ZSL
LET'S WORK FOR WILDLIFE

EDGE

EVOLUTIONARILLY DISTINCT & GLOBALLY ENDANGERED

Survival Blueprint

Chinese pangolin, Manis pentadactyla

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Suggested citation: Khatiwada, AP (2016): A survival blueprint for the Chinese pangolin, Manis pentadactyla, National Trust for Nature Conservation, Lalitpur, Nepal

1. STATUS REVIEW

1.1 Taxonomy:

Kingdom: Animalia> Phylum: Chordata> Class: Mammalia> Order: Pholidota> Family: Manidae> *Genus: Manis*> *Species: Pentadactyla*

Species Authority: Linnaeus, 1758
Common Name: Chinese Pangolin
Nepali Name: KALO SALAK

Synonyms:

Manis auritus (Hodgson, 1836); Phateges bengalensis, Pholidotus assamensis (Fitzinger, 1872)

1.2 Distribution and population status:

1.2.1 Global distribution:

Country	Population estimate (plus references)	Distribution	Population trend (plus references)	Notes
Nepal	Approx. 5000 (Jnawali et al. 2011)	Considered to occur throughout Nepal (Jnawali et al. 2011). Confined to elevations below approximately 1500m in Nepal (Frick 1968; Mitchell 1975)	Declining (Jnawali et al. 2011)	
China	50000-100000 (Wu et.al. 2002; Zhang Yue 2008) Wild population 25100-49450 (Li Zhang et.al. 2008)	Sichuan, Guizhou, Yunnan, Anhui, Jiangsu, Zhejiang, Jiangxi, Hunan, Guangdong, Fujian, Hainan Island, Guangxi Zhuang and Tibet (Zhang *et al.* 1997); throughout southeast China from the southern border as far north as Changjiang (the Yangtze		

		River), island of Chusan at the mouth of the Changjiang (Allen and Coolidge 1940), Lantau Island (Reels 1996).		
India	Unknown	Northeastern India from Sikkim eastward (Tikader 1983).		
Taiwan		Central Mountain Range, the Western Foothill Range, the Taoyuan Tableland, the Ouluanpi		
		Tableland, the East Coast Mountain Range, the Tatun Volcano Group, Taipei Basin, Puli Basin, and the Pingtun Plain. The upper limit of occurrence is around 2000m (Chao Jung-Tai 1989; Taiwan Forestry Research Institute *in litt.* 1992)		
Thailand		Doi Inthanon in Changwat, Chiang Mai, sometime in the 1930s (Allen and Coolidge 1940)		
Vietnam		Northern half of the country, as far south as Quang Tri Province (Bourret 1942; Peenen *et al.* 1969)		
Myanmar		Northern part of Myanmar (Salter 1983; Corbett and Hill 1992; U Tin Than-WWF		

		Thailand *in litt.* 1999)		
Bangladesh				
Lao PDR	Unknown	North and central Lao PDR (Duckworth *et al.* 1999; Timmins and Evans 1996)		

1.2.2 Local distribution:

Country	Region / province	Site	Level of Protection	Population size	Reference(s)	Notes
Nepal	Taplejung	Nangkholyang and Dokhu village Development Committee (VDC)	Medium	Roughly estimated minimum 9 pair of pangolins i.e 18 pangolins in one VDC	Local level consultation with stakeholders, burrow survey, camera trapping survey, direct observation	Each VDC comprise 9 wards and in each ward there are minimum of a pair of pangolins
Nepal	Taplejung	48 VDCs and one Municipality	Poor	Most the VDCs and one municipality inhabits good population of pangolin	Field observation, sighting reports, rescue information, burrow records	Each VDC of Taplejung is good habitat for pangolins
Nepal	Pachther, Ilam, Jhapa, Swankhuwasabha, Terathum, Dhankuta, Bhojpur, Solukhumbu, Okhaldhunga, Khotang, Udayapur, Dolakha, Ramechhap, Sindhuli, Rasuwa, Dhading, Nuwakot,	Most of the districts in Nepal are pangolin habitat	Poor	Not known	Rescue information, key informants, new etc.	It is needed to explore and find distribution of Chinese pangolin all over Nepal

	Sindhupalchowk, Kavrepalanchowk, Bhaktapur, Lalitpur, Kathmandu, Chitwan, Makwanpur, Parsa, Gorkha, Lamjung, Tahahun, Rukum, Rolpa, Jagarkot					
India	Sikkim, Arunachal Pradesh, Meghalaya, Nagaland, Assam, Manipur, Tripura, Mizoram and northern part of West Bengal				ENVIS Newsletter, Vol. 9 No. 1&2, 2002, Zoological Survey of India.	

1.3 Protection status:

ZSL-EDGE rank 91. IUCN status critically endangered. CITES Appendix II and zero annual export quota. Priority protected species of National Parks and Wildlife Conservation (DNPWC) Act of Nepal 1973.
According to section 26 (sub section 2) of the DNPWC act 1973, any person who kills or injures pangolin shall be punished with a fine ranging from forty to seventy five thousand rupees, or face an imprisonment ranging from one year to ten years or both. Similarly, section 25 (sub section 1) of the act did provision of reward as any person who furnishes information about a poacher who has killed or injured pangolin and leads to his arrest may be rewarded with an amount of up to twenty five thousand rupees. In India Chinese pangolin is included in Schedule I of the Indian Wildlife (Protection) Act, 1972, and thereby totally protected throughout the country.

1.4 Ecology, behaviour and habitat requirements:

This species is solitary, primarily nocturnal (sometimes crepuscular), and largely terrestrial although it is fully capable of climbing trees and, like other pangolins, swims well (Heath and Vanderlip 1988; Chao Jung-Tai 1989). Little is known about the species' life history, although in China and Taiwan, young (normally one and occasionally two) are reportedly born in spring (Allen and Coolidge 1940, Chao Jung-Tai 1989).
Its diet consists of ants and termites and it has been noted that in China, there appears to be a close correlation between its distribution and the distribution of two termite species
(*Coptotermes formosanus)* and *Termes* (*Cyclotermes formosanus*) which are assumed to form a major component of its diet (Allen and Coolidge 1940, Heath and Vanderlip 1988). Its distribution may also have correlation with water resource too as the pangolin was captured on camera trap in front of old burrow close to water stream in two days of camera placement in Nangkholyang village of Taplejung district in 2013.

- Pangolins eyesight and hearing is poor but they have good sense of smell
- Pangolins do not have teeth, their tongue length reaches up to 40 cm
- A pangolin can feed 70 million ants per year
- Though the baby pangolin can walk, mother carry them on her back or tail and send them her beneath if she feel danger and roll up to protect baby
- Pangolins are also called as scaly ant eaters
- Pangolins dig burrow to find food, sleep in the burrow during day time and are mostly active in the night though, they search food during day time occasionally
- They can swim and climb trees
- Usually only one and occasionally 2 offspring are born after a gestation period of between 318 and 372 days in a burrow. After a month baby pangolin accompany their mother out of the burrow and began to eat ants/termites
- The weight of their scales makes up approximately 20% of their total weight
- Leopards, dogs and human are the main predators of the pangolins

Chinese pangolin is found in a wide range of habitat from tropical primary and secondary forest to the temperate broad-leaf, bamboo and coniferous forest. They are found from Jhapa in terai to Taplejung in mountain in eastern Nepal. They are distributed up to Jajarkot district in western Nepal. Burrows were recorded up to 3000 m elevation in Nangkholyang and Dokhu villages of Taplejung district. *Schema castanopsis* forest, *Alnus nepalensis*, *Pinus roxburghii* are major forest species of pangolin habitat. They are also found in grassland, farm land/agricultural land close to the human settlements. Pangolin distribution is linked on prey and water availability. A camera trap was placed nearby water stream close to the agricultural field in front of old burrow in Nangkholyang village of Taplejung district

in February 2013 where the Chinese pangolin was captured within two days of camera trap placement.

1.5 Threat analysis:

Major threats to pangolins are illegal poaching/trade and from anthropogenic pressure to natural resources along with human-induced developmental activities. The threats are varied and numerous. Major threats to pangolins are presented in the bullet points below:

- Illegal poaching and trade primarily for scales and local consumption
- Increasing use of chemical fertilizer to agricultural crops to increase productivity
- The use of chemical fertilizer has negative affect to prey species (termites and ants)
- Habitat degradation due to developmental activities (road construction, resort, hydro power etc)
- Population of pangolin declined because of regular/occasional forest fire in the habitat
- Low level of pangolin conservation awareness among local communities
- Pangolin population is distributed more in human dominated landscape in Nepal where they are very fragile due to low level of protection mechanism and illegal trade
- Deforestation at private and national forest has degraded the pangolin habitat
- Climate induced disasters: fire, landslide and drying of water sources due to prolonged drought

Pangolins are threatened mostly by illegal trade. Action based conservation to be implemented to save pangolins from the brink of extinction. Identify pangolin strongholds and employ informants from each stronghold and connect them with crime investigation bureau (CIB) of Nepal police to tackle illegal trade for long term conservation. Government of Nepal particularly the ministry of forest and soil conservation (MoFSC) should have lead on this. Conservation partners can support to employ the informants.

Pangolin prey species are threatened by excessive use of chemical fertilizer in farmland. Support to local farmers to produce organic food benefits both human beings and pangolins for their long live. Implementation of community based pangolin conservation projects engaging local people through income generating and developmental activities.
Awareness raising among general public and effective law enforcement targeting poachers and illegal trades helps to conserve pangolin in their natural heritage.

1.6 Stakeholder analysis:

Country	**Stakeholder**	**Stakeholder's interest in the species' conservation**	**Current activities**	**Impact** *(positive, negative or both)*	**Intensity of impact** *(low, medium, high or critical)*
Nepal	Ministry of Forest and Soil Conservation (MoFSC)	Conservation	National survey and conservation outside PAs too	+	Critical
Nepal	Department of National Parks and Wildlife Conservation (DNPWC)	Conservation	Legal action and protected areas (PAs) management	+	Critical
Nepal	Department of Forest (DOF)	Conservation	Legal action and protection outside PAs	+	Critical
Nepal	National Trust for Nature Conservation (NTNC)	Conservation and research	Chinese pangolin conservation project in eastern Nepal, Makwanpur and Gorkha district	+	Critical
Nepal	ZSL-Nepal	Conservation and research	Funders	+	Critical
Nepal	NTNC-Central Zoo	Conservation	Practitioners	+	High
Nepal	WWF Nepal	Conservation and research	Funders	+	Critical
International	Zoological Society of London	Conservation and research	Funders	+	Critical
International	Ocean Park Conservation Foundation Hong Kong (OPCFHK)	Conservation and research	Funders	+	Medium
International	Mohamad bin Ziyad conservation fund (MBZ)	Conservation and research	Funders	+	Medium
Regional/ Nepal	ICIMOD	Conservation and research	Funders	+	Medium

Nepal	Alumni Association for	Conservation and research	Practitioners	+	Medium
	Conservation and Development (AACD)				
Nepal	Pangolin Conservation Committees	Conservation	Practitioners	+	Medium
Nepal	Ministry of local development	Development activities	Infrastructure development/ conservation	+/-	Medium
Nepal	District Forest Office	Conservation	Legal actions and protection in district level	+	Critical
Nepal	FECOFUN	Advocacy	Practitioners	+/-	Medium
Nepal	Community Forest User Groups (CFUG)	Conservation and use of natural resources	Community based conservation and utilization of resources	+/-	High
Nepal	Nepal police	Law enforcement against illegal wildlife trade	Practitioners	+	Critical
Nepal	Nepal army	Control illegal activities	Practitioners	+	Critical

1.7 Context and background information that will affect the success of any conservation action for this species:

	Description	Barriers to conservation	Opportunities for conservation
Socio-cultural effects and cultural attitudes	Our project goal is to conserve habitat, minimize poaching/illegal trade and played adaptative role to address climate induced disasters through strong community engagement. Pangolins are found more in human dominated landscape outside PAs.	Extraction of natural resource for daily subsistance, poaching/illegal trade for income generation and excessive use of chemical fertilizer to produce more agricultural products are major factors to be addressed for successful implementation of this blueprint.	Alternative source of income through income generating activities in pangolin strongholds. Promotion of organic farming helps both human beings and pangolins. Implementation of adaptive measures to address climate induced disasters. Motivation of local communities to conserve pangolins.
Economic implications	Illegal trade of pangolin scales. Pangolin scales price increased up to 350% over last 10 years in eastern Nepal	Local poachers may get continuously lured due to high price and demand of pangolin scales	Establishment of pangolin conservation areas. Implementation of alternative income generating activities, programs to address adverse impact of climate change motivates local communities towards pangolin conservation

Existing conservation measures	Upcoming national level pangolin surveys lead by MoFSC. Pangolin conservation work in Taplejung district, Makwanpur and Gorkha district implemented by NTNC	Poor protection measures and law enforcement outside PAs network.	Engage local communities in pangolin conservation work. Effective implementation of existing law.
Administrative/political set-up	MoFSC, DNPWC, DOF, NTNC, ZSL-Nepal, WWFNepal, FECOFUN and other conservation organizations in Nepal are interested on pangolin conservation	Pangolins value is hardly understood by local communities and political parties. It takes time to make them aware on pangolin conservation and its importance in nature	Local communities are connected to political parties. Awareness raising among political leaders influence wider communities. 18 thousand CFUGs of Nepal can play important role to conserve pangolins
Local expertise and interest	Traditional hunters know more about the species. General public are interested to conserve the species in their area	Traditional hunters may continue killing pangolins without having alternative income source	The hunters knowledge can be used to know more about the species ecology and behaviour motivating them for conservation
Cultural attitudes	Pangolins are nocturnal in behaviour, if community people saw the pangolin in day time they feel unlucky. Because of low level of conservation awareness, they kill the pangolin if encountered in any places.	People may kill pangolins when encounter	Public awareness can help to change the traditional belief and conserve the species

Appeal of species	Pangolins are insectivorous burrowing mammals. One adult pangolin can feed <70 million ants per year. This is important species to regulate termites and ants population. The species is unique, ranked at 91 on EDGE. It can be conserved as iconic flagship species. Most of the people do not know what pangolins are and their details.	Along with poaching and illegal trade excessive use of chemical fertilizer in farmland are major conservation threats for pangolins. Deforestation and developmental activities has adverse impact on habitat.	Chinese pangolin is critically endangered species. This species is worth alive then dead to local communities. They do not harm to human beings but play supportive role to farmers regulating termite and ant population. Conservation of the species as iconic flagship would contribute on ecotourism promotion.

2. ACTION PROGRAMME

Vision (30-50 years)	
Healthy and viable population of Chinese pangolin exist in all regions across its natural range as iconic flagship species where poaching and illegal trade doesn't exist, climate induced disasters are taken into consideration and human beings started to get benefit from organic food, sustainable tourism and climate smart society	
Goal(s) (5-10 years)	
Local and regional communities initiated proactive role to conserve pangolin habitat, minimize poaching/illegal trade establishing pangolin conservation strongholds across its natural range and played adaptive role to address climate induced disasters making climate smart society considering pangolin as iconic flagship species.	
Objectives	**Prioritisation**
1. Prepare a distribution map of pangolin for Nepal and identify pangolin strongholds	Critical
2. National pangolin conservation action plan produced and endorsed	Critical
3. Study on habitat suitability for Chinese pangolin in Nepal	Critical
4. Study on ecology of Chinese pangolin	Critical
5. Education and outreach on importance of pangolin conservation at local and national level	Critical
6. Establish community based pangolin conservation areas (in strongholds)	Critical
7. Establish community based anti-poaching units or pangolin conservation committees and mobilize them for conservation work in community based pangolin conservation areas	Critical
8. Train and equip local youths for pangolin monitoring in strongholds	Critical
9. Ensure action based pangolin conservation in strongholds	High
10. Develop national and international cooperation between scientific and expert organizations/individuals working on research and conservation of Chinese pangolin	High
11. Implement livelihood interventions in community based pangolin conservation strongholds	High
12. Develop a seizure database system of pangolins for Nepal	High
13. Develop pangolin price index at local, cluster and national level	Medium
14. Implement programs to minimize climate induced disasters in pangolin strongholds	Medium

Activities	Country / region	Priority *(low, medium, high or critical)*	Associated Cost	Time scale	Responsible stakeholders	Indicators	Risks	Activity type
Objective 1: Prepare a distribution map of pangolin for Nepal and identify pangolin strongholds								
1.1 Collect pangolin presence absence data from 74 DFOs, more than 18 thousand CFUGs, PAs, Buffer Zones, DSCOs etc. across Nepal	Nepal	Critical	$ 50000	2016	MoFSC, NTNC, ZSL-Nepal, WWF-Nepal	Pangolin distributio n map of Nepal prepared	Government initiation to collect the data Reliability of the data as we depend on secondary sources. We need ground truth	Social survey – Secondary information
1.2 Filter the collected data into three category (confirm, indirect confirm, absence) and do ground truth doing systematic random sampling (select district from terai, mid mountain and high mountain from all 5 developmental regions of Nepal).	Nepal	Critical	$ 50000	2016	MoFSC, NTNC, ZSL-Nepal, WWF-Nepal	Pangolin distributio n map	Government initiation to collect the data	Ecological and social survey

Activities	Country / region	Priority *(low, medium, high or critical)*	Associated Cost	Time scale	Responsible stakeholders	Indicators	Risks	Activity type
1.3 Identify pangolin strongholds	Nepal	Critical	$ 100000	2017	MoFSC, NTNC, ZSL-Nepal, WWF-Nepal	Map showing pangolin strong holds	Pangolin distribution along with strongholds identified	Ecological and social survey
Objective 2: National pangolin conservation action plan produced and endorsed								
National pangolin conservation action plan produced	Nepal	Critical	$ 10000	2016	NTNC	Action plan	MoFSC, DNPWC, DOF, NTNC, ZSL-Nepal, WWF-Nepal are supportive	Pangolin conservation
Objective 3: Study on habitat suitability for Chinese pangolin in Nepal								
3.1 Take sample from three geographic regions (high mountain, mid mountain and Terai) of all five development regions of Nepal where pangolin found for habitat study	Nepal	Critical	$ 50000	2017	NTNC, ZSL Nepal	Habitat suitability map Habitat of Chinese pangolin known	Conservation organizations are supportive Resource constraint is threat	Ecological survey
Objective 4: Study on ecology of Chinese pangolin								
4.1 Site identification, project planning, endorsement of project	Nepal	Critical	$ 5000	2017	NTNC, ZSL Nepal			Ecological survey
4.2 Ecological study (collaring, behaviour study etc.)	Nepal	Critical	$100000	2018	NTNC, ZSL Nepal	Study report		Ecological survey
Objective 5: Education and outreach on importance of pangolin conservation at local and national level								

Activities	Country / region	Priority *(low, medium, high or critical)*	Associated Cost	Time scale	Responsible stakeholders	Indicators	Risks	Activity type
5.1 Organize development region level workshops (five) and national level workshop on pangolin conservation	Nepal	Critical	$ 15000	2017	NTNC, ZSL Nepal	Reports		Conservation awareness
5.2 Pilot school teaching program (50) focused in eastern Nepal (Taplejung district) for a year	Nepal	Critical	$ 50000	2017	NTNC, ZSL Nepal			Conservation awareness
5.3 Community meetings, group discussions and publication of pangolin conservation poster, brochure etc.	Nepal	Critical	$ 50000	2017	NTNC, ZSL Nepal	Poster, brochure, reports		Conservation awareness
Objective 6: Establish community based pangolin conservation areas (in strongholds)								
6.1 Twenty five community meetings and stakeholders consultation in eastern Nepal	Nepal	High	$50000	2018	NTNC, ZSL Nepal	Meeting reports, photos		Conservation
6.2 Demography collection and area demarcation	Nepal	High	$ 200000	2018	NTNC, ZSL-Nepal, DNPWC, DOF	Report and map		Conservation area

Activities	Country / region	Priority *(low, medium, high or critical)*	Associated Cost	Time scale	Responsible stakeholders	Indicators	Risks	Activity type
6.3 Establishment of two community based conservation areas	Nepal	High	$ 100000	2018	NTNC, ZSL-Nepal, DNPWC, DOF	Management plan, reports		Conservation areas
Objective 7: Establish community based anti-poaching units (CBAPUs) or pangolin conservation committees and mobilize them for conservation work in community based pangolin conservation areas								
7.1 Fifteen CBAPUs established in eastern Nepal	Nepal	High	$ 30000	2018	NTNC, ZSLNepal	CBAPU committee established		Training
***Objective* 8. Train and equip local youths for pangolin monitoring in strongholds (200 youths trained in 20 locations)**	Nepal	Critical	$ 40000	2018	NTNC, ZSLNepal	Name list of trained youths		Training
***Objective* 9. Ensure action based pangolin conservation in strongholds (employ 20 informants to collect illegal activities information from 10 different locations and connect them to CIB)**	Nepal	High	$ 50000	2018	NTNC, ZSL-Nepal, DNPWC	Poachers arrest record		Training / Livelihoods

Activities	Country / region	Priority *(low, medium, high or critical)*	Associated Cost	Time scale	Responsible stakeholders	Indicators	Risks	Activity type
***Objective* 10. Develop national and international cooperation between scientific and expert organizations/individuals working on research and conservation of Chinese pangolin**	Nepal	High	$ 5000	2017	NTNC, ZSLNepal			Communication
***Objective* 11. Implement livelihood interventions in community based pangolin conservation strongholds (identify 2 sites and implement livelihood activities)**	Nepal	High	$ 100000	2018	NTNC, ZSLNepal	Local people initiated income generating activities	Community may have more demand on infrastructure development	Livelihood
***Objective* 12. Develop a seizure database system of pangolins for Nepal**	Nepal	High	$ 10000	2018	NTNC, ZSLNepal	Seizure database		Improving knowledge
***Objective* 13. Develop pangolin price index at local, cluster and national level**	Nepal	Medium	$ 10000	2018	NTNC, ZSLNepal			Improving knowledge

Activities	Country / region	Priority *(low, medium, high or critical)*	Associated Cost	Time scale	Responsible stakeholders	Indicators	Risks	Activity type
***Objective* 14. Implement programs to minimize climate induced disasters in pangolin strongholds (prepare community adaptation plan of actions and plantation program)**	Nepal	High	$ 100000	2018	NTNC, ZSLNepal	100 ha plantation and 5 community adaptation plan of action prepared		Climate change adaptation
Total cost			**$ 1175000**					

3. LITERATURE CITED

Allen, G. M. and Coolidge, H. J. 1940. Mammal collections of the Asiatic Primate Expeditions. Bulletin of the Museum of Comparative Zoology, Harvard 97(3): 131-166.

Bourret, R. 1942. Les mammifères de la collection du Laboratoire de Zoologie de l'Ecole Supérieure des Sciences. Notes et Travaux de l'Ecole Supérieure, Université Indochinoise No. 1.

Chao, J. 1989. Studies on the Conservation of the Formosan Pangolin (Manis pentadactyla pentadactyla). I. General Biology and Current Status. Division of Forest Biology, Taiwan Forestry Research Institute. Printed by Council of Agriculture, Executive Yuan. October 1989.

Corbett, G.B. and Hill, J.E. 1992. The mammals of the Indomalayan region: a systematic review. Natural History Museum Publications, Oxford University Press, Oxford, U.K.

Duckworth, J.W., Timmins, R.J., Khounboline, K., Salter, R.E. and Davidson, P. 1999. Large Mammals. In Duckworth, J.W., Salter, R.E. and Khounboline, K. Wildlife in Lao PDR: 1999 Status Report. Vientiane: IUCN-The World Conservation Union/Wildlife Conservation Society/ Centre for Protected Areas and Watershed Management.

Fitzinger, L.J. 1872. Die Naturliche familie der schuppenthiere (Manes). Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften in Wien, 65:9-83.

Frick, F. 1968. Die Höhenstufenverteilung der Nepalesischen Säugetiere. Säugetierkundliche Mitteilungen 17: 161-173.

Heath, M.E. and S.L. Vanderlip. 1988. Biology, husbandry, and veterinary care of captive Chinese pangolins (Manis pentadactyla). Zoo Biology: 5(4). Pp. 387-390.

Hodgson, B. H. 1836.Synoptical description of sundry new animals enumerated in the catalogue of Nipalese mammals. Journal of the Asiatic Society of Bengal, 5:231-238.

Li Zhang, Ning Hua and Shan Sun (2008), 'Wildlife trade, consumption and conservation awareness in southwest China', Biodiversity and Conservation, 17: 1493-1516.

Mitchell, R. M. 1975. A checklist of Nepalese mammals. Säugetierkundliche Mitteilungen 23: 152-157.

Pandey, R. Shrestha, D. Joshi, B. R. Lamichhane, J. Griffiths, A. Khatiwada and R. Amin (compilers). 2011. The Status of Nepal's Mammals: The National Red List Series. Department of National Parks and Wildlife Conservation, Kathmandu, Nepal.

Peenen, P.F.D. van, Ryan, P. and Light, R. 1969. Preliminary Identification Manual for Mammals of South Vietnam. Smithsonian Institution, Washington.

Reels, G. 1996. Distribution of large mammals in Hong Kong. A summary of sightings made since 1992. Porcupine! Newsletter of the Department of Ecology and Biodiversity, Hong Kong University. No.15. Dec. 1996.

Salter, R.E. 1983. Summary of Currently Available Information on Internationally Threatened Wildlife Species in Burma. FAO Field Document 7/83 FO: BUR/80/006.

Taiwan Forestry Research Institute in litt. to WCMC and IUCN/SSC, 1992.

Tikader, B.K. 1983. Threatened Animals of India. Zoological Survey of India, Calcutta.

Timmins, R.J. and Evans, T.D. 1996. A wildlife and habitat survey of Nakai-Nam Theun National Biodiversity Conservation Area, Khammouan and Bolikhamsai Provinces, Lao PDR. Vientiane: CPAWM/WCS.

U Tin Than in litt. to TRAFFIC International 11 March 1999.

Wu SB, Ma GZ, Tang M, Chen H, Liu N F. 2002. The status and conservation strategy of pangolin resource in China. J Nat Resour 17:174–18.

Zhang Y., et al. 1997. Distribution of Mammalian Species in China. CITES Management Authority of China. China Forestry Publishing House, Beijing. (Distribution of Manis spp., and Saiga tatarica).

Zhang, Y. (2008). Conservation and Trade Control of Pangolins in China. Workshop on the trade and conservation of pangolins native to South and Southeast Asia. Singapore Zoo, Singapore, TRAFFIC. Pp.66–74.