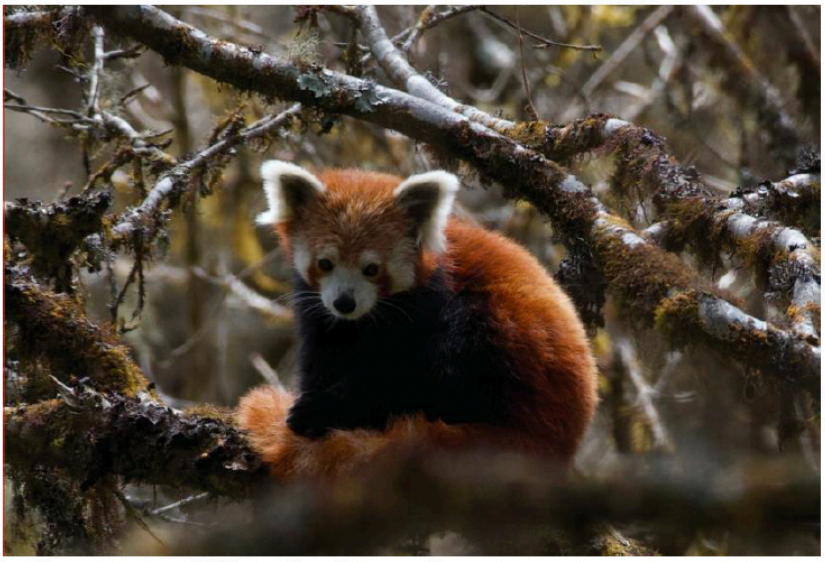
RED PANDA *(Ailurus fulgens)*
CONSERVATION STRATEGY AND ACTION PLAN FOR BHUTAN
JULY 2025- JUNE 2035



Nature Conservation Division, Department of Forests and Park Services, Ministry of Energy and Natural Resources, Royal Government of Bhutan

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Nature Conservation Division,

Department of Forests and Park Services,

Ministry of Energy and Natural Resources,

Royal Government of Bhutan

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FOREWORD

Bhutan's rich biodiversity is a national treasure and a symbol of our commitment to environmental stewardship. Nestled in the heart of the Eastern Himalayas, our country is home to one of the most unique and charismatic species, globally endangered, Red Panda (*Ailurus fulgens*). It is affectionately known as "*Acho Dongka*," in Bhutanese language, and holds deep symbolic reverence among the Bhutanese people. This elusive and shy animal plays a vital role in the fragile ecosystems of our temperate forests. It is both an aesthetically marvel as well as a conservation priority for Bhutan.

The Red Panda Conservation Strategy and Action Plan for Bhutan (July 2025 – June 2035), the second of its kind in Bhutan, is a timely and forward-looking roadmap to safeguard this endangered species. Building upon the lessons of the first plan, this decade-long strategy embraces a holistic and inclusive approach, integrating science, traditional knowledge, and the participation of communities who share their landscapes with the Red Panda. It sets out clear objectives, ranging from habitat protection, research, ecotourism and community stewardship. This plan aligns with broader goals of Bhutan's 13th Five Year Plan, which emphasizes climate resilience, sustainable livelihoods, and biodiversity conservation. It is one of the species for the Ministry's ambitious plan for wildlife and nature-based tourism in Bhutan. Its protection not only benefit ecological stability but also contributes to socio-economic wellbeing of cohabiting communities through benefits shared from tourism ventures.

Despite challenges, Bhutan remains resolute in its conservation mission. With 69.7% of the country's area under forest cover, a strong network of protected areas, and unwavering leadership guided by the country's developmental philosophy of Gross National Happiness, we are uniquely positioned to champion species conservation like the Red Panda. However, this task cannot rest on government alone. It requires partnerships with local people, development partners, civil society, and global allies working hand in hand for a shared goal.

I commend the Department of Forests and Park Services and all stakeholders whose dedication has made this Strategy and Action Plan a reality. It is my sincere hope that this document will not only ensure the survival of the Red Panda in Bhutan but also inspire a new generation of conservation leaders.

Together, let us protect the Red Panda not just for its intrinsic value, but as a symbol of our shared responsibility to preserve life in all its forms.

Tashi Delek!

Karma Tshering
Secretary

PREFACE

The Red Panda, an elusive species of Bhutan's temperate forests, continues to face increasing threats despite being legally protected and ecologically significant. Habitat degradation, climate change, disease, and limited conservation resources challenge our ability to safeguard this iconic species. As we reflect on the experiences of the first Red Panda Action Plan (2018–2023), it becomes evident that sustained and adaptive conservation efforts are essential to ensure the survival of the red panda within our landscapes.

The Red Panda Conservation Strategy and Action Plan for Bhutan (July 2025–June 2035) has been developed as a strategic, evidence-based framework that integrates the lessons from the past with emerging conservation needs. This second edition aligns with Bhutan's national development priorities and the broader vision of the 13th Five Year Plan, which emphasizes environmental sustainability, community engagement, and resilient ecosystems. The Strategy is rooted in science, supported by robust field data, and enriched by the wisdom and participation of local communities and frontline staff of the department.

The Department of Forests and Park Services is committed to implementing this Strategy and Action Plan in close collaboration with national and international partners. The Nature Conservation Division has taken the lead in steering this important initiative, supported by a team of dedicated professionals from across all field offices of the department. We are also grateful for the contributions of civil society organizations, donors, and community members who remain our strongest allies in conservation.

We present this Strategy and Action Plan not only as a guide for action but as a reaffirmation of our collective responsibility to protect the red panda and the habitats it depends upon. It is our hope that this Strategy inspires coordinated efforts and renewed commitment for conservation across generations.

Tashi Delek

Karma Tenzin
Director

ACKNOWLEDGEMENT

I would like to extend my heartfelt appreciation to everyone involved in the development of this Conservation Strategy and Action Plan, an important priority for the Nature Conservation Division in our pursuit of securing funding and ensuring the long-term protection of this unique and vital species.

In particular, I would like to thank Nature Conservation Section focal officials from all field offices under the Department of Forests and Park Services for their valuable contributions during the drafting process. My sincere gratitude also goes to the core team from the Nature Conservation Division and Jigme Khesar Strict Nature Reserve for their leadership in formulating this plan and for their coordination with key stakeholders throughout its development.

Special thanks to *Connaître et Protéger le Panda Roux* (Knowing and Protecting Red Panda), France, for their critical review and continued commitment to collaborate on the implementation of this plan.

Above all, I wish to express my deepest thanks to the GEF-Ecotourism Project under the Department of Tourism for funding the formulation of this plan, and to WWF Bhutan for their generous co-financing support.

Sonam Wangdi

Chief Forestry Office

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ACRONYMS

BFL	Bhutan for Life
BTFEC	Bhutan Trust Fund for Environmental Conservation
CD	Canine Distemper
CITES	Convention on International Trade of Endangered Species of Wild Fauna and Flora
DoFPS	Department of Forests and Park Services
DoL	Department of Livestock
DoT	Department of Tourism
FNCA	Forest and Nature Conservation Act 2023
FNCRR	Forest and Nature Conservation Rules and Regulations 2023
IUCN	International Union for Conservation of Nature
LFMA	Local Forest Management Area
MoENR	Ministry of Energy and Natural Resources
NCD	Nature Conservation Division
NLCS	National Land Commission Secretariat
NWFP	Non-Wood Forests Product
RGoB	Royal Government of Bhutan
SMART	Spatial Monitoring and Reporting Tool
SWS	Sakteng Wildlife Sanctuary
UWIFoRT	Ugyen Wangchuck Institute for Forestry Research and Training
WWF	World Wildlife Fund

EXECUTIVE SUMMARY

The 2nd Edition of the Red Panda Conservation Action Plan for Bhutan, now renamed as Red Panda Conservation Strategy and Action Plan (July 2025-June 2035) is a comprehensive 10-year document aimed at ensuring the conservation of a viable red panda population within Bhutan's landscape. This ambitious Strategy and Action Plan is driven by the vision of "*An Ecologically stable population of red panda conserved within its distribution range in Bhutan landscape*" and the overarching goal of "*To strengthen red panda conservation programs and manage habitat through a community participatory conservation approach*". We define an ecologically stable population as one that is sustainably supported by its environment and contributes to maintaining the ecological integrity and functioning of the ecosystem.

The Strategy and Action Plan is structured around four key objectives, each designed to address critical aspects of Red Panda conservation. These objectives are supported by nine specific outputs and a total of 37 actionable items. The strategic focus of the plan includes enhancing habitat protection and management, strengthening community engagement and participation, conducting research and monitoring, and securing sustainable financing and partnerships. These efforts are crucial for safeguarding and managing Red Panda habitats, promoting sustainable land use practices, engaging local communities in conservation activities, building capacity, carrying out scientific research, establishing monitoring systems, mobilizing financial resources, and developing partnerships with stakeholders.

The proposed budget for the 10-year plan amounts to Nu. 127.5 million, which is critical to implementing the 37 actions outlined in the plan. Funding will be allocated to various initiatives, including habitat protection, community engagement, research, and capacity building. The plan emphasizes the need for proper financing mechanisms to ensure the long-term success of Red Panda conservation efforts. The plan builds on the achievements of previous initiatives and introduces several promising projects.

Significant threats to Red Pandas in Bhutan include habitat loss, fragmentation, climate change, and predation by free-roaming dogs. The lack of awareness among local communities and limited funding for conservation efforts exacerbate these challenges. Despite these challenges, promising initiatives such as the sustainable rangeland management project in Sakteng Wildlife Sanctuary and the activities under the Bhutan for Life project have shown potential in protecting red panda habitats and supporting local

communities. Additionally, the Bhutan for Life project prioritizes the conservation of lesser-known species, including Red Pandas, through sustainable financing of protected areas.

The 2nd Edition Red Panda Conservation Strategy and Action Plan for Bhutan (July 2025-June 2035) presents a visionary and strategic framework for conserving Red Pandas within their natural habitat. By focusing on habitat protection, community engagement, research, and sustainable financing, the plan aims to strengthen conservation efforts and ensure the survival of this endangered species. With dedicated efforts and collaborative support, Bhutan is poised to make significant strides in Red Panda conservation over the next decade.

CHAPTER 1: BACKGROUND

The Red Panda (*Ailurus fulgens*), an arboreal mammal known for its shy and elusive nature is native to the Eastern Himalayas. The Red Pandas face serious threats and are classified as "Endangered" on the IUCN Red List (Wang et al., 2008). Their range is fragmented and characterized by low population densities (Wei et al., 1999; Thapa et al., 2018). Preferring temperate conifer and cool broadleaf forests with dense bamboo undergrowth, it is typically found at elevations between 1,500 and 4,800 meters (Choudhury, 2001). Historically, Red Pandas were distributed across Nepal, Bhutan, southwest China, Myanmar, and northeastern India, including states like Sikkim and Arunachal Pradesh as shown in Figure 1 (Wei et al., 2022; Choudhury, 2001). Recent genetic research suggests two distinct species: the Himalayan Red Panda (*Ailurus fulgens*) and the Chinese Red Panda (*Ailurus styani*), separated by the Salween River (Hu et al., 2020; Wang et al., 2008).

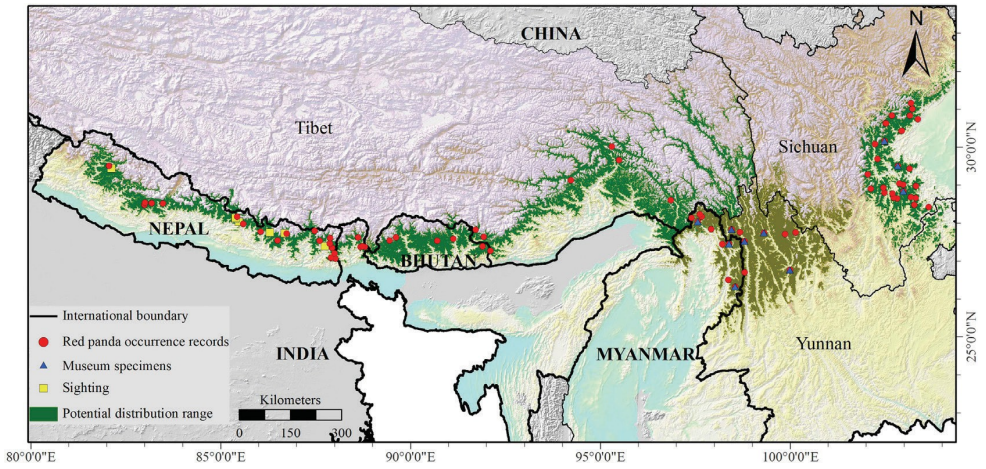

Figure 1. Map showing potential global distribution of Red Panda along with sighting information (Wei et al., 2022).

Red Pandas depend on dense bamboo for food and shelter (Yonzon & Hunter, 1991). Although classified as carnivores, their diet is primarily herbivorous, consisting of bamboo leaves and shoots, supplemented by fruits, mushrooms, roots, and acorns, with occasional consumption of insects and bird eggs (Yonzon & Hunter, 1991). Within the habitat, fallen logs and stumps serve as climbing aids and resting spots, while proximity to water sources is vital for their survival (Dendup et al., 2020; Bista et al., 2017).

Red Pandas face numerous threats, including habitat loss and fragmentation caused by deforestation and infrastructure development (Glatston, 1994; Wei et al., 1999). Poaching persists despite legal protections in all range countries (Yonzon & Hunter, 1991; Glatston, 1994). Predation by free-roaming domestic dogs, often used by herders, poses another risk (Bista et al., 2017; Dendup et al., 2016). Climate change exacerbates their vulnerability by altering vegetation patterns and increasing extreme weather events, which disrupt their food

supply and habitat (Glatston et al., 2015). Additionally, dependence on natural resources by local communities can lead to disturbances in Red Panda habitats (Dhendup et al., 2016).

In Bhutan, the population estimate of Red Panda is found to be minimum at 302 individuals and represent a vital component of the country's rich biodiversity (NCD, 2024). Red Pandas are found in 19 of Bhutan's 20 districts, with Pemagatshel being the exception. Their elevation range spans 1,520 to 4,331 meters, closely tied to the availability of bamboo species like *Yushania maling*, *Y. microphylla*, *Borinda grossa*, and *Arundinaria racemosa* (Dorji et al., 2011; Letro et al., 2022; Dendup et al., 2023). Recent surveys have recorded Red Pandas in diverse habitats, including alpine meadows, scrub, and areas near human settlements, in addition to mixed conifer and fir forests (Dendup et al., 2023). Within protected area network, their presence is recorded in Wangchuck Centennial National Park, Jigme Dorji National Park, Phrumsengla National Park, Jigme Singye Wangchuk National Park, Jigme Khesar Strict Nature Reserve, Bumdeling Wildlife Sanctuary, Jomotsangkha Wildlife Sanctuary and Sakteng Wildlife Sanctuary, and biological corridors (BC3, BC4, BC6, BC7 and BC8) that enhance genetic connectivity. Approximately 10,971.2 km² of Bhutan's land (28.58% of the country; Figure 2) is recognized as potential red panda habitat (Letro et al., 2022).

Despite legal protections under Schedule II of the Forest and Nature Conservation Act of Bhutan (2023), Red Pandas face significant challenges. Predation and disease transmission by free-roaming dogs, habitat degradation from climate change, and limited conservation awareness among local communities are major issues (NCD, 2024; Dhendup et al., 2020). Additionally, financial and technical constraints hinder effective conservation efforts for the red panda (NCD, 2024). Funding for Red Panda conservation is often overshadowed by larger, charismatic species like tigers and snow leopards. Although the Red Panda Conservation Action Plan 2018–2023 provides a roadmap, many initiatives remain unimplemented due to resource limitations (NCD, 2023).

This Red Panda Conservation Strategy and Action Plan for Bhutan July 2025 – June 2035 aims to refine and strengthen conservation strategies, ensuring a more sustainable future for this unique species in Bhutan.

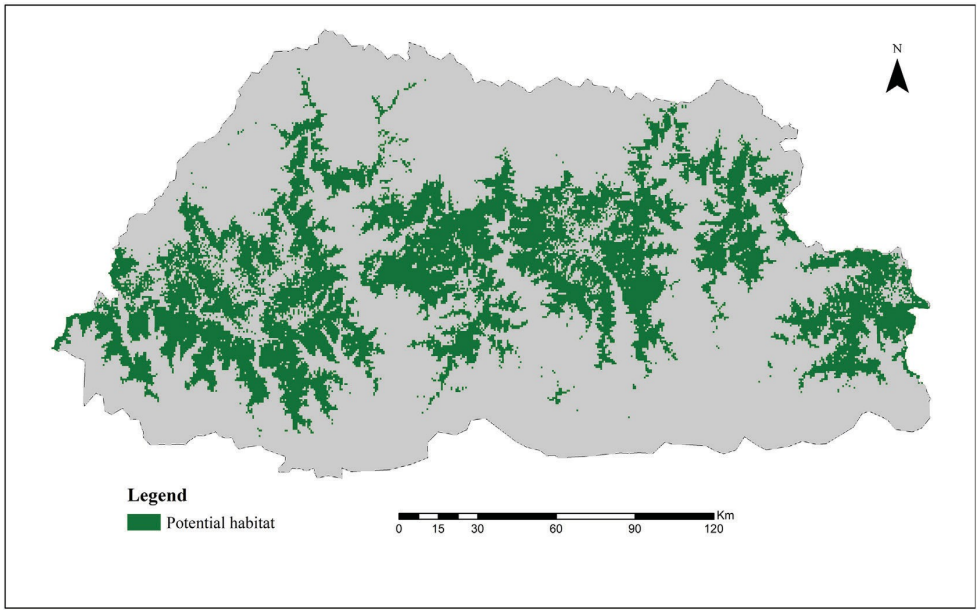

Figure 2. Potential Habitat of Red Panda in Bhutan (Lethro et al., 2022)

Red Panda recorded at Phrumsengla National Park

CHAPTER 2: REVIEW OF THE 1ST RED PANDA ACTION PLAN

The 1st Red Panda Action Plan of Bhutan (2018-2023) was devised with five strategic objectives encompassing 55 specific actions aimed at conservation Red Panda and its habitat through landscape conservation approach. These objectives not only focused on the conservation efforts within Bhutan but also addressed transboundary issues, particularly between Bhutan and India, to enhance collaborative conservation efforts. However, despite the comprehensive framework, the plan faced significant challenges in implementation due to funding constraints and complexities involved in transboundary cooperation.

A meticulous review of the action plan revealed that only approximately 27% of the prescribed actions were successfully achieved. This translates to about 15 out of the 55 actions being fully implemented. This limited success can be attributed to various factors, including insufficient financial resources, administrative hurdles, and the complexities of international collaboration. The critical aspects that hindered the execution of the action plan was the lack of funding. Conservation initiatives require substantial financial support to ensure effective implementation and sustainability. The anticipated funding did not materialize, leading to many planned activities being either delayed or abandoned.

In light of these challenges, a thorough evaluation was conducted to identify the effective elements of the plan and the areas that required modification. It was observed that actions which relied solely on national resources and initiatives had a higher success rate compared to those dependent on international collaboration. Consequently, it was recommended to remove activities related to transboundary collaborations from the forthcoming action plan.

The proposed 2nd edition of the Red Panda Action Plan of Bhutan (Now Red Panda Conservation Strategy and Action Plan for Bhutan) will primarily focus on national-level activities while ensuring that the successful elements of the previous plan are carried forward. By refining the objectives and concentrating on achievable targets within the national framework, the new plan aims to enhance the conservation efforts for Red Pandas in Bhutan. This strategic shift is expected to optimize resource allocation, improve implementation efficiency, and ultimately, contribute more effectively to the conservation of this endangered species.

The review of the 1st Red Panda Action Plan of Bhutan highlighted both achievements and shortcomings, providing valuable insights for the development of a more focused and realistic 2nd edition. By addressing the limitations identified, the new plan aims to foster a more sustainable and impactful conservation strategy and action plan for Red Pandas in Bhutan.

CHAPTER 3: THREATS AND CHALLENGES FOR RED PANDA CONSERVATION

3.1 Threats

We identified threats based on past studies and consultation with the field offices of the department. They face threats from habitat loss and fragmentation, illegal poaching, unplanned development activities, and irregular weather patterns that disrupt the flowering of bamboo, their primary food source (Lethro et al., 2022; NCD, 2024). The emerging threat is the numerous free-roaming dogs within the Red Panda habitat, that tends to trigger high mortality rates of Red Pandas. A comprehensive threat analysis was conducted considering all these factors (Figure.3). The threat ranking analysis was conducted using Miradi software, based on score values of Low, Medium, High, and Very High attained against three aspects of scope, severity and irreversibility. The culmination of overall threat rating considering these threats ranked "MEDIUM" (Table 1) for the species.

Red panda photographed by Phub Dorji (tourist guide)

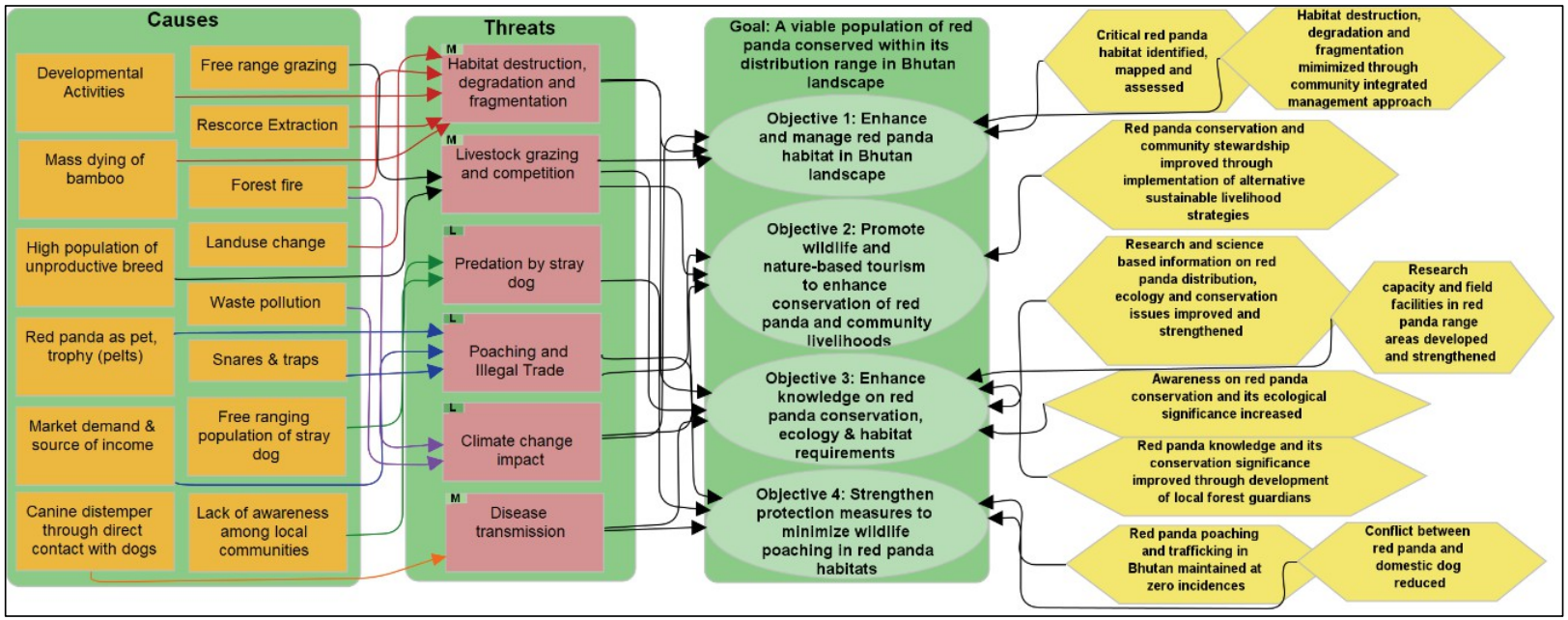

Figure 3. Conceptual model for threat analysis for conservation of red panda in Bhutan.

Table 1. The current status of threat for red panda conservation in Bhutan

Threats\Targets	Objective 1: Enhance and manage red panda habitat in Bhutan landscape	Objective 2: Promote wildlife and nature-based tourism to enhance conservation of red panda and community livelihoods	Objective 3: Enhance knowledge on red panda conservation, ecology and habitat requirements	Objective 4: Strengthen protection measures to minimize wildlife poaching in red panda habitats	Summary Threat Rating
Habitat destruction, degradation and fragmentation	Medium		Medium		Medium
Livestock grazing and competition	High	Low	Medium		Medium
Predation by stray dog				Low	Low
Poaching and illegal Trade		Low		Medium	Low
Climate change Impacts	Medium	Low			Low
Disease transmission			Medium	Medium	Medium
Summary Target Ratings:	**Medium**	**Low**	**Medium**	**Medium**	**Overall Rating** **Medium**

3.1.1 Habitat destruction, degradation and fragmentation

Most Red Panda habitats are in the eastern Himalayan region, a landscape encircled by rapidly developing nations with some of the world's highest population densities (Thapa et al., 2020). The rising population in these areas intensifies land-use pressures for housing, agriculture, and infrastructure, leading to increased demand for natural resources (Thapa et al., 2020).

In addition to natural threats such as erratic bamboo flowering and landslides, Red Panda habitats are severely impacted by human activities including resource extraction and infrastructure expansion (Dendup et al., 2020). Forest fires are also a significant threat to both Red Panda populations and their habitat conservation (Bista & Paudel, 2014). The development of linear infrastructure, especially roads and power transmission lines result in extensive forest clearing, contributing to habitat loss, degradation, and fragmentation (Dendup et al., 2020). Such projects not only divide habitats but also increase the risk of soil erosion and landslides due to disturbed and exposed soil. Moreover, roads facilitate access to remote areas, accelerating resource extraction and increasing Red Pandas' susceptibility to poaching and illegal trade (Choudhury, 2001; Dorji et al., 2021).

Although Red Pandas show some adaptability to landscapes altered by human activity, this adaptability comes with a trade-off that compromises their long-term survival (Bista et al., 2022). This highlights the urgent need to incorporate habitat fragmentation and forest exploitation concerns into conservation strategies to ensure the species' persistence (Bista et al., 2022).

3.1.2 Livestock grazing and competition

In Bhutan, the majority of rural communities practice agro-pastoralism, and livestock grazing has emerged as a significant threat to Red Panda habitats (Namgay et al., 2013). Grazing activities contribute to bamboo depletion, habitat degradation, and decreased Red Panda presence in affected areas (Namgay et al., 2013). Research indicates that grazing damages bamboo, which is a vital food source for Red Pandas, and that the species tends to avoid areas with intense livestock activity, limiting their access to both food and resting sites (Lama et al., 2020). High livestock density and herding practices also reduce habitat suitability, especially during sensitive periods such as the cub-rearing season (Bista et al., 2023).

Free-roaming livestock further exacerbate habitat fragmentation and degradation by trampling and overgrazing bamboo, underscoring the urgent need for effective management strategies (Tobgay et al., 2020). The implementation of targeted livestock management and conservation plans is critical to minimizing these disturbances and enhancing Red Panda survival (Bista et al., 2022; Dendup et al., 2020).

Some of the key challenges include free-range grazing, a high population of unproductive livestock breeds, and traditional grazing rights (NCD, 2024; Dhendup et al., 2020). Similar impacts have been observed in Nepal, where livestock grazing has been identified as a major contributor to red panda habitat loss (Lama et al., 2020).

Red Pandas in Bhutan and across the Himalayan region typically inhabit elevations ranging from 1,500 to 4,800 meters (Wangchuk, 2015; Letro et al., 2022; Davis, 2024), zones that also serve as key grazing areas for livestock (Dendup et al., 2020). As both human and livestock populations increase, Red Pandas are increasingly forced to coexist with domestic animals within their natural habitat (Dendup et al., 2020). However, studies consistently indicate that ongoing and future livestock grazing and competition for resources pose substantial threats to Red Panda conservation (Dendup et al., 2020; Letro et al., 2022; Davis, 2015).

To safeguard Red Panda populations, it is essential to adopt appropriate measures that mitigate grazing-related threats. Reducing competition and habitat degradation through effective management will create conditions that allow red pandas to thrive in their native environments.

3.1.3 Disease transmission

Red Pandas are increasingly threatened by diseases transmitted from both domestic animals and wild species (Sharon et al., 2021). One of the most serious threats is Canine Distemper, a highly contagious viral disease primarily transmitted from domestic dogs to red pandas (Sharon et al., 2001). The risk of transmission is heightened by the overlap between livestock grazing areas and red panda habitats, where domestic dogs often accompany herders. Due to its contagious nature, canine distemper has the potential to decimate wild Red Panda populations.

In addition to existing disease threats, climate change may facilitate the emergence of new

pathogens that could further endanger red panda populations. Preventing the spread of canine distemper relies heavily on effective vaccination of domestic dogs (Sharon et al., 2001). To be successful, vaccination programs must ensure both high-quality vaccine use and comprehensive coverage, leaving no dogs in and around red panda habitats unvaccinated.

3.1.4 Predation by stray dogs

The presence of free-roaming dogs can cause wildlife to move away from an area, either temporarily or permanently (Hughes & Macdonald, 2013). Past studies recorded evidences of Red Panda depredation by domestic dogs (Dorji & Venes, 2012) and killings by domestic dogs are reported as major threats in Nepal (Bista & Paudel, 2014). DFO Trashigang and DFO Wangduephodrang recorded two cases of red panda depredation by dogs from 2020 to 2025. Educating local trekkers and herders on impact of free roaming dogs on Red Panda will reduce direct threat to red panda from domestic dogs.

3.1.5 Poaching and Illegal trades

There are no incidences of people engaging in poaching or illegal trades in Bhutan. However, elsewhere, it is killed or poached for meat, fur, pelts and other body parts. In countries such as China, Nepal and Myanmar, red panda is killed or poached for their body parts and traded in illegal markets (Dhendup et al., 2020). In some range countries, the Red Panda meat is consumed, while fur and pelts fetch good price in the black market (Bista et al., 2020). Although there is no direct or deliberate killing of Red Panda in Bhutan, there has been records of it being killed when ensnared in the traps set for other wildlife. People set traps for other wildlife species such as musk deer or pheasants and red panda has been reported to get killed when they get entrapped in such snares. In the past, however, people in Red Panda habitat used to make and wear hats of Red Panda (Dorjee, S. et. al., 2011).

Raising awareness among local herders and communities living in Red Panda habitats about the species' ecological importance can help prevent unintentional killings. Additionally, promoting the use of SMART patrolling in Red Panda habitats, with a focus on combating poaching, can significantly reduce the risk of red pandas being caught in snares intended for other wildlife.

3.1.6 Climate change

Climate change is increasingly contributing to the degradation and fragmentation of Red Panda habitats (Zang et al., 2020). In the Eastern Himalayas, where Red Pandas have a limited habitat range, this range is projected to shrink more rapidly than the species can adapt—posing a serious risk of extinction (Zang et al., 2020). A simulation conducted in the Chitwan-Annapurna landscape of Nepal predicts a nearly 60% decline in potential Red Panda habitat by 2070 due to climate change impacts (Thapa et al., 2025). Additionally, studies have found a positive correlation between climate change and the decline of understory bamboo species—the primary food source for Red Pandas—indicating a likely food shortage within their natural habitats (Tuanmu et al., 2013). Warming trends across the Himalayas are expected to intensify with elevation, particularly in regions such as Bhutan, Nepal, and Himachal Pradesh (Shrestha, 2009).

Implementing climate-smart habitat management strategies—such as planting native bamboo species, using nature-based solutions to prevent erosion and reduce habitat degradation, and conserving key host tree species—can enhance the resilience of Red Panda habitats to the impacts of climate change.

3.2 Challenges

3.2.1 Livelihood practice and traditional rights

Forest grazing is the primary source of fodder for livestock in Bhutan, and livestock plays a crucial role in the livelihoods of rural communities (Roder et al., 2002). The substantial number of livestock and the widespread traditional grazing rights make it challenging to monitor and assess the impact of grazing on red panda conservation (Dhendup et al., 2020).

3.2.2 Inadequate resources and capacity

A major challenge in the conservation of Red Pandas and other species in Bhutan is the lack of adequate human resources and financial support. Frontline forestry officials, who play a crucial role in Red Panda conservation and research, often lack the necessary technical skills specific to this species due to their multitasking responsibilities. Additionally, there are few conservation professionals with extensive knowledge and experience in Red Panda conservation in Bhutan. Securing financial support is particularly difficult, except for high-profile species like tigers and snow leopards. Regular capacity building and professional skill development for frontline forestry staff and community members are essential to effectively advance species research and conservation efforts for the red panda.

Red panda photographed by Yejay, Forester

CHAPTER 4: CONSERVATION STRATEGY AND ACTIONS

4.1 Vision, Goal and Objectives

4.1.1 Vision:

An Ecologically stable population of red panda conserved within its distribution range in Bhutan landscape"

4.1.2 Goal:

To strengthen red panda conservation programs and manage habitat through community participatory conservation approach.

4.1.3 Objectives

Objective 1: Enhance knowledge on Red Panda conservation, ecology, and habitat requirements

Objective 2: Enhance and manage the Red Panda habitat in Bhutan landscape

Objective 3: Promote wildlife and nature-based tourism to enhance conservation of Red Panda and community livelihoods

Objective 4: Strengthen protection measures to minimize wildlife poaching in Red Panda habitats

4.1.3.1 Objective 1: Enhance knowledge on Red Panda conservation, ecology, and habitat requirements

Rationale

Understanding the distribution and habitat requirements of species is crucial for assessing their ecological needs and habitat preferences (Dendup et al., 2020). The interplay of habitat dynamics, connectivity, and their impact on survival of the species is a fundamental aspect of wildlife ecology (Tobgay & Mahavik, 2020). Currently, the effectiveness of conservation measures for the Red Panda remains unclear due to its elusive behavior, low reproductive rate, and specialized ecological niche, making it sensitive to human-induced disturbances (Dendup et al., 2020). Conducting surveys and studies can provide valuable insights and help to assess habitat suitability, overlaps, and predict habitat changes over time, providing a clearer picture of the red panda's ecological needs (Su et al., 2021). Despite the 2023 nationwide red panda survey, comprehensive data on movement ecology remains limited,

hindering effective conservation planning. Conducting studies on breeding ecology and movement using radio collaring is crucial for gathering the data necessary to inform long-term conservation strategies (Nature Conservation Division, 2024).

Output 1.1*: Research and science-based information on red panda distribution, ecology and conservation issues improved and strengthened*

Action 1.1.1: Conduct nationwide Red Panda survey to understand its distribution and its population estimates after every 5 years.

Action 1.1.2: Conduct foraging ecology study to understand Red Panda food habits and its dietary compositions.

Action 1.1.3: Conduct breeding ecology study to understand courtship behavior, breeding success and fecundity.

Action 1.1.4: Conduct Red Panda movement ecology study to understand its movement, home range, habitat selection and Action pattern through GPS/radiotelemetry.

Action 1.1.5: Conduct study on socio-cultural and ecological significance of Red Panda to raise its profile and increase policy attention for conservation.

Output 1.2: *Research capacity and field facilities in red panda range areas developed and strengthened.*

Action 1.2.1: Equip the field offices of Red Panda range areas with adequate research field equipment (radio collar, GPS, camera traps, digital cameras, telescopic lens, smart phones, sample collection tool kit).

Action 1.2.2: Organize research methodology, data collection and analysis trainings to field rangers.

Action 1.2.3: Provide wildlife rescue operation training to field rangers and local forest guardians.

Output 1.3: *Awareness on Red Panda conservation and its ecological significance increased.*

Action 1.3.1: Develop Red Panda awareness and education materials (posters, pamphlets, visual materials) for different stakeholders.

Action 1.3.2: Engage monastic institutions in promoting Red Panda conservation through spiritual talks.

Action 1.3.3: Conduct periodic awareness and education programs to policy makers, tour operators, local communities and students through the concept of living classrooms.

Output 1.4: *Red Panda knowledge and its conservation significance improved through development of local forest guardians*

Action 1.4.1: Institute local forest guardians to engage in Red Panda conservation programs.

Action 1.4.2: Provide hands on Red Panda research and awareness campaigning methodology trainings to local forest guardians.

Action 1.4.3: Organize exposure tours and exchange visits for field rangers and local forest guardians to successfully implement red panda projects, wildlife and nature-based tourism.

4.1.3.2. Objective 2: Enhance and manage the Red Panda habitat in Bhutan landscape

Rationale

The Red Panda (*Ailurus fulgens*), an endangered species, faces severe habitat challenges in Bhutan due to multiple anthropogenic and environmental factors (NCD, 2024). Habitat destruction, degradation, and fragmentation are prominent threats resulting from expanding human activities and unsustainable land use (NCD, 2024; Dhendup et al., 2020). Climate change compounds these issues by altering the distribution and growth of bamboo, a critical food source for red pandas (Thapa et al., 2025). Livestock grazing and competition for resources further strain their habitats, leading to reduced availability of suitable living spaces (Dhendup et al., 2020). Additionally, predation by stray dogs, poaching, illegal trade, and disease outbreaks significantly jeopardize the species' survival (Dendup et al., 2023).

Conservation authorities emphasize implementing community-based forest management practices, enhancing habitat connectivity, and enforcing anti-poaching laws to mitigate these threats (NCD, 2024). Efforts to rehabilitate degraded habitats through reforestation and address climate-induced challenges are equally crucial. The involvement of local communities in conservation initiatives, such as reducing livestock grazing in red panda habitats, can play a pivotal role in sustaining their populations (Dendup et al., 2023). The conservation strategies and programs should focus on the enhancement and manage the red panda habitat in Bhutan landscape.

Output 2.1: *Critical red panda habitat identified, mapped, and assessed*

Action 2.1.1: Identify and map critical red panda habitat for protection and management interventions

Action 2.1.2: Conduct stakeholder consultation meeting to harmonize and mainstream critical Red Panda habitats into National Land Use Zoning (NLUZ), and developmental plans

Action 2.1.3: Develop online/offline red panda observation forms in mobile apps to update Red Panda information and provide hands-on training to the field rangers

Output 2.2: *Habitat destruction, degradation, and fragmentation minimized through community-integrated management approach*

Action 2.2.1: Initiate habitat improvement through enrichment plantation of native plants and bamboo species

Action 2.2.2: Support pasture/rangeland development through planting fodder trees and suitable native grass species for improved fodder production to offset competition with Red Panda

Action 2.2.3: Establish a nursery for the supply of palatable plant species for Red Panda and livestock

Action 2.2.4: Regulate extraction of timber and NWFPs in critical Red Panda habitats through the creation of LFMAs

Action 2.2.5: Initiate commercial plantation of bamboo to help communities develop bamboo products to generate additional income and minimize resource competition

Action 2.2.6: Institute community-based forest fire management group by providing firefighting equipment (blowers, spades, gloves, goggles, grasscutters, and drip torches) to strengthen prevention and response mechanisms

Action 2.2.7: Create awareness on waste management and adopt waste in and waste out policy in critical Red Panda habitat

4.1.3.3. Objective 3: Promote wildlife tourism to enhance conservation of Red Panda and community livelihoods

Rationale

Promoting wildlife tourism is a strategic approach to enhance Red Panda conservation while supporting the livelihoods of local communities. The Red Panda faces threats from habitat destruction, fragmentation, predation by stray dog, poaching and illegal trade (IUCN, 2021). Wildlife tourism can provide alternative sustainable income sources for communities living adjacent to Red Panda habitats. By participating in tourism, the local stakeholders are

incentivized to protect wildlife and their habitats. Moreover, well-managed wildlife tourism initiatives raise awareness and foster a sense of responsibility for Red Panda conservation in Bhutan.

Involvement of eco-tours and community-led initiatives can educate visitors about the ecological importance of Red Pandas contributing to a broader conservation effort. Investments in ecotourism eco-friendly infrastructure also generate employment for the youth, improve local services and encourage cultural exchange which strengthens community resilience towards Red Panda conservation (Scheyvens, 2015).

Integrating Red Panda conservation with wildlife tourism ensures that conservation efforts are aligned with community development goals and fostering a win-win situation. Overall, wildlife tourism serves as a tool for harmonizing red panda conservation and enhancement of local community livelihood.

Output 3.1 *Red Panda conservation and community stewardship improved through implementation of alternative sustainable livelihood strategies*

Action 3.1.1 Identify Red Panda sites and develop eco-friendly trails and basic amenities for promotion of red panda tourism

Action 3.1.2 Train and engage local youth as nature guide for Red Panda tourism to generate additional income

Action 3.1.3 Develop benefit sharing mechanism for local communities to benefit from Red Panda tourism

Action 3.1.4 Identify and promote homestay in Red Panda tourism site

Action 3.1.5 Create Red Panda-themed handicrafts, such as sculptures or textiles, which reflect cultural significance and support local economies

4.1.3.4. Objective 4: Strengthen protection measures to minimize wildlife poaching in Red Panda habitats

Rationale

In many countries, Red Panda are killed or poached for its fur, meat and pelt. Some are captured to be kept as pet. In Nepal alone, 13 seizures of illegal Red Panda body parts were made from 2016 to 2019 (TRAFFIC, 2020).

In Bhutan, there has not been a single record till now of Red Panda either killed or poached deliberately for illegal trade or for use in the household. TRAFFIC reported that from July 2010 till June 2019, there has been not a single record of Red Panda killing or poaching in Bhutan. However, the cases of inadvertent or accidental killings are reported. This occurs mainly when the Red Panda get entangled in the traps and snares set for Musk Deer or

Pheasant (Dorji et al, 2011).

In order to maintain zero poaching in Bhutan, it is of paramount importance to strengthen surveillance and intelligence sharing among different law enforcement agencies. Beefing up SMART patrolling, both in terms of frequency as well as effectiveness will immensely contribute to Red Panda conservation and maintaining zero poaching cases. Training of frontline rangers in detection of wildlife crime and conducting anti-snare operations are all aimed to thriving of Red Panda and ensure not a single animal is killed or poached.

Output 4.1: *Red panda poaching and trafficking in Bhutan maintained at zero incidences*

Action 4.1.1: Strengthen surveillance and intelligence networking involving local forest guardians, armed personnel and other relevant stakeholders

Action 4.1.2: Strengthen SMART patrolling programs in red panda habitats through increased patrolling frequencies

Action 4.1.3: Train frontline rangers on detection of wildlife crimes and enforcement

Action 4.1.4: Conduct anti-snare operations involving local forest guardians

Action 4.1.5: Provide patrolling safety gears for field rangers and local forest guardians

Output 4.2: *Conflict between red panda and domestic dog reduced*

Action 4.2.1: Sensitize livestock herders residing in the red panda habitat range on the importance of dog sterilization and livestock vaccination to prevent diseases.

Action 4.2.2: Control the population of free ranging dogs through sterilization programs to reduce and prevent the spread of diseases in collaboration with DoL.

Action 4.2.3: Implement wildlife health strategy in collaboration with DoL to reduce diseases transmission.

4.1.4 Implementation and Budget Outlay

4.1.4.1 Institutional Arrangements

The NCD will coordinate the implementation of the Strategy and Action Plan in collaboration with functional divisions, UWIFoRT, field offices and other relevant agencies. The execution of the activities detailed in the Conservation Strategy and Action Plan will be the responsibility of field divisions and protected areas located within red panda habitats. The UWIFoRT will lead the research and development aspects of the Conservation Strategy and Action Plan. Furthermore, financial and technical assistance from conservation partner organizations will play a crucial role in ensuring the successful implementation of the Conservation Strategy and Action Plan.

4.1.4.2 Work Plan and Budget

Implementing this Conservation Strategy and Action Plan over the ten years (July 2025–June 2035) is projected to require a total budget of **Nu. 127.5 million** as shown in Table 2. The primary funding sources will be from the Royal Government of Bhutan and the donor organizations. The NCD will take the lead in sourcing additional funding needs from potential national and other international donors for the implementation of this Red Panda Strategy and Action Plan.

Female red panda with cub recorded at JSWNP (Dr. Lungten Dorji's record)

Table 2. Implementation Plan and Budget Outlay of Red Panda Conservation Strategy and Action Plan July 2025 – June 2035

Implementation Plan and Budget Outlay	Budget in Million Ngultrum										Sub-Total
	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	
Objective 1. Enhance knowledge on red panda conservation, ecology and habitat requirements											
Output 1.1. Research and science-based information on red panda distribution, ecology and conservation issues improved and strengthened											
Action 1.1.1. Conduct nationwide red panda survey to understand its distribution and its population estimates after every 5 years					5					5	10
Action 1.1.2. Conduct foraging ecology study to understand red panda food habits and its dietary compositions			0.8								0.8
Action 1.1.3. Conduct breeding ecology study to understand courtship behavior, breeding success and fecundity						0.8					0.8
Action 1.1.4. Conduct red panda movement ecology study home range, habitat selection and Action pattern through radiotelemetry				2					2		4
Action 1.1.5. Conduct study on socio-cultural and ecological significance of red panda to raise its profile and increase policy attention for conservation		1							1		2
Output 1.2. Research capacity and field facilities in red panda range areas developed and strengthened											
Action 1.2.1. Equip the field offices of red panda range areas with adequate research field equipment (radio collar, GPS, camera traps, digital cameras, telescopic lens, smart phones, sample collection tool kit)				2				1.5			3.5
Action 1.2.2. Organize research methodology, data collection and analysis trainings to field rangers			0.7				0.7				1.4
Action 1.2.3. Provide wildlife rescue operation training to field rangers and local forest guardians		0.8			0.8			0.8			2.4
Output 1.3. Awareness on red panda conservation and its ecological significance increased											
Action 1.3.1. Develop red panda awareness and education materials (posters, pamphlets, visual materials) for different stakeholders		1				1					2
Action 1.3.2. Engage monastic institutions in promoting red panda conservation through spiritual talks				0.5				0.5			1
Action 1.3.3. Conduct periodic awareness and education programs to policy makers, tour operators, local communities and students through the concept of living classrooms			0.7			0.7			0.7		2.1
Output 1.4. Red panda knowledge and its conservation significance improved through development of local forest guardians											

Action 1.4.1. Institute local forest guardians to engage in red panda conservation programs		1			1			1			3
Action 1.4.2. Provide hands on red panda research and awareness campaigning methodology trainings to local forest guardians		0.4			0.4			0.4			1.2
Action 1.4.3. Organize exposure tours and exchange visits for field rangers and local forest guardians to successfully implement red panda projects, wildlife and nature-based tourism		0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	3.6
Objective 2. Enhance and manage red panda habitat in Bhutan landscape											
Output 2.1. Critical red panda habitat identified, mapped and assessed											
Action 2.1.1. Identify and map critical red panda habitat for protection and management interventions	0.5					0.5					1
Action 2.1.2. Conduct stakeholder consultation meeting to harmonize and mainstream critical red panda habitats into National Land use Zoning (NLUZ) and developmental plans		0.2					0.2				0.4
Action 2.1.3: Develop online/offline red panda observation forms in mobile apps to update red panda information and provide hands-on training to the field rangers		0.5									0.5
Output 2.2 Habitat destruction, degradation and fragmentation minimized through community integrated management approach											
Action 2.2.1. Initiate habitat improvement through enrichment plantation of native plants and bamboo species			2	2	2			2	2	2	12
Action 2.2.2. Support pasture/rangeland development through planting fodder trees and suitable native grass species for improved fodder production to offset competition with red panda				2		2			2		6
Action 2.2.3. Establish nursery for supply of palatable plant species for red panda and livestock	9.5					5.7					15.2
Action 2.2.4. Regulate extraction of timber and NWFPs in critical red panda habitats through creation of LFMAs		0.6			0.6			0.6			1.8
Action 2.2.5. Initiate commercial plantation of bamboos to help communities develop bamboo products to generate additional income and to minimize resource competition	3		0.5								3.5
Action 2.2.6. Institute community-based forest fire management group in fire prone area by providing firefighting equipment to strengthen prevention and response mechanisms				2.5					1.5		4
Action 2.2.7. Create awareness on waste management and adopt w*aste in and waste* out policy in critical red panda habitat		0.2				0.2			0.2		0.6
Objective 3. Promote wildlife and nature-based tourism to enhance conservation of red panda and community livelihoods											

Output 3.1. Red panda conservation and community stewardship improved through implementation of alternative sustainable livelihood strategies											
Action 3.1.1. Identify red panda sites and develop eco-friendly trails and basic amenities for promotion of red panda tourism			2				2		2		6
Action 3.1.2. Train and engage local youth as nature guide for red panda tourism to generate additional income			0.4				0.35		0.35		1.1
Action 3.1.3. Develop benefit sharing mechanism for local communities to benefit from red panda tourism				0.15							0.15
Action 3.1.4. Identify and promote homestay in red panda tourism site				0.5				0.5		0.5	1.5
Action 3.1.5. Create red panda-themed handicrafts, such as sculptures or textiles, which reflect cultural significance and support local economies			1.2				1.3				2.5
Objective 4. Strengthen protection measures to minimize wildlife poaching in red panda habitats											
Output 4.1. Red panda poaching and trafficking in Bhutan maintained at zero incidences											
Action 4.1.1. Strengthen surveillance and intelligence networking involving local forest guardians, armed personnel and other relevant stakeholders			0.8			0.8			0.8		2.4
Action 4.1.2. Strengthen SMART patrolling programs in red panda habitats through increased patrolling frequencies	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	7.5
Action 4.1.3. Train frontline rangers on detection of wildlife crimes and enforcement		0.9			0.9			0.9			2.7
Action 4.1.4. Conduct anti-snare operations involving local forest guardians	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	7.5
Action 4.1.5. Provide patrolling safety gears for field rangers and local forest guardians		1			1				1		3
Output 4.2. Conflict between red panda and domestic dog reduced											
Action 4.2.1. Sensitize livestock herders residing in the red panda habitat range on the importance of dog sterilization and livestock vaccination to prevent diseases			0.5			0.5			0.5		1.5
Action 4.2.2. Control the population of free ranging dogs through sterilization programs to reduce and prevent the spread of diseases in collaboration with DoL	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	6.5
Action 4.2.3. Implement wildlife health strategy in collaboration with DoL to reduce diseases transmission			0.6			0.6			0.6		1.8
Midterm Review of the Conservation Strategy and Action Plan					0.7						0.7
Total projected budget											**127.5**

CHAPTER 5: MONITORING AND EVALUATION

5.1 Monitoring and Evaluation

The Forest Management and Information Division (FMID) and the Nature Conservation Division (NCD) will be responsible for overseeing the monitoring of the plan's implementation. The monitoring and evaluation format was developed as per the guidelines outlined in the M&E framework. Field offices will conduct annual monitoring to assess progress as per the table below. FMID in collaboration with NCD and field divisions, will carry out mid-term and final evaluations.

Table 3: Monitoring and Evaluation Framework

Activities		Action Indicator	Baseline	Unit	Yearly Target									
					Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Objective 1	**Enhance knowledge on red panda conservation, ecology and habitat requirements**													
Output 1.1. Research and science-based information on red panda distribution, ecology and conservation issues improved and strengthened														
Action 1.1.1	Conduct nationwide red panda survey to understand its distribution and its population estimates after every 5 years	Number of nationwide population surveys conducted	1	Number					1					1
Action 1.1.2	Conduct foraging ecology study to understand red panda food habits and its dietary compositions	Number of studies conducted	0	Number			1							
Action 1.1.3	Conduct breeding ecology study to understand courtship behavior, breeding success and fecundity	Number of studies conducted	0	Number						1				
Action 1.1.4	Conduct red panda movement ecology study to understand its movement, home range, habitat selection and Action pattern through radiotelemetry	Number of individual red panda radio-collared	0	Number				1					1	
Action 1.1.5	Conduct study on socio-cultural and ecological significance of red panda to raise its profile and increase policy attention for conservation	Number of studies conducted	0	Number		1							1	
Output 1.2	***Research capacity and field facilities in red panda range areas developed and strengthened***													
Action 1.2.1	Equip the field offices of red panda range areas with adequate research field equipment (radio collar, GPS, camera traps, digital cameras, telescopic lens, smart phones, sample collection tool kit)	Number of different items supplied	0	Set				1				1		
Action 1.2.2	Organize research methodology, data collection and analysis trainings to field rangers	Number of trainings organized	1	Number			19				19			
Action 1.2.3	Provide wildlife rescue operation training to field rangers and local forest	Number of trainings	4	Number		19			19			19		

	guardians	organized												
Output 1.3. Awareness on red panda conservation and its ecological significance increased														
Action 1.3.1	Develop red panda awareness and education materials (posters, pamphlets, visual materials) for different stakeholders	Number of awareness materials (posters, pamphlets, visual aids) produced and distributed	0	Set		19				19				
Action 1.3.2	Engage monastic institutions in promoting red panda conservation through spiritual talks	Number of people created awareness	0	Number				570				570		
Action 1.3.3	Conduct periodic awareness and education programs to policy makers, tour operators, local communities and students through the concept of living classrooms	Number of awareness programs conducted, and stakeholder groups reached.	0	Number			19			19			19	
Output 1.4	***Red panda knowledge and its conservation significance improved through development of local forest guardians***													
Action 1.4.1	Institute local forest guardians to engage in red panda conservation programs	Number of local forest guardians trained and engaged in conservation programs.	0	Number		190			190			190		
Action 1.4.2	Provide hands on red panda research and awareness campaigning methodology trainings to local forest guardians	Number of local forest guardians trained and engaged in conservation programs.	0	Number		190			190			190		
Action 1.4.3	Organize exposure tours and exchange visits for field rangers and local forest guardians to successfully implement red panda projects and wildlife tourism	Number of local forest guardians trained and engaged	0	Number		25	25	25	25	25	25	25	25	25

Objective 2	Enhance and manage red panda habitat in Bhutan landscape													
Output 2.1	***Critical red panda habitat identified, mapped and assessed***													
Action 2.1.1	Identify and map critical red panda habitat for protection and management interventions	Number of critical red panda habitats identified and mapped	1	Number	1					1				
Action 2.1.2	Conduct stakeholder consultation meeting to harmonize and mainstream critical red panda habitats into National Land use Zoning (NLUZ) and developmental plans	Number of stakeholder consultation meetings conducted and incorporated in NLUZ	1	Number		1					1			
Action 2.1.3	Develop online/offline red panda observation forms in mobile apps to update red panda information and provide hands-on training to the field rangers	Online/offline red panda data base developed	0	Number		1								
		Number of individuals trained	0	Number		380								
Output 2.2	***Habitat destruction, degradation and fragmentation minimized through community integrated management approach***													
Action 2.2.1	Initiate habitat improvement through enrichment plantation of native plants and bamboo species	Area (in hectares) of habitat improved	0	Area			38	38	38			38	38	38
Action 2.2.2	Support pasture/rangeland development through planting fodder trees and suitable native grass species for improved fodder production to offset competition with red panda	Area (in hectares) pasture/rangelands developed	0	Area				29		29			29	
Action 2.2.3	Establish nursery for supply of palatable plant species for red panda and livestock	Number of nurseries established and functional	0	Number	19					19				
Action 2.2.4	Regulate extraction of timber and NWFPs in critical red panda habitats through creation of LFMAs	Number of LFMAs established	18	Number		1			1			1		

Action 2.2.5	Initiate commercial plantation of bamboos to help communities develop bamboo products to generate additional income and to minimize resource competition	Area (in hectares) of bamboo plantation established	20	Area	38		38							
		Numbers of different wildlife tourism products developed	0	Number	3		3							
Action 2.2.6	Institute community-based forest fire management group by providing firefighting equipment (blowers, spades, gloves, goggles, grasscutters, and drip torches) to strengthen prevention and response mechanisms	Number of community-based forest fire management groups formed	0	Number				19					19	
		Set of firefighting equipment supplied	0	Number				19					19	
Action 2.2.7	Create awareness on waste management and adopt w*aste in* and *waste out* policy in critical red panda habitat	Number of waste management awareness conducted	19	Number		19				19			19	
		Number of wastes in and waste out policy adopted	1	Number		19				19			19	
Objective 3	**Promote wildlife and nature-based tourism to enhance conservation of red panda and community livelihoods**													
Output 3.1	***Red panda conservation and community stewardship improved through implementation of alternative sustainable livelihood strategies***													
Action 3.1.1	Identify red panda sites and develop eco-friendly trails and basic amenities for promotion of red panda tourism	Number of eco-friendly trails developed	0	Number			3				3		3	
		Number of basic amenities established	0	Number			3				3		3	
Action 3.1.2	Train and engage local youth as nature guide for red panda tourism to generate additional income	Number of local youths trained and employed as nature guides	0	Number			15				15		15	

Action 3.1.3	Develop benefit sharing mechanism for local communities to benefit from red panda tourism	Benefit-sharing mechanism established	0	Number				3						
Action 3.1.4	Identify and promote homestay in red panda tourism site	Number of homestays established and operationalized in red panda tourism sites	0	Number				3			3			3
Action 3.1.5	Create red panda-themed handicrafts, such as sculptures or textiles, which reflect cultural significance and support local economies	Number of different tourism products developed	0	Number			4				4			
Objective 4	**Strengthen protection measures to minimize wildlife poaching in red panda habitats**													
Output 4.1	***Red panda poaching and trafficking in Bhutan maintained at zero incidences***													
Action 4.1.1	Strengthen surveillance and intelligence networking involving local forest guardians, armed personnel and other relevant stakeholders	Number of surveillance and intelligence networking conducted	4	Number			1			1			1	
Action 4.1.2	Strengthen SMART patrolling programs in red panda habitats through increased patrolling frequencies	Number of patrolling conducted	100	Days	760	760	760	760	760	760	760	760	760	760
Action 4.1.3	Train frontline rangers on detection of wildlife crimes and enforcement	Number of frontline staff trained	80	Number		380			380			380		
Action 4.1.4	Conduct anti-snare operations involving local forest guardians	Number of anti-snare operations conducted	1	Days	266	266	266	266	266	266	266	266	266	266
Action 4.1.5	Provide patrolling safety gears for field rangers and local forest guardians	Number equipment distributed	0	Set		19			19				19	

Output 4.2	***Conflict between red panda and domestic dog reduced***													
Action 4.2.1	Sensitize livestock herders residing in the red panda habitat range on the importance of dog sterilization and livestock vaccination to prevent diseases	Number of sensitization programs conducted	0	Number			38			38			38	
Action 4.2.2	Control the population of free ranging dogs through sterilization programs to reduce and prevent the spread of diseases in collaboration with DoL	Number of sterilization programs conducted	0	Number	19	19	19	19	19	19	19	19	19	19
Action 4.2.3	Implement wildlife health strategy in collaboration with DoL to reduce diseases transmission	Number of strategies implemented	0	Number			19			19			19	
REVIEW AND EVALUATION OF CONSERVATION STRATEGY				Number					1					

REFERENCES

Bista, D., Baxter, G. S., Hudson, N. J., Lama, S. T., & Murray, P. J. (2022). Effect of disturbances and habitat fragmentation on an arboreal habitat specialist mammal using GPS telemetry: a case of the red panda. Landscape Ecology, 37(3), 795–809. https://doi.org/10.1007/s10980-021-01357-w

Bista, D., Baxter, G. S., Hudson, N. J., & Murray, P. J. (2023). Seasonal resource selection of an arboreal habitat specialist in a human-dominated landscape: A case study using red panda. Current Zoology, 69(1), 1–11. https://doi.org/10.1093/cz/zoac014

Bista, D., & Paudel, R. (2014). An Overview of the Status and Conservation Initiatives of Red Panda Ailurus fulgens (Cuvier, 1825) in Nepal. The Initiation, 5, 171–181. https://doi.org/10.3126/init.v5i0.10268

Bista, D., Baxter, G. S., & Murray, P. J. (2020). What is driving the increased demand for red panda pelts?. *Human Dimensions of Wildlife*, *25*(4), 324-338.

Bista, D., Shrestha, S., Sherpa, P., Thapa, J. G., Kokh, M., Lama, T. S., Jnawali, R. S. (2017). Distribution and habitat use of red panda in the Chitwan-Annapurna Landscape of Nepal. PLOS, 1-16.

Choudhury, A. (2001). An overview of the status and conservation of the red panda Ailurus fulgens in India, with reference to its global status. *Oryx, 35*, 250 -259.

Davis, H (2024). The effect of livestock grazing on the himalayan red panda, ailurus fulgens. https://ohiostate.pressbooks.pub/sciencebitesvolume2/chapter/2-3-the-effect-of-livestock-grazing-on-the-himalayan-red-panda-ailurus-fulgens/

Dendup, P., Cheng, E., Lham, C., & Tenzin, C. (2016). Response of Endangered red panda Ailurus fulgens fulgens to anthropogenic disturbances, and its distribution in Phrumsengla National Park, Bhutan. *Oryx*, 1-8.

Dendup, P., Humle, T., Bista, D., Penjor, U., Lham, C., & Gyeltshen, J. (2020). Habitat requirements of the Himalayan red panda (Ailurus fulgens) and threat analysis in Jigme Dorji National Park, Bhutan. *Ecology and Evolution*, *10*(17), 9444–9453. https://doi.org/10.1002/ece3.6632

Dendup, P., Ugyen, U., Dorji, R., & Lham, C. (2023). Updated distribution and habitat use by endangered Himalayan red panda (*Ailurus fulgens* Cuvier, 1825) in Bhutan. *Journal of Animal Diversity*, 5(1), 55–64. http://dx.doi.org/10.52547/JAD.2023.5.1.3

Dorji, S., Rajaratnam, R., & Vernes, K. (2011). The vulnerable Red panda Ailurus fulgens in Bhutan:distribution, conservation status and management

recommendations. *Oryx*, 536-543.

Dorji, S., Rajanatnam, R., & Vernes, K. (2012). The Vulnerable red panda Ailurus fulgens in Bhutan: distribution, conservation status, and management recommendations. Oryx, 46(4), 536-543. doi:10.1017/S0030605312000138

Glatston, A. R. (1994). The red panda, olingos, coatis, raccoons, and their relatives: status survey and conservation action plan for procyonids and ailurids.

Glatston, A., Wei, F., Zaw, T., & Sherpa, A. (2015). Ailurus fulgens (Errata Version Published in 2017). The IUCN Red List of Threatened Species 2015: e. T714A110023718.https://doi.org/10.2305/IUCN.UK20154.RLTS.T714A45195924.en.

Hu, Y., Thapa, A., Fan, H., Ma, T., Wu, Q., Ma, S., Zhang, D., Wang, B., Li, M., & Yan, L. (2020). Genomic evidence for two phylogenetic species and long-term population bottlenecks in red pandas. *Science Advances, 6*(9), eaax5751. https://doi.org/10.1126/sciadv.aax5751

Hughes, J., & Macdonald, D. W. (2013). A review of the interactions between free-roaming domestic dogs and wildlife. *Biological conservation*, *157*, 341-351

IUCN (2021). The IUCN Red List of Threatened Species. Retrieved from www.iucnredlist.org

Lama, S., Shrestha, S., Koju, N. P., Sherpa, A. P. (2020). Assessment of the Impacts of Livestock Grazing on Endangered Red Panda (Ailurus fulgens) Habitat in Eastern Nepal. DOI:10.4236/oje.2020.103008

Letro, L., Tandin, T., Wangdi, S., Wangdi, T., Dendup, P.(2022). Status, distribution and conservation of red panda *Ailurus Fulgens* in Bhutan. https://www.sciencedirect.com/science/article/abs/pii/B9780128237533000041#:~:text=Red%20Panda%20Distribution%20in%20Bhutan.

Letro, L., Tandin, T., Wangdi, S., Wangdi, T., Dendup, P., & Millar, J. (2022). Status, distribution and conservation of red panda Ailurus Fulgens in Bhutan. In Red Panda (pp. 463-474). Elsevier.

Namgay, K., Millar, J., Black, R., & Samdup, T. (2013). Transhumant agro-pastoralism in Bhutan: Exploring contemporary practices and socio-cultural traditions. Pastoralism, 3(1). https://doi.org/10.1186/2041-7136-3-13

Nature Conservation Division. (2024). Red Panda Status in Bhutan: National Red Panda Survey Report 2023. Department of Forests and Park Services, Ministry of Energy and Natural resources, Royal Government of Bhutan.

NCD. (2023). Management Effectiveness of Protected Areas in Bhutan 2022-2023. DoFPS.

Roder, W., Gratzer, G., & Wangdi, K. (2002). Cattle Grazing in the Conifer Forests of Bhutan. Mountain Research and Development, 22(4), 368-374.

Scheyvens, R. (2015). Tourism and Poverty. 270 Madison Avenue, New York, NY 10016.

Sharon, L, Deem, D.V.M., Dipl. A. C.Z.M., Lucy H. Spelman, D.V.M., Rebecca A. Yates, M.A., D.V.M., & Richard. J. Montali, D.V.M. (2000), *Canine Distemper in terrestrial carnivores: A Review,* 441

Shrestha, A. B. (2009). Climate Change in the Himalayas. ICIMOD.

Su, H., Bista, M., & Li, M. (2021). Mapping habitat suitability for Asiatic black bear and red panda in Makalu Barun National Park of Nepal from Maxent and GARP models. *Scientific Reports*, *11*(1), 1–14. https://doi.org/10.1038/s41598-021-93540-x

Thapa, A., Baral, S., KC, R. B., Paudel, R. P., Thapa, G. J., Basnet, H., ... & Khanal, L. (2025). Differential vulnerability of key threatened mammals to climate and land cover changes in the Central Himalayas. *Ecosphere*, *16*(4), e70242.

Thapa, A., Wu, R., Hu, Y., Nie, Y., Singh, B, P., Wei, F. (2018). Predicting the potential distribution of the endangered red panda across its entire range using MaxEnt modeling. *Ecology and Evolution*, 1-13.

Thapa, A., Hu, Y., Aryal, P. C., Singh, P. B., Shah, K. B., & Wei, F. (2020). The endangered red panda in Himalayas: Potential distribution and ecological habitat associates. *Global Ecology and Conservation*, *21*, e00890.

Tobgay, Sonam, and Nattapon Mahavik. "Potential habitat distribution of Himalayan red panda and their connectivity in Sakteng Wildlife Sanctuary, Bhutan." *Ecology and evolution*10, no. 23 (2020): 12929-12939.

Tuanmu, M.-N., Viña, A., Winkler, J. A., Li, Y., Xu, W., Ouyang, Z., & Liu, J. (2013). Climate-change impacts on understorey bamboo species and giant pandas in China's Qinling Mountains. Nature Climate Change, 249-253.

TRAFFIC (2020). Assessment of illegal trade-related threats to red Panda in India and selected neighbouring range countries, pp-8.

Tobgay, S., & Mahavik, N. (2020). Potential habitat distribution of Himalayan red panda and their connectivity in Sakteng Wildlife Sanctuary, Bhutan. *Ecology and*

Evolution, *10*(23), 12929–12939. https://doi.org/10.1002/ece3.6874

Wangchuk, K. (2024). Rufford Foundation Report. https://ruffordorg.s3.amazonaws.com/media/project_reports/15374-1%20Final%20Report.pdf.

Wang, X., Choudhury, A., Yonzon, P., Wozencraft, C., & Than, Z. (2008). Red panda Ailurus fulgens. The IUCN Red List of Threaten Species, e.T714A13069919.en.

Wei, F., Feng, Z., Wang, Z., & Hu, J. (1999). Current distribution, status and conservation of wild red pandas *Ailurus fulgens* in China. *Biological conservation*, 285 -291.

Wei, F., Thapa, A., Hu, Y., & Zhang, Z. (2022). Red panda ecology. In *Red panda* (pp. 329-351). Academic Press.

Yonzon, B. P., & Hunter, M. L. (1991). Conservation of Red Panda Ailurus fulgens. *Biological conservation*, 1-11.

Zang, Z., Deng, S., Ren, G., Zhao, Z., Li, J., Xie, Z., & Shen, G. (2020). Climate-induced spatial mismatch may intensify giant panda habitat loss and fragmentation. *Biological Conservation*, *241*, 108392.

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