Red Listing at the Regional Level -- a Conservation Assessment and Management Plan Workshop for South Asian Primates

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Introduction

It is observed that much of the information which goes in international databases and publications is second or third hand information and often outdated. The IUCN Red Data Books and, to a lesser extent, the web based IUCN Red List of Threatened Species, have relied on species data collected from all over the world from individuals and institutions with different methods and definitions of estimating population decline and numbers. Field biologists from the range countries who conduct genuine field studies often have little direct input into such lists.

Even within India, searching for a definitive list and number of species of Indian mammals, reptiles, amphibians, etc. can be a frustrating exercise, with different numbers and species names coming from the different authorities and agencies. Sometimes taxonomic modifications take place which are not reflected in national listings for years.

The Conservation Assessment and Management Plan (CAMP) Workshop, a workshop "process" developed by the IUCN SSC Conservation Breeding Specialist Group, provides a forum for up-to-date listing of species with the aid of taxonomic and field experts from many different institutions. CAMP workshops also provide an opportunity for currently working field biologists to input directly into the IUCN Red List for the species they study.

A CAMP workshop was conducted for South Asian Primates from 5-9 March in Coimbatore at the State Forest Service College. More than 50 field biologists from all over South Asia attended along with four zoo personnel and two IUCN SSC Primate Specialist Group representatives from USA and UK.

Representatives from almost every institution with primate biologists attended. M. S. Pradhan, Dy. Director, ZSI discusses CAMP matters with Sanjay Molur, Red List Advisor.

Primates in zoos in India

There are more than 180 public zoos, mini zoos and deer parks in India and 97 of them hold from one to 8 species of primates. Primates are among the most popular zoo animals due to their similarity to man and their funny, charming behaviour. The total number of individual primates is rather large, 1753, of which 1526 are just four species, Bonnet Macaque (693), Rhesus Macaque (573), Common Langur (149) and Assamese Macaque (111). Seven of the 15 species listed by the Central Zoo Authority are threatened globally with the remainder non-threatened and data deficient. Unfortunately, for conservation breeding programmes, the number of individuals of threatened species in the zoos is very low, while the four listed as most numerous are common, and do not require an organized programme.

At least that was true until this CAMP workshop. With the workshop has come awareness of recent revisions in primate taxonomy and nomenclature which have been evolving for the last

Senior forest officials, e.g. Sri. J.C. Kala, I.F.S., Dr. Sukh Dev, I.F.S., Ms. Sally Walker, Dr. V. Ramakantha (host), and Sri Rakesh Vasisht, I.F.S. paid a very welcome visit to the CAMP to meet participants, hear about the CAMP process and comment on the proceedings.

few years and are still changing. Now, instead of 15 species of primates with Indian distribution there are more species and subspecies defined in different taxonomic systems. The different systems are complicated and erratic but what is true is that the names and taxonomic status currently being used by CZA and others are no longer valid, and require updating.

The taxonomic revisions and a gap of five years between Mammal CAMP of 1997 and today, led CBSG, South Asia and the Primate Specialist Group to organise a CAMP Review. This Review included primates in South Asian countries including India. The Review took advantage of the new information to come out of the long-term Indo-US Primate Project in India, the Smithsonian Project in Sri Lanka and several other small projects (See page 6).

Hear no evil, speak no evil, see no evil. Internationally known primatologists Dr. Ajith Kumar, SACON; Dr. Mewa Singh, Indo-US Primate Proj.; Dr. Rauf Ali, ANET

CAMP Workshop

CAMP is an acronym for Conservation Assessment and Management Plan. It is a workshop "process" rather than an end in itself. Species are assessed on the basis of their current population, distribution, rate of decline, habitat deterioration and threats, all of which change over time, for good or for ill. Thus, having periodic CAMP Reviews is part of the process. Over some years such reviews aid in monitoring taxon groups at many levels, nationally, regionally and globally.

CAMP workshops depend heavily on field biologists and foresters to provide information on the numbers and distribution of species in the target taxon group. Participants prepare for the workshop by returning questionnaires about species using their field notes. The primary goal of a CAMP is an objective, scientific output for the good of the species: this aim creates an atmosphere in which the participants willingly give out information both published and unpublished. One of the premises of a CAMP workshop is that much of the information a field biologist collects remains in his head. Interacting with others triggers his memory and enhances his insight into his field experience. Thus, much data which would go unused otherwise, gets onto paper and computer and into record so that management actions to protect species can be recommended. It also happens that partial information from a few individual field workers may not be enough to draw a conclusion. When these individuals get together, however, and combine their various pieces of data, often it is sufficient to make an assessment and recommendations for conservation action.

The South Asian Primate CAMP was endorsed by the IUCN SSC Primate Specialist Group, the IUCN SSC Conservation Breeding Specialist Group, the Ministry of Environment and Forests, the Regional Biodiversity Programme, Asia and the Indo-US Primate Project. Conservation International, USA, Primate Conservation, Inc., Chester Zoo, North Carolina Zoological Park, Lincoln Park Zoo, Oklahoma City Zoo, Toronto Zoo, the European Association of Zoos and Aquaria and Appenheul Primate Park, Netherlands provided funds for bringing participants from far away places, their upkeep and other expenses.

In the workshop four South Asian countries (India, Nepal, Sri Lanka, Bangladesh) USA and UK were represented by participants attending. Two more South Asian countries, Pakistan and Bhutan, could contribute to the workshop by exchanging emails throughout the exercise. Participants were primarily field biologists working in South Asia, however, primate taxonomist Dr. Douglas Brandon-Jones, Primate Specialist Group Vice-Chair for Asia, Dr. Ardith Eudey, trade expert, Manoj Misra as well as several foresters and zoo managers were also in attendance.

A CAMP workshop is organised and conducted by trained facilitators whose objective is to bring about a participatory, consensual, objective, scientific product. Such an output is appreciated very much by governments in particular but it is also appreciated by the community of scientists working on the target taxa. Every effort is made to provide all field workers an opportunity to participate.

Everything is agreed by consensus in plenary sessions, from deciding the list of species, the taxonomy to be used, the schedule, whether tea, coffee or cold drinks, to the additional subjects to be discussed. There are Ground Rules which insure that agreed goals can be achieved during the workshop. Most of the work takes place in working groups, organized by taxon or region, with participants filling in detailed forms called Taxon Data Sheets. In this workshop the groups were organised by region with a South India group, a North-East Alliance (including NE India, Nepal and Bangladesh), a North-Central group (also included Nepal), and a Sri Lanka group.

After filling in information required in an 8-page Taxon Data Sheet, participants used the IUCN Red List Criteria, explained on the first day of the workshop, to decide a threat category. With their information and the category it was not difficult to make very precise and relevant recommendations for species conservation. Individual

Dr. Douglas Brandon-Jones, Taxonomist, PSG, and Dr. Ardith Eudey, Vice Chair for Asia of PSG. Dr. Brandon-Jones was an excellent advisor and guide for taxonomic issues. Dr. Ardith Eudey, who was involved with the CAMP organisation almost from day one, raised 3/4 of the funds for the workshop and provided excellent guidance. She also conducted a PSG meeting one night during the workshop.

Species Action Plans were drawn up for nearly all species. "Special Issue" Working Groups were formed on the following subjects: Urban monkey problems; Funding Field Studies; Education and Species Conservation Action; *Semnopithecus entellus* Taxonomy; and Conservation Breeding. The Draft report of the Conservation Breeding group is included along with this article in view of this magazine's zoo focus.

A Draft Report containing Taxon Data Sheets for all 45 species and subspecies was given to all participants for vetting. A Report will be brought out incorporating their corrections and comments and widely distributed. With the advantage of having many currently working field biologists from the range of these species, it emerged that there were more threatened species than previously thought. Also the new taxonomic revisions subdivided *Semnopithecus entellus,* so, instead of one species of langur which was of "Least concern", there are many distinct populations of langurs which are threatened and require immediate protection.

In the workshop, 36 of the 45 species and subspecies of primates were categorized as "threatened" as opposed to 28 of 49 species of South Asian primates in the 2000 Red List. The final assessment will be ascertained only after receiving corrected Taxon Data Sheets. There may be about 6 species/ subspecies of South Asian primates categorized as Critically Endangered, 24 Endangered, and 5 Vulnerable under the IUCN Red List Criteria 2001(3.1). Ten species were not threatened or Data Deficient. Being assessed and ranked in any of the IUCN threatened categories implies a relatively high to extremely high risk of extinction in the near or relatively near future.

The output from the workshop will find a place in the IUCN Red List of Threatened Species 2003. This is an appropriate utilisation of information from local field biologists and primate students from South Asia and a credit to their work.

North Central Working Group, South Asian Primate CAMP

North East Alliance Working Group, South Asian Primate CAMP

Sri Lanka Working Group, South Asian Primate CAMP

South India Working Group, South Asian Primate CAMP

The Indo-US Primate Project

Mewa Singh and Rauf Ali consult the map of South Asia

Mewa Singh of the University of Mysore presented a summary information on the objectives, research and extension activities and achievements of the Indo-US Primate Project. The project had its headquarters at JNV University, Jodhpur with regional centers at Mysore, Guwahati, Shimla, Aligarh, Kumbalgarh and Jaipur. In addition to the Director Dr. S.M. Mohnot, the other senior researchers involved in the project were Dr. Mewa Singh, Dr. Arun Srivastava, Dr. Santosh Kumar Sahoo, Dr. G. Umapathy, Dr. M.F. Siddiqi and Dr. Reena Mathur. Several other institutions such as CDFD, CCMB, WII, NIM etc. were also involved in the project.

During this project, research was undertaken on primates of northeastern India. Besides the long-term behavioral studies on several species, the research indicated that the Stump-tailed Macaque was Critically Endangered, Assamese Macaque, Pig-tailed Macaque, Hoolock Gibbon, Capped Langur, Golden Langur and Phayre's Leaf Monkey were Endangered, and the Slow Loris was Data Deficient. Conservation and management suggestions based on research have been proposed.

In the northwestern Himalaya, populations of Rhesus Macaque and Hanuman Langur were studied in high altitudes. It was found that at most of the places, Rhesus Macaques were in serious conflict with humans, especially due to the crop raids by monkeys. Plans have been developed to involve the community in the management of such commensal populations.

In western India, long-term behavioral studies have been conducted on the population of Hanuman Langurs near Jodhpur. The outstanding observations include the fission of troops, social organization, infanticide, population dynamics etc. A detailed ecological and behavioral study on the forest-dwelling Hanuman Langurs was conducted at the Kumbalgarh Wildlife Sanctuary.

Research on several species of primates was undertaken at the southern Indian regional station at Mysore. Surveys and ecological studies were initiated on the nocturnal and solitary Slender Loris in the states of Tamil Nadu and Andhra Pradesh. Several viable populations have been located at Dindigul, Kaundiniya, Tirumala Hills and Seshachalam Hills. Plans for the conservation and management of this little known species have been suggested. The group in south also undertook long term studies on the reproductive biology of the forest-dwelling Lion-tailed Macaques. Many new findings regarding births seasonality, sexual cycles, reproductive behavior of this endangered species are reported. There was no published information available at all on a unique subspecies of the long-tailed macaque in the Nicobar Islands of India. The group at Mysore undertook the surveys and located groups of this species in the Great Nicobar, Little Nicobar and Katchal Islands.

More than 70 research articles have been prepared under the Indo-US Primate Project and 2 books have been published. There were several training programmes and community involvement camps conducted during the project. The major achievement of the project has been the training of a whole lot of young primate biologists throughout the country who would continue primate research in the future. As an outcome of the project, an NGO has been set up at Jodhpur and a research centre under the name Primate Research Centre has been established to coordinate the future research activities on primates.

Mewa Singh also discussed briefly the other major projects undertaken on primates since 1990. These included many major research projects by Ajith Kumar, Mewa Singh, Mridula Singh, K.K. Ramachandran, P.S. Easa, M. Balakrishnan and R.S. Pirta.

Conservation Breeding of Indian Primate Species – Special Issue Working Group - Draft

Keeping in view the classification of primates into various subspecies, it will be appropriate that the Indian zoos prevent breeding of the following species until they can be properly identified : —

1. Bonnet Macaque
2. Common Langur / Grey Langur
3. Assamese Macaque
4. Capped Langur
5. Slender Loris

The animals may be segregated on the basis of morphological differences. The help of a qualified taxonomist, ideally from the IUCN Primate Specialist Group may be taken by the zoos in determining how the animals should be segregated. The help of the Centre for Cellular and Molecular Biology (CCMB), Hyderabad may also be taken for identification of different subspecies, only after a throrough DNA testing of the wild populations have generated identifiable subspecies or population markers.

During the next 3 years time, zoos can be made aware of the new taxonomy and the anomalies in their collection. Priority can be fixed on non-controversial species to be covered under planned breeding programmes. Zoos will also make their visitors aware of the status and importance of different subspecies in their natural habitat and encourage them to support for conservation of the *in situ* population. With respect to other species the details are as follows:

1. Slow Loris *(Nycticebus bengalensis)*
At present 8 zoos in India are displaying 12 (6 males and 6 females) Slow Loris. Out of the 8 zoos, four are located in the animals' habitat area. Assam State Zoo, Guwahati and Sanjay Gandhi Biological Park, Patna has experience in breeding the animals. However due to bad management practices the zoo populations have suffered a higher level of mortality.

Keeping in view the recommentations of the South Asian Primate CAMP and if at all a special conservation breeding programme of the species needs to be initiated for conserving the gene pool, facilities can be created at the zoos located at Guwahati, Itanagar and Patna.

Working Group on Captive Breeding -- South Asian Primate CAMP

Itanagar Zoo is already creating an enclosure on the guidelines of Central Zoo Authority for housing of this species.

Not recommended for Captive Breeding.

2. Stump-tailed Macaque *(Macaca arctoides):*
At present 10 zoos in India are displaying 41 (20 males and 21 females) stump-tailed macaques. Out of the ten zoos, three zoos are located near the animals' habitat. Only a few zoos have a sizeable number, but the sex ratio is skewed. Some of the zoos like Guwahati Zoo and Patna Zoo have bred the species in the past. Though the overall population of the species is satisfactory on the surface, due to their scattered distribution and skewed sex ratio, few zoos can actually breed the animals. Thus, pooling of the animals has to be done in the zoos which are near the animals' habitat, so that if any animal is rescued from the wild or confiscated from traders can be brought to these zoos and involved in the breeding programme.
An appropriately designed enclosure for the species is under way at Guwahati Zoo.

Recommended for Captive Breeding.

3. Pig-tailed Macaque *(Macaca leonina):*
At present 7 zoos in India are displaying 20 (11 males and 9 females) Pig-tailed macaques. Only 2 zoos are located near the habitat of the animal. These 2 zoos alone make up for 14 animals, e.g., 7 males and 7 females, with the rest of them distributed singly in 5 zoos. The Assam State Zoo has been successful in breeding the animal. The present population in the zoos is not sufficient to start a breeding programme, keeping in view that for any such programme at least 20 founder animals would be required. The possibility of assembling an age group of individuals currently in their prime, is also remote. Therefore, help of zoos outside India and the animals rescued from wild areas would be required to initiate a fruitful breeding programme.

Not recommended for Captive Breeding.

4. Lion-tailed Macaque (*Macaca silenus*): 18 zoos in India are displaying Lion-tailed Macaques. Out of these, 10 zoos are located in proximity to the animals' habitat, i.e. the Western Ghats. 50 (28 males and 22 females) animals are on display.

Arignar Anna Zoo, Chennai is the studbook keeper of the species. A

Table I : Taxonomic and nomenclature changes in Primates distributed in India and commonly found in Indian zoological gardens	
Name as listed in CZA Inventory	**Name according to most recently published reference**
(not listed by CZA but with a distribution in India)	*Macaca thibetana* (Milne-Edwards, 1870)
Hylobates hoolock	*Hylobates (?Bunopithecus) hoolock hoolock* (Harlan, 1834) Nominate subspecies in India
Loris tardigradus	
(Loris tardigradus is not used for Indian population at all; now it is only used for the Sri Lankan population. Indian population is *Loris lydekkerianus.*	*Loris lydekkerianus* is split into two subspecies *Loris lydekkerianus lydekkerianus* Cabrera, 1908 *Loris lydekkerianus malabaricus* Wroughton, 1917
Macaca assamensis	Now split into two subspecies *Macaca assamensis assamensis* (McClelland, 1839) *Macaca assamensis pelops* (Hodgson, 1840)
Macaca fascicularis umbrosa	*Macaca fascicularis umbrosa* (Miller, 1902)
Macaca mulatta	Now split into three subspecies *Macaca mulatta mulatta* (Zimmermann, 1780) *Macaca mulatta villosa* (True, 1894) *Macaca mulatta vestita* (Milne-Edwards, 1892)
Macaca nemestrina Indian population is no longer called *Macaca nemestrina*	Now called *Macaca leonina* (Blyth, 1863)
Macaca radiata	Now split into two subspecies *Macaca radiata radiata* (E. Geoffroy, 1812) *Macaca radiata diluta* Pocock, 1931
Macaca silenus	*Macaca silenus* (Linnaeus. 1758)
Macaca speciosa	*Macaca arctoides* (I. Geoffroy, 1831) Name change
Nycticebus coucang This refers to southeast Asian population. Indian population is *Nycticebus bengalensis*	*Nycticebus bengalensis* (Lacépède, 1800)
Semnopithecus entellus	*Semnopithecus* group has been split into seven species: *Semnopithecus entellus entellus* (Dufresne, 1797) *Semnopithecus entellus* subspecies *Semnopithecus ajax* (Pocock, 1928) *Semnopithecus dussumieri* I. Geoffroy, 1843 *Semnopithecus hector* (Pocock, 1928) *Semnopithecus hypoleucos* Blyth, 1841 *Semnopithecus priam* Blyth, 1844 *Semnopithecus schistaceus* Hodgson, 1840
Presbytis geei	*Trachypithecus geei* Khajuaria, 1955
Presbytis johnii	*Trachypithecus johnii* (Fischer, 1829)
Presbytis phayrei	*Trachypithecus phayrei phayrei* (Blyth, 1847) Nominate subspecies in India; Other subspecies in southeast Asia
Presbytis pileatus	*Trachypithecus pileatus* has been split into four subspecies *Trachypithecus pileatus pileatus* (Blyth, 1843) *Trachypithecus pileatus brahma* (Wroughton, 1916) *Trachypithecus pileatus durga* (Wroughton, 1916) *Trachypithecus pileatus tenebricus* (Hinton, 1923)

Note: Taxonomic and nomenclatural changes according to Groves (2001), the last published revision. Another article under review will very likely define many species listed here as subspecies and add more subspecies. This is the way of taxonomy.

References:

CZA, 2002. Inventory of Animals in Indian Zoos 2000-2001. Central Zoo Authority, New Delhi, pp xix + 314
Central Zoo Authority database (Primates section) printout (unpub.) 2002.
Groves, C. 2001. Primate taxonomy. Smithsonian University Press, Washington and London, 350pp.

studbook for all the LTM's in Indian zoos has been prepared by the Wildlife Institute of India. It has also been established that a managed conservation breeding programme for the species can be initiated from the present captive population. AAZP, Chennai, Mysore Zoo and Trivandrum Zoo are participating in the breeding programme. The CZA will make all efforts to pool the single animals in other zoos and send breeding age individuals to the breeding centre. Others will be kept on display, provided an appropriate enclosure for the animals should exist, so they may serve as ambassadors for conservation and protection of their kins in the wild.

Recommended for CB

5. Golden Langur *(Trachypithecus geei):*
Five zoos in India are displaying 7 (2 males and 5 females) of Golden Langur. Two zoos are located in the proximity of the animals' habitat. It is suggested that, as Assam State Zoo, Guwahati has a very good enclosure for Golden Langur in an off-display area, the single animals in other 4 zoos should be shifted to Guwahati. Controlled captive breeding can be carried out at Guwahati, but long-term captive breeding of the species cannot be recommended at this stage.

Not recommended for CB

6. Nilgiri Langur (*Semnopithecus johnii*):
Eight zoos in India are displaying 27 (11 males, 14 females and 2 juveniles) Nilgiri Langurs. Six zoos are located in the proximity of the animals' habitat. Despite the fact that Arignar Anna Zoo, Chennai, the Chamarajendra Zoological Gardens, Mysore and, more recently the V.O.C. Park, Coimbatore have been successful in breeding of the species, a national programme on Conservation Breeding of the animals cannot be initiated. However, single animals (if they are of breeding age) can be pooled in the above zoos, which are located near the animals' habitat, for use in breeding programme. These zoos may receive animals rescued from the wild, which can then be added to the existing groups.

Not recommended for CB

7. Long-tailed Macaque *(Macaca fasicularis umbrosa)*
This species of primate is distributed only at one zoo at Port Blair, Andamans. Presently 16 (9 males and 7 females) Long-tailed Macaques are displayed. In the past the zoo had one or two successes in breeding of the species, however the animal survival rate was poor. This may be due to the design of the enclosure constructed by the Andamans and Nicobar Forest department at Chidiya Tapu Biological Park. May be once these animals get translocated to the new enclosure, breeding may take place.

If at all any programme is initiated for conservation breeding of the species, an offsite area in the new zoo has to be set up and fresh animals should be acquired from the wild as the present population may be inbred. One or two of these also may not be in their prime.

Not recommended for CB

8. Hoolock Gibbon (*Bunopithecus hoolock hoolock*)
Five zoos in India are displaying 10 (4 males and 6 females) Hoolock Gibbon. 3 zoos are located near the animals' habitat and only Assam State Zoo, Guwahati has an appropriate enclosure for the animals. This is the only zoo which had success in breeding of the Hoolock Gibbon, but survival rate was very poor. Due to the nature of the animal, breeding is limited to suitable pairing. Much study is needed of the behaviour of the species, before any serious breeding programme can be taken up.

The zoos located near the animals habitat may in the meantime try to form compatible pairs for breeding.

Not recommended for CB

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Photo of langurs in Arignar Anna Zoo area 1985. Said to be Malabar langur *Semnopithecus entellus dussumieri* . Zoos can play an important role in taxonomic problems. Photo by: Sally Walker