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**Ministry of Energy and Natural Resources
Department of Forests and Park Services**



Key Biodiversity Area Kado Ngatshang, Ugyentse

Manis crassicaudata, Indian Pangolin



Picture from Google

**Conservation Action Plan
July 2023 to June 2033**

Divisional Forest Office, Samtse



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Ministry of Energy and Natural Resources
Department of Forests and Park Services



Royal Government Endorsement and Approval

Kado-Ngatsang Key Biodiversity Area Conservation Action Plan
 (1st July 2023 - 30th June 2033)

“In accordance with and as per the provisions of the Forest and Nature Conservation Act of Bhutan, 1995”

Submitted for Approval Forwarded for Approval

Chief Forestry Officer
 Divisional Forest Office, Samtse

Chief Forestry Officer
 Nature Conservation Division

Approved by

DIRECTOR
Department of Forests and Park Services



དཔལ་ལྷན་འབྲུག་གཞུང་། ལུས་ཤུགས་དང་རང་བཞིན་ཐོན་སྐྱེད་རྩྭ་ལྗང་ལྗང་།
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 Royal Government of Bhutan
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FOREWORD

Bhutan’s rich biodiversity has been secured by the network of protected areas for the past many decades. However, the state of forests and biodiversity are equally rich beyond the protected areas in Bhutan. On the contrary, the areas beyond protected areas faces considerable threats from anthropogenic disturbances and economic development, and this poses risk to many globally threatened habitats and species found therein. Across the globe, such areas of conservation significance have been addressed by the “other effective area-based conservation measures” or OECMs, an area set aside towards achieving the long term and effective in-situ conservation of biodiversity outside of protected areas. OECMs complement protected areas through sustained, positive conservation outcomes, even though they may be managed primarily for other reasons.

The Key Biodiversity Areas (KBA) in Bhutan, at a global scale is part of the OECMs and is, therefore, adopted towards securing conservation of areas and species that are of conservation significance in Bhutan. Of the many potential KBA sites in the country, the Department has identified and prioritized 11 sites in various Divisional Forest Offices, that requires urgent conservation interventions. For these 11 sites, key interventions have been identified, and has been and is being presented in this conservation action plan as per the guidelines on KBA. The KBA sites classified will serve as in-situ conservation of biodiversity beyond the protected areas.

These classified KBAs are expected to bring in improved conservation outcomes, that are crucial for the functioning of the environment through the provision of essential ecosystem services. It is essential for the processes that support all life on Earth, including humans. These KBAs are expected to address the issues of biodiversity loss and ecosystem degradation due to threats such as pollution, overexploitation of natural resources, introduction of invasive species and habitat loss.

I am happy to note that we continue to prioritize conserving our natural resources, while balancing ourselves with the need to economically develop the nation. I applaud all concerned officials from the Department for coming up with this conservation action for the first set of KBAs classified in the country and wish you all success in implementing the actions.

(Lobzang Dorji)

Director

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DEFINITIONS

Biodiversity is ‘the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part. This includes diversity within species, between species, and of ecosystems’ (CBD, 1992).

Key Biodiversity Area: The KBA, as defined by the IUCN, is “sites contributing significantly to the global persistence of biodiversity.” In the context of Bhutan, the word ‘global’ in this definition may be replaced with ‘national’ and shall refer “areas outside protected areas.” As such, KBAs are “sites outside protected area networks, contributing significantly to the global and/or national persistence of biodiversity (DoFPS, 2021).

The definition of key terms used in defining the KBAs, as reflected in the KBA Global Standard (IUCN, 2016) constitutes the “conservation area” or “any other area” in the context of national legislations such as FNCA 1995, National Forests Policy 2011, and Forests and Nature Conservation Rules and Regulations 2017.

Protected Area (PA) or Protected Area Network (PAN) refers to National Parks, Wildlife Sanctuaries, Strict Nature Reserves and Biological Corridors (BC).

CHAPTER 1: INTRODUCTION

Background

The Kado-Ngatsang key biodiversity area, located in Ugyentse Gewog has been identified for the conservation of the Indian Pangolin (*Manis crassicaudata*). The species is classified as endangered in the IUCN Red List Categories (IUCN, 2014), and is protected under Schedule-I of Forest and Nature Conservation Act of Bhutan, 1995.

Manis crassicaudata is a solitary, elusive and predominantly nocturnal medium-sized mammal native to Indian subcontinent. The species feeds mainly on insects including ants and termites and is estimated to consume about 70 million insects in a year and play vital role in the ecosystem (www.snmcpn.org, n.d.). It also feeds on other invertebrates such as beetles and worms. Typically, an adult pangolin weighs about 8 to 16 kilograms and can reach a body length up to 148 cm (Mahmood et al., 2019)

The species is found in the southern foot hills of Bhutan (Dorji, 2020) and one such location is forest areas of Kado-Ngatsang village under Ugyentse Gewog of Samtse Dzongkhag. The KBA site is located at the geo-reference point 26.939778° N and 88.994380° E (**Figure 1**) and falls in proximity to the human settlement. The site encompasses a total area of about 126 ha (312 acre) and is surrounded by villages. The Kado village lies on the northern side of the KBA, while Tashiding and Ngatshang villages lie to the south-east. Along the western and southern border flows Khuchi-Daina River, including cultivation land.

The area has subtropical vegetation with good forest cover mainly, comprising of species such as *Bombax ceiba*, *Ailanthus grandis*, *Pandanus sp.*, *Tetrameles nudiflora*, *Duabanga grandiflora* etc. The species is usually observed near streams and marshy sites in the locality where its prey species (ants and termites) are abundant and occasionally in adjoining agricultural lands. During the field assessment, several fresh burrows of the species were observed in the KBA.

The site is also home to other mammals, birds, and reptiles that dwell throughout the year and other seasonal species in the area. Some of these include wild pigs, Assamese Macaque, common leopard, Indian peafowl, oriental pied hornbill, cattle egret, Indian python, king cobra, monitor lizard etc. and the site is visited by migratory Asian elephants seasonally.

Current records suggest good presence of Indian pangolin in the vicinity. However, the site is also characterized by many human activities that pose considerable challenges towards their

conservation. Therefore, the identification of the site as KBA has become an important step in securing a proper management plan for the protecting their habitat in the locality.

KBA for *Manis crassicaudata* conservation at Kado- Ngatshang under Ugyentse Gewog

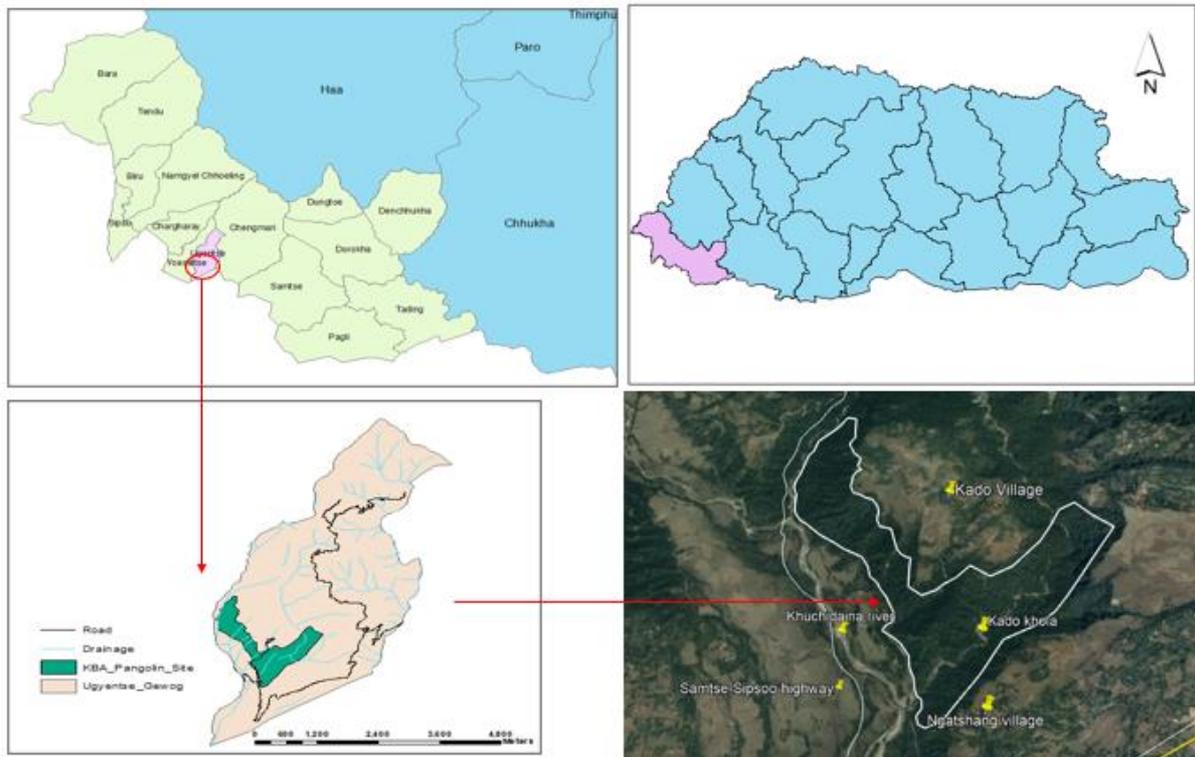


Figure 1: Map of the KBA for conservation of *Manis crassicaudata*

CHAPTER 2: THREATS AND CHALLENGES

2.1 Threat Identification

There are many threats to the conservation of *Manis crassicaudata* population in its natural habitat. Some of the pertinent threats include habitat loss due to human activities resulting from close settlement which has also resulted in fragmentation of existing habitat. Other threats include poaching by people from across the border and unintentional kills in snares kept along marginal agricultural lands for other animals to guard the crops. The area also experiences considerable pressure from activities such as collection of firewood, fodder, and timber resources from the local community. The forest land is also grazing ground for the livestock of Kado and Ngatshang villages.

2.1.1 Habitat loss

The rising human population adds pressure on natural resources, which has resulted in habitat loss for the survival of *Manis crassicaudata* and other species in the area. Developmental activities such as road is major cause of habitat loss. The Samtse-Tashicholing highway is located very close to the site, and the farm road to Kado village runs across the KBA. Such developments have also caused fragmentation of habitat. There is also considerable pressure from nearby settlements for the conversion of forest land into expansion of cultivation through land exchange programs.

2.1.2 Anthropogenic pressure

The presence of high human activities has considerably resulted in forest degradation through extraction of timber, firewood, fodder, and extensive grazing by domestic animals. There are also numerous footpaths in the forest, including occasional visits by people across the border. The noise produced from moving vehicles in the vicinity also causes much disturbances to the animals.

Over the years it has also been observed that there is also change in rainfall pattern and temperature which indicate that there is a shift from the earlier condition that may trigger general unfavorable condition for the survival of the species.

2.1.3 Poaching

According to Forest and Nature Conservation Act of Bhutan, 1995 the taking (killing, destroying, capturing, and collecting) of any wild animals listed in Schedule I are totally protected whether found inside or beyond State Reserve Forest, except to defend against an attack on human life or pursuant to a special permit granted under Section 23 on the grounds of scientific or conservation purposes and other justified reasons. The fine for killing an Indian Pangolin is Nu.10,000.00, along with confiscation of wildlife or its parts (FNCRR,2017). However, there are threats to the loss these species from poaching activities despite the legal restrictions. The threats also arise from across the border who encroach the area for illegal activities such as hunting for subsistence, live capture to sell as meat (source of protein), hunting for keratinous scales (source of traditional medicine) and traps intended for other agricultural animals. These threats entail an important impetus for conservation planning and status assessment.

2.1.4 Human wildlife conflict and unintentional killing

The villages surrounding the KBA are mainly dependent on agriculture for livelihood. As these fields shares boundaries with the forest, there is considerable human wildlife conflict occurring at the site. To defend the crops from wild animals, farmers sometimes set many snares along the peripheral sites of their field. These snares sometimes trap Indian pangolin, and the animals get killed during delayed rescue.

2.2 Challenges

2.2.1 Limited knowledge on species

There is very little information available on the distribution, current status and conservation treats facing the Indian Pangolin in Bhutan. The socio-economic activities in the locality pose many challenges to the dwindling population of the species. Some people in the area believe that the species brings bad omen, and some killings may be attributed to this orthodox believe. According to Dorji (2020) Indian Pangolin are less known due to their elusive and nocturnal behavior. Therefore, strong data base is needed to fill the gap and prepare their conservation plan before its local extinction.



Figure 2: Setting Camera Traps to study presence of Indian pangolins at Kado-Ngatsang KBA.

2.2.2 Pressure from anthropogenic activities

The key biodiversity area is situated very close to human settlement and experience considerable pressure on the natural resources. There is high risk of habitat losses and fragmentation arising from the conversion of forest to agricultural land and other developmental activities, such as farm roads. The area is also susceptible to degradation from the collection of fodder, firewood, and timber resources by the people of Kado and Ngatshang villages, who traditionally dependent on the forest for these resources. Additionally, other threats arise from the site being located near Indian border, which may result in potential threats from across border involving illegal activities.

Threats Ranking

The ranking of threats to the Indian Pangolin was carried using Miradi tools (Table 1). The result indicates that the main threats to the conservation of the species are the loss of habitat and its fragmentation, anthropogenic pressure, poaching and human wildlife conflict. Additionally, it was observed that the species is also threatened by kills resulting from snares and traps set by the local people. Overall, the threat ranking for the designated area is high.

Table 1: Threat rating based on Miradi Table

Threats \ Targets	Protecting and conservation of species and its habitats	Enhancement / diversification of local livelihood opportunities	Summary Threat Rating
Habitat loss	High		Medium
Anthropogenic pressure	Medium		Low
Poaching	Medium	Medium	Medium
HWC and unintentional killing	Medium	High	Medium
Summary Target Ratings:			Overall Project Rating
Medium		Medium	High

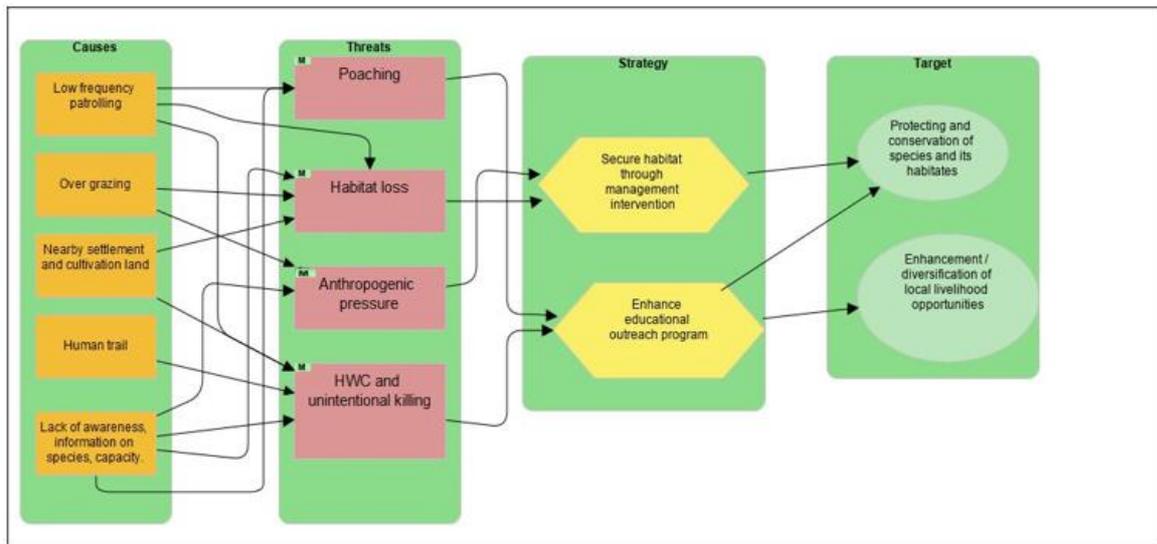


Figure 3: Threat analysis framework



Figure 4: Burrows of Indian pangolins at Kado-Ngatsang Forest area, January 2023.

CHAPTER 3: INTERVENTION/ CONSERVATION PLANS

Vision: A viable population of *Manis crassicaudata* in coexistence with the people in the landscape

Goal: To maintain a viable population of *Manis crassicaudata* in an improved habitat with reduced human wildlife conflict'

Objectives

1. Protection and conservation of species and its habitat
2. Enhancement/diversification of local livelihood opportunities

The strategies and actions outlined in this plan are designed to achieve the overall goals of protecting and conserving the Indian Pangolin and its habitat while supporting the local community's development. The plan addresses issues, threats, and challenges that hinder the conservation objectives, with the aim of ensuring sustainable management of resources in the key biodiversity area.

This section highlights the strategic plans for intervention on various issues, threats, and challenges discussed in Chapter Two of the plan. Through the interventions outlined in this section, we aim to fulfill the conservation goals for the Indian Pangolin in the KBA. The strategic actions are broadly grouped under two objectives, three strategies, and eleven actions, which are specified in the implementation framework (Table 2) along with detailed programs and estimates for the funding required for implementation.

The total funding requirement for successful implementation of the action plan between 2023 and 2033 is estimated at **Nu. 2.75 million (Ngultrum Two Million Seven Lakhs Fifty Thousand)** only. To pursue various activities during the plan's duration, a consistent and sustainable funding mechanism needs to be secured. Currently, the Division is supported in various activities by the IKI Project, BTFEC Project, and RGoB funds for implementing conservation activities in the Division. However, there will still be funding gaps for implementation, which we plan to explore through other conservation donors such as WWF, UNDP, Bhutan Foundation, RSPN, and other international donors for the implementation of the plan."

Table 3: The management intervention plan for the KBA was prepared for 10 years (Budget in Nu. Million)

Objectives	Strategy	Action	Year along with budget (in million)										Total	
			Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10		
Objective 1 Protection and conservation of species and its habitat	1.1 Secure habitat through management intervention.	1.1.1 Habitat mapping for classification of prime habitat	0.05											0.05
		1.1.2 Conduct habitat development works such as enrichment plantation and other restoration activities in degraded habitat		0.30					0.20					0.50
		1.1.3 Conduct regular patrolling to curb wildlife poaching through SMART patrol	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.50
	1.2 Ensure survival of species through conservation efforts	1.2.1 Assess the ecological composition and foraging habits of species		0.05										0.05
		1.2.2 Install camera traps to understand the population dynamics and food habits of the species	0.06		0.06		0.06		0.06		0.06			0.30
		1.2.3 Radio tagging of pangolins to assess the movement and habitat preference			0.5									0.50
Objective 2 Enhancement/diversification of local livelihood opportunities	2.1 Enhance educational outreach program	2.1.1 Provide public awareness program on the importance of the conservation of the species	0.05					0.05					0.10	
		2.1.2 Initiate group in the community for the conservation of species			0.03								0.03	
		2.1.3 Sensitization on waste management in the KBA to local communities, stakeholders, and school children		0.03	0.03					0.03	0.03		0.12	
		2.1.4 Facilitate community-based management of habitat through initiative taken by local community (cattle herders) in monitoring and creating awareness about the site.			0.025	0.025			0.025	0.025			0.10	
		2.1.5 Install walking trails, develop canopies and other facilities for commuters and nature lovers.		0.50									0.50	
		Total estimated budget	0.21	0.93	0.7	0.08	0.11	0.1	0.34	0.11	0.14	0.05	2.75	
		Grand total for ten years	2.75											

CHAPTER 4: MONITORING AND EVALUATION

4.1 Monitoring and evaluation

Monitoring and evaluation are essential components for keeping track of progress and verifying that the action plan is being followed. Timely monitoring is also crucial to ensure effective implementation of the plan and to address any issues or challenges that may arise during the process. Periodic monitoring will be carried out by the field office, under the supervision of the Nature Conservation Section of the Division.

Evaluation will be conducted during the mid-point (5th year) and at the end of the plan period to assess the impact of the interventions. The final evaluation will provide information on the overall impact of the action plan and its achievement of the targets set for the new plan.

The monitoring framework in **Table 3**, along with the provided indicators, will be used for monitoring and evaluation.

Table 4: Monitoring framework

Objectives	Action	Output indicator	Baseline	Unit	Yearly target										Total	
					Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10		
Protection and conservation of species and its habitats	Habitat mapping for classification of prime habitat	Maps produced	0	Nos.	1										1	
	Conduct habitat development works such as enrichment plantation and other restoration activities in degraded habitat	Area brought under habitat management.	0	Ac		2				1					3	
	Conduct regular patrolling to curb wildlife poaching through SMART patrol	No. of SMART patrolling conducted	0	Nos.	12	12	12	12	12	12	12	12	12	12	12	108
	Assess the ecological composition and foraging habits of species	Reports produced	0	Nos		1										1
	Install camera traps to understand the population dynamics and food habits of the species	Records of camera trapping activity	0	Nos.	4		4		4		4		4			20
	Radio tagging of pangolins to assess the movement and habitat preference	No. of Pangolins Radio tagged	0	Nos			2									2
Enhancement/diversification of local livelihood opportunities	Provide public awareness program on the importance of the conservation of the species	Public awareness conducted	0	Nos.	1					1					2	
	Initiate group in the community for the conservation of species	Group formed for management	0	Nos.			1								1	

Sensitization on waste management in the KBA to local communities, stakeholders, and school children	Awareness camping for public and student	0	Nos.		1	1					1	1		4
Facilitate community-based management of habitat through initiative taken by local community (cattle herders) in monitoring and creating awareness about the site.	Awareness camping to cattle herders	0	Nos.			1	1			1	1			4
Install walking trails, develop canopies and other facilities for commuters and nature lovers to appreciate the site.	Facilities developed	0	Nos.		1									1

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