete and accurate, exercises can be planned.

The combination of elements which make up a CAMP workshop such as group effort of researchers and associated specialists, a neutral working environment, objective facilitation, good faith and good intentions can provide informed advice for conservation action planning. The results of this Workshop are the outcome of such an exercise

### Conservation action and recommendations

The previous section dealt with the different values used in the IUCN categories for assessing taxa. This section concerns conservation action to insure the survival of the taxa in the long term, and their habitat. Conservation action can take many forms, of which keeping the habitat inviolate may be the best way of insuring survival of taxa. However, for some species habitat protection alone may not be sufficient. Constant pressure on habitat and individual taxa has forced many taxa into small, isolated or fragmented populations, which can result in a steady decline in numbers, genetic viability and general fitness, or what is called an "extinction vortex". To overcome these complications and avoid extinction, corrective actions need to be taken up, intensively and aggressively.

Table 4 summarises the various conservation actions recommended for the taxa. Since knowledge of species distribution is not nearly adequate, participants recommended Survey more than any other action, for more than 50% of the amphibians assessed. For taxa whose extent of occurrence far exceeded the area of occupancy, the recommendation was for more surveys within the range as to identify other areas of distribution. Since population studies are lacking and trends in amphibian populations need detailed studies, Monitoring also was recommended for many taxa. Other conservation actions recommended were habitat management, taxonomic and genetics

studies, limited factor research, life history studies, genetic management and population and habitat viability assessment studies.

### Captive breeding and level of difficulty

Captive breeding recommendations are at 4 levels, Level 1, 2, 3 and 4 (see definition end of this report). Level 1 is for taxa to be interactively managed *in situ* and *ex situ* so as to retain 90% genetic diversity for 100 years. Level 2 is for *ex situ* populations to be infused with fresh genetic material from the wild so as to retain sufficient diversity. Level 3 is not for conservation but only for education, husbandry and research. Level 4 is for commercial and sustainable utilisation.

Of the threatened taxa, only 57 endemic taxa and 17 non-endemic taxa were recommended for captive breeding. Within the recommendations, however, captive breeding for education, research and husbandry were encouraged more than for conservation. Not a single taxon was recommended for sustainable harvest including the species that were previously exported in the frog leg trade.

One of the reasons for not recommending captive breeding for conservation could be the fact that breeding techniques are not known. Participants could identify only 18 (8 endemic and 10 non-endemic) out of 205 taxa for which captive breeding technology was well known. Until last year, no zoo in India kept any amphibian, even for exhibition. This is clearly a good reason for such poor knowledge. Scattered efforts have been made in the past mostly in laboratories where common species have been kept or bred. In recent times, only the Coimbatore Zoological Park and Conservation Centre has taken up maintenance of amphibians in captivity. They have been successful in breeding some species.

It is unfortunate that captive breeding is so poorly known and misunderstood. Amphibians are small and harmless to man. They are relatively easy to maintain and breed in captivity and are not expensive. They are a group of organisms for which reintroduction could be a real possibility. Considering the rapidity and scope of amphibian decline and the percentage of threatened amphibians, captive breeding could provide a degree of security with minimal cost and danger, either to animal or man.

### Research and management recommendations

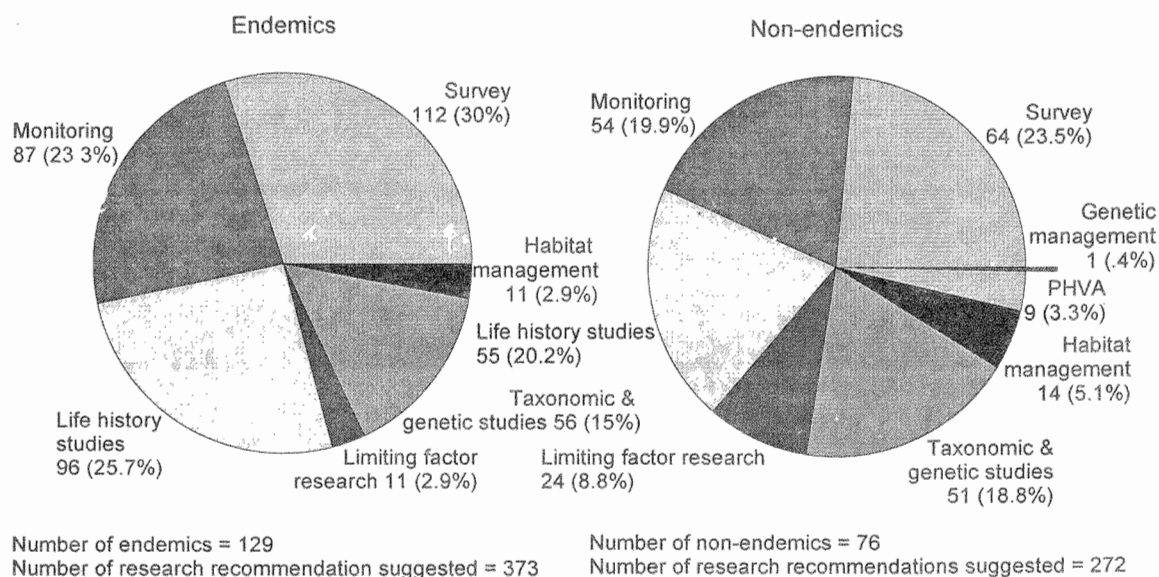


Table 4. Research recommendations as suggested for the assessed taxa

|                                                     | T  | S  | M  | G | H | Hm | Lm | Lr | Lh | P | O |
|-----------------------------------------------------|----|----|----|---|---|----|----|----|----|---|---|
| <b>AMPHIBIANS ENDEMIC TO INDIA</b>                  |    |    |    |   |   |    |    |    |    |   |   |
| CR                                                  | 6  | 10 | 9  | - | - | 1  | -  | -  | 9  | - | - |
| EN                                                  | 13 | 24 | 21 | - | - | 1  | -  | 1  | 21 | - | - |
| VU                                                  | 18 | 39 | 35 | - | - | 6  | -  | 6  | 33 | - | - |
| LR-nt                                               | 7  | 11 | 19 | - | - | 3  | -  | 4  | 16 | - | - |
| LR-lc                                               | 1  | -  | 1  | - | - | -  | -  | -  | 1  | - | - |
| DD                                                  | 11 | 28 | 2  | - | - | -  | -  | -  | 16 | - | - |
| NE                                                  | -  | -  | -  | - | - | -  | -  | -  | -  | - | - |
| <b>AMPHIBIANS OCCURING IN INDIA BUT NOT ENDEMIC</b> |    |    |    |   |   |    |    |    |    |   |   |
| CR                                                  | -  | -  | -  | - | - | -  | -  | -  | -  | - | - |
| EN                                                  | 14 | 18 | 12 | - | - | 3  | -  | 3  | 14 | 7 | - |
| VU                                                  | 2  | 3  | 4  | 1 | - | 3  | -  | 1  | 3  | - | - |
| LR-nt                                               | 25 | 29 | 31 | - | - | 8  | -  | 19 | 30 | 2 | - |
| LR-lc                                               | 5  | 3  | 4  | - | - | -  | -  | -  | 4  | - | - |
| DD                                                  | -  | 10 | 3  | - | - | -  | -  | 1  | 4  | - | - |
| NE                                                  | 1  | 1  | -  | - | - | -  | -  | -  | -  | - | - |

Table 5. Captive breeding recommendations for Indian amphibians

| Captive Breeding                                    | Level 1 | Level 2 | Level 3 | Level 4 | Pending | No |
|-----------------------------------------------------|---------|---------|---------|---------|---------|----|
| <b>AMPHIBIANS ENDEMIC TO INDIA</b>                  |         |         |         |         |         |    |
| CR                                                  | -       | 8       | -       | -       | -       | 2  |
| EN                                                  | 1       | 16      | -       | -       | 4       | 5  |
| VU                                                  | -       | -       | 29      | -       | 2       | 11 |
| LRnt                                                | -       | -       | 1       | -       | 1       | 19 |
| LRlc                                                | -       | -       | -       | -       | -       | 2  |
| DD                                                  | -       | 1       | 1       | -       | -       | 26 |
| NE                                                  | -       | -       | -       | -       | -       | -  |
| <b>AMPHIBIANS OCCURING IN INDIA BUT NOT ENDEMIC</b> |         |         |         |         |         |    |
| CR                                                  | -       | -       | -       | -       | -       | -  |
| EN                                                  | -       | 7       | 1       | -       | 2       | 8  |
| VU                                                  | -       | -       | 2       | -       | -       | 1  |
| LRnt                                                | -       | -       | 7       | -       | -       | 29 |
| LRlc                                                | -       | -       | -       | -       | -       | 6  |
| DD                                                  | -       | -       | -       | -       | -       | 11 |
| NE                                                  | -       | -       | -       | -       | -       | 1  |

Table 6. Level of difficulty in breeding amphibians in captivity

| Level of difficulty                | Level 1 | Level 2 | Level 3 | Unknown |
|------------------------------------|---------|---------|---------|---------|
| <b>AMPHIBIANS ENDEMIC TO INDIA</b> |         |         |         |         |
| CR                                 | -       | -       | 1       | 9       |
| EN                                 | -       | -       | 1       | 23      |
| VU                                 | -       | 2       | 3       | 37      |
| LRnt                               | -       | -       | 1       | 20      |
| LRlc                               | -       | -       | -       | 2       |
| DD                                 | -       | -       | -       | 28      |
| NE                                 | -       | -       | -       | -       |

| Level of difficulty                                  | Level 1 | Level 2 | Level 3 | Unknown |
|------------------------------------------------------|---------|---------|---------|---------|
| <b>AMPHIBIANS OCCURRING IN INDIA BUT NOT ENDEMIC</b> |         |         |         |         |
| CR                                                   | -       | -       | -       | -       |
| EN                                                   | 1       | -       | -       | 17      |
| VU                                                   | 3       | -       | -       | 1       |
| LRnt                                                 | 2       | 2       | -       | 33      |
| LRlc                                                 | -       | -       | 1       | 5       |
| DD                                                   | -       | -       | -       | 10      |
| NE                                                   | -       | -       | 1       | -       |

### Special issue working groups

Special working groups were formed at the workshop to discuss issues of importance in the context of assessing and conserving amphibians. Three groups were formed for subjects such as 1. Taxonomy and nomenclature, 2. Education and awareness, 3. Captive breeding of amphibians and 4. Strategies for field methods. The working group reports are presented below.

### Nomenclature working group

Members: S. Prakash, Recorder; Members: I. Das, S. Dutta, S. Katre, S.V. Krishnamoorthy, A.K. Sarkar, M.S. Ravichandran, S.K. Chandra K. Deuti. Observers: Workshop participants (also contributed in the latter part of the discussion). Facilitators: S. Molur, S. Walker

### Introduction

In recent years, Alan Dubois of Paris Natural History Museums has proposed nomenclatural changes to some amphibians (mostly Ranids) and thereby reinstating old generic names. Dr. S.K. Dutta and Dr. I. Das have taken up that system of nomenclature change, thereby renaming and standardizing taxonomy of Indian Amphibians. The system though valid and rational, is not widely understood by all amphibian researchers in India (and abroad) and therefore has led to confusion and 'chaos' in taxonomy. This working group was set up to tackle that problem and for Dutta and Das to explain at length the rational behind the changes.

Dr. S.K. Dutta stated that the species nomenclature remains unchanged and only generic changes have been proposed, hence, there should not be much concern on this issue. Mr. K. Deuti asked for the reason for the sudden generic change and asked if anyone could propose a change. S.K. Dutta replied that generic nomenclatures are very flexible and if anybody should wish to propose a new genus, he should first publish the report in a peer-reviewed publication.

Dr. S. Katre said that, by and large, non-taxonomists are not so rigid over species nomenclature changes, but there should be a scientific methodology or key available to them for reference and cross-checking, as there is none to date. Dr. I. Das said that species nomenclature are biological in origin and hence very should but the generic changes are man-made. Non-taxonomists should make species identifications from Boulenger's key following the international Code for Zoological Nomenclature rules.

S. Molur pointed out that not everybody had access to the key and hence whatever keys are available should be given for distribution to amphibian workers through the network. S. Dutta, I. Das and P.V. Desai agreed to take up the French translation of Dubois (1986, 1992) for this purpose. S. Walker pointed out that the check lists provided by I. Das and S.K. Dutta before the workshop had some contradictions and it would be helpful if these could be regularized at the workshop itself.

On the question of homonyms raised by Dr. Krishnamurthy, Dr. Das and Dr. Chandra replied that anybody working with any species of frog

research should first get the specimens identified by recognized authority e.g. Zoological Survey of India, Bombay Natural History Society, etc. and also deposit a voucher species and obtain a registration number.

Dr. Bhupathy raised the issue of the minimum number required to describe a new species to which the reply was "preferably six." He also raised a question with regard to the loss of the only type specimen. e.g. how long the nomenclature should be confirmed in the list. The response was that until the concerned species is taxonomically resolved, its validity should not be questioned.

Dr. Katre asked Dr. Dutta to pronounce the name of his proposed name for species, *Philautus crnri* as she felt it was "impossible" to pronounce. However, the species name has been accepted in the existing scientific literature.

A consensus of the core discussion group and the participants was that the proposed scientific nomenclature is accepted and the taxon list should have the latest combination of the valid species name first followed by the original name.

### Captive Breeding working group

Members: P.K. Mullick, A.K. Mondal, P.V. Desai, S. Bhat. I. Das, S.S. Kamble, A.Kumar, S. Walker.

It was agreed by the Workshop participants that captive breeding should be considered for threatened species with due precautions and that a Working Group should be formed to discuss the implications.

It was agreed by the working Group that in the matter of captive breeding the guidelines and policies of the IUCN Conservation Breeding Specialist Group, Reintroduction Specialist Group as well as Indian agencies such as the Central Zoo Authority and Wildlife Institute of India be used when formulating any strategy for captive breeding.

The Working Group identified the following areas of priority:

- edible and other commercially important species (including genetic material)
- ecologically important species including species in pest bio-control
- threatened species such as those identified by the workshop

The following centres were identified (by region) as places which may be interested in taking up systematic, scientific captive propagation programmes in future:

Southern India and Western Ghats of southern India - Coimbatore Zoological Park, Zoological Survey of India, Southern Regional Station, Madras Crocodile Bank, Madras Snake Park, Western Regional Station

Western India and Western Ghats - Goa University, ZSI Western Regional Station



Eastern India - Utkal University, Frog Culture Division of Central Institute of Freshwater Aquaculture (ICAR), at Kalyani, West Bengal  
Northeastern India - North Eastern Hill University, Shillong

Northern India - Agra University, Dayalbagh Educational Institute

Educational Institutions which use amphibians for research and teaching activities should be identified and encouraged to take up captive breeding to sustain their activities.

Resource materials in captive breeding (see below) need to be collected and made available at affordable rate to appropriate institutions.

- Stud book of Indian species in North America and European Zoos
- Collection of literature on captive breeding methodology (including books, papers and manuals) from India and abroad.
- Standardization of technology (included breeding, hatchery management, etc.)
- Specific activities (collection of stock, preparation of hormonal extracts, hatcheries, larval and adult culture)

A few specific points were discussed

- Poly-culture (i.e. culture of several species together)
- Marking animals for individual identification
- Diseases, bacterial and parasite control
- Prioritizing species for captive breeding (using IUCN criteria)
- Reintroduction using Reintroduction Specialist Group guidelines
- Economic feasibility of frog farming for research laboratories and educational institutions to be assessed

Minimum needs of captive propagation programme were discussed with Dr. Mondal giving information from his work Basic steps include

- Collecting breeding stock (captive bred stock wherever possible)
- Acquiring pituitary extracts for induced breeding
- Infrastructural set up
  - Stage 1 - Hatcheries-small room
  - Stage 2 - Tadpole culture - 2 acres
  - Stage 3 - Frog culture - 4-5 acres

(The above is for commercial breeding in great numbers (millions), such as for consumption and export. For conservation breeding the requirements will undoubtedly vary from species to species and situation to situation)

#### **Education working group**

Members: K. Deuti, S.C. Deshpande, R.C. Gupta, M.R. Yadav, S. Sengupta. Observers: K. Mookherjee, B. Kakkar

Conservation Education and Environmental Awareness

##### Policy makers level

- Environmental education camps to be done at rural, urban and zoo level and even for policy makers.
- Policy makers should be encouraged to release funds for conservation education.
- Policy makers to be addressed on larger issues affecting amphibian conservation by influential conservationists or activist campaigns (for examples of such issues, see below)

##### Public level

###### A. Urban

- Popularising amphibians through television (wildlife firms depicting Indian amphibians), cartoon films with animal of "foggy" character, quiz, etc.) radio (frog calls, etc)
- Zoos to exhibit amphibians and sell stickers, posters, leaflets, tee-shirts promoting amphibian protection and conservation and general knowledge of amphibians.

###### B. Rural

- Creating awareness among villagers of the ecological importance of amphibians and their habitats by mass media (television, radio, newspapers, etc) in specific season (cropping season)
- Villagers may be made aware of the ban in frog leg export by environmental awareness camps in local languages.

##### Educational institutions

###### A. Primary school level

- Field and photo guides and colouring books on local amphibians to be produced and distributed among school children.
- Posters (With species and life cycle of frogs and toads) to be made available to children.
- Drawings and essay competitions on frogs to be arranged among school-children and the prize winners be awarded with mementos of frogs such as pins, lockets, tee-shirts, etc.

###### B. Secondary, High School and College levels

- Usage of computer software to demonstrate dissection and minimise number of specimens dissected by students.
- Behavioural studies on amphibians to be included in the curriculum. Students encouraged to do such field studies themselves.
- Nature camps to be organised among students to promote "frog-watching."

Appendix: Issues in amphibian conservation education/activism  
The use of pesticides damage amphibian populations. Integrated pest management and biological control of insect pests or pesticides is preferred. Fertilizers can also cause damage to the micro-environment. While direct contact of developing eggs and early tadpoles doses of fertilizers may show some immediate effects, this is purely of a temporary and transient nature, as its judicious application leads to good growth of phyto- and zooplanktons which for the food of tadpoles. Proper selection of fertilizers and their judicious application need to be investigated to derive the optimum benefits.

Toxic effluents are destructive to amphibian populations and should not be released at random but treated before released into the environment and closely monitored.

Detergents affect the eggs and larvae of amphibians. Manufacturers should be encouraged to print warnings on labels and industries, businesses and domestic establishments encouraged to be mindful of dumping detergents in amphibian habitats.

Fisheries may be educated not to kill frogs as few frogs eat fish fingerlings

Environmental impact assessment can be demanded by conservationists before projects on road construction etc. to be carried out.

#### **Strategies in amphibian research working group**

Members: S. Katre, A. Kumar, I. Das, S.V. Krishnamurthy, S.K. Chanda, A.K. Sarkar, S. Prakash, D.B. Sawarkar, D.K. Mohanta, M.S. Ravichandran, S. Bhupathy

The Working Group discussed strategies in amphibian research and produced the following list of needs and problems.

- There should be better coordination among people for research.
- The Indian Wildlife (Protection) Act should reflect, as much as possible, the results of ongoing and current research and the present assessment.
- As demonstrated by the results of the Workshop there are many Data Deficient species, including a serious lack of surveys, which should be addressed.
- Surveys should be two types



- a. Rarer species quantitative data not required
  - b. Identifying species for quantification of population data
5. Priority to taxonomy of species under complexes categories, e.g. *Limnonectes limnocharis*, *Euphylyctis cyanophlyctis*
  6. Ecological information on microhabitat should be collected
  7. Two kinds of monitoring
    - a. forest reserves
    - b. disturbed areas
  8. Modern tools and techniques should be learned and utilized on priority basis, such as cyto-taxonomy, chemo-taxonomy, molecular genetics, acoustics, etc. A workshop in these techniques is an urgent requirement.
  9. A well maintained/ properly indexed/ and accessible central repository for specimen is required.
  10. Regional voucher collection with audio-video photographs is required.
  11. Bio-information on amphibians is required.
  12. Training workshops on survey, monitoring and identification should be held regularly.
  13. Literature should be categorised and bibliography updated.
  14. Fundraising should be done for doing surveys. Additional funding agencies internationally, nationally, private, NGO should be identified.
  15. Zoo Outreach Organisation should be asked to do the annual abstract of Indian Publications on amphibians.
  16. In the areas where C.N.R. Rao had collected specimen and the type specimen are lost an intensive survey should be made and at night, in the current monsoon. ZSI will provide this help.

## Conclusion

The BCPP Conservation Assessment and Management Plan Workshop for all Indian amphibians was a pioneering effort in several ways. For the first time in India, and perhaps anywhere, a systematic conservation workshop was held for a complete taxon group, which are neither particularly attractive or exciting or in trade. This CAMP shows that

amphibians that are declining all over the world are threatened in India also with more than half the described taxa under threat.

The workshop was also a good exercise in the application of the IUCN Categories, which are meant for all living organisms except micro-organisms. Problems participants had using the categories were communicated to the Review Working Group of the Species Survival Commission, which benefited by our testing the categories on amphibians. Perhaps more important with regard to the IUCN categories, the workshop participants reported that they learned a great deal about conservation biology and population dynamics which would be reflected in the kinds and quality of information they aspired to collect in future field studies.

Several problems of amphibian systematics, research methodology and captive breeding were addressed in the special working groups, as well as the potential for education and awareness regarding amphibians. These working groups proved very useful in solving some of the often-debated subjects such as taxonomy, field methodology and captive breeding.

Perhaps the most useful achievement of the workshop was that it provided a forum and occasion for many amphibian field biologists and taxonomists to get together and discuss status of amphibian taxa in India; some of the researchers being tapped for their knowledge for the first time.

Since the CAMP workshop for Indian amphibians, a request for a CAMP workshop for amphibians of Sri Lanka has been received. The results of the amphibian CAMP for India will be included as part of the Amphibian Action Plan for south Asia being prepared by the South Asian Reptile and Amphibian Specialist Group. This could very well pave the way for similar assessments in other countries for making conservation action plans for amphibians and other taxonomic groups.

## TAXON DATA SHEETS

This Report is incomplete without the Taxon Data Sheets and the Summary Data Table. A Taxon Data Sheet is one where in information regarding the species is included as given by the participants at the workshop. Information includes (as given in the example below) details about species distribution, threats to the habitat, threats to the population, population trends, number of individuals and other important information i.e., require to derive the threat category. For every species, data quality index is also provided to distinguish the kind of information gathered at the workshop, be it through scientific field study, records, indirect information or popular belief. Finally, the Taxon Data Sheets also includes recommendation for research and management action for every species as suggested by participants, which is the outcome of the CAMP process. A Taxon Data Sheet is filled for everyone of the 205 taxa assessed at the workshop, making it a treasure-trove of information on all Amphibians in India, in a single source.

We are unable to publish the two due to their length as they are too long for ZOOS' PRINT. Persons interested in a complete report may write to ZOO/CBSG, India and order it for Rs. 325 (Indians and equivalent for other Asian countries) and \$ 35.00 for people from development countries.

***Bufo parietalis* Boulenger, 1882 – LRnt** -- Family: Bufonidae. Taxonomic status: Species. Habit: Terrestrial. Habitat: Evergreen forests. Global Distribution: ENDEMIC to Western Ghats. Current Regional Distribution: Karnataka, Kerala & Tamil Nadu. - Elevation: 200 -1,400 m. - Range (sq. km): > 20,000. - Area Occupied (sq. km): > 2,000. - Number of locations: > 10 (Silent Valley, Sabarigiri, Ponmudi, Malabar, Cochin Hills, Parambikulam Wildlife Sanctuary, Ooty); Fragmented. Population Trends - % change- % Decline: Not known. - Time / Rate (Yrs or gens): Not known. - No. of Mature Individuals: Not known. Global Population: Widely distributed but fragmented population. Data Quality: General field studies (ZSI SRS 1979-85 in Silent Valley and Sabarigiri; Inger *et al.*, 1982 in Ponmudi). Recent Field Studies: None. Threats: Loss of habitat, Human interference; Loss of habitat due to fragmentation. Trade: No. Other Comments: -- Status- IUCN: LOWER RISK - NEAR THREATENED. - Criteria based on: —. - CITES: No. - IWPA (1972; 91): No. - RDB, National (1994): No. - RDB, International (1996): No. Recommendations- Research management: Survey; Life history studies; Monitoring. - PHVA: No. Captive Breeding Recommendations- Captive breeding: No. - Level of difficulty: Not known. Existing Captive Programs: None. - Names of facilities: —. Sources (Refer Appendix): 27, 62, 172, 190. Compilers: S. Bhat, P.V. Desai, S. Katre, S.V. Krishnamurthy, S.S. Kamble, M.S. Ravichandran, S. Bhupathy, R. Gupta, S.C. Deshpande, A. Kumar.