

Conservation Breeding of Indian Species of Mustelids, Viverrids and Herpestids: A Perspective

Captive Breeding and Trade - I

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CONSERVATION BREEDING means captive breeding done systematically for conservation purpose or *ex situ* conservation. Captive breeding is carried out in other institutions also where it is often more successful due to the ability of these institutions to specialise and concentrate on a limited subject matter. These may be specialised institutions devoted to one taxon or genus, such as snake parks or primate centres, private captive breeding centres, institutional centres, research centres and rescue centres set up for breeding. The IUCN SSC Action Plan for the Conservation of Mustelids and Viverrids brought out by the then IUCN SSC Mustelid and Viverrid Specialist Group (Schreiber *et al.* 1989) confirms the role of conservation breeding in research, recovery and education. The editors of the plan were careful to affirm that *ex situ* breeding should serve as a support - not a substitute - for field conservation and that programmes can succeed in the long term only when the reasons of decline *in situ* have been targeted and addressed.

For all practical purposes "captive breeding" can be associated with zoos more than any other institution. Perhaps one of the most important facets of conservation of Mustelids, Viverrids and Herpestids (MVH) with regard to zoos has been expressed very well by Jackson (1990). It says, "people need to know about the role of mustelids and viverrids in ecosystems. Seldom seen in the wild, these animals should be shown to the public as the lively and beautiful animals they are".

Of the 250 zoos in India, including "Large", "Medium" and "Small" zoos, Deer parks and Mini zoos, a total of 52 zoos in 23 states keep one to six different species of MVHs (Appendix I). With 32 species having a range in India, 12 species of MVHs are represented in Indian zoos in varying numbers and sex ratios, species numbers being indicated in Table 1. That some zoos hold as many as five to six different species of this animal group is in itself interesting. These zoos, in particular, could contribute much to the public knowledge and appreciation as well as to research and conservation of these mammals by displaying them attractively, by studying the behaviour and biology of each separate species and by treating them as the important conservation instruments that they are.

An impressive 102 individuals of MVHs are kept in Indian zoos (Table 2) but this number does not reflect the poor conservation breeding status of MVH in captivity. The zoos barring a few, do not invest in good husbandry, exhibits or interpretation for these animals. More significantly, zoos do not invest time and money for initiating research and study into their need for a breeding programme or how to breed them or even

Table 1. Number of species of viverrids, mustelids and herpestids kept in different categories of Indian zoos

No. of zoos holding	No. of species	Zoo category	No.
31	1	Large	12
11	2	Medium	15
3	5	Small	8
4	4	Mini-zoos	12
1	5	Deer park	5
2	6	Total	52

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Table 2. Status of Mustelidae, Viverridae and Herpestidae kept in Indian zoos. Compatible pairs could be used for conservation breeding.

Family and Species	Total Indian zoo population	Number of Pairs	IUCN Red List Criteria
Viverridae			
Binturong	5.6.0 = 11	1	DD
Himalayan masked palm civet	2.3.1=6	2	LR-lc
Common palm civet/Toddy cat	47.32.15=94	17	LR-lc
Large Indian civet	1.0.1=2	0	VU
Small Indian civet	12.09.16=37	3	LR-nt
Herpestidae			
Grey mongoose	4.4.0=8	3	LR-lc
Crab-eating mongoose	1.0.0=1	0	VU
Mustelidae			
Badgers			
Ratel/Honey badger	15.5.3=23	4	LR-nt
Small-Toothed ferret badger	1.1.0=2	1	EN
Martens			
Yellow-throated marten	1.1.0=2	1	LR-lc
Otters			
Eurasian otter	17.10.04.=31	5	NE
Smooth-coated otter	4.2.0=6	1	NE

An impressive 102 individuals of MVHs are kept in Indian zoos but this number does not reflect the poor conservation breeding status of mustelids, viverrids and herpestids in captivity.

for transporting these animals to other zoos to pair up in managed breeding programmes. Table 2 illustrates that the number of paired animals is very small for some species. For Binturong, for example, of the 11 animals there is only 1 pair; thus 2 are kept in one zoo as a pair and the other nine animals are scattered in different zoos (Walker 1999 a,b) with no breeding potential at all. They are merely an exhibit of a single individual which demonstrates poor conservation management or no management at all.

Of all these species and zoos, there are only three threatened species of MVH being held by four Indian zoos. Of these, there is only one species, the small-toothed ferret badger *Melogale moschata* is in a breeding situation, e.g. having a male and a female in the Assam State Zoo. Frequently when one finds such rare animals in zoos, they have been brought in as rescued youngsters and are siblings from the same litter - not ideal for scientific breeding. One pair is not sufficient to start a serious captive breeding programme. Since there is strict ban on taking animals from the

wild, captive breeding being an exception, making a case for it is difficult and as a result zoos have to be satisfied with what comes to them. Since the small-toothed ferret badger is already threatened, it is important to establish a breeding programme for it. A survey to establish its population numbers and evaluate remaining habitat should be mounted in the single location in which it is found in India, the Naga hills. Capturing a few small-toothed ferret badgers from the wild for captive breeding, assuming habitat condition would support a larger population, may be appropriate. However, many Indian zoos do not know how to breed badgers or any of this group of animals. Practice with surrogate species that are abundant in the wild or imported technical assistance from any country where badgers have been bred successfully is required before such a programme is attempted.

The other two threatened species being held by Indian zoos are the large Indian civet *Viverricula zibetha* of which there is a male and a female - but in two different zoos and

a single crab-eating mongoose *Herpestes urva*. At the very least the two zoos holding the large Indian civets (Assam State Zoo, Guwahati and the National Zoo, New Delhi) could put this estranged pair together. Only the Assam State Zoo is holding a single crab eating mongoose (Walker 1999 a,b).

That is the sum total of threatened species *ex situ* conservation for this group of animals in India today. Hopefully, such articles as this in periodicals devoted to these animals would flag the large gap between need and actuality. Zoos need better facilities and management in order to provide for the needs of threatened species, providing *ex situ* back up for *in situ* conservation action.

Three other species of conservation significance which are represented in Indian zoos are binturong *Arctictis binturong*, small Indian civet *Viverricula indica* and ratel or honey badger *Mellivora capensis*. All three species were categorised as Lower Risk-near threatened according to IUCN Red List criteria, which means that there is danger that these species could come into a threatened category in the near future. According to IUCN captive breeding policy, now is the time to perfect breeding techniques while the species numbers are still respectable. In terms of zoo status, the small Indian civet is in a seemingly better position with pairs in three zoos. However, there are 31 small Indian civets remaining as singles or single sexed groups in sixteen zoos. Although the small Indian civet was categorised as Lower-Risk-near threatened because of trade, its captive breeding programme is highly advisable. Besides, this will make an excellent surrogate for practicing a managed breeding programme for other civet species in the eventuality of the need for a recovery programme.

Although, the greater percentage of species of MVHs currently kept in Indian zoos are abundant in the wild or relatively so, that is no reason to accord lesser quality treatment. If a recovery programme with intensive

management were required to save one of these species in a fragmented area, perhaps its very last habitat, no one would know how to do it. What is meant by a "recovery programme" would include the capture and rapid, controlled reproduction of the species in captivity in conditions permitting it to be released back into the wild under a carefully engineered programme. It would be extremely useful if zoos master the art and science of keeping and breeding the common species, as they would have much in common biologically with threatened taxa.

Ratel *Mellivora capensis* is one of the mustelids that is notoriously difficult to breed. Only one or two zoos in the world have bred ratels and so far none in India. The right combination of diet, enclosure, climate, enrichment and partners has not yet been found. Of those currently held in Indian zoos (15.5.23), if all were sexed and paired, they could form the basis of a coordinated breeding experiment. Of the eleven zoos holding ratel, only four have mixed sexes. The remaining have single males or unknowns. Normally when we see ratels or honey badgers in zoos, it is usually in very sturdy but uninteresting enclosures that give no idea of the animal's unique characteristics and abilities that include both digging complex tunnels and climbing trees. The animals are frequently active during the day and fascinate visitors by running in and out of their caves, holes and tunnels if they are provided with them and, of course, climbing trees.

Most civets and mongoose have been described as only "moderately difficult" to breed, yet there are no good breeding programmes for any of them anywhere in India and few in the world. In India, and presumably other parts of the world where they occur, there has not been much incentive to breed species that frequently come into zoos as confiscation or strays. Perhaps this is because they are thought to be common and they are neither large or

One reason zoos find it difficult to put together viable breeding groups is because the process for acquisition and disposition of animals is tedious and arbitrary.

charismatic, nor considered as "valuable" or even as particularly attractive exhibits. Perhaps it is also because the threats to all civets have not been given sufficient publicity as well as the fact that the conservation status of many of them is simply not known. Some species are so poorly studied that they are known only from museum specimens or even body parts and have never been observed alive by any living taxonomist or field biologist.

Selection of species for captive breeding

Modern zoos have collection plans for which they carefully select the species they want to exhibit and breed. These plans are determined by a variety of factors, the more basic including zoo space, budget, philosophy, direction, biogeographic location, even climate and visitor profile. Zoo philosophy and direction may determine what priority endangerment, endemism and monotypicity is given. Some species (even threatened species) that are exhibited are not bred at all and some that are bred are off exhibit, so carefully are these collection plans constructed. This is not the case in India where the concept of the collection plan has yet to catch on. In India, zoos have a haphazard approach to their collection. Long range planning is not part of the current scenario and perhaps it cannot be under present conditions. A lengthy correspondence is required from the zoo to officials at city or state level to central government. Sometimes when requests are granted the process has taken so long that the animals are no more available.

Many zoo directors have good knowledge of conservation requirements and also want to regularise the gene pool of some of their endangered Indian animals. Such expertise should be used for developing captive breeding programmes within India. There are several factors to be considered when planning a breeding programme. This should be done in cooperation with several zoos holding the same species. A species may be selected for conservation breeding for some of the following reasons:

- Attractiveness as a zoo exhibit - although this is sometimes not cited as a reason for selection in a breeding programme, propagation of a species for the sake of other zoos to exhibit to the public is valid. If species are bred for exhibition, they do not have to be taken from the wild by zoos that don't have them, but can be had from captivity itself.
- Degree of threat - endangerment is the most commonly considered reason for establishing a breeding programme but it is not always valid. Selection of a threatened species with insufficient conspecifics in other zoos to maintain genetic diversity is not productive. Also, as stated in the Mustelid and Viverrid Action Plan and IUCN Policy Statement, there should be adequate habitat for returning the animal if a genuine conservation programme is envisioned (Anon. 1987). Selection of threatened species for conservation breeding should be done by a group of good zoos and a team of field biologists who can work together on the care and breeding of the animals.
- Species can be prioritised for captive breeding by being monotypic, endemic, useful to man as medicine, useful as indicator species, etc. Species can be prioritised because they are easy to breed and safe to release to the wild - for the sake of practice runs.

The Mustelid and Viverrid Action Plan (Schreiber *et al.* 1989) recommends that some of the best zoos take up a couple of species to acquire know-how in care and propagation so that they will be prepared in the eventuality that a species needs a programme to insure its survival. While this Plan highlights the need to prioritise the most threatened species for expensive and time-consuming programmes, it is acknowledged that the state of knowledge about their status in the wild is still too poor to know if their

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short term survival can only be guaranteed by a captive programme.

Some non-threatened species held in Indian zoos

Yellow-throated marten *Martes flavigula* is not threatened in India. The Manipur zoo holds a single pair. Since it is common as well as uncommonly attractive and active, it would make a good research animal for zoos to practice breeding techniques for martens and exhibit the surplus.

Smooth-coated otter *Lutra perspicillata* inhabits reservoirs, large rivers and tanks in lower altitudes. It is not doing well in captivity with non-breeding pairs only at one facility and singles at two more. It is considered moderately difficult to breed. Any otter makes an interesting zoo animal - its aquatic habits and playful nature are most attractive and have good education potential.

The Eurasian otter *Lutra lutra* is fairly numerous in captivity in India with a total 31 animals (17.10.04) in 12 zoos but only five of these zoos have paired animals. A few zoos have very nice enclosures for their otters with underwater viewing for visitors and good land and water area for the animal. The Kamla Nehru Zoo in Ahmedabad has established a breeding technique even in their old enclosure. Females are uncommon in the zoo collections - many of the zoos have two or more males and no females. There is one single female that could be moved or given a mate from another zoo. There are unsexed animals in three collections which could turn out to be females. The population in zoos outside of India is 29.32.2 = 63 in 20 facilities.

Grey mongoose *Herpestes edwardsii* is very adaptable to disturbance and frequents public places such as parks. It is least difficult to breed. However, this species is not a priority for captive breeding, being Lower risk-least concern (Molur et al. 1998) and it would be argued by some zoo biologists

that it is taking up valuable space and resources when the zoos could be holding threatened species. Of the zoos holding it, only one of them has genuine conservation potential in any case so this concern is probably spurious. It is rare to see these animals attractively housed. They are active and fun to watch, friendly and comic. If given a good enclosure with enrichment devices they would provide an educative and entertaining visitor experience.

Conservation value

Of the nine civet species reported from India, two are endemic to the Western Ghats. Jerdon's palm civet or brown palm civet *Paradoxurus jerdoni* and the Malabar civet *Viverra civettina*. Both are endemic and threatened according to IUCN criteria. Jerdon's palm civet was categorised as Vulnerable and the Malabar civet as Critically Endangered. Both are species rather than subspecies. So for reasons of endangerment, endemism and uniqueness, these are very high priority species for long term conservation action and planning.

Malabar civet *Viverra civettina* in particular requires intensive and immediate conservation action. Thought to be extinct for some years, recently a small population was confirmed in one area of the Western Ghats. It requires a recovery programme with captive breeding, reintroduction, introduction into alternative habitats and intensive protection and monitoring.

The brown palm civet *Paradoxurus jerdoni* is thought to exist in many fragmented locations in the southern Western Ghats. Population trend and numbers are not known. If very small populations are located in fragmented areas which are impossible to protect or connect, it is likely that they will not survive in any case. In such instances - it is advisable to catch sufficient animals to form a healthy captive breeding population so that periodic releases can take place in appropriate areas.

Seven species of mongoose are reported from India. Brown mongoose *Herpestes fuscus* is endemic to the Western Ghats. Due to its Vulnerable status yet presence in many locations, a planned capture for a conservation breeding programme would be fully justified in the case of this species, provided zoos were prepared to go about it in a systematic, scientific and dedicated fashion.

Marsh mongoose *Herpestes palustris* is endemic to India with a current regional distribution of North and South 24 Parganas and Howrah district in West Bengal. Its population has been observed having declined rapidly over the last 30 years such that its type locality has become a city whereas earlier it was a swamp! Conservation breeding is required for this endangered, endemic species but there is no captive population in India or any other country.

Spotted linsang or tiger civet *Prionodon pardicolor* is a most attractive viverrid species which is not represented in any Indian zoo. Although it is a threatened species which is justification enough for a captive breeding programme, it is so dramatic and charming that it might be displayed simply for attractiveness as an exhibit. It was assessed as Vulnerable within India according to the IUCN Red List Criteria in the CAMP workshop (Molur et al. 1998) due to its restricted distribution, limited location, severe fragmentation and continuing decline in size and quality of habitat. It was recommended for conservation breeding. There are none in captivity in Indian zoos but three males in the Singapore zoo. This attractive species requires a captive programme and a carefully drawn up international plan might be initiated in collaboration with Singapore zoo and some other south-east Asian zoos.

The large-toothed ferret badger *Melogale personata* is not endemic to India but it has

not been sighted for many years and has been given IUCN status of Vulnerable (Nationally) based on its restricted distribution, limited location, severe fragmentation, continuing decline in extent of occurrence and quality of habitat (Molur et al. 1998). That it has been assessed as Vulnerable in India according to the revised IUCN criteria, is a warning to have a closer look at the species by listing authorities. This species was also recommended for captive breeding but there are none in captivity in India.

Species in IUCN non-threatened categories

The stripe-necked mongoose *Herpestes vitticollis* although not categorised as threatened was considered a mongoose to watch. It was recommended for captive breeding for education, as it is not known to people despite its common status. Its dramatic neck stripe guarantees its attractiveness as an interesting and educational exhibit if displayed properly. It is in correct numbers for initiating a captive breeding programme according to IUCN guidelines, before the population has sunk to a low level genetically and numerically.

Siberian weasel *Mustela sibirica* was assessed as Lower Risk-near threatened. Its global distribution includes the Trans-Himalaya and Myanmar. It is listed in Appendix II of CITES. Captive breeding for research and education was recommended but there are no captive individuals in India.

Small Indian mongoose *Herpestes javanicus*, its wide range and many locations account for its non-threatened status. There are numerous recorded threats to this species such as hunting for trophies and food, pesticides, road kills and trade for parts. Trade in the species is domestic, commercial and international. Its hair is traded for making brushes and bristles. Captive breeding is not recommended unless for practice and education. There are none in captivity in Indian zoos.

For reasons of endangerment, endemicity and uniqueness conservation breeding for many mustelids, viverrids and herpestids could be initiated by the Indian zoos.

For the Indian ruddy mongoose *Herpestes smithii*, the CAMP workshop (Molur et al. 1998) recommended that a study on the ecological separation between ruddy, stripe-necked and brown mongoose should be done. Captive breeding was not recommended and there are none in captivity in India.

Data deficient species

Hog badger *Arctonyx collaris* is a charming little badger which does indeed look much like a pig. Almost nothing is known of it, the only data is from old records and literature. Currently there is no record of any in captivity but a few years ago there was one held in a concrete and chain mesh enclosure in Manipur Zoological Garden which behaved much like similarly housed rats, with frantic pacing and hissing around its enclosure, but was even more ferocious when approached.

Beech marten *Martes foina* is found in many parts of the world and in both temperate and alpine areas of the Himalayas. Lack of information about this species led to a Data Deficient category being given by the workshop but it was recommended for captive breeding. There are no captive populations in Indian zoos however.

Pale weasel *Mustela altaica* is listed in CITES and Schedule II of the Indian Wildlife (Protection) Act. There have been neither any recent study on this species nor it is kept in any Indian zoo.

Research, management and surveys are recommended for yellow-bellied weasel *Mustela kathiah*. None in captivity anywhere.

Back-striped weasel *Mustela strigidorsa* has not been studied for many years. Globally also, it has restricted distribution and is considered as a species of concern in the Mustelid and Viverrid Action Plan (Schreiber et al. 1989).

Himalayan stoat *Mustela erminea* is not recommended for captive breeding but it is interesting to speculate how many people in India have seen a stoat. It would be wonderful if each of these species were displayed and bred somewhere simply for the sake of education.

Literally nothing is known about the Tibetan polecat *Mustela putorius* in terms of its normal elevation, range, area occupied, population numbers or trend, threats or trade. It is thought to occupy a single area in India, that is Kashmir. It needs study and management. As India's only polecat surely it deserves some attention.

Not evaluated species

There are three species of otters in India, two of which are in captive facilities. The small-clawed otter is not currently displayed in any Indian zoo but it is least difficult to breed. It is very well managed in captivity abroad with an international studbook, species coordinators and 109.110.42 = 261 individuals in 56 zoos.

CONCLUSIONS

The group of animals which comprise viverrids, mustelids and herpestids are important ecologically, economically, and culturally. A number of these are threatened with extinction according to the IUCN Red List Criteria as well as endemic to India or a region of India. Few of these are held in Indian zoos and those which are held are not being managed according to any programme. With a few exceptions, exhibits are minimal even by basic welfare standards without aesthetic or educational value. This group of animals has a "story" to tell of their musk bearing glandular system, their frequently arboreal, nocturnal habits and charming appearance and play behaviour. They are all relatively small, easy to keep and not dangerous to man, all of which makes them more feasible for conservation breeding. Their threatened status, threats

of a general nature and lack of information on their ecology all point to the need to take them more seriously. The loss of species from this group of animals may have a serious impact on the ecosystem, particularly in terms of their preference for potential pests, such as rodents. Zoos can contribute to their conservation in all respects - breeding for safeguarding genetic material, research into their behaviour and biology and perhaps most of all educating the public of their importance. Indian zoos have sufficient numbers to make a good beginning in learning to breed them, to utilise their stock for research and for public awareness.

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Appendix I
Indian Zoos Keeping Mustelids, Viverrids and Herpestids

Names of Zoos	Species held	
Alipore Zoological Garden, Calcutta	Grey mongoose	4.4.0=8
Amirdhi Zoo, Vellore	Small Indian civet	0.0.2=2
Amte's Animal Park, Gadchiroli, Palghat	Ratel / Honey badger	1.0.0=1
Arignar Anna Zoo, Vandalur	Binturong	1.0.0=1
	Common palm civet	2.2.0=4
	Small Indian civet	2.0.0=2
	Common otter	2.2.0=4
Assam State Zoo, Guwahati	Binturong	2.0.0=2
	Common palm civet	1.1.0=2
	Large Indian civet	0.0.1=1
	Small Indian civet	1.0.0=1
	Crab-eating mongoose	1.0.0=1
	Common otter	2.0.0=2
Aurangabad Municipal Zoo, Aurangabad	Common palm civet	4.2.0=6
Baguwa Pheasant Farm, Gangtok	Common palm civet	1.1.0=2
Bannerghatta Zoo, Bangalore	Common palm civet	2.2.0=4
Bellary Childrens Park-Cum-Zoo, Bellary	Common palm civet	0.1.0=1
Bondla Zoo, Usgao, Goa	Common palm civet	1.0.0=1
	Grey mongoose	1.2.0=3
Calcutta Snake Park, Badu	Common palm civet	1.1.0=2
Chamarajendra Zool. Gardens, Mysore	Binturong	1.0.0=1
	Common palm civet	2.2.3=7
	Small Indian civet	0.2.0=2
	Ratel / Honey badger	1.1.0=2
	Common otter	1.1.0=2
Children's Corner, Guindy	Common palm civet	0.0.2=2
	Small Indian civet	0.0.1=1
	Grey mongoose	0.0.2=2
	Common otter	0.0.1=1
Children's Park Mini Zoo, Shimoga	Common palm civet	0.1.0=1
Gandhi Zoological Park, Gwalior	Common palm civet	0.1.0=1
Indira Gandhi Zoo, Visakhapatnam	Common palm civet	2.0.0=2
	Small Indian civet	1.0.0=1
	Ratel / Honey badger	1.0.0=1
Itanagar Zoological Park, Itanagar	Binturong	0.1.0=1
	Masked palm civet	1.1.0=2
	Common palm civet	1.0.0=1
	Ratel / Honey badger	1.0.0=1
Jaipur Zoo, Jaipur	Common palm civet	0.0.2=2
	Smooth-coated otter	1.0.0=1
Jawaharlal Nehru Biological Park, Bokaro	Common palm civet	3.2.0=5
Jodhpur Zoo, Jodhpur	Small Indian civet	1.0.0=1
Karnia Nehru Zoo, Ahmedabad	Binturong	0.1.0=1
	Masked palm civet	1.1.0=2
	Common palm civet	1.0.0=1
	Ratel / Honey badger	1.1.0=2
	Common otter	4.3.0=7
Kanpur Zoological Park, Kanpur	Common palm civet	2.2.0=4
	Common otter	3.0.0=3
Kukrail Deer Park, Centre, Kukrail	Smooth-coated otter	2.2.0=4
Kurseong Deer Park Dow Hill, W. Bengal	Small Indian civet	1.1.0=2

Contd...

Lady Hydari Park, Shillong	Binturong	0.1.0=1
	Small Indian civet	1.3.0=4
Mahatma Gandhi Zoo, Solapur	Small Indian civet	0.0.4=4
Maitri Baagh Zoo, Bhilai	Grey mongoose	1.1.0=2
Malsi Deer Park, Dehradun	Ratel / honey badger	2.0.0=2
Mangalore Deer Park, Kadri Hill	Common palm civet	1.1.0=2
Manipur Zoological Garden, Imphal	Masked palm civet	0.0.1=1
	Common palm civet	1.1.0=2
	Small Indian civet	0.0.3=3
	Yellow-throated marten	1.1.0=2
Miao Mini Zoo, Miao	Common palm civet	1.0.0=1
Mini Zoo Cum Children Park, Gulbarga	Small Indian civet	0.0.4=4
Mini Zoo, Haddo, Port Blair	Common palm civet	2.4.0=6
Mini Zoo, KodaNadu	Common palm civet	0.0.3=3
	Grey mongoose	0.0.4=4
Mini Zoo, Ram Bagh, Amritsar	Common palm civet	0.0.1=1
	Common otter	0.0.2=2
Moradabad Deer Park	Common otter	0.0.1=1
Nandankanan Biological Park, Bhubaneswar	Binturong	0.1.0=1
	Common palm civet	2.4.0=6
	Small Indian civet	0.1.0=1
	Grey mongoose	2.2.0=4
	Ratel / honey badger	4.1.0=5
	Smooth-coated otter	1.0.0=1
National Zoological Park, Delhi	Large Indian civet	1.0.0=1
	Common otter	2.2.0=4
Nehru Zoological Park, Hyderabad	Common palm civet	4.1.0=5
	Small Indian civet	0.1.0=1
	Ratel / honey badger	2.2.0=4
	Common otter	1.1.0=2
Parassinikkadavu Snake Park, Kannur	Common palm civet	5.0.0=5
Rewalsar Wildlife Zoo, Mandi	Common palm civet	0.0.3=3
Sakkarbaug Zoo, Junagarh	Ratel / honey badger	1.0.0=1
Sanjay Gandhi Biol. Park, Patna	Ratel / honey badger	1.0.0=1
	Common otter	0.1.0=1
Sayaji Baug Zoo, Vadodara	Common otter	1.0.0=1
Sepahijala Zoo, Sepahijala	Binturong	1.2.0=3
	Masked palm civet	0.1.0=1
	Small Indian civet	1.0.0=1
Shivganga Garden Mini Zoo, Thanjavur	Small Indian civet	0.0.2=2
State Museum & Zoo, Thrissur	Common palm civet	2.1.0=3
	Small Indian civet	2.0.0=2
	Common otter	1.0.0=1
Tata Steel Zoological Park, Jamshedpur	Common palm civet	4.1.0=5
Thiruvananthapuram Zoo,	Common palm civet	1.1.0=2
Thiruvananthapuram		
	Small Indian civet	1.0.0=1
Udaipur Safari Park & Zoo, Udaipur	Grey mongoose	11.14.0=25
Udaipur Zoo, Udaipur	Ratel / honey badger	0.0.3=3
V.O.C. Park Mini Zoo, Coimbatore	Small Indian civet	1.1.0=2
	Grey mongoose	0.0.1=1
VJB Udyan -- Mumbai Zoo, Byculla	Common palm civet	1.0.0=1