

Conservation Management Plan
(June 2020 - June 2030)
Bumdeling Wildlife Sanctuary





Department of Forests and Park Services

Ministry of Agriculture and Forests
Royal Government of Bhutan



Bumdeling Wildlife Sanctuary

CONSERVATION MANAGEMENT PLAN (July 2020 - June 2030)

“Sustaining Bhutan’s forest resources and biodiversity for the happiness of present and future generations”

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Department of Forests and Park Services

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ENDORSEMENT AND APPROVAL OF ROYAL
GOVERNMENT OF BHUTAN



**Conservation Management Plan of Bumdeling Wildlife Sanctuary
(July 2020 - June 2030)**

"In accordance with the provision of Forest and Nature Conservation Act of Bhutan 1995"

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Department of Forests and Park Services
Ministry of Agriculture and Forests Royal
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FOREWORD

The Bhutan's constitution mandates to preserve minimum of 60% of the country's land under forest cover for all times to come. Currently, Bhutan has 71% of the land under forest cover. Guided under the leadership of visionary monarchs, Bhutan became the recipient of many environmental conservation awards such as *Paul Getty Award for Conservation Leadership*, the *Kyoto Earth Hall of Fame*, and UNEP "*Champion of Earth*". However, with the growth of population and advancement of developmental activities, preservation of environment is becoming a challenge for conservationists.

Unlike in other parts of the world, the Protected Areas (PAs) in Bhutan has residents living inside. Therefore, there is a requirement to meet local communities' demand for natural resources like timber and other non-timber forest products (NTFPs). This poses enormous challenges to conservationists and park managers in striking the balance between socio-economic wellbeing of the communities living inside the PAs and conservation of natural resources.

Residents living inside Bumdeling Wildlife Sanctuary (BWS) mostly are agriculturists and depend their livelihoods on livestock rearing and farming. BWS has rich bio-diversity of flora and faunas such as tigers, snow leopards, Ludlow's Bhutan Glory (National butterfly), Black-Necked Crane and Blue poppy to name a few. The Sanctuary has 217 households residing inside the park from three Geogs of Bumdeling (Trashiyangtse), Khoma (Lhuentse) and Sherimuhung (Mongar). However, the park management caters services to all the 1119 households of the three geogs besides conservation and protection works.

In the face of rapid modernization and development era, sustainable conservation of natural resources and habitat management of wildlife has become a greater challenge. Therefore, I am pleased to commend that Bumdeling Wildlife Sanctuary has successfully accomplished the past Conservation Management Plan (July 2013-June 2018) and came up with the new Conservation Management Plan (July 2020-June 2030). I am also delighted that the conservation plan is in line with the Five Year Plan (FYP) and that all the required prescriptions essential for the sound management of the PA is incorporated.

Therefore, I have my heartfelt congratulations and best wishes for the successful implementation of the plan.

TASHI DELEK!

(Thinley Namgyel)



Department of Forests and Park Services
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PREFACE

Environmental conservation as one of the four pillars of country's Gross National Happiness philosophy, Bhutan has designated more than 50% of its area under protected area networks. These protected areas in the country represent intricate ecological processes, which provide human needs and environmental values. Bhutan is listed as one of the ten global hotspots in the world.

Bumdeling Wildlife Sanctuary (BWS) has mandate not only to protect ecological integrity and conservation of natural resources but also entrusted with responsibilities to promote historic, cultural and religious values thus balancing conservation of natural resources and social livelihoods of the community residing in and around the sanctuary. BWS has made remarkable achievements in terms of infrastructure development, human resources, conservation of floral and faunal diversity, enhancement of ecotourism programmes and conservation advocacies to local communities.

The recent rapid biodiversity survey (2018), recorded 52 species of mammals, 356 birds, 966 vascular plants (trees, shrubs, herbs, ferns, and climbers), 200 butterflies and 18 snakes. Besides, the sanctuary has many historic religious sites such as Singye Dzong (Lhuentse Dzongkhag), Pemaling and Risumgoenpa (Trashiyangtse Dzongkhag) and Aja Ney (Sherimuhung, Mongar Dzongkhag). These sites offer lot of opportunities to initiate ecotourism development activities in the sanctuary. The plan preparation process involved Rapid Biodiversity & Socio-Economic Surveys, review of past management plan with rigorous consultations with geogs, local communities, and other stakeholders of Bumdeling Wildlife Sanctuary.

I am happy to learn that Bumdeling Wildlife Sanctuary has come up with the 3rd Conservation Management Plan (July 2020-June 2030). It is also inspiring to note that, the new plan is in line with the plan outputs of the Department of Forests and Park Services (DoFPS).

Therefore, I would like to congratulate and express my appreciation to the entire staff of Bumdeling Wildlife Sanctuary for doing this commendable work. I am confident that this plan will not only help to mainstream the conservation effort but also contribute towards achieving the goals of the department as a whole.

(Lobzang Dorji)

DIRECTOR

Department of Forests and Park Services

ACRONYMS AND ABBREVIATIONS

B2C2	Bhutan Biological Conservation Complex
BNC	Black-Necked Crane
BTFEC	Bhutan Trust Fund for Environmental Conservation
BWS	Bumdeling Wildlife Sanctuary
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Fauna and Flora
DoFPS	Department of Forests and Park Services
DYT	Dzongkhag Yargay Tshogchung (District Development Committee)
FIRMS	Forest Information Resource Management System
FMU	Forest Management Unit
FNCA	Forest and Nature Conservation Act
FNCRR	Forests and Nature Conservation Rules and Regulations
FYP	Five-year Plan
GNH	Gross National Happiness
GYT	Geog Yargay Tshogchung (Geog Development Committee)
HH	Household
HWC	Human-Wildlife Conflict
ICDP	Integrated Conservation and Development Programme
IUCN	International Union for the Conservation of Nature
METT+	Management Effectiveness Tracking Tool Plus
MoAF	Ministry of Agriculture and Forests
NCD	Nature Conservation Division
NGO	Non-Government Organization
NWFP	Non-Wood Forest Products
PA(s)	Protected Area (s)
PAME	Protected Area Management Effectiveness
PRO	Park Range Office
RBS	Rapid Biodiversity Survey
RGoB	Royal Government of Bhutan
RSPN	Royal Society for the Protection of Nature
SES	Socio-Economic Survey
TCB	Tourism Council of Bhutan
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UWICER	Ugyen Wangchuck Institute for Conservation and Environmental Research
WWF	World Wildlife Fund (also known as World-Wide Fund for nature)

TABLE OF CONTENTS

FOREWORD	iv
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PREFACE	iv
ACRONYMS AND ABBREVIATIONS	vi
PART I: BACKGROUND	1
1.1 History and Significance of Protected Areas in Bhutan	1
1.2 Vision, Mission and Goals	2
1.3 Salient Features of the Plan	3
1.4 Zones of the Sanctuary	4
PART II: CURRENT STATUS OF PROTECTED AREA	9
2.1 Landscape Characteristics	9
2.1.1 Landscape and Elevation.....	9
2.1.2 Geology and Soil	9
2.1.3 Climate and Topography	9
2.1.4 Hydrology and Drainage	9
2.2 Floral Description	10
2.2.1 Forest Types	10
2.2.2 Floral Species Diversity	11
2.3 Faunal Description	12
2.3.1 Faunal Species Diversity	12
2.4 People and Livelihood	14
2.4.1 Demography	14
2.4.2 Local Economy	14
2.4.3 Resource Utilization and Allocation	17
2.4.4 Traditional Practices.....	18
2.4.5 Community Forest	19
2.4.6 Grazing	19
2.5 Administrative, Service Delivery and Park Infrastructure	19
2.5.1 Location and Service Delivery	19

2.5.2 Park Infrastructure and Mobility	20
PART III: SUMMARY REVIEW OF THE PAST PLAN	21
3.1 Assessment of Past Plan (July 2013 – June 2018)	21
3.1.1 Species Conservation	21
3.1.2 Integrated Conservation Development Programme (ICDP)	22
3.1.3 Social Forestry Programme	23
3.1.4 Forest products utilization and service delivery.....	23
PART IV: CONSERVATION THREATS AND CHALLENGES	25
4.1 Degradation of natural resources and management	25
4.2 Less support in natural resources conservation by local communities	25
4.3 Lack of reliable facilities and infrastructures for efficient conservation activities	25
4.4 Illegal wildlife trades and poaching	25
4.5 Human wildlife conflicts and retaliatory killings	26
4.6 Poornature-based ecotourism infrastructure services	26
4.7 Ineffective wastemanagement by visitors	26
4.8 Drying up of small and perennial water sources	26
4.9 Degradation of habitats for key faunal species	26
4.10 Incidences of forest fire	27
PART V: CONSERVATION MANAGEMENT PRESCRIPTIONS	28
5.1 Sustainable use of natural resources and management	28
5.2 Support in natural resources conservation by local communities	28
5.3 Develop reliable facilities and infrastructures for efficient conservationand monitoring	
29	
5.4 Minimize illegal wildlife trades and poaching	29
5.5 Reduce wildlife conflicts and retaliatory killings.....	29
5.6 Strengthenand promote ecotourism infrastructure and services	30
5.7 Initiate effective waste managementprogrammes	30

5.8 Climate smart restoration of perennial water sources	30
5.9 Habitat management for key species	31
5.10 Prevent incidences of forest fire	31
PART VI: IMPLEMENTATION PLAN & FINANCIAL OUTLAY	32
6.1 Implementation Plan and Budget Outlay (July 2020 – June 2030)	32
PART VII: IMPLEMENTATION & MONITORING FRAMEWORK	39
7.1 Implementation & Monitoring Framework (Plan period: July 2020-June 2030)	39
REFERENCES	44
Appendix 1: List of useful plants of BWS	46
Appendix 2: Checklist of Vascular plants of BWS	56
Appendix 3: Checklist of mammals of BWS	84
Appendix 4: Checklist of birds of BWS	86
Appendix 5: Checklist of butterflies of BWS	98
Appendix 6: Checklist of Snakes and Lizards of BWS	103

PART I: BACKGROUND

1.1 History and Significance of Protected Areas in Bhutan

Bhutan established conservation landscapes comprising of protected area (PA) networks appropriately called Bhutan Biological Conservation Complex (B2C2) to ensure long-term conservation of biodiversity with associated ecosystem services and cultural values. Over the last few decades, there has been remarkable expansion of PA systems which is a notable success for conservation in Bhutan. Today, Bhutan's conservation network is composed of 10 protected areas, 8 connecting biological corridors, and one botanical park that constitute more than half of the country's geographic area.

The protected areas system in Bhutan started as early as 1960s, when Bhutan started the first national development Five Year Plan. Initially, Bhutan designated Northern and Southern Wildlife Circles, which was later converted into protected areas during 1980s for better conservation of biodiversity. In 1999, a series of biological corridors were established as a "*Gift to the earth from the people of Bhutan*", which act as the linkage between the protected areas to facilitate safe migration of species. The Wangchuck Centennial National Park was established in 2008 to commemorate the centenary reign of Wangchuck Dynasties in Bhutan.

Currently, there are five National Parks, four Wildlife Sanctuaries, one Strict Nature Reserve, one Botanical Park, and eight connecting biological corridors that cover 51.44% of the country (NCD, 2016).

The Bumdeling Wildlife Sanctuary (BWS), erstwhile known as Kulongchhu Wildlife Sanctuary was officially established in the year 1995 to protect ecological zones of the mid and highaltitude ecosystems of the eastern parts of Bhutan, to support and strengthen the important religious sites, and to cater socio-economic needs to the local people residing inside the Sanctuary.

The landscape of BWS encompasses diverse habitats, ranging from warm broadleaved forest to Alpine scrubs and lakes. Large areas of these habitats provide home for many endangered and vulnerable species such as Snow Leopard (*Panthera uncia*), Tiger (*Panthera tigris*), Red Panda (*Ailurus fulgens*), Musk Deer (*Moschus leucogaster*), Himalayan Black Bear (*Ursus thibetanus*), Marbled Cat (*Pardofelis marmorata*), Black-Necked Crane (*Grus nigricollis*), Rufous-Necked Hornbill (*Aceros nipalensis*), Himalayan Monal Pheasant (*Lophophorus impejanus*), Ludlow's Bhutan Glory (*Bhutanitis ludlowi*). The important floral species occurring in BWS are Bluepoppy (*Meconopsis species*), Chinese Caterpillar (*Cordyceps sinensis*) and Himalayan yew (*Taxus baccata*).

The sanctuary has recorded 966 species of plants (130 species of trees, 31 species of ferns, 579 species of herbs, 64 species of orchids and 162 species of shrubs), 52 species of mammals, 356 species of birds, 200 species of butterflies and 18 species of snakes (BWS, 2018).

The Bumdeling flood plain, which includes roosting and feeding sites of Black-necked Crane, was declared as RAMSAR site, a wetland of international importance in the year 2012. The endemic

swallowtail of Bhutan, Ludlow’s Bhutan Glory (*Bhutanitis ludlowi*) can only be seen in Bumdeling valley.

Culturally, BWS is blessed with many important religious sites such as Singye Dzong, Roelmatheng and Gonpakarp under Khoma geog; Pemaling, Rigsumgoenpa, Pelritse and Dechenphordang under Bumdeling geog and Aja Ney under Sherimuhung geog. This provides huge opportunities to development of ecotourism products thus contributing to national economy.

1.2 Vision, Mission and Goals

Vision and Mission of DoFPS

DoFPS vision	Sustaining Bhutan’s forest resources and biodiversity for the happiness of present and future generations
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DoFPS missions	To conserve and manage Bhutan’s forest resources and biodiversity to ensure social, economic and environmental well-being, and to maintain a minimum of 60 percent of the land under forest cover for all times to come
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Goal and Objective of BWS

BWS Goals	To enhance biodiversity conservation through adoption of climate smart interventions for sustainable management of natural resources and improvement of livelihoods of local communities
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Objective I:

To enhance biodiversity conservation through adoption of climate smart interventions

Objective II:

To improve livelihood of the local communities through adoption of climate smart and disaster resilient interventions

Objective III:

To enhance service delivery and management effectiveness

1.3 Salient Features of the Plan

The Bumdeling Wildlife Sanctuary was gazetted in the year 1994 to safeguard ecological habitats of eastern Bhutan. The sanctuary encompasses parts of Trashiyangtse, Lhuntse and Mongar with area coverage of 1534.24 Sq.Km. It shares international borders with Tibet autonomous region

(China) in the north and Arunachal Pradesh State (India) in the northeast. The elevation of the sanctuary ranges from 1390 to 6400 metres above sea level (masl).

Geographically, the Sanctuary consists mostly of rugged mountainous terrains, rocky peaks, permanent snow, small glaciers, glacial lakes, steep river valleys, and few plains. Almost 90% of the Sanctuary lies between 2500m and 5000m elevation. These glacial lakes and permanent snow-capped mountains serve as perennial water sources for important major drainage systems such as Kholongchhu, Khomachhu and Sherichhu.

This conservation management plan describes in details the importance of the park in ensuring biological continuity and ecosystem integrity, human communities and economic status; experiences and challenges, achievements from the past conservation management plan, threats and strategic actions for next 10 years. This plan also includes implementation work plans with budget outlay, monitoring, and evaluation approach for the planned activities.

The new conservation management plan (CMP) aims to address the issues pertinent to species conservation and protection such as habitat management, human-wildlife conflicts, sustainable and judicious utilization of park resources, building climate resilient communities, sustainable nature-based eco-tourism and strengthening institutional efficiency.

BWS has made notable achievements in terms of infrastructures development, human resources, conservation of floral and faunal diversity, enhancement of ecotourism programmes and conservation advocacies to local communities. Such success was mainly attributed to efficient implementation of past Conservation Management Plans (CMP 2001-2007 & CMP, 2013-2018), which had guided BWS management during the execution of conservation activities.

This is the 3rd conservation management plan of BWS that provides smart framework for the management to make wise decision, facilitate natural resource management, and carryout conservation works more effectively.

The evaluation of the implementation of the conservation management plan will be carried out through monitoring and reporting systems to fine tune and streamline activities in line with the department's output objectives.

The past CMP expired in 2018. However, the 3rd CMP could be developed in 2020 only since the present plan required to be developed for 10 years that warranted conduct of additional rounds of public consultations. The plan also adopted the new Protected Area Zonation Guidelines of 2019 which required delineation of new zones for management prescriptions.

1.4 Zones of the Sanctuary

The BWS zonation was carried out based on the "Protected Area Zonation Guidelines of 2019" with an objective to classify the wildlife sanctuary into different zones as per the functions of the area to accordingly prescribe relevant regulations and management interventions.

The entire sanctuary was divided into four zones (Table 1, Fig. 1&2) with different management prescriptions corresponding to multiple zone (428 Sq.Km), buffer zone (221 Sq.Km), and transition zone (257 Sq.Km) and core zone (628 Sq.Km) (Fig. 3).

Table 1: Percentage of sanctuary falling under different zones

Zones	Area (Sq.Km)	Percentage (%)
Multiple use zone	428	27.90
Buffer zone	221	14.41
Transition zone	257	16.75
Core zone	628	40.94
Total Area	1534	100

Majority of the park area (Fig. 1) is classified under core zone (40.9%) given the fact of the presence of intact forests and sacred mountains and water towers; followed by multiple zones (27.9 %).

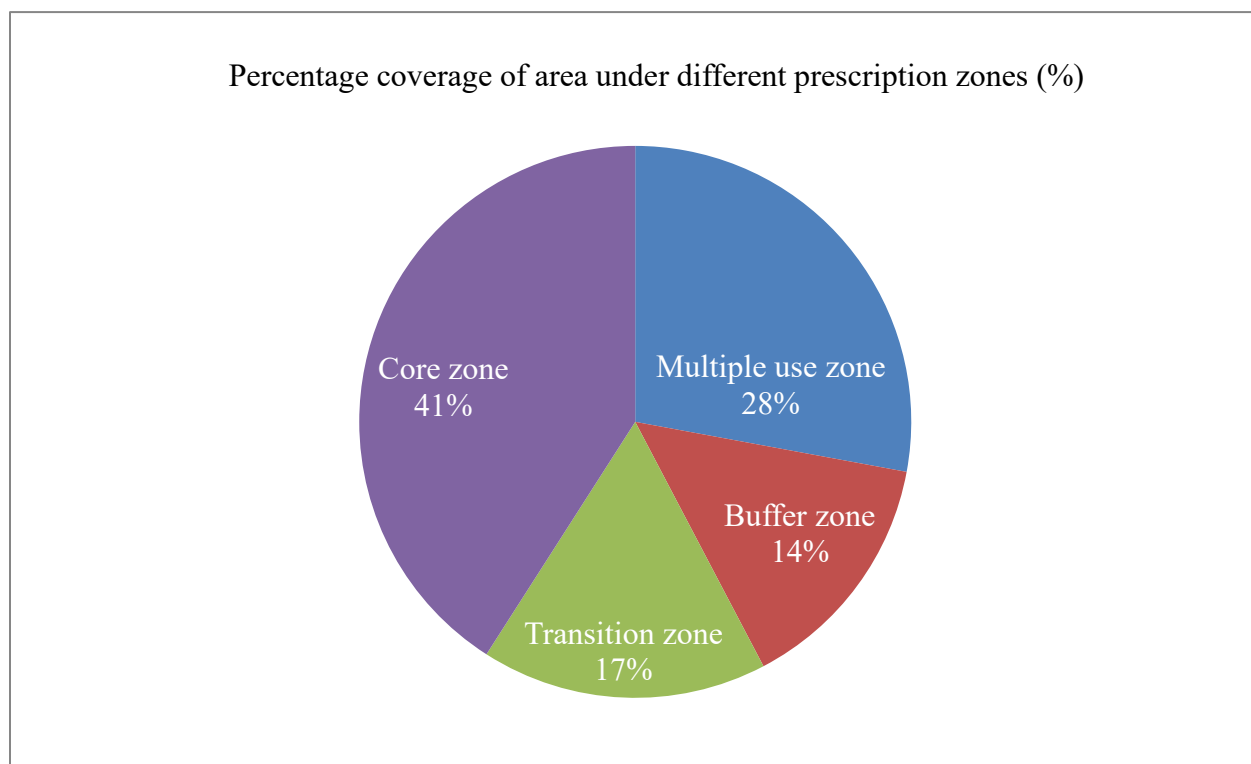


Figure 1: Percentage of BWS falling under different zones

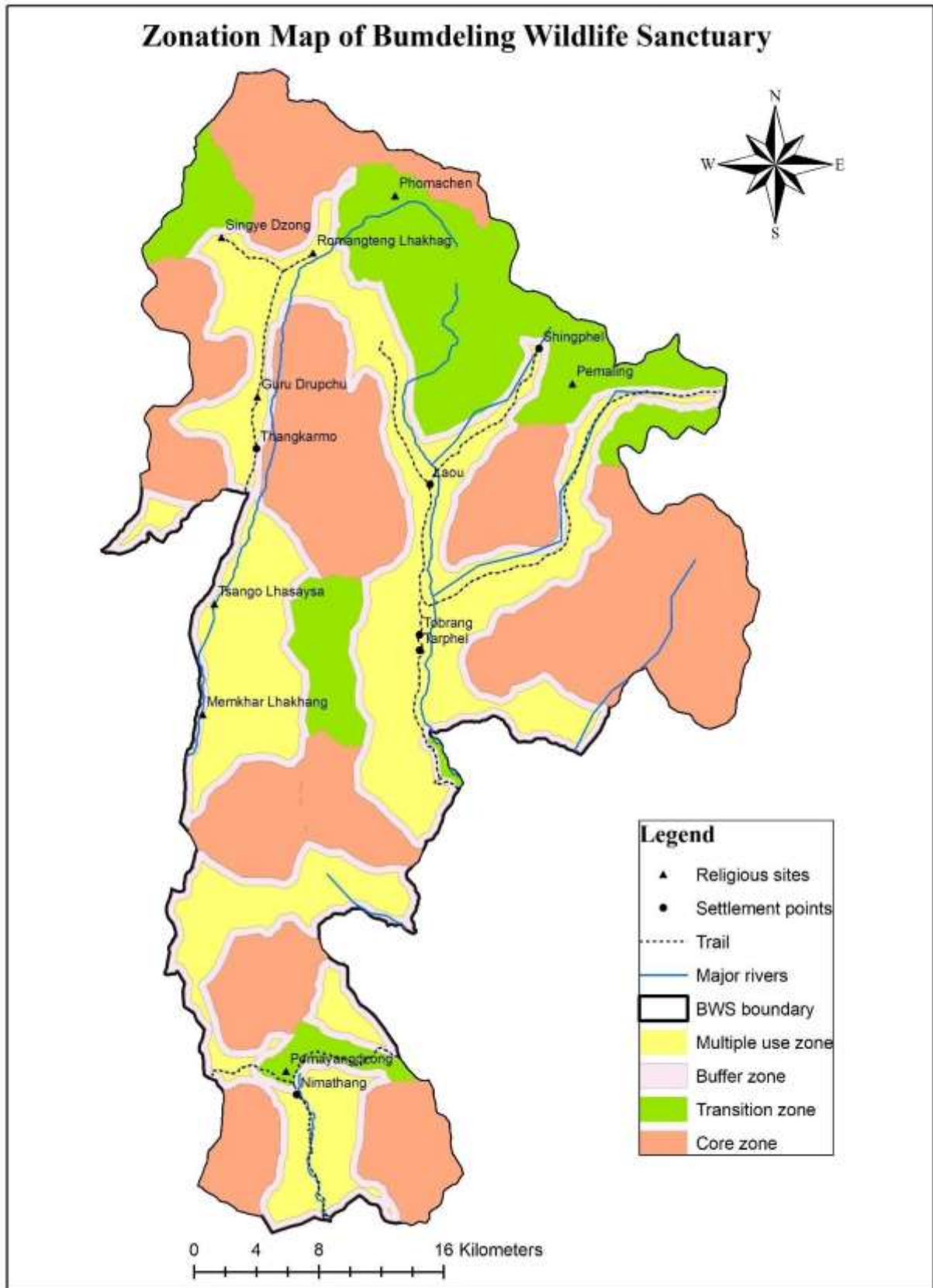


Figure 2: Zonation map of Bumdeling Wildlife Sanctuary

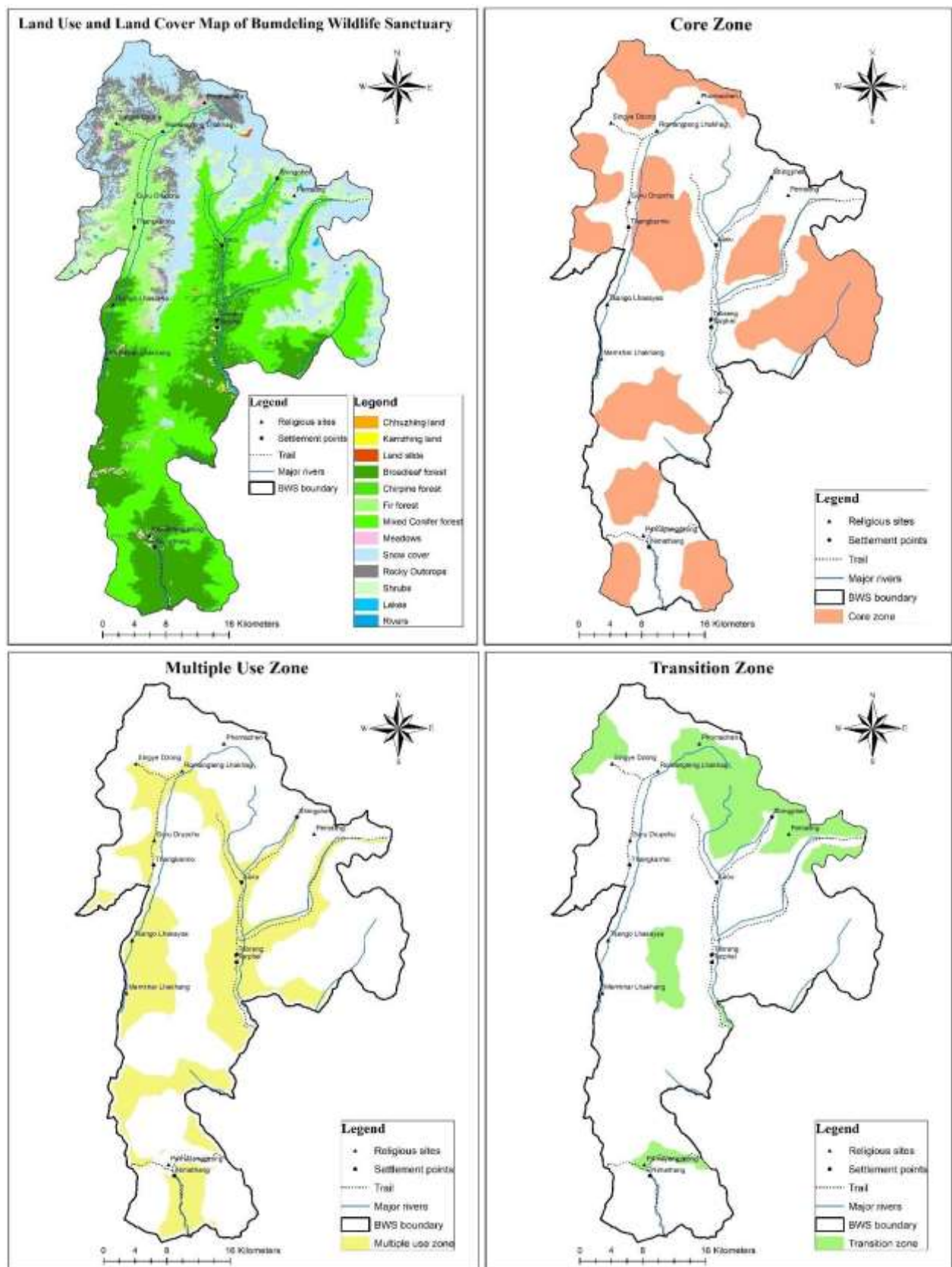


Figure 3: LULC Map and different zones of Bumdeling Wildlife Sanctuary Table 2: Land use categories falling within Multiple Use Zone

Zones	Land cover class	Sub-class	Symbol	Total area (Sq.Km)	Area (%)	Total Area (%)	
Multiple use zone	Cultivated Agriculture land	Kamzhing land	AK	1.02	0.24	0.24	
	Degraded Areas	Land slide	DL	0.18	0.04	0.04	
	Forests		Broadleaved forest	FB	174.29	40.75	87.62
			Broadleaved & Conifer forest	FBc	8.96	2.09	
			Fir forest	FCf	50.88	11.90	
			Mixed Conifer forest	FCm	140.61	32.88	
	Meadows	Meadows	GP	5.64	1.32	1.32	
	Snow cover	Snow cover	OS	10.92	2.55	2.55	
	Bare Areas	Rocky Outcrops	RR	9.29	2.17	2.17	
	Shrubs	Shrubs	SH	25.21	5.89	5.89	
	Water Bodies		Lakes	WL	0.15	0.03	0.16
Rivers			WR	0.53	0.12		
			Total	427.69	100	100	

Table 3: Land use categories falling within Buffer Zone

Zones	Land cover class	Sub-class	Symbol	Total area (Sq.Km)	Area (%)	Total Area (%)	
Buffer zone	Cultivated Agriculture land	Chhuzhing land	AC	0.11	0.05	0.24	
		Kamzhing land	AK	0.43	0.19		
	Degraded Areas	Land slide	DL	0.26	0.12	0.12	
	Forests		Broadleaf forest	FB	66.99	30.30	74.41
			Broadleaf & Conifer forest	FBc	0.97	0.44	
			Chir Pine forest	FCc	0.03	0.01	
			Fir forest	FCf	20.88	9.44	
			Mixed Conifer forest	FCm	75.65	34.21	
	Meadows	Meadows	GP	3.15	1.42	1.42	
	Snow cover	Snow cover	OS	14.05	6.35	6.35	
	Bare Areas	Rocky Outcrops	RR	8.68	3.93	3.93	
Shrubs	Shrubs	SH	29.38	13.29	13.29		
Water Bodies		Lakes	WL	0.28	0.13	0.23	
		Rivers	WR	0.23	0.11		
			Total	221.11	100	100	

Table 4: Land use categories falling within Transition Zone

Zones	Land cover class	Sub-class	Sym bol	Total area (Sq.Km)	Area (%)	Total Area (%)
Transition zone	Cultivated Agriculture land	Chhuzhing land	AC	0.12	0.05	0.08
		Kamzhing land	AK	0.08	0.03	
	Degraded Areas	Landslide	DL	0.70	0.27	0.27
	Forests	Broadleaved forest	FB	10.49	4.08	22.20
		Broadleaved & Conifer forest	FBc	0.00	0.0002	
		Fir forest	FCf	6.99	2.72	
		Mixed Conifer forest	FCm	39.58	15.40	
	Meadows	Meadows	GP	9.12	3.55	3.55
	Snow cover	Snow cover	OS	90.27	35.12	35.12
	Bare Areas	Rocky Outcrops	RR	30.50	11.87	11.87
	Shrubs	Shrubs	SH	66.57	25.90	25.90
Water Bodies	Lakes	WL	1.43	0.56	1.00	
	Rivers	WR	1.14	0.44		
			Total	256.9	100	100

Table 5: Land use categories falling within Core Zone

Zones	Land cover class	Sub-class	Symbol	Total area (Sq.Km)	Area (%)	Total Area (%)
Core zone	Degraded Areas	Land slide	DL	0.32	0.05	0.05
	Forests	Broadleaved forest	FB	85.38	13.59	50.92
		Broadleaved & Conifer forest	FBc	0.05	0.01	
		Chir Pine forest	FCc	0.001	0.0001	
		Fir forest	FCf	35.43	5.64	
		Mixed Conifer forest	FCm	199.12	31.69	
	Meadows	Meadows	GP	8.29	1.32	1.32
	Snow cover	Snow cover	OS	142.43	22.67	22.67
	Bare Areas	Rocky Outcrops	RR	49.58	7.89	7.89
	Shrubs	Shrubs	SH	105.58	16.80	16.80
	Water Bodies	Lakes	WL	2.17	0.35	0.35
Rivers		WR	0.01	0.00		
			Total	628.40	100	100

PART II: CURRENT STATUS OF PROTECTED AREA

2.1 Landscape Characteristics

2.1.1 Landscape and Elevation

Geographically, the sanctuary consists mostly of rugged mountainous terrains, rocky peaks, permanent snow, small glaciers, glacial lakes, steep river valleys, and few plains. Almost 90% of the Sanctuary lies between 2500m and 5000m elevation.

2.1.2 Geology and Soil

Most of the sanctuary is underlain by gneiss with some areas with quartzite, graphite schist and limestone, which contribute to the formation of different landscapes. The slopes are formed due to the accumulation of talus materials moving down the slopes due to gravity. Alluvial and colluvial formation are apparent in the narrow valleys of BWS, which consist of soil, silt, clay, sand and gravels brought down by the action of soil and water erosion (BWS, 2013).

2.1.3 Climate and Topography

The sanctuary has warm temperate climate in the south, cool temperate climate in the centre and alpine in the northern part. In the lower parts of the Sanctuary, the maximum temperature ranges from 20°C to 30°C and minimum between 8°C to 15°C, while the centre region experiences maximum temperature of 15°C to 20°C with minimum temperature ranging between 3°C to 10°C. The North part of the Sanctuary usually remains cold with most of the time under snow cover. Maximum rainfall is received in the months of May - September. The annual rainfall ranges from 1000mm to 3500mm.

2.1.4 Hydrology and Drainage

Bumdeling Wildlife Sanctuary has three major rivers systems flowing through it. The Kholongchhu flows in the centre of the sanctuary while Khomachhu (Lhuentse) flows from the western part of the sanctuary. Sherichhu (Mongar) form the main drainage systems flowing from the south.

Numerous tributaries feed these three major drainage systems. The Major tributaries of the Kholongchhu include Shingphelchhu, Lamzangchhu, Langmalachhu, Wominangchhu and Dongdechhu. The mega hydropower project is located on the downstream of Kholongchhu.

Singyedzongchhu and Roelmatengchhu are the major tributaries that feed Khomachhu while Sherichhu is fed by Phunningchhu and Nyendhachhu.

2.2 Floral Description

2.2.1 Forest Types

In recent Rapid Biodiversity Survey (RBS) of 2018, the forest was reclassified into 12 types based on classification system of National Forest Inventory (NFI) of Bhutan, 2012 as follows:

a) Alpine scree slopes (above 4000m)

These consist of loose rocks with very sparse vegetations of grasses, herbs and stunted shrubs. Many of the rocks are covered by mosses and lichens. Adjacent cliffs are used by blue sheep and form a refuge for the blue sheep from its predators. It is a hunting ground for the snow leopard. The limited areas are also grazed by yaks in summer.

b) Alpine pastures and meadows (4000-4600m)

Depending on the soil types and the moisture regime, different types of meadows occur. Around Shingphel, Roelmateng and Singye Dzong, these meadows are grazed by yaks in summers. Medicinal plant such as Chinese caterpillar (*Opiocordyceps sinensis*) is collected annually by yak herders and villagers from the nearest villages of the Geogs of Bumdeling (Trashiyangtse) and Khoma (Lhuentse) in the meadows.

c) Alpine scrub forest (3700-4200/4600m)

Dry alpine scrub is dominated by *Ephedra* and *Cotoneaster* species, and in wetter conditions by juniper (*Juniperus squamata*) and *Rhododendron* species. Extensive *Rhododendron* scrub is found around Shingphel and Singye Dzong, especially on north and west slopes. Dry alpine scrub is found on south exposed slopes. Alpine scrub and meadows are a habitat for blue sheep, snow leopard and red fox. Various bird species, including wood snipe can be encountered.

d) Sub-alpine broad-leaved forest (3000-4000m)

This vegetation type has been separated from the cool broad-leaved forests, as the environment and the species differ considerably. Birch (*Betula utilis*), *Sorbus lanata* and maple (*Acer campbellii*) often dominate in this forest.

e) Fir forest (3100-3800m)

Fir forests are abundant in the sanctuary. Those within a reasonable distance from villages have often been used extensively for shingles for the traditional roofs of houses. The fir forest is characterized with undergrowths of bamboo and rhododendrons. Red pandas can be found mostly in the bamboo undergrowths. Common species of plants include *Abies densa*, *Sorbus foliolosa*, *Rhododendron campanulatum* and other *Rhododendron* species.

f) Mixed conifer forest

In this forest, other conifers such as spruce, blue pine, larch and yew (*Taxus wallichiana*) are present, often occurring together with hemlock or fir.

g) *Pine forests (2100-3000 & <2000m)*

Small areas of Bhutan pine (*Pinus bhutanica*) forest are found in the Sanctuary. Chirpine (*Pinus roxburghii*) forest is abundant in Eastern Bhutan, mostly on the southern slopes of the lower Khomachhu.

h) *Evergreen oak forest (2000-2600m)*

This forest type is quite abundant in the sanctuary and is dominated by oaks (*Quercus glauca*, *Quercus lamellosa*, *Quercus griffithii* and *Quercus semicarpifolia*). Associated species include *Rhododendrons* in catchment areas. Star anise (*Illicium griffithii*) is the most abundant species in Aja.

i) *Cool broad-leaved forest (2000-2900m)*

This forest is wetter than the evergreen oak forest. *Lauraceae*, *Exbucklandia*, maples (*Acer thomsonii*) and birches (*Betula alnoides*) are the dominant species. Some oaks can also be seen. Tiger roams around in this and the evergreen oak forests. Rufous-necked hornbills and chestnutbreasted partridges are also found.

j) *Alder forest*

Alder (*Alnus nepalensis*) is a pioneer species which establishes itself on disturbed soil, such as landslides and recent river and debris flow deposits, and also on abandoned agricultural land.

k) *Warm broad-leaved forest (1000-2300 m)*

These mixed evergreen and deciduous forests are found in the south of BWS and are also an important part of the tiger habitat in the sanctuary. Various threatened or near-threatened bird species are also found, including the rufous-necked hornbill and chestnut-breasted partridge.

l) *Temperate pastures and meadows*

Temperate natural pastures and meadows have grass cover, or grasses mixed with shrubs such as *Piptanthus*, barberry (*Berberis* species), dwarf bamboo or rushes (*Juncus* species). A large number of these pastures are presently being invaded by shrubs and trees resulting in large reduction in grazing areas for ungulates. There are risks of being taken over by shrubs in near future.

2.2.2 Floral Species Diversity

The floral species diversity (H^{''}) is found highest in Cool Broadleaved forest followed by Warm Broadleaved forest and Mixed Conifer forest whereas, the species diversity is lowest at Rhododendron Shrub and Dry alpine shrub regions of BWS (Fig.4)

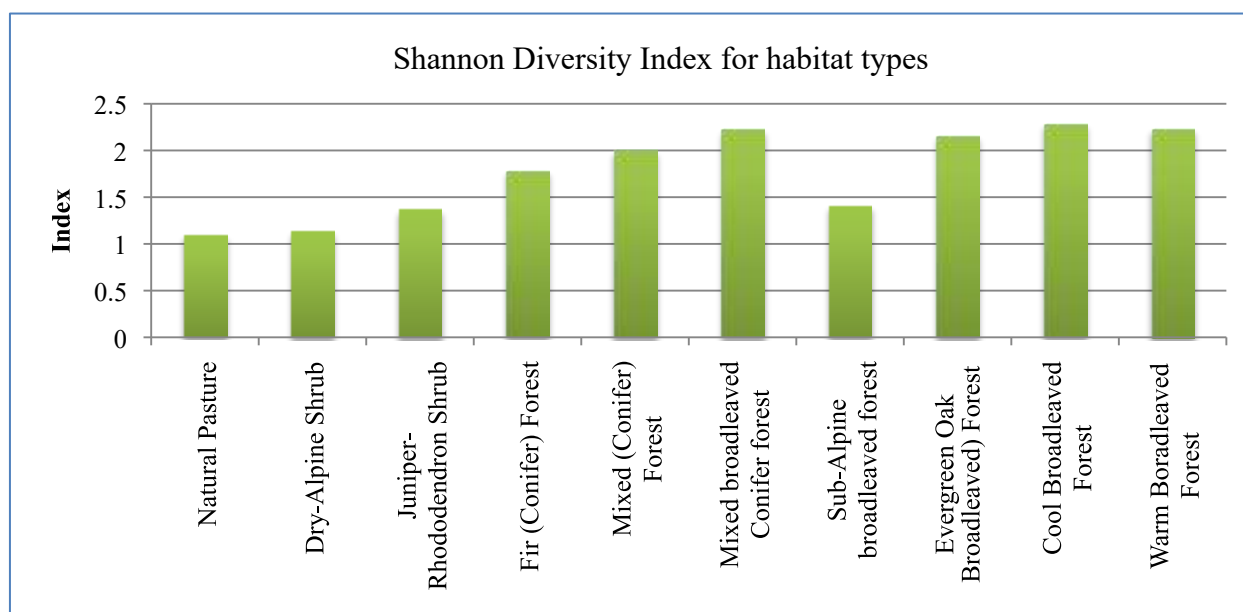


Figure 4: Floral Diversity of BWS

Due to vast altitudinal variation in the sanctuary, BWS houses varied species of floral diversity. There are 966 species of plants known to occur in BWS including 130 species of trees, 31 species of ferns, 579 species of herbs, 64 species of orchids and 162 species of shrubs.

Table 6: Plants of conservation importance

Common Name	Scientific Name	IUCN Status	FNCA Schedule
Pangpoi	<i>Nardostachys jatamansis</i>	Critically Endangered	-
Himalayan Yew	<i>Taxus baccata</i>	Endangered	Schedule-I
Bhreeng-gee-radzaraza	<i>Panax pseudo-ginseng</i>	-	Schedule-I
Chinese caterpillar	<i>Opiocordyceps sinensis</i>	Vulnerable	Schedule-I
Blue poppy	<i>Meconopsis grandis</i>	-	Schedule-I
Weeping cypress	<i>Cupressus corneyana</i>	-	-
Walnut	<i>Juglans regia</i>	-	-
Juniper	<i>Juniperus recurva</i>	-	-
Champ	<i>Michelia champaca</i>	-	-
Chukar metog	<i>Rheum nobile</i>		-

2.3 Faunal Description

2.3.1 Faunal Species Diversity

With the huge variation in altitude from 1390-6400 masl and existence of complex vegetation zones, BWS harbours diverse biodiversity in terms of faunal presence. It provides home to

critically endangered and threatened faunal species. The rapid biodiversity survey of 2018, revealed additional terrestrial, avian, herpeto-fauna and aquatic species to existing lists in BWS.

Mammal diversity

BWS recorded 52 mammal species, which constitutes 25.6% of 203 mammals recorded in Bhutan. Of the 52 mammals, 11 (21.15%) species are listed in IUCN Red List (4 species are endangered, 5 species are vulnerable and 2 species are near threatened) and/or schedule I of FNCA 1995 (Table 1)

Table 7: Mammals of conservation importance

Common Name	Scientific Name	IUCN Status	FNCA Schedule
Snow leopard	<i>Panthera uncia</i>	Vulnerable	Schedule-I
Tiger	<i>Panthera tigris</i>	Endangered	Schedule-I
Himalayan Musk Deer	<i>Moschus leucogaster</i>	Endangered	Schedule-I
Wild dog (Dholes)	<i>Cuon alpinus</i>	Endangered	–
Capped Langur	<i>Trachypithecus pileatus</i>	Vulnerable	–
Clouded Leopard	<i>Neofelis nebulosa</i>	Vulnerable	Schedule-I
Himalayan Black Bear	<i>Ursus thibetanus</i>	Vulnerable	Schedule-I
Marbled Cat	<i>Pardofelis marmorata</i>	Near Threatened	Schedule-I
Red Panda	<i>Ailurus fulgens</i>	Endangered	Schedule-I
Common Leopard	<i>Panthera pardus</i>	Vulnerable	Schedule-I
Himalayan Serow	<i>Capricornis thar</i>	Near Threatened	Schedule-I

Avifauna diversity

BWS has high diversity of birds, which constitutes more than 40% of total birds found in Bhutan. As per the most recent record, the sanctuary is home to 356 species of birds, of which 11 species are listed in IUCN Red List and/or schedule I of FNCA 1995, as shown in Table2.

Table 8: Birds of conservation importance

Common name	Scientific name	IUCN Status	FNCR Schedule
Steppe Eagle	<i>Aquila nipalensis</i>	Endangered	
Chestnut-breasted Partridge	<i>Arborophila mandellii</i>	Vulnerable	
Satyr Tragopan	<i>Tragopan satyra</i>	Near Threatened	
Himalayan Monal	<i>Lophophorus impejanus</i>	Least concern	Schedule-I
Ferruginous Poachard	<i>Aythya nyroca</i>	Near Threatened	
Yellow-rumped Honeyguide	<i>Indicator xanthonotus</i>	Near Threatened	
Rufous-necked Hornbill	<i>Aceros nipalensis</i>	Vulnerable	Schedule-I
Ward's Trogon	<i>Harpactes wardi</i>	Near Threatened	
Black-necked Crane	<i>Grus nigricollis</i>	Near Threatened	Schedule-I

Wood Snipe	<i>Gallinagon emoricola</i>	Vulnerable	
River Lapwing	<i>Vanellus duvaucelii</i>	Near Threatened	

Butterfly Diversity

Today BWS has more than 200 species of butterflies. Some important and rare species of butterflies found in BWS includes Ludlow’s Bhutan Glory (*Bhutanitis ludlowi*) – the national butterfly of Bhutan is vulnerable (IUCN) and endemic to Trashiyangtse. Other species include Krishna’s Peacock (*Papilio krishna*) -national butterfly of Nepal, Chinese Nawab (*Ployuran arcaea*) and Bhutan Tree brown (*Lethe marigaritae*).

Herpetofauna & Fish Diversity

There are 18 species of snakes and 4 species of lizard found in and around BWS (Wangyel, 2009). Seven native species of fishes representing seven genera and three families are recorded from the rivers under BWS (Phuntsho & Shivaraj, 2005)

2.4 People and Livelihood

2.4.1 Demography

Bumdeling Wildlife Sanctuary caters services to three geogs of Khoma, Sherimuhung, Bumdeling totaling up to 1,119 households with 8,782 people (BWS, 2017) of which 49.2% are men and 50.8% women. There were 32 new houses constructed within five years in three geogs attributing to more family member divisions. The reasons for increasing the number of *gungtong* are attributed to rural-urban migration and human wildlife conflict.

However, only 19.39% of households fall inside the park area with 29.58% falling within the buffer zone (based on the existing park administrative zonation). (Table 9)

Table 9: Households of BWS (geog wise/jurisdiction)

Sl.#	Geogs/Dzongkhag	HHs inside BWS	HHs outside BWS (services catered)	Total HHs
1	Bumdeling/Trashiyangtse	179	190	369
2	Khoma/Lhuentse	29	307	336
3	Sherimuhung/Mongar	9	405	414
4	Total	217	902	1,119
		19.4%	80.6%	

2.4.2 Local Economy

Major source of income for the park residents comes from the sale of agricultural products (rice and vegetables such as chili and potatoes). Non-farm activities (contract and portering, business

and shops, weaving, salary, carpentry, farmhouse and sale of bamboo products, *Dapa* and paper products) and sale of livestock products were other sources of income for the residents of Sanctuary (Fig. 5). The geog wise income for resident households is given in figures 6, 7 & 8)

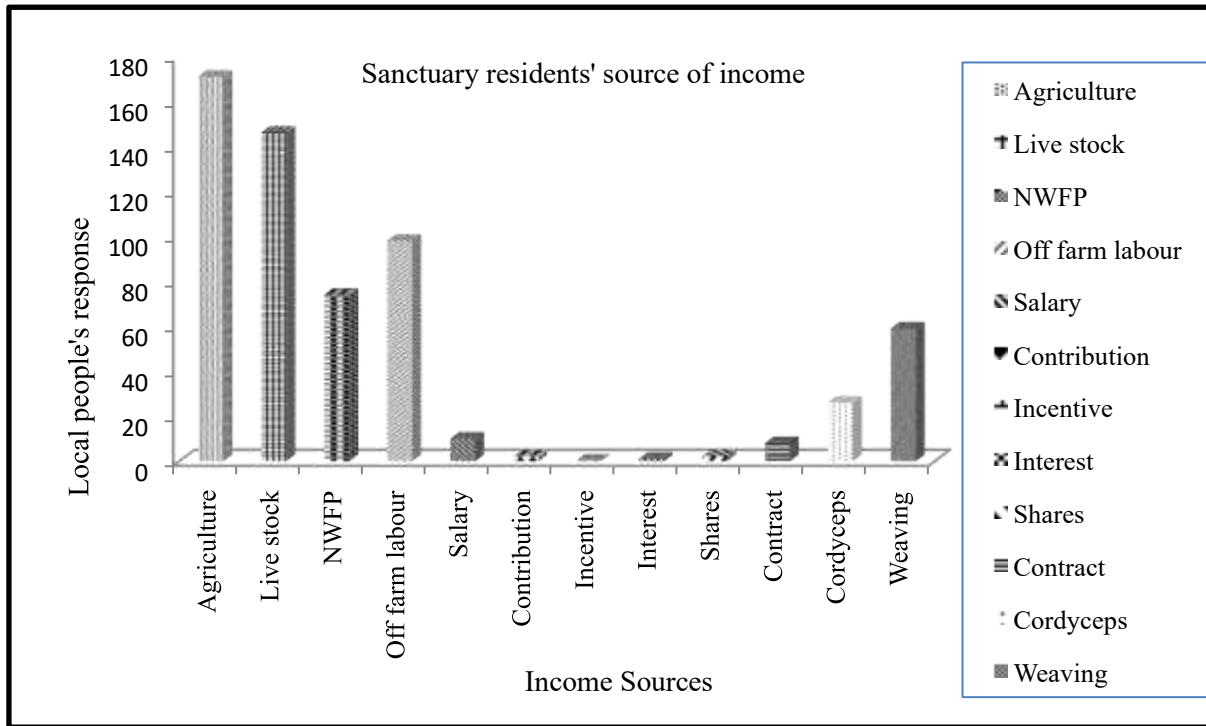


Figure 5: Sanctuary residents' source of income

For Khoma geog, weaving is the most important source of income with 30% of the respondents involved in weaving followed by agriculture (23%) and livestock (22%). This is because the people of Khoma geog are specialized in weaving and the best Bhutanese textile comes from Khoma and nearby geogs under Lhuentse Dzongkhag. The other incomes for the people of Khoma geog are bamboo weaving, *Cordyceps*, off-farm activities, performing rituals, government employment and NWFP.

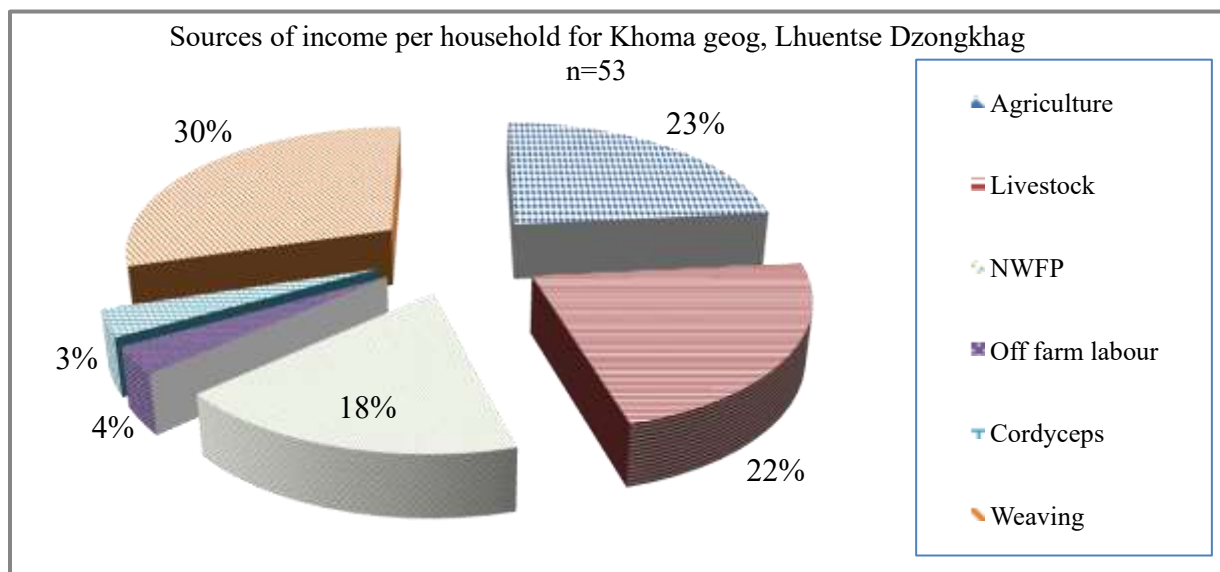


Figure 6: Income source for Khoma Geog, Lhuentse Dzongkhag

In Sherimuhung geog, agriculture was the main source of cash income with 33% of the respondents involved in agriculture followed by off-farm labour (28%) and livestock (27%). The other category of income for the people of Sherimuhung geog includes NWFP, contribution, performing rituals, carpentry, contract works and business.

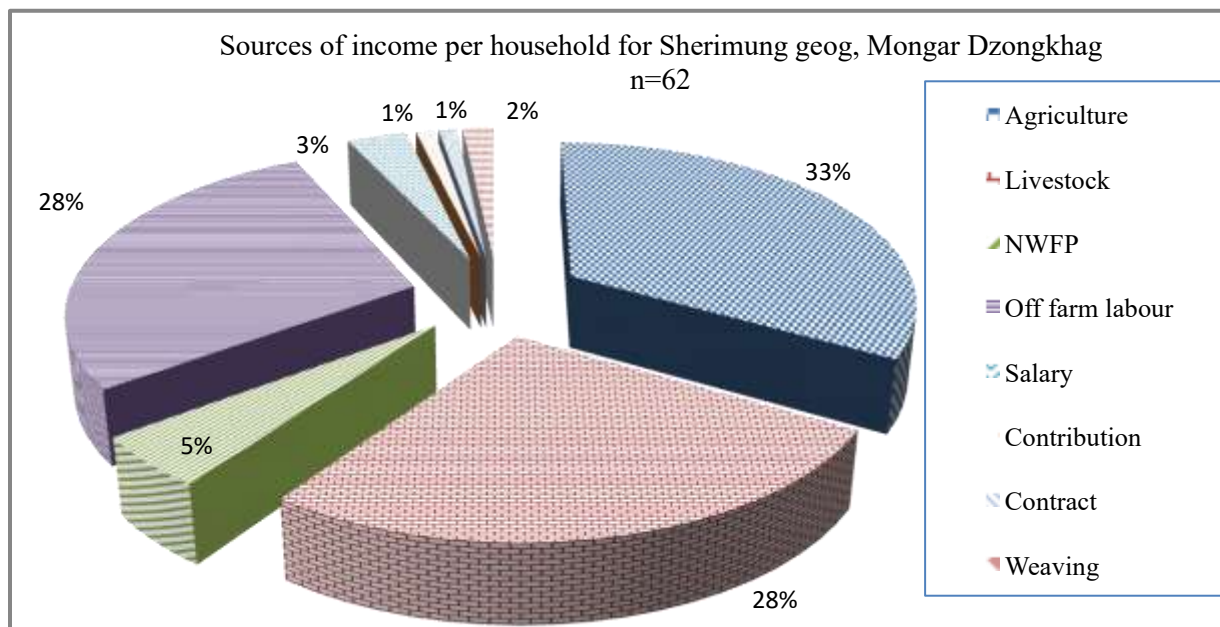


Figure 7: Income source for Sherimuhung Geog, Mongar Dzongkhag

In Bumdeling geog, agriculture is also the main source of income with 26% of the respondents involved in agriculture works followed by livestock (25%) and off-farm labour (16%). The other categories of income source include contract works, shares, logging, NWFP, painting, and salary.

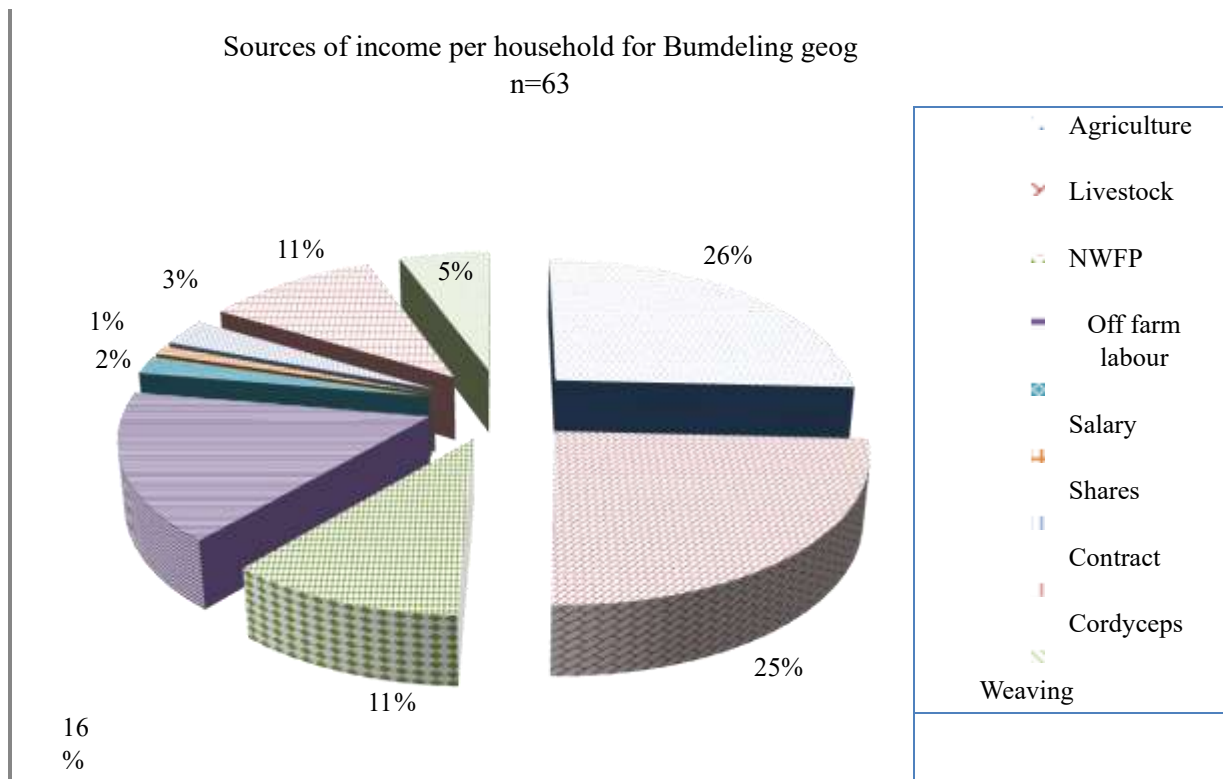


Figure 8: Income source for Bumdeling Geog, Trashiyangtse Dzongkhag

2.4.3 Resource Utilization and Allocation

To ensure sustainability of the natural resources, allotment of forest products such as commercial and rural timber, fencing posts, flagpoles and firewood are done strictly based on the FNCRR 2017. The service delivery includes forestry clearance and allotment of Wood and Non-Wood Forest Products.

Wood Products

As shown in Fig. 9, BWS residents utilized forest products mostly in form of timber and fencing posts.

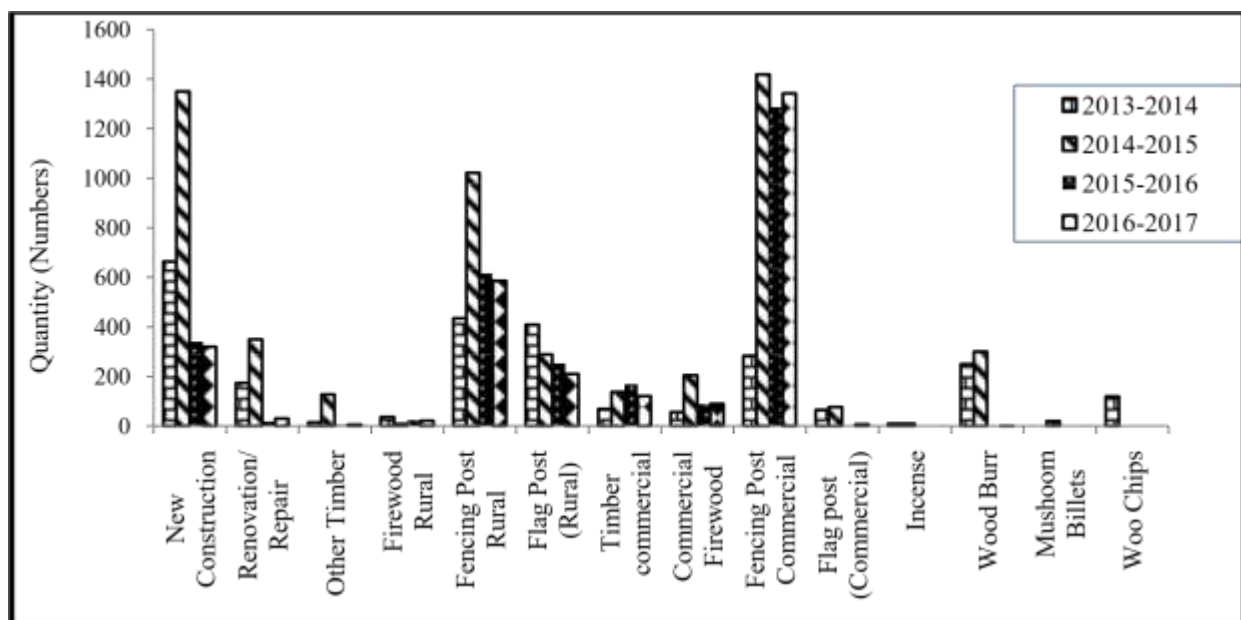


Figure 9: Forest products allotment from BWS (2013-2017)

Non-Wood Forest Products

The sanctuary residents have availed NWFPs such as bamboos, boulders, sands, gravels, wood burrs, mushrooms and wild vegetables (Table 10).

Table 10: NWFP supply from BWS (2013-2017)

Sl. No	Type of Product	Unit	2013-2014	2014-2015	2015-2016	2016-2017	Total
1	Large Bamboo	No	55	105	103	227	490.00
2	Small Bamboo	No	1200	7425	9905	7725	26,255.00
3	Boulder	T/L	182	333	17475	653	18,643.00
4	Sand	T/L	73	62.5	59.5	110	305.00
5	Gravel	T/L	4	4	0	2	10.00
6	Daphne Bark	Kgs	400	700	0	0	1,100.00
7	Incense	H/L	10	10	0	0	20.00
8	Incense	T/L	2	0	0	0	2.00
9	Wood Burr	No	250	300	200	0	752.00
10	Handicraft	No	4	0	0	0	4.00
11	Top Soil	T/L	1	2	20	0	23.00
12	Mushroom	Kgs	0	0	0.1226	0	0.13

2.4.4 Traditional Practices

The people of the Bumdeling valley in Trashiyangtse have developed incredible skill of woodworking (*Dapa* making) and traditional paper making (*Desho*). People of Bumdeling geog earn their income from the sale of these products besides *Cordyceps*.

The Khoma village in Lhuentse is known throughout the country for its signature woven textile, the *Kishuthara*. The women sit in a row of makeshift textile cottage, weaving intricate designs and patterns. It is the main income source for the people of Khoma geog.

2.4.5 Community Forest

In order to help inculcate a sense of belonging and stewardship on management of state forest around the settlement, BWS has created 17 community forest management groups (CFMGs) and six non-wood forest product management groups (NWFPMGs). This programme covered more than 800 hectares of state reserved forests for sustainable management by local communities.

2.4.6 Grazing

More than 94% of the BWS households own cattle, on average with nine heads per household. Most of the cattle comprise of Yaks owned by highlanders. Yaks graze alpine natural pastures during summer and descend to forest areas at lower altitudes during winter. Yak herders reported to own on average of 70 heads per household (12 households) but the figure is likely to be higher.

2.5 Administrative, Service Delivery and Park Infrastructure

2.5.1 Location and Service Delivery

The Head Quarter of the Wildlife Sanctuary is located at Trashiyangtse. Headed by the Chief Forestry Officer (CFO), the management of BWS is administered through three ranges viz. Khoma (Khoma, Lhuentse), Dungzam (Bumdeling, Trashiyangtse) & Serzhong (Sherimuhung, Mongar) (Fig.10) making a total area of 1,534.24 Sq.Km.

However, the BWS management provides services to the entire households (1,119) included within the three geogs of an area of 1,889.032 Sq.Km.

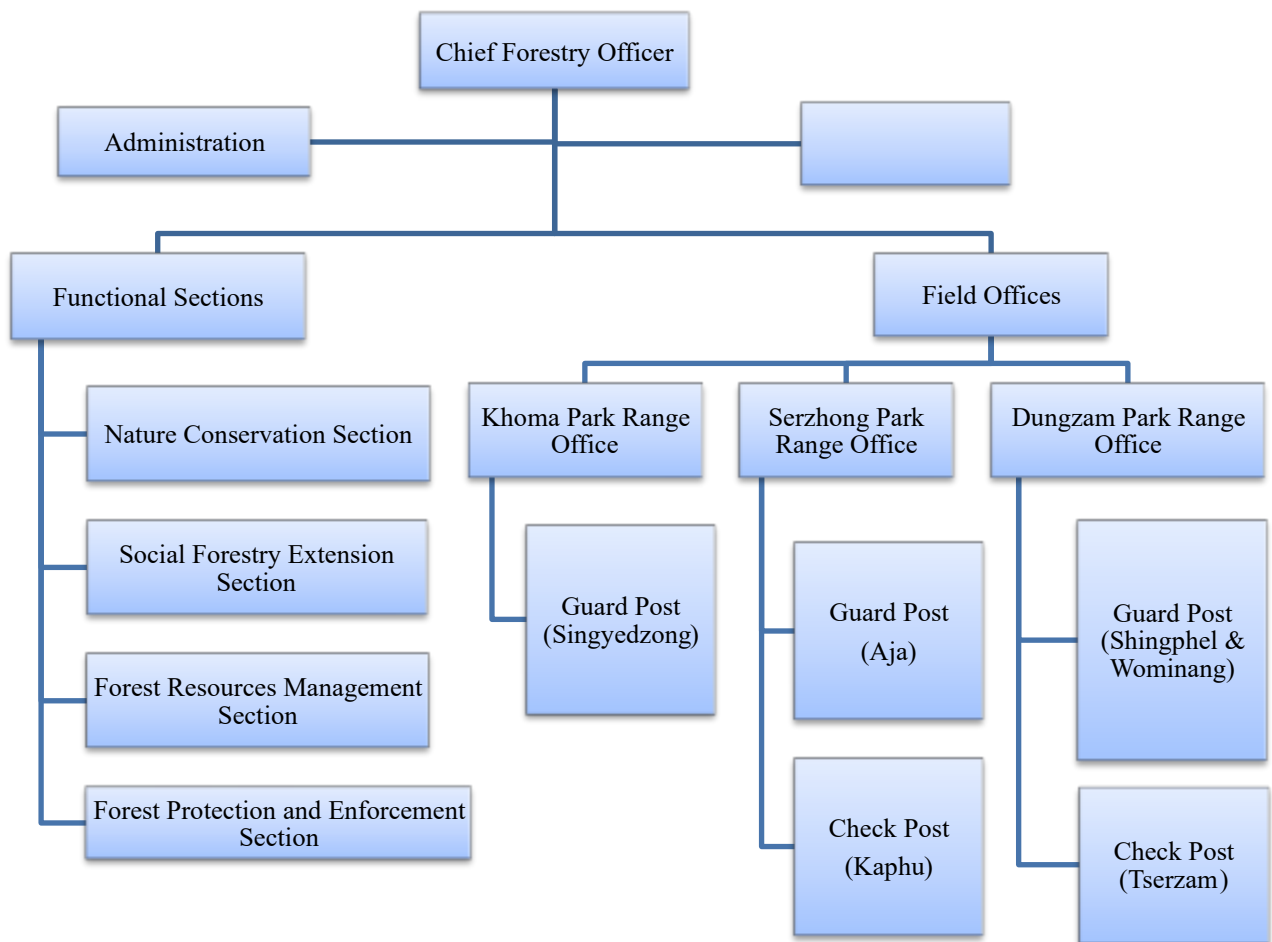


Figure 10: Organizational structure of BWS

2.5.2 Park Infrastructure and Mobility

BWS head office has the main office building, Park Manager’s resident and guest house. BWS head office has no staff quarter. Three Range Offices have staff quarters with transit camps and guard posts (Singye Dzong, Shingphel and Aja).

BWS has a 4WD Toyota hilux which enables the movement of the staff for various official works.

PART III: SUMMARY REVIEW OF THE PAST PLAN

3.1 Assessment of Past Plan (July 2013 – June 2018)

3.1.1 Species Conservation

a) Presence of snow leopard and tiger in BWS

The first ever footages of snow leopard and tiger were captured in the camera traps in BWS in the year 2017. With these footages, BWS confirmed the presence of these mega-faunas inside the Sanctuary.



Figure 11: First ever footages of Snow Leopard and Tiger in BWS

b) The Life History of Bhutanitis ludlowi

For the first time in the world, the complete life cycle stages of *Bhutanitis ludlowi* was recorded at BWS campus in an ex-situ environment on the leaves of *Aristolochia griffithii* (Aristolochiaceae)- the larval host plant. The behaviours, metamorphic stages of eggs, caterpillars, pupae, and adult emergence were observed in the greenhouse especially designed for the research. The life cycle completes in 367 days with eggs hatching in 14-18 days, larva- 5 months 8 days and pupa- 6 months & 7 days. Adults emerge after eight instars. It is a univoltine brood.

c) Black-Necked Crane (BNC) Conversation Programmes

The following habitat management activities were carried out in close collaboration with the local communities to manage black-necked cranes:

- Habitat management activities such as revival of fallow lands and annual clearing of roosting sites
- Formation of community BNC conservation support groups at Bumdeling and Yangtse Geogs
- As an appreciation for keeping farmers' land fallow during winters to facilitate feeding areas for BNC, the local communities were provided with power tillers to ease paddy field cultivation thus expanding for BNC
- Abandoned fallow lands were reclaimed for paddy cultivation through supply of Electric-Fencing (EF) materials at subsidized rates thus extending the feeding area for BNC

3.1.2 Integrated Conservation Development Programme (ICDP)

With an aim to garner community support in species conservation and resource management, ICDP was initiated in parks. The ICDP programmes include provision of agriculture inputs and machineries, subsidized energy and heating systems and substitutions for shingles like CGI sheets.

The detailed reports on the impact assessment of ICDP interventions in various activity heads on different aspects were produced separately (*Ref. detail report*). However, for the purpose of this conservation management plan, the major impacts of ICDP towards social livelihood and conservation are highlighted as below:

Impact of ICDP to social livelihoods

- a) Installment of electric fencing (52.64 km) had helped reduce crop damage by wildlife, which benefited more than 60% (276 households) of the local communities through this intervention
- b) Supply of *Keshothara* threads under Khoma geog had benefited approximately 65% of local communities and increased (70%) annual income generation through selling of *Keshotharas*
- c) Power tiller (7 nos.) supply had benefited more than 60% of households under Bumdeling and Yangtse geogs and eased the labour contribution towards agriculture works
- d) Supply of HDP pipe helped the local communities to maintain irrigation channels and benefited more than 30% of local people residing inside BWS through this program
- e) Capacity building such as farmers study tour, advocacy & awareness programmes, conservation support group formations had benefited roughly 70% of local communities in BWS
- f) Trail and religious sites development had benefited around 55% of local communities through portering and benefited more than 100 national pilgrims annually
- g) Supply of yak breeding bulls (12 Nos.) benefited around 62% of the local communities living in BWS, which produced 142 improved progenies in three geogs. This has helped reduce number of unproductive heads that would affect on grazing competitions with wild ungulates in the highlands
- h) Solar lighting sets, electrical appliances and substitutes such as CGI sheets had benefited especially the people living in the highlands (12 households) and institutions
- i) With an objective to promote and create avenues for the local people to generate additional income through engagement in ecotourism activities and to provide better facilities and services to the pilgrims and visitors at affordable rate, BWS constructed and developed basic infrastructures along Khoma-Singye Dzong (Lhuentse) and Khabrak-Aja Ney (Mongar)

Impact of ICDP to conservation

The major impacts of ICDP interventions on conservation of biodiversity in BWS are as mentioned below:

- a) Approximately, 98% of *Shinglep* extraction demand by local communities living inside BWS was reduced due to supply of CGI sheet
- b) Issuance of solar lighting sets had improved living standards of more than 20 households in BWS and reduced annual fuel wood consumption by 20%
- c) Supply of electric rice cookers to schools and religious institutions had benefited in reduction of annual commercial fuel wood demand by 10 to 11 truckloads

3.1.3 Social Forestry Programme

BWS has created 17 community forest management groups (CFMGs), six non-wood forest product management groups (NWFPMGs) and one forest fire management group. More than 800 hectares of state reserved forests were handed over to the communities (150 rural households) for sustainable management with utilization plans.

3.1.4 Forest products utilization and service delivery

Allotment of timber and wood products

In the past 5 years, BWS allotted a maximum number of commercial and rural timbers, followed by fencing posts (Fig.12).

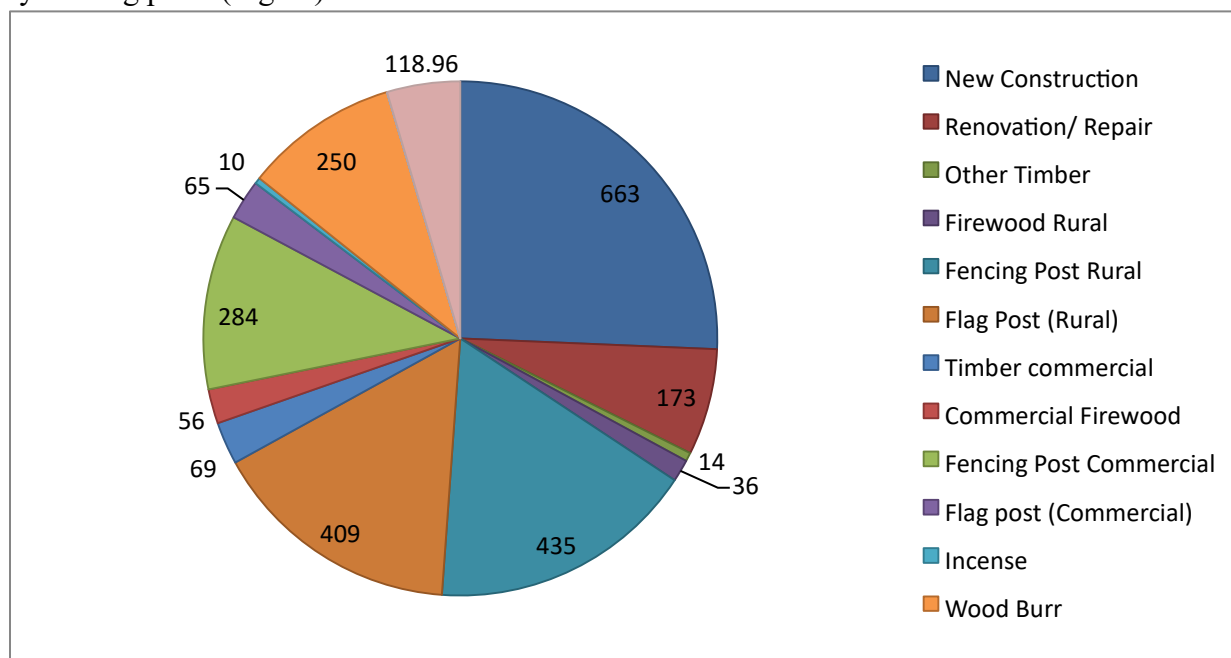


Figure 12: Forest products allotment from BWS (2013-2017)

More than 1,300 Nos. of standing trees were allotted as subsidized timbers for construction and renovation of houses from the government land.

Surface collection and NWFP

Surface collection and non-wood forest products during the plan period of 2013-2018 mostly included bamboos, boulders, sands, gravels, wood burrs, mushrooms, and wild vegetables (Table 11 &12).

Table 11: Surface collection (2013-2017)

Sl. No	Type of Product	Unit	2013-2014	2014-2015	2015-2016	2016-2017	Total
1	Boulder	T/L	182	333	17475	653	18,643.00

2	Sand	T/L	73	62.5	59.5	110	305.00
3	Gravel	T/L	4	4	0	2	10.00
4	Top Soil	T/L	1	2	20	0	23.00

The residents inside the park used 19,000 truckloads of boulders besides sand and gravels (socioeconomic survey report, 2018).

Table 12: NWFP and vegetables collection (2013-2017)

Sl. No	Type of Product	Unit	2013-2014	2014-2015	2015-2016	2016-2017	Total
1	Large Bamboo	No	55	105	103	227	490.00
2	Small Bamboo	No	1200	7425	9905	7725	26,255.00
3	Daphne Bark	Kgs	400	700	0	0	1,100.00
4	Incense	T/L	2	0	0	0	2.00
5	Wood Burr	No	250	300	200	0	752.00
6	Handicraft	No	4	0	0	0	4.00
7	Mushroom	Kgs	0	0	0.1226	0	0.13

Besides 26,255 Nos. of small bamboo, 1,100 kg of *Daphne* barks were collected during the last five years. Others NWFPs products included large bamboos and incense (BWS, 2018)

PART IV: CONSERVATION THREATS AND CHALLENGES

Threats and challenges were listed in accordance with the priority rankings set during consultation with the general public of the three geogs of Bumdeling, Khoma and Sherimuhung.

4.1 Degradation of natural resources and management

Park residents are mainly dependent on surrounding natural resources for their livelihood thus; allotment of forest produces is one of the key activities in the sanctuary besides law enforcement

and protection. The highly subsidized supply of timbers and other resources has further led to growing pressure on forest resources.

In the past 5 years, more than 1,300 standing trees were allotted for new constructions and renovations of houses followed by supply of fencing post. Almost 19,000 truckloads of boulders (Fig.9) and 26,255 nos. of bamboos (Table 12) were allotted. This trend would lead to unsustainable management and utilization of natural resources.

4.2 Less support in natural resources conservation by local communities

Participation and involvement of local communities in conservation of natural resources is emphasized at all levels. However, despite advocacy programmes, local communities show very less sense of ownership to natural resources in the localities and thus less support in conservation. One of the programmes to instill in the sense of ownership and belonging is through handing over of state forest to communities as community forests under social forestry programmes. More than 800 hectares of state forests were handed over to 150 households to strengthen the community support on natural resources conservation.

4.3 Lack of reliable facilities and infrastructures for efficient conservation activities

Management of protected areas comprises of diverse programmes ranging from infrastructure to professional development to natural resources management. For instance; lack of reliable infrastructure like transit camps and guard posts would hamper efficient conduct of protection and conservation works. Hence, the current conservation management plan requires covering up issues from past plan such as habitat management for concern species, infrastructures (construction of transit camps and guard posts) and office professional equipments; for example, powerful tele-binoculars and other field equipments.

4.4 Illegal wildlife trades and poaching

The poachers target several species of wild animals such as musk deer for its pod, tiger and other big cats for their skin and medicines; and ungulates for meat, Himalayan Black Bear for its bile and plants like *Paris pollyphylla* and *Opiocordyceps sinensis*, which are of great commercial value in the international market. Since BWS shares international borders with India and China, the illegal wildlife poaching and trade remains as one of the main challenges.

More than 300 snares set up by poachers for trapping musk deer were dismantled from areas in and around Shinphel in 2015. The existing SMART patrolling is being continued, strengthened and implemented strictly.

4.5 Human wildlife conflicts and retaliatory killings

Crop depredation by wild animals is common and widespread in Bumdeling Wildlife Sanctuary. Settlements inside the sanctuary are interspersed often by forested areas making it easy for the wild animals to predate livestock and to raid crops.

Crop loss due to Wild Pigs, Porcupines, Monkeys and Bear raids is considerably high despite sleepless nights being spent guarding crops. Socio-Economic Survey of 2018 showed that

residents who are dependent on livestock products lost more than 5 heads annually to wild predators such as tiger and common leopards increasing chances of retaliatory action against the problem animals. There is a need to establish compensation (livestock and crop damage) schemes.

4.6 Poor nature-based ecotourism infrastructure services

BWS has culturally and historically significant sites such as Singye Dzong (Lhuentse), Pemaling (Trashiyangtse) and Aja (Mongar). Existence of such sites not only help local communities improve their livelihoods through financial gains from portering and serving as guides for pilgrims but also promote preservation of historic sites and cultures. Besides, unique and diverse products from Trashiyangtse communities such as *Dapa* (wood turning arts and crafts) from wood burrs add to the ecotourism potential.

Therefore, there is a need to develop ecotourism related amenities in order to promote ecotourism services and opportunities.

4.7 Ineffective waste management by visitors

Trash goes along with the people wherever they go. Pilgrims, trekkers, and Cordyceps collectors (Shingphel and Singye Dzong) leave huge volume of garbage in the mountains, pilgrimage sites, roadsides, watersheds, water bodies, alpine meadows, and deep forests.

Proper waste management practices should be encouraged and waste management campaigns continued to ensure trash-in trash-out programmes. Such programmes are implemented through advocacies and sensitization program.

4.8 Drying up of small and perennial water sources

In the face of climate change, there are known incidences of drying up perennial streams. Local residents have expressed concerns about drying up of Dungtso Lake in Bumdeling geog and Drakten Lake in Khoma. There is a need to conduct a detail studies on the causes and carry out restoration works.

4.9 Degradation of habitats for key faunal species

Every year Bumdeling valley receives around 100 Black-Necked Crane (BNC) in an average. However, the population of this winter visitor is found declining by the year. The decline could be attributed to the reduction of feeding areas such as paddy fields, developmental activities, and human disturbances. There is a need to revive abandoned paddy fields due to HWC problems through appropriate interventions of land reclamation and electric fencings. Maintain and improve winter roosting sites of BNC.

Ludlow's Bhutan Glory, the national butterfly of Bhutan is endemic to Trashiyangtse. However, very few people know about its existence in Trashiyangtse due to no enough awareness and conservation programmes. The core areas of the species are continuously grazed by cattle thus destroying the natural regeneration of the host plants. There is a need to take forward the conservation activities more seriously including activities such as species population monitoring,

enrichment plantations of the host plants, formation of local Ludlow groups and advocacies amongst the local communities.

Development activities and human population growths have resulted in the fragmentation of habitats of Rufous-Necked Hornbill in Sherimuhung Geog under Serzhong range. The preliminary field surveys on availability of its food trees in the areas showed that the status was on declining trend. Therefore, the field studies recommended for restoration activities such as enrichment plantation works of the fig plants for hornbills.

Similarly, there is a need to identify, improve, and maintain salt licks and water holes, manage alpine meadows to manage habitats for cats and ungulates

4.10 Incidences of forest fire

Incidences of forest fire outbreaks in BWS are not common like in other parts of the country. However, the park areas including Khoma and Sherimuhung are susceptible to fire outbreaks given the vegetation covered by chir pine forest. Therefore, it requires conduct of timely advocacies and fire control measures annually.

PART V: CONSERVATION MANAGEMENT PRESCRIPTIONS

This section outlines the strategic plan prescriptions to address the identified social and conservation issues and local people's expectation discussed in Chapter IV.

5.1 Sustainable use of natural resources and management

With the settlements inside the park, residents depend on the natural resources for their livelihoods. More than 1,300 Nos. of standing trees were allotted as subsidized timbers for construction and renovation of houses from the government land. In addition, the residents used 19,000 truckloads of boulders and 1,100 kg (socio-economic survey report, 2018) of Daphne barks besides firewood for heating and cooking purposes especially cattle feed. Therefore, there is a need to build a sustainable means to reduce growing pressure on natural resources and sustainable management.

Strategic actions

The following activities will be initiated in the three ranges of Khoma, Serzhong and Dungzam under BWS

- a) Management of natural resources through development of Local Forest Management Areas (LFMA) with detail utilization plans
- b) Carry out stock assessments through National Forest Inventory to understand the state of forest and carbon stocks besides LFMA
- c) Explore and support other alternatives in lieu of the use of woods and other natural resources such as electrical appliances and heating sets

5.2 Support in natural resources conservation by local communities

One of the programmes to instill in the sense of stewardship and belonging of local communities in conservation of natural resources is through community-based forest management and conservation programmes. This includes handing over of state forest to communities as community forests under social forestry programmes. BWS has until date, handed over seven community forests to the group.

Strategic actions

Based on the need analysis and public consultations with the local communities of the three geogs, following communities-based programmes (community forests and NWFPs) shall be emphasized:

- a) Develop new community forests (CF) and management plan for Thilingthramo, Bapdong, Tarphele, Womanang and Longkhar since there is no LFMA
- b) Revise CF management plans for Gangmung, Soenakhar, Serzhong, Muhung and Menchugang that will expire by 2021-2022.
- c) Develop NWFP management plans for Roelmateng (Sangzey), Womanang (herbal tea) and Bumdeling (Satuva)
- d) Revise NWFP management plans for Womanang, Aja, Jabgang, Kentsong, Chang/Longkhar (2022-2023)
- e) Train CFMG/NWFP groups on silviculture and books/record keeping for better management of conservation groups
- f) Carry out nursery and plantations of *Dapa* making tree species, *Daphne*, *Paris polyphylla* and Herbal tea species by the groups to meet raw material shortages faced currently
- g) Establish nature-based enterprises for rural income generation (traditional paper, herbal tea, Sangzey, Canes and bamboo)

5.3 Develop reliable facilities and infrastructures for efficient conservation and monitoring

In order to ensure effective implementation of PA plans and conservation activities, following strategic actions and guidelines are identified:

Strategic actions

- a) Evaluate the management effectiveness of the Sanctuary through Bhutan METT+ assessments.
- b) Ensure efficient monitoring and surveillance of illegal activities and PA management through development of infrastructures such as trails, bridges, guard posts, transit camps, renovation works for offices and VIC improvement (for advocacies and information dissemination).
- c) Ensure effective management of PAs through timely management and procurement of office furniture, laptops, copiers and professional cameras and binoculars.

5.4 Minimize illegal wildlife trades and poaching

Crop raids and livestock depredation due to wild animals have resulted into human wildlife conflicts (HWC). Therefore, in order to harmonize coexistence of species and local community through minimization of HWC and conflict management schemes, following strategic actions will be adopted.

Strategic actions

- a) Adopt zero poaching strategy (SMART) patrolling to mitigate and reduce illegal activities
- b) Develop rescue and rehabilitation facilities to treat injured animals due to HWC
- c) Procure patrolling equipments (communication sets, first aid tools, cyber trackers etc) to improve and combat illegal activities

5.5 Reduce wildlife conflicts and retaliatory killings

Annually, park residents lose five cattle heads to wild animals such as tiger, leopards and wild dogs besides crop damages by wild boars, monkeys, deer and porcupines. Therefore, following measures will be continued to adopt.

Strategic actions

- a) Install electric fencings for HWC mitigation for communities not covered during the past conservation management plan
- b) Initiate livestock predation compensation schemes for the predation by important wild animal species
- c) Awareness programmes on wild pests and problem animals

5.6 Strengthen and promote ecotourism infrastructure and services

BWS has culturally significant historic sites (Singye Dzong (Lhuentse), Pemaling (Trashiyangtse) and Aja (Mongar) besides unique arts and crafts. In order to promote and strengthen the nature-based ecotourism services the following strategic actions will be implemented.

Strategic actions

- a) Develop and/or improve ecotourism services in form of improved trekking round trip routes to historic sites of Bumdeling-Rigsum-Dechenphodrang
- b) Initiate ecotourism products and improve services and amenities in historic and religious sites of Aja, Pemaling and Singye Dzong
- c) Initiate and develop ecotourism products including recreational sites (picnic spots, birds/butterfly watching sights, boating/rafting avenues along Kholongchhu
- d) Improve and support existing ecotourism products such as traditional arts and crafts

5.7 Initiate effective waste management programmes

Indiscriminate littering of environment is becoming the most challenging task for conservationists to control despite numerous measures being put in place. Therefore, BWS wants to initiate waste management programmes and implement in 3 Ranges as follows:

Strategic actions

- a) Carry out waste management campaigns in all the three ranges continuously by adopting trash-in trash-out measures and trash management programmes during *Cordyceps* collection seasons for two ranges
- b) Incentivize those local groups who actively participate in waste management campaigns including bringing out the highest amount of trash from mountains and significant water heads
- c) Encourage waste segregations through use of improvised waste bins by local institutions such schools and monasteries

5.8 Climate smart restoration of perennial water sources

Bumdeling valley was designated as RAMSAR site, the wetlands of international importance. However, no much is done on effective management of wetlands and watersheds to conserve perennial streams and water sources. Therefore, effective management of wetlands and water resources are emphasized with following strategies.

Strategic actions

- a) Conduct survey and carry out assessment and restoration work of drying water sources in Bumdeling geog
- b) Develop wetland action plans for Bumdeling RAMSAR site
- c) Carry out scientific restoration of important (drying) lakes Dingtso (Bumdeling) and Drakteng lake (Khoma)
- d) Advocate on importance of water source management through placement of information boards, Signage (alpine lakes) to inform communities about it
- e) Operationalize and strengthen existing wetland conservation support groups under Bumdeling geog
- f) Bring degraded areas under climate smart restoration and conservation of important watershed

5.9 Habitat management for key species

BWS houses many species that is noteworthy for conservation through proper management of habitats. The target species include Black-Necked Crane (BNC), Ludlow's Bhutan Glory, the national butterfly of Bhutan, Rufous-Necked Hornbill, big cats and ungulates. Therefore, following habitat management strategic actions will be taken for individual species.

Strategic actions

- a) Carry out revival works of abandoned paddy fields (seasonal floods), restore BNC roosting sites and assist in supply of EF (HWC problem) which can help extend and conserve existing feeding areas for BNC
- b) Conduct habitat management works such as enrichment plantations of host plants for Ludlow's Bhutan Glory through consultations with local communities. This will not only

help in conservation efforts for the species, it will also help create enough awareness about the species among local people

- c) Initiate restoration activities of food plants (*Ficus* plants) for Rufous-necked hornbill under Serzhong range, Sherimuhung, Mongar
- d) Identify, improve and maintain water holes and salt licks for important wildlife species
- e) Carry out alpine habitat management works to manage highland open meadows (clearing and or prescribed burning etc.) for ungulates and other dependent species in the highland areas of Shingphel and Singye Dzong

5.10 Prevent incidences of forest fire

Climate change and global warming have resulted in an increase in temperature thus increasing incidences of forest fires. Hence, following strategies will be adopted:

Strategic actions

- a) Carry out assessment of forest fire areas to initiate appropriate interventions
- b) Form community fire management group with responsibilities on prevention of forest fire in fire prone areas in Khoma and Sherimuhung

PART VI: IMPLEMENTATION PLAN & FINANCIAL OUTLAY

6.1 Implementation Plan and Budget Outlay (July 2020 – June 2030)

Objectives	Strategies	Actions	Year along with budget (in Nu. millions)										Remarks	
			Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10		
Objective I: To enhance biodiversity conservation through adoption of climate smart interventions	Enumerate National Forest Inventory cluster plots falling under BWS	Action 1: Carry out stock assessments through National Forest Inventory to understand the state of forest and carbon stocks	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	As a part of NFI-123 plots
	Minimize natural resources degradation through sustainable management	Action 2: Initiate Local Forest Management Areas (LFMA).	0.00	0.15	0.15	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Areas outside CF
	Improve and manage habitats of key faunal species	Action 3: Support for revival works of abandoned paddy fields (seasonal floods), restore BNC roosting sites.	0.00	0.70	0.70	0.70	0.00	0.70	0.00	0.70	0.70	0.70	0.70	Bumdeling
		Action 4: Support communities with EF to mitigate HWC and extend feeding area for BNC.	0.00	0.50	0.50	0.50	0.00	0.50	0.00	0.50	0.50	0.50	0.50	Bumdeling
		Action 5: Conduct habitat management (Alnus forest in the Bumdeling flood plain and host plants for Ludlow's Bhutan Glory).	0.00	0.50	0.50	0.00	0.00	0.50	0.50	0.50	0.00	0.50	0.50	Bumdeling

		<i>Action 6: Initiate restoration activities of food plants (Ficus plants) for Rufousnecked Hornbills through habitat management of ficus trees.</i>	0.00	0.80	0.00	0.00	0.50	0.00	0.80	0.50	0.00	0.50	Serzhong
		<i>Action 7: Identify, improve and maintain water holes and salt licks for important wildlife species (Annually 15 No.)</i>	0.00	0.50	0.50	0.50	0.00	0.50	0.00	0.50	0.50	0.50	3 Ranges
		<i>Action 8: Carry out alpine habitat management works to manage highland meadows (clearing and or controlled prescribed burning)</i>	0.30	0.50	0.50	0.80	0.80	0.80	0.80	0.80	0.80	0.80	Singye Dzung & Shingphel
	<i>Strengthen waste management programmes</i>	<i>Action 9: Carry out waste management campaigns (trash-in trash-out measures)</i>	0.00	0.30	0.30	0.30	0.30	0.30	0.80	0.80	0.80	0.80	3 Ranges
		<i>Action 10: Provide waste bins and construct waste collection points.</i>	0.50	0.50	0.50	0.30	0.30	0.30	0.30	0.30	0.30	0.30	3 Ranges
<i>Objective II: To improve livelihood of the local communities through adoption of</i>	<i>Enhance implementation of Zero poaching Strategy</i>	<i>Action 11: Conduct SMART patrolling to mitigate illegal activities through improved systems of communications and data management</i>	0.50	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	3 Ranges

<i>climate smart and disaster</i>		<i>Action 12: Strengthen intelligence networking and patrol equipments</i>	0.00	0.00	0.80	0.50	0.30	0.50	0.50	0.80	0.80	0.80	3 Ranges
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<i>resilient interventions</i>	<i>Minimize pressure on natural resources through appropriate alternatives</i>	<i>Action 13: Explore and support alternatives in lieu of natural resources such as electrical appliances and heating sets</i>	0.00	0.50	1.00	1.00	1.00	0.50	0.60	0.70	0.80	0.00	Esp. for highlanders
	<i>Enhance livelihoods of local communities through naturebased enterprise and community/NWFP groups</i>	<i>Action 14: Strengthen existing community forests (CFs) and NWFP management groups</i>	0.00	0.10	0.20	0.00	0.20	0.00	0.10	0.10	0.10	0.00	Serzhong, Khoma, Bumdeling
		<i>Action 15: Revise CF and NWFP plans</i>	0.00	0.10	0.20	0.20	0.20	0.00	0.00	0.00	0.20	1.00	Serzhong, Khoma, Bumdeling
		<i>Action 16: Support plantations of Dapa making tree species, Daphne, Paris polyphylla and Herbal tea species in CFs and NWFP groups to meet raw material shortages</i>	0.00	0.00	1.20	0.00	1.20	0.00	1.20	0.00	1.20	0.00	Bumdeling geog
		<i>Action 17: Establish nurseries for Dapa making tree species, Daphne, Paris polyphylla and Herbal tea species</i>	0.00	0.00	0.80	0.80	0.80	0.00	0.00	0.50	0.00	0.00	Bumdeling geog

		<i>Action 18: Establish nature-based enterprises for rural income generation (traditional paper, herbal tea, sangzey, canes and bamboo)</i>	0.00	1.00	1.50	1.00	1.00	1.00	0.00	0.00	0.00	0.00	Khoma & Bumdeling
	<i>Support affected farmers to improve tolerance towards problem</i>	<i>Action 19: Install electric fencings for HWC mitigation for communities not</i>	0.00	0.00	0.80	0.80	0.80	0.00	0.00	0.80	0.90	0.90	3 Ranges

	<i>animals</i>	<i>covered during the past conservation management plan</i>											
		<i>Action 20: Awareness programmes on wild pests and problem animals</i>	0.00	0.00	0.00	0.50	0.50	0.50	0.00	0.00	0.50	0.00	3 Ranges
	<i>Strengthen ecotourism avenues and services</i>	<i>Action 21: Develop and/or improve ecotourism services in form of improved trekking routes to historic sites of Bumdeling Dechenphodrang</i>	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.80	0.00	0.00	Bumdeling geog
		<i>Action 22: Develop and improve trails and bridge (Dungzam – Shingphel-Pemaling)</i>	0.00	1.20	0.80	0.80	0.00	0.50	0.00	0.00	0.50	0.00	Dungzam, Shingphel, Pemaling
		<i>Action 23: Renovate to improve visitors' information centre (VIC)</i>	0.00	1.20	0.00	0.80	0.00	0.60	0.00	0.50	0.00	0.00	BWS, HQ & Bumdeling

		<i>Action 24: Initiate ecotourism products and improve services and amenities in historic and religious sites of Aja, Pemaling and Singye Dzong</i>	0.00	0.00	1.00	1.00	1.00	0.50	0.30	0.30	0.30	0.50	3 Ranges
		<i>Action 25: Initiate and develop ecotourism products including recreational sites (picnic spots, birds/butterfly watching sights, boating/rafting avenues along Kholongchhu</i>	0.00	0.00	1.00	1.50	0.00	0.00	0.50	0.00	1.00	0.00	Bumdeling geog

		<i>Action 26: Improve and support existing ecotourism products such as traditional arts and crafts</i>	0.00	0.00	0.80	0.60	0.70	0.00	0.00	0.50	0.00	0.00	Bumdeling, Khoma
	<i>Conserve existing and or drying wetlands/ water sources and watersheds through restoration works</i>	<i>Action 27: Conduct survey and carry out assessment and restoration work of drying water sources</i>	0.00	0.90	0.90	0.90	0.00	0.50	0.00	0.50	0.00	0.00	Bumdeling, Khoma, Sherimuhung geogs
		<i>Action 28: Operationalize and strengthen wetland conservation support Group, Bumdeling Ramsar site</i>	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.20	0.00	0.00	Bumdeling wetlands management group

		<i>Action 29: Bring degraded areas under climate smart restoration and maintained for conservation of important wetlands and watershed</i>	0.00	0.00	0.80	0.80	0.80	0.00	0.00	0.00	0.80	0.00	3 Ranges
		<i>Action 30: Advocate on importance of water source management through placement of information boards, Signage (alpine lakes) to garner support of communities on its conservation.</i>	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.50	0.00	0.00	Singye Dzong & Shingphel
		<i>Action 31: Carry out restoration of important (drying) lakes Duntso (Bumdeling) and Drakteng lake (Khoma)</i>	0.00	0.90	0.90	0.00	0.00	0.00	0.00	0.50	0.50	0.00	Bumdeling & Khoma
	<i>Enhance fire prevention skills community participation</i>	<i>Action 32: Map forest fire prone areas to initiate appropriate prevention measures such as advocacies and fire lines</i>	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	3 Ranges
		<i>Action 33: Strengthen forest fire management group</i>	0.00	0.30	0.30	0.30	0.00	0.00	0.00	0.30	0.30	0.30	3 Ranges
<i>Objective III: To</i>	<i>Improve efficiency of protected area</i>	<i>Action 34: Expedite clearance and service delivery process</i>	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	BWS

<i>enhance service delivery and management effectiveness</i>	<i>management and conservation</i>	<i>Action 35: Evaluate management efficiency using METT+</i>	0.15	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.15	BWS
		<i>Action 36: Revise conservation management plan</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	Plan review
		<i>Action 37: Conduct RBS to draw new conservation management plan</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.50	RBS survey for new management plan
		<i>Action 38: Carry out Watershed and wetland (RAMSAR) management programmes</i>	0.00	0.20	0.20	0.00	0.20	0.00	0.20	0.00	0.20	0.00	3 Ranges
		<i>Action 39: Construct new staff quarter (BWS HQ)</i>	0.00	4.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Staff Quarter, BWS HQ (BFL)
		<i>Action 40: Procure office furniture, laptops, copiers and professional cameras and binoculars</i>	0.00	0.30	0.50	0.60	0.80	0.70	0.80	0.00	0.80	0.90	Office stationeries
		Total (Nu. in millions)	1.55	17.05	21.9	16.45	12.65	10	8.5	13.7	14.6	11.25	127.65

PART VII: MONITORING AND EVALUATION

7.1 Monitoring and Evaluation

Monitoring is an important process of any conservation management plan cycle. This will be carried out in regular intervals to assess how proposed activities are being implemented towards achievement of goals and objectives. It will also help keep track of the plan progress for timely adjustments of the management activities if the targets are not likely to be achieved as planned.

Evaluation is the analysis of the effectiveness of planned activities. Evaluation is intended to improve performance during the implementation of activities of conservation management plan. It will also assess implementer to determine the extent to which anticipated outcomes are produced as per the objectives.

The monitoring and evaluation will be done at the midterm and at the end of the plan period. For the assessment of BWS management effectiveness, standards of Bhutan Management Effectiveness Tool Plus (METT+) will be adopted.

PART VII: IMPLEMENTATION & MONITORING FRAMEWORK

7.1 Implementation & Monitoring Framework (Plan period: July 2020-June 2030)

Objectives	Action	Output Indicator	Base -line	Unit	Yearly Target (2020-2030)										
					Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	
Objective I: To enhance biodiversity conservation through adoption of climate smart interventions	Action 1: Carry out stock assessments through National Forest Inventory to understand the state of forest and carbon stocks	No. of NFI plots enumerated	1	No.	0	0	1	0	0	0	0	0	1	0	0
	Action 2: Initiate Local Forest Management Areas (LFMA).	No. of LFMAs developed	0	No.	0	1	1	1	0	0	0	0	0	0	0
	Action 3: Support for revival works of abandoned paddy fields (seasonal floods), restore BNC roosting sites.	Acres of abandoned paddy fields restored.	10	Acre	0	5	5	5	0	5	0	5	5	5	5
	Action 4: Support communities with EF to mitigate HWC and extend feeding area for BNC.	Communities supported with EF	5	Km	0	5	5	5	0	5	0	5	5	5	5
	Action 5: Conduct habitat management (Alnus forest in the Bumdeling flood plain and host plants for Ludlow' Bhutan Glory).	Areas brought under habitat management	0	Acre	0	5	5	0	0	5	5	5	0	5	5
	Action 6: Initiate restoration activities of food plants (Ficus plants) for Rufous-necked Hornbills through habitat management of ficus trees.	Areas brought under habitat management	0	Ha	0	10	0	0	10	0	10	10	0	10	10
	Action 7: Identify, improve and maintain water holes and salt licks for important wildlife species (Annually 15 No.)	No. of waterholes and salt licks improved.	28	No.	0	15	15	15	0	15	0	15	15	15	15

	<i>Action 8: Carry out alpine habitat management works to manage highland meadows (clearing and or controlled prescribed burning)</i>	<i>Area brought under habitat management</i>	21	Ha.	6	10	10	10	10	10	10	10	10	10
	<i>Action 9: Carry out waste management campaigns (trash-in trash-out measures)</i>	<i>No. of awareness campaigns conducted</i>	36	Nos.	0	12	12	12	12	12	12	12	12	12
	<i>Action 10: Provide waste bins and construct waste collection points.</i>	<i>No. of waste bins provided and collection points constructed.</i>	5	No.	10	10	10	5	5	5	5	5	5	5
<i>Objective II: To improve livelihood of the local communities through adoption of climate smart and disaster resilient interventions</i>	<i>Action 11: Conduct SMART patrolling to mitigate illegal activities through improved systems of communications and data management</i>	<i>No. of patrolling conducted and reports produced.</i>	0	No.	1	1	1	1	1	1	1	1	1	1
	<i>Action 12: Strengthen intelligence networking and patrol equipments</i>	<i>Intelligence networking strengthened and patrolling equipments procured.</i>	0	No.	0	0	45	30	5	10	10	10	10	20
	<i>Action 13: Explore and support alternatives in lieu of natural resources (electrical appliances and heating sets).</i>	<i>No. of electrical appliances and heating sets procured.</i>	12	No.	0	10	5	10	5	5	5	5	5	0
	<i>Action 14: Strengthen existing community forests (CFs) and NWFP management groups</i>	<i>No. of CF management plans developed.</i>	14	No.	0	1	2	0	2	0	1	1	1	0
	<i>Action 15: Revise CF and NWFP plans</i>	<i>No. of CF and NWFP plans revised</i>	23	No.	0	1	2	2	2	0	0	0	2	1

<i>Action 16: Support plantations of Dapa making tree species, Daphne, Paris polyphylla and Herbal tea species in CFs and NWFP groups to meet raw material shortages</i>	<i>Areas supported for plantation in CFs and NWFP</i>	0	Ha	0	0	23	0	12	0	10	0	10	0
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<i>Action 17: Establish nurseries for Dapa making tree species, Daphne, Paris polyphylla and Herbal tea species</i>	<i>No. of nurseries established.</i>	0	Sites	0	0	1	1	1	0	0	1	0	0
<i>Action 18: Establish nature-based enterprises for rural income generation (traditional paper, herbal tea, Sangzey, Canes and bamboo)</i>	<i>No. of naturebased enterprises established.</i>	0	No	0	1	1	1	1	1	0	0	0	0
<i>Action 19: Install electric fencings for HWC mitigation for communities not covered during the past conservation management plan</i>	<i>Length of EF installed.</i>	52	Km	0	0	5	5	5	0	0	5	7	7
<i>Action 20: Awareness programmes on wild pests and problem animals</i>	<i>No. of awareness programs conducted.</i>	0	Sites	0	0	0	1	1	1	0	0	1	0
<i>Action 21: Develop and/or improve ecotourism services in form of improved trekking routes to historic sites of Bumdeling-Dechenphodrang</i>	<i>Trekking routes and amenities developed.</i>	1	No	0	0	1	0	0	0	0	1	0	0
<i>Action 22: Develop and improve trails and bridge (Dungzam –Shingphel-Pemaling)</i>	<i>Trails and bridges developed.</i>	0	No.	0	3	2	2	0	1	0	0	1	0
<i>Action 23: Renovate visitors' information centre (VIC)</i>	<i>VIC renovated</i>	1	No.	0	1	0	1	0	1	0	1	0	0

<i>Action 24: Initiate ecotourism products and improve services and amenities in historic and religious sites of Aja, Pemaling and Singye Dzong</i>	<i>Ecotourism products initiated and improved.</i>	1	Sites	0	0	1	1	1	1	1	1	1	1	1
<i>Action 25: Initiate and develop ecotourism products including recreational sites (picnic spots, birds/butterfly watching sights, boating/rafting avenues along Kholongchhu</i>	<i>Ecotourism products initiated and improved.</i>	0	No.	0	0	1	1	0	0	1	0	1	0	0

<i>Action 26: Improve and support existing ecotourism products such as traditional arts and crafts</i>	<i>Traditional arts and crafts improved.</i>	0	No.	0	0	1	1	1	0	0	1	0	0	0
<i>Action 27: Conduct survey and carry out assessment and restoration work of drying water sources</i>	<i>Drying water source assessed and restored</i>	0	No.	0	1	1	1	0	1	0	1	0	0	0
<i>Action 28: Operationalize and strengthen wetland conservation support Group, Bumdeling Ramsar site</i>	<i>Wetland conservation group strengthened</i>	1	No.	1	0	1	0	0	0	0	1	0	0	0
<i>Action 29: Bring degraded areas under climate smart restoration and maintain for conservation of important wetlands and watershed</i>	<i>Degraded areas brought under restoration.</i>	0	Ha.	0	0	5	5	5	0	0	0	5	0	0
<i>Action 30: Advocate on importance of water source management through placement of information boards, Signage (alpine lakes) to garner support of communities on its conservation</i>	<i>Advocacy on water source management conducted</i>	0	Sites	0	0	1	0	0	0	0	1	0	0	0

	<i>Action 31: Carry out restoration of important (drying) lakes Duntso (Bumdeling) and Drakteng lake (Khoma)</i>	<i>Drying lakes restored</i>	0	Sites	0	1	1	0	0	0	1	1	0	0
	<i>Action 32: Map forest fire prone areas to initiate appropriate prevention measures such as advocacies and fire lines</i>	<i>Forest fire prone areas mapped.</i>	0	No.	0	1	1	1	1	1	1	1	1	1
	<i>Action 33: Strengthen forest fire management group</i>	<i>Refresher course conducted</i>	1	No	0	1	1	1	0	0	0	1	1	1
<i>Objective III: To enhance service delivery and management effectiveness</i>	<i>Action 34: Expedite clearance and service delivery process</i>	<i>Clearance and service delivery expedited.</i>	0	Days	14	14	14	14	14	14	14	14	14	14
	<i>Action 35: Evaluate management efficiency using METT+</i>	<i>Management efficiency evaluated</i>	64	% score	85	0	0	0	85	0	0	0	0	85
	<i>Action 36: Revise conservation management plan</i>	<i>CMP revised</i>	1	No.	0	0	0	0	0	0	0	0	0	1
	<i>Action 37: Conduct RBS to draw new conservation management plan</i>	<i>RBS conducted</i>	1	No.	0	0	0	0	0	0	0	0	0	1
	<i>Action 38: Carry out Watershed and Wetland (RAMSAR) management programmes</i>	<i>Watershed and Wetland management programmes carried out.</i>	0	No.	0	1	1	0	1	0	1	0	1	0
	<i>Action 39: Construct new staff quarter (BWS HQ)</i>	<i>Staff quarter constructed.</i>	1	No.	0	1	0	0	0	0	0	0	0	0
	<i>Action 40: Procure office furniture, laptops, copiers and professional cameras and binoculars</i>	<i>Office assets procured.</i>	0	No.	0	3	5	5	6	6	12	0	12	15

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Appendix 1: List of useful plants of BWS

Botanical Name	English	Dzongkha	Yangtsip	Sharchop	Nepali	Local uses
<i>Abies densa</i>	Himalayan silver fir	Dungshing				Leaves used as medicines and it can also be used for making incense
<i>Acer campbellii</i>	Maple	Chalum	Ser galee	Sermaling	Kapaal	Preferred wood for use in lathe to produce wooden cups
<i>Acer sikkimensis</i>			Lungtong		Lharakapasi	Firewood and yak browse its leaves
<i>Aconitum ferox</i>	Monkhood		Bjatshendu			Tubers for arrow poison; Med: bongmar, root: fever, infection, antidote
<i>Aconitum hookeri</i>	Monkhood	Tshendu	Tshendu			Tubers for arrow poison
<i>Aconogonum molle</i>			Chongla	Kochomo	Thothney	Tender young shoots eaten as vegetable and browsed by cattle
<i>Acorus calamus</i>		Chuhutahrechu		Bartsee		roots used for curing bone pain/ ache
<i>Actaea acuminata</i>		La poi	Poi po cha			Incense and medicine (poisonous) Syn: <i>Actaea spicata</i>
<i>Justicia adhatoda</i>		Bashaka		Khateermu		Flowers often used as vegetables Syn: <i>Adhatodavasica</i>
<i>Aesandra butyracea</i>	Butter tree	Yikashing	Yishing			Edible fruits and extraction of vegetable oil in past
<i>Allium semenovii</i>	Wild onion		yuru			Leaves eaten as vegetable
<i>Allium wallichii</i>	Onion		Lagob			Vegetable; Med: Ri-gog, plant as antiseptic and for inflammation
<i>Alnus nepalensis</i>	Alder	Gama	Mushang	Gammo shing	Utis	Firewood and fencing posts
<i>Anemone rivularis</i>						Med. Soup-key, fruits as antipyretic, blister and antiseptic
<i>Arisaema spp.</i>						Med: Dah-wah, roots: anti-inflammatory, anti-bacterial, heals tissues

<i>Artemisia vulgaris</i>	Indian wormwood	Khempa	Nyew	Mayengma		Cattle bedding, mulching, brooms, syn: <i>A. Nilagirica</i>
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Botanical Name	English	Dzongkha	Yangtzip	Sharchop	Nepali	Local uses
<i>Asparagus racemosus</i>		Ngakhachu		Ngalakom		young shoot as vegetables
<i>Aster flaccidus</i>						Med: Metolukmig, except root for bronchitis, cramps, common cold
<i>Astilbe rivularis</i>			Khashalagpa	Tongseryugay	Buroakhoti	Roots used to cure back ache pain
<i>Astragalus yunnanensis</i>						Med: Sedkar, whole plant
<i>Berberis asiatica</i>		Kepaitsang				Bark and root used to cure eye diseases
<i>Bergenia ciliata</i>						Med: Dakcham, root
<i>Betula utilis</i>	Birch	la tap	Khoglashang		Bhujapat	Burs used for dapa (wooden bowls)
<i>Bistorta macrophylla</i>						Med: Pang ram, except root: diarrhea and blood dysentery
<i>Borinda grossa</i>	Bamboo	Bagg	Ruee	Shee		Baskets, mats, binding materials, etc.
<i>Brassaiopsis mitis</i>			Omdong		phutta	High quality fodder
<i>Bulbophyllum affine</i>	Orchid		Kha			Flower as vegetable
<i>Calamus spp.</i>	Cane					Daily farm use products, shoots and fronds edible
<i>Canna speciosa</i>				Ashoomlanga		Ingredient for making ara (local wine)
<i>Cannabis sativa</i>	Hemp	Kenum		Phagpanam	Bhang	cattle bedding and drug
<i>Cardiocrinum giganteum</i>			Wou long mento			Flowering time indicates it's time for sowing of rice and millet
<i>Carum carvi</i>	Caraway					Med: Goh-nyoid, seeds: strengthens vision, digestive, appetizer
<i>Cautleya spicata</i>			Flangba			Root edible
<i>Clematis montana</i>						Med: Emong, seeds and flowers

<i>Codonopsis bhutanica</i>						Med: Lu-dhui-dorjee, except root: leprosy and evil affliction
<i>Colocasia esculenta</i>	Taro		Ngalang	Boozong	Mane	Rhizomes and Stems eaten as Vegetable
<i>Colocasia fallax</i>			Nanglang			Pig feed when boiled and salt added

Botanical Name	English	Dzongkha	Yangtzip	Sharchop	Nepali	Local uses
<i>Corydalis govaniiana</i>						Med: Basha ka, except root: liver and blood disease
<i>Crawfurdia speciosa</i>			Khando mento	Tseelingmameto		Flowers as vegetable
<i>Chrysosplenium forrestii</i>						Med: yakima, leaves: bile disease
<i>Cupressus corneyana</i>	Weeping cypress	Chendey	Tshenden	Tshenden	Dhupi	Durable timber, incense, also for coughs and to treat weak cattle
<i>Cyanotis vaga</i>			Acuchaju			Root edible
<i>Cymbidium longifolium</i>	Orchid		Chung chungbadee			Flowers as vegetable
<i>Cynoglossum furcatum</i>						Med: Nemajarma
<i>Dactylorhiza hatageria</i>						Med: Wangpoi lagpa, root-tonic
<i>Daphne bholua</i>	Daphne	Dhay Shing/ DheyNap	Shogo shing			Bark for making traditional paper
<i>Diplazium esculentum</i>	Fiddle top fern	Nakey	Kukalee	Da wai		Young shoots as vegetable
<i>Elaeagnus parvifolia</i>		Bji	Marip	Dangboor zoo	Gweli	Edible berry
<i>Elatostema lineolatum</i>		Damboor/dambru	Namroo	Dreema mom	Chotey	Leaves and tender shoots as vegetable

<i>Elatostema sessile</i>			Phatoo			Fodder
<i>Ephedra gerardiana</i>						Med: Tshe-dhum, except root: fever, wounds, injuries
<i>Erythrina arborescens</i>	Coral tree	Chassee		Kharshing	Phaledo	Stems for live fencing.
<i>Euphorbia griffithii</i>						Med: root
<i>Ficus semicordata</i>			Ridangshang	Bara chongma	Nebharo	Fodder and fruits sometimes eaten syn: <i>Ficus cunia</i>
<i>Ficus oligodon</i>		Baku Shing		Chongma Shing	Timil	Leaves for wrapping cheese, fodder,

Botanical Name	English	Dzongkha	Yangtsip	Sharchop	Nepali	Local uses
						fruits edible
<i>Fragaria indica</i>						Med: Drey ta, whole plant: lung inflammation, chronic bronchitis, neurological infection
<i>Fragaria nubicola</i>	Strawberry		Sa marip			Berry edible
<i>Galium aparine</i>						Med: Zangtshikarpo
<i>Gaultheria fragrantissima</i>		Chamzekarm				Edible berries (some species)
<i>Gentiana algida</i>						Med: Pangjeykarp, whole plant: antidote, inflammation of throat & lungs
<i>Gentiana robusta</i>						Med: Kichukarp, whole plant: malaria
<i>Gentiana tubiflora</i>						Med: Pang-ghen, whole plant: antiinflammatory, febrifuge, antitoxin
<i>Gentiana urnula</i>						Med: Gang-chung, whole plant: detoxicant and diarrhoea
<i>Geranium spp.</i>						Med: La-gang, root: sore throat, lung and large intestine

<i>Girardinia diversifolia</i>		Zoocha	Kee	Zangroo	Bangresanu	Fibre for weaving sacks served to cattle and pigs
<i>Gnaphalium affine</i>			Prampa mento			Grazed by the cattle and horses
<i>Hedychium densiflorum</i>			Dee			For making a material to hold the round end of pots
<i>Hedychium gardnerianum</i>			Dee kap			Leaves for making a material to hold the round end of pots
<i>Hemiphragma heterophyllum</i>						Med: Abi-raa, whole plant: tonic and regulates blood
<i>Heracleum obtusifolium</i>						Med: Tru-ma, root: leprosy, bleeding and neurology

Botanical Name	English	Dzongkha	Yangtsip	Sharchop	Nepali	Local uses
<i>Holboellia latifolia</i>		Enterroobji	Zalumpa	Khrokchangroo	Gufla	Fruit edible
<i>Houttuynia cordata</i>			Mraptang	Mombaring		Shoot, stem and root eaten as vegetable
<i>Ilex dipyrena</i>	Himalayan holly		Ki shang	Ratsa shing	Lise	Firewood and leaves browsed by yak
<i>Iris kemaonensis</i>						Med: Draymaygayser, root: anthelmintic (worms) and antipyretic
<i>Juglans regia</i>	Walnut	Ta shing	Targa shang	Khey shing	Okhar	Durable timber for any use
<i>Juniperus recurva</i>	Juniper	Shup		Shukpashing		whole plants used for making Incense
<i>Larix griffithiana</i>	East Himal. larch	Zashing	Shun shang		Barge salla	Wooden container
<i>Leontopodium spp.</i>						Med: Trah-wah, stem and flower: antiinflammatory and anti-toxin
<i>Lepisorus spp.</i>						Med: Drag poi, whole plant: bone fractures

<i>Ligularia amplexicaulis</i>						Med: Rhee-shou, except root: emetic and digestive
<i>Lindera cubeba.</i>			Nanshang	Nen shing	Timur	Fruit used as spice in curry
<i>Lycopodium clavatum</i>		Chai lab		Zalagadang		Washing utensils, (insulation of houses)
<i>Lyonia ovalifolia</i>				Shajula shing	Angeri	Firewood and fencing posts
<i>Magnolia campbellii</i>	Magnolia	Zamboolingmeto		Zamboolingmeto	Goke champ	Timber for construction
<i>Meconopsis horridula</i>						Med: Tshernguen, flower: heals broken bones & makes them strong
<i>Meconopsis simplicifolia</i>						Med: Yue-pel, flower: antipyretic, lungs and liver
<i>Michelia champaca</i>		Khashing	Bay za shang	Karshing	Champ	Best timber for any purpose
<i>Nardostachys jatamansis</i>						Med: Pang-poi, whole plant: chronic fever/de-toxicant

Botanical Name	English	Dzongkha	Yangtsip	Sharchop	Nepali	Local uses
<i>Onopordum acanthium</i>	Scotch thistle		Bo zomtsang			Flowers used as vegetable
<i>Ophiocordyceps sinensis</i>	Chinese caterpillar	Yartshagoenpo	Yartshagoenpo	Yartsa goenpo		Medicine for almost any sickness
<i>Orobancha spp.</i>						Med: Ngoh-droh, whole plant: renal tonic, aphrodisiac etc.
<i>Parnassia ovata</i>						Med: Tig-ta, except root: Ganglion blockage and malaria
<i>Pedicularis bicornuta</i>						Med: Lug-roo-karp, flowers: used against vaginal and seminal discharges
<i>Pedicularis longiflora</i>						Med: Lugroserp, flower: dehydration

<i>Pedicularis oliveriana</i>						Med: Lug-roo-mugpo, flowers: antitoxin, anti-inflammatory, febrifuge, anti-diarrheal
<i>Persea bhutanica</i>	Wild avocado	Goli	Goli			Edible fruit
<i>Embllica officinalis</i>		Amla				fruit edible, water tastes sweet afterwards (syn: <i>Phyllanthus emblica</i>)
<i>Picrorhiza kurrooa</i>		Putishing	Khonglyan	Puti shing		Med: Honglen, whole plant: cough and cold, purifies blood
<i>Pieris formosa</i>	Khangleymetog		Tsakshang		Balu	Leaves when dried used for smoking bidi
<i>Pinus roxburghii</i>	Chir pine	They tong	Thay dong shang	Roinang shing	Dhup	Construction wood, furniture, firewood, torchwood, etc.
<i>Pinus wallichiana</i>	Himalayan blue pine	Tongphu	Croshang		Dhupi	Timber and firewood (and prayer flag poles); Med: Druen shing
<i>Pleurospermum amabile</i>						Med: Tshud, whole plant: antidote
<i>Pleurospermum hookeri</i>						Med: Tang -kuen, root: heart diseases

Botanical Name	English	Dzongkha	Yangtsip	Sharchop	Nepali	Local uses
<i>Podophyllum hexandrum</i>						Med: Youlmo say, whole plant: blood circulation & pregnancy (syn: <i>P.emodi</i>)
<i>Polygonatum cirrhifolium</i>						Med: Rah-nyay, Rhizome: tonic, promotes body heat, dries up serous fluid
<i>Polygonatum verticillatum</i>						Med: Nay shing, root: appetizer, longevity and tranquilizer

<i>Polygonum spp.</i>						Med: Polygonaceae, root: febrifuge, anti-inflammatory and anti-diarrheal
<i>Potentilla peduncularis</i>			Anam			Root edible with pan (substitutes beetle nut)
<i>Primula capitata</i>			Sisi mento			Tender stem edible after removing the bark
<i>Primula sikkimensis</i>						Med: Shang drilba, whole plant:
<i>Prunus cornuta</i>	Bird cherry	jai-doma-maap		Khagasaytsaloo		Leaves browsed by the cattle
<i>Pteridium aquilinum</i>	Bracken (fern)	Pangkey	Ta	Dhawai	Unew	Cattle bedding and occasionally used as vegetable
<i>Quercus glauca</i>	Oak	Thomp	Thongpashang	Thongpa shing	Musrephalat	Firewood and tool handles
<i>Quercus griffithii</i>	Oak	Sisi shing		Bainang shing	Kasru	Firewood, tool handles and leaves for cattle bedding
<i>Quercus lamellosa</i>	Oak	Bangka	Thongpashang	Fangkhoi-ma shing	Bajrant	Firewood and tool handles
<i>Quercus semecarpifolia</i>	Oak	Bjishing	Kaithshang	Betsinangshang	khosru	Firewood and tool handles
<i>R. cinnabarinum</i>			Debu mento		Sanu chimal	Incense and firewood
<i>R. falconeri</i>		Khangleymetog	La shang jab lew		Korlinga	Leaves for packing butter
<i>R. glaucophyllum</i>			Takchung mento			Fire wood
<i>R. hodgsonii</i>			La shang		Korlinga	Firewood
<i>Rubus</i>			Tshangmrip	Kaptong gong		Berry edible

Botanical Name	English	Dzongkha	Yangtsip	Sharchop	Nepali	Local uses
<i>hoffmeisterianus</i>						
<i>R. kendrickii.</i>			Tshongmedshang			Incense and firewood
<i>R. kesangiae.</i>		Tala	Khamlashang	Tala meto		Leaves for packing butter
<i>R. keysii</i>			Debu mento			Firewood and incense

<i>R. lindleyi</i>			khepa mento		Laherechimal	Incense and fire wood
<i>R. setosum</i>		Saloo	Saloo	(Saloo)	Dhupi	Incense
<i>R. thomsonii</i>		Khempametog	Khaima mento			Firewood
<i>Ranunculus brotherusii</i>						Med: Che-tsha, except root: antipyretic, wounds and pus
<i>Ranunculus tricuspis</i>						Med: Chu-rugg, whole plant: relieves nerve pain
<i>Rheum acuminatum</i>						Root used as medicinal value
<i>Rheum nobile</i>		Chuka Metog				Med: Chu-ma-tshee, stem and flower: laxative, diuretic and antiemetic
<i>Rhodiola spp.</i>						Med: Solou-marpou, Rhizome: febrifuge, antitussive, removes odour from pulmonary tract
<i>Rhododendron anthopogon</i>		Bhaloo	Bhaloo		Dhupi	Incense; Med: Ba-lu, stem+leaves: digestive, antitussive, appetizer, cough, cold, promotes heat, etc
<i>Rhododendron arboreum</i>						Med: Tag-ma, flower: haemostatic, against spread of blood & pus in throat
<i>Rhus hookeri</i>				Jar shing	Khangbhalyo	Seeds for oil
<i>Rhus succedanea</i>	Wild tree	varnish	say shang	Say shing	Rani Bhalyo	Varnishing wooden items
<i>Ribes laciniatum</i>						Berry edible
<i>Rosa macrophylla</i>						Med: fruits: antidote, constipation, abscess and boils
<i>Rosa sericea</i>						Med: Saywemeto, flowers:

Botanical Name	English	Dzongkha	Yangtsip	Sharchop	Nepali	Local uses
<i>Rubia cordifolia</i>		Tsoy	Sood	la nyiroo		Red dye (wooden floors); Med: Tzohd, stem: febrifuge, used against blood disorder
<i>Rubus ellipticus</i>	Raspberry	Tshematsheloo	Co mrip	Sergong/Gongzoo	Aselu	Berry edible
<i>Salix sikkimensis</i>			Glangmashang	Langma shing		Bark for binding materials, wood for cooking, leaves browsed by cattle
<i>Salvia spp.</i>						Med: Jeeptshi
<i>Saussurea graminifolia</i>						Med: Matong-ganglhaa, whole plant: antitussive, purifies and increases blood, promotes heat
<i>Saussurea obvallata</i>						Med: Sah di gohgho, whole plant: paralysis of limbs & cerebral ischemia
<i>Saussurea roylei</i>						Med: Konpa-gabke, whole plant: antiinflammatory, vasoconstrictor, antitoxin, emollient etc.
<i>Saxifraga moorcroftiana</i>						Med: Tig-ta, except root: antipyretic (fever) and bile diseases
<i>Saxifraga parnassifolia</i>						Med: Ser tig, whole plant: wound, cough, cold and bile disease
<i>Schefflera impressa</i>			Geelaomdong			Productive fodder
<i>Scurrula elata</i>			Yum			Leaves use as tea leaves in suja (butter tea)
<i>Smilax ferox</i>			Yangrumed			Climber for making drum stick to use during puja
<i>Smilax rigida</i>			Gon phey			Grazed by the yak
<i>Sorbus lanata</i>			Laachushang			Leaves for packing butter and fruit best food for Red Panda

<i>Swertia woffangiana</i>						Med: Gudee, whole plant: heals wound, joint and nerve pain
Botanical Name	English	Dzongkha	Yangtisp	Sharchop	Nepali	Local uses
<i>Symplocos glomerata</i>			Dombushang			Scaffolding for construction
<i>Symplocos paniculata</i>			Shungnangshang	Zeem shing		Yellow dye
<i>Tanacetum atkinsonii</i>						Med: Genthabata, whole plant
<i>Taraxacum parvulum</i>						Med: Khurmung, whole plant: stomach diseases, fever etc.
<i>Taxus wallichiana</i>	Yew	Ha-shing	Tai-Shang	Kerang shing	Dhengresallu	Durable timber for making wooden containers (Also: <i>Taxus baccata</i> ssp <i>wallichiana</i>)
<i>Thalictrum reniforme</i>						Med: Chag-jhue, except root: antidote and antibacterial
<i>Thalictrum spp.</i>						Med: Ngoh-trheen, stem and roots: febrifuge, antitoxin, anti-rheumatic and anti-diarrheal
<i>Tsuga dumosa</i>	Hemlock	Wang shing	Main shang		Threngreesalla	Shingles, roofing materials
<i>Usnea longissima</i>						Med: Nguequed, whole plant
<i>Vaccinium nummularia</i>			Shang botpo			Root edible
<i>Veronica himalensis</i>						Med: Dum-nag, whole plant: ulcer and haemorrhage
<i>Zanthoxylum armatum</i>		Thi-ngey		Gee	Tumber	fruit used to flavour vegetables

Appendix 2: Checklist of Vascular plants of BWS

Common name	Scientific name	Remarks (Synonyms)
FERNS		
	<i>Amphineuron opulentum</i>	
	<i>Angiopteris spp.</i>	
	<i>Coniogramme intermedia</i>	
	<i>Dennstaedtia appendiculata</i>	
Inet, fiddletop fern	<i>Diplazium esculentum</i>	
	<i>Diplazium himalayense</i>	
	<i>Diplazium polypodioides</i>	
	<i>Dryopteris clarkei</i>	
	<i>Dryopteris lepidopoda</i>	
	<i>Dryopteris sparsa</i>	
	<i>Dryopteris spp</i>	
Inet: fern	<i>Lastreopsios spp.</i>	
	<i>Lepisorus lariformis</i>	
	<i>Loxogramme cuspidata</i>	
	<i>Microsorium normale</i>	
	<i>Monachosorum henryi</i>	
	<i>Oleandra neriiformis</i>	
	<i>Pichisermollia malacodon</i>	
	<i>Plagiogyria pycnophylla</i>	
	<i>Polypodiodes amoena</i>	
	<i>Polypodiodes lachnopus</i>	
	<i>Polystichum atkinsonii</i>	
	<i>Polystichum attenuatum</i>	
	<i>Polystichum manmeiense</i>	
	<i>Polystichum nepalense</i>	
	<i>Polystichum squarrosom</i>	
bracken fern	<i>Pteridium aquilinum</i>	
	<i>Pteridium revolutum</i>	
	<i>Selligua griffithiana</i>	

	<i>Tectaria polymorpha</i>	
	<i>Xogramme involuta</i>	
GRASSES, SEDGES		
	<i>Festuca cumminsii</i>	
	<i>Festuca polycolea</i>	

Common name	Scientific name	Remarks (Synonyms)
	<i>Isachne albens</i>	
	<i>Juncus thomsonii</i>	
	<i>Kobresia uncinoides</i>	
	<i>Oplismenus compositus</i>	
	<i>Poa gammieana</i>	
	<i>Poa pagophila</i>	
	<i>Trisetum spicatum</i>	
	<i>Trisetum spp</i>	
	<i>Carex duthiei</i>	
	<i>Cyperus cyperoides</i>	<i>Cyperoidesretzius</i>
	<i>Danthonia cumminsii</i>	
	<i>Thysanolaena maxima</i>	
HERBS		
	<i>Acanthocalyx nepalensis (D. Don) M.J. Cannon</i>	
monkhood	<i>Aconitum ferox</i>	
	<i>Aconitum fletcheranum G. Taylor</i>	
	<i>Aconitum heterophylloides</i>	
monkhood	<i>Aconitum hookeri</i>	
	<i>Aconitum laciniatum</i>	

	<i>Aconitum nakaoui</i>	
	<i>Aconitum naviculare</i> (Briehl) Stapf	
	<i>Aconitum novoluridum</i>	
	<i>Aconitum scaposum</i>	
	<i>Aconitum sherriffii</i>	
	<i>Aconitum spicatum</i> (Bruhl) Stapf	
	<i>Aconogonum alpinum</i>	not in FOB, in FoH: Aconogonum
	<i>Aconogonum campanulatum</i>	In FoH, YD: Aconogonon
	<i>Acorus calamus</i>	
	<i>Actaea acuminata</i>	<i>Actaea spicata</i>
	<i>Actaea vaginata</i> (Maxim.) J. Compton	
	<i>Adonis brevistyla</i> Franch.	
	<i>Adonis davidii</i> Franch.	
	<i>Aechmanthera gossypina</i>	
	<i>Agapetis serpens</i>	
	<i>Ageratum conyzoides</i>	
	<i>Allium rhabdotum</i> Stearn	
wild onion	<i>Ailium wallichii</i> Kunth	

Common name	Scientific name	Remarks (Synonyms)
	<i>Ainsliaea aptera</i>	
	<i>Ainsliaea latifolia</i>	
	<i>Ajanianubigena</i> (Wall. ex DC.) A.A. Muldashev	
	<i>Aletris pauciflora</i>	in FoH
	<i>Aletris pauciflora</i> (Klotzsch) Hand.-Mazz.	
	<i>Allium macranthum</i>	
	<i>Allium rhabdotum</i>	not in FOB, in FoH
	<i>Allium semenovii</i>	
Pigweed	<i>Amaranthus hybridus</i>	

	<i>Anaphalis alata</i>	
	<i>Anaphalis usua</i> (Buch.-Ham.) Hand.-Mazz.	
	<i>Anaphalis contorta</i> (D. Don) Hook. fil.	
	<i>Anaphalis cooperi</i> A. I. C. Grierson & L. S. Springate	
	<i>Anaphalis margaritacea</i> (L.) Benth.	
	<i>Anaphalis triplinervis</i>	
	<i>Androsace stenophylla</i> (Petitm.) Hand.Mazz.	
	<i>Anemone demissa</i> Hook. fil. & Thomson	
	<i>Anemone obtusiloba</i> D. Don	
	<i>Anemone rivularis</i>	
	<i>Anemone rivularis</i> Buch.-Ham. ex DC.	
	<i>Anemone rupestris</i> Wall.	
	<i>Anemone rupicola</i> Cambess.	
	<i>Anemone trullifolia</i> Hook. fil. & Thorns.	
	<i>Anemone vitifolia</i>	
	<i>Angelica sikkimensis</i>	
	<i>Anisodus luridus</i> Link	
	<i>Aorchis spathulate</i> (Lindl.) Verm.	
	<i>Arabis pterosperma</i>	
	<i>Arabis venusta</i>	
	<i>Arenaria debilis</i> Hook. fil. ex Edgew. & Hook. fil.	
	<i>Arenaria edgeworthiana</i> Majumdar	
	<i>Arenaria glanduligera</i> Edgew. ex Edgew. & Hook. fil.	

Common name	Scientific name	Remarks (Synonyms)
	<i>Arenaria glandulosa</i> (Benth. ex G. Don)F.N. Williams	
	<i>Arenaria kansuensis</i>	
	<i>Arenaria ludlowii</i> H. Hara	

	<i>Arenaria melandryiformis</i> F.N. Williams	not in FOB, page 212/YD, Inet: China
	<i>Arenaria melandryoides</i> Edgew. ex Edgew. & Hook. fil.	
	<i>Arenaria polytrichoides</i>	
	<i>Arisaema griffithii</i>	
	<i>Arisaema jacquemontii</i>	
snake plant	<i>Arisaema nepenthoides</i>	
snake plant	<i>Arisaema propinquum</i>	
	<i>Artemisia campbellii</i>	
	<i>Asparagus racemosus</i>	
	<i>Asplenium indicum</i>	
	<i>Aster albescens</i>	
	<i>Aster diplostephioides</i> (DC.) C. B. Cl.	
	<i>Aster flaccidus</i>	
	<i>Aster himalaicus</i>	
	<i>Aster himalaicus</i> C. B. Cl.	
	<i>Astilbe rivularis</i>	
	<i>Astragalus yunnanensis</i>	
	<i>Barbarea intermedia</i>	
	<i>Bassecoia hookeri</i> (C. B. Cl.) V.Mayer & Ehrend.	not in FOB/YD, Inet: China
	<i>Bergenia purpurascens</i> (Hook. fil. & Thorns.) Engl.	
	<i>Bhutanthera himalayana</i> Renz	
	<i>Bidens pilosa</i>	
	<i>Bistorta affinis</i>	
	<i>Bistorta amplexicaulis</i> (D. Don) Greene	
	<i>Bistorta griffithii</i>	
	<i>Bistorta macrophylla</i> (D. Don) Sojak	
	<i>Bistortamilletii</i>	
	<i>Bistorta perpusilla</i> (Hook. fil.) Greene	
	<i>Bistorta vacciniifolia</i> (Wall. ex Meisner) Greene	
	<i>Bistorta vivipara</i> (L.) Delarbre	

	<i>Boenninghausenia albiflora</i>	
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Common name	Scientific name	Remarks (Synonyms)
	<i>Boschniakia himalaica</i>	
	<i>Bryocarpum himalaicum</i>	
	<i>Buddleja colvilei</i> Hook. fil. & Thomson	
	<i>Bupleurum candollei</i> Wall.	
	<i>Bupleurum candollii</i>	
	<i>Calanthe alpina</i> Hook.f. ex Lindl.	
	<i>Callianthemum endlicheri</i> Walp.	
	<i>Caltha palustris</i> L.	
	<i>Campanula pallida</i> Wall.	
	<i>Canna speciosa</i>	
	<i>Cannabis sativa</i>	
	<i>Cardamine macrophylla</i>	
	<i>Cardamine macrophylla</i> Willd.	
	<i>Cardiocrinum giganteum</i>	
	<i>Carum carvi</i>	red garden plant
hemp	<i>Cassiope fastigate</i> (Wall.) D. Don	
	<i>Cathcartia uillosa</i> Hook. fil.	
	<i>Cautleya spicata</i>	
Caraway, Persian cumin	<i>Chaerophyllum villosum</i>	
	<i>Chesneya purpurea</i> . P.C.Li	
	<i>Chirita pumila</i>	
	<i>Chirita urticifolia</i>	
	<i>Chrysosplenium forrestii</i> Diels	in FoH, ginger family
	<i>Cicerbita macrorhiza</i>	

	<i>Cimicifuga foetida</i>	
	<i>Cirsium eriophoroides</i> (Hook. fil.) Petr.	
	<i>Clematis montana</i> Buch.-Ham. ex DC.	
	<i>Clintonia udensis</i> Trautv. & C.A.Mey.	
	<i>Cnidium bhutanicum</i>	
	<i>Codonopsis bhutanica</i>	
	<i>Codonopsis foetens</i> Hook.f. & Thomson	
	<i>Codonopsis subsimplex</i>	
	<i>Colocasia esculenta</i>	
	<i>Colocasia fallax</i>	
	<i>Commelina maculata</i>	
	<i>Cordyceps sinensis</i>	
	<i>Cortiadepressa</i>	
taro	<i>Cortiella hookeri</i> (C. B. Cl.) C. Norman	
	<i>Corydalis aurantiaca</i> Ludlow & Stearn	

Common name	Scientific name	Remarks (Synonyms)
	<i>Corydalis bowes-lyonii</i>	
	<i>Corydalis calliantha</i> D.G.Long	
	<i>Corydalis crispa</i> Prain	
	<i>Corydalis ecristata</i> (Prain) D.G.Long	
	<i>Corydalis flaccida</i> Hook. fil.& Thomson	
	<i>Corydalis geraniifolia</i>	
	<i>Corydalis govaniana</i>	
	<i>Corydalis juncea</i> Wall.	
	<i>Corydalis latiflora</i>	
	<i>Corydalis polygalina</i> Hook. fil. & Thomson	
	<i>Corydalis stracheyi</i>	
	<i>Corylopsis himalayana</i>	in FoH
	<i>Cosmos bipinnatus</i>	

	<i>Cotoneaster breviflora</i>	
	<i>Cotoneaster microphyllus</i> Wall. ex Lindl.	
	<i>Cotoneaster rubens</i>	
cosmos	<i>Cotoneaster tibetica</i>	
	<i>Crassocephalum crepidioides</i>	
	<i>Cremanthodium bhutanicum</i> Ludl.	
	<i>Cremanthodium ellisii</i> (Hook. ill.) Kitam. in H. Hara.	
	<i>Cremanthodium oblongatum</i> C. B. Cl.	
	<i>Cremanthodium palmatum</i> Benth.	
	<i>Cremanthodium reniforme</i> (Wall. ex DC.) Benth.	
	<i>Cremanthodium retusum</i>	
	<i>Cremanthodium thomsonii</i>	
	<i>Crotalaria sessiliflora</i>	
	<i>Cryptothladia polyphylla</i> (Wall. ex DC.) M.J. Cannon	
	<i>Cyananthus incanus</i> Hook.f. & Thomson	
	<i>Cyananthus inflatus</i> Hook.f. & Thomson	
	<i>Cyananthus lobatus</i> Wall. ex Benth.	
	<i>Cyananthus macrocalyx</i> subsp. <i>Spathulifolius</i> (Nannf.)	
	<i>Cyananthu sspathulifolius</i> Nannf.	
	<i>Cyanotis vaga</i>	
	<i>Cynoglossum furcatum</i>	
	<i>Dactylorhiza hatageria</i>	
	<i>Daphne bholua</i> Buch.-Ham. ex D. Don	

Common name	Scientific name	Remarks (Synonyms)
	<i>Dasiphora arbuscula</i> (D. Don) J. Sojak	
	<i>Delphinium bhutanicum</i>	
	<i>Delphinium drepanocentrum</i>	
	<i>Delphinium ludlowii</i>	
	<i>Delphinium nepalense</i> Kitam. & Tamura	

	<i>Delphinium viscosum</i> Hook. iil. & Thorns.	
	<i>Dipsacus atratus</i>	
	<i>Dipsacus inermis</i>	
	<i>Dracocephalum wallichii</i> Sealy	
	<i>Drymaria propinqua</i>	
	<i>Dubyaea hispida</i> (D. Don) DC.	
	<i>Elatostema grandidentatum</i>	
	<i>Elatostema integrifolium</i>	not in FOB, 1-2,215 but in Know the plant of Bhutan
	<i>Elatostema lineolatum</i>	
	<i>Elatostema monandrum</i>	
	<i>Elatostema obtusum</i>	
	<i>Elatostema platyphyllum</i>	
	<i>Elatostema pusillum</i>	
	<i>Elatostema sessile</i>	
	<i>Elsholtzia strobilifera</i> (Benth.) Benth.	
	<i>Ephedra gerardiana</i> Wall. ex Stapf	
	<i>Epilobium laxum</i>	
	<i>Epilobium wallichianum</i>	
	<i>Eremogone edgeworthiana</i> (Majumdar) Sadeghian	
	<i>Erysimum hieraciifolium</i> L.	
	<i>Euphorbia griffithii</i>	
	<i>Euphorbia hirta</i>	
	<i>Euphorbia stracheyi</i> Boiss.	
	<i>Euphrasia melanosticta</i> R.R. Mill	
	<i>Eutrema deltoideum</i> (Hook.f. & Thomson) O.E. Schulz	
	<i>Fragaria daltoniana</i>	
	<i>Fragaria indica</i>	
	<i>Fragaria nubicola</i>	
	<i>Fritillaria cirrhosa</i> D.Don	
	<i>Fritillaria delavayi</i> Franch.	
	<i>Gagea flavonutans</i> (H.Hara) Zarrei &	

Common name	Scientific name	Remarks (Synonyms)
	Wilkin	
	<i>Gagea serotina</i> (L.) Ker Gawl.	
	<i>Galeariss pathulata</i> (Lindl.) P.F.Hunt	
	<i>Galeopsis bifida</i> Boenn.	
	<i>Galinsoga parviflora</i>	
	<i>Galium aparine</i>	
	<i>Galium boreale</i>	
	<i>Gaultheria trichophylla</i> Royle	
	<i>Gentiana algida</i>	
	<i>Gentiana bryoides</i>	
	<i>Gentiana elwesii</i> C. B. Cl.	
	<i>Gentiana lacerulata</i>	
	<i>Gentiana loureirii</i>	
	<i>Gentiana ornate</i> (Wall. ex G. Don) Griseb.	
	<i>Gentiana phyllocalyx</i> C. B. Cl.	
	<i>Gentiana prolata</i>	
	<i>Gentiana robusta</i>	
	<i>Gentiana stipitate</i>	
	<i>Gentiana tibetica</i> King ex Hook. fil.	
	<i>Gentiana tubiflora</i> (Wall. ex G. Don) Griseb.	
	<i>Gentiana urnula</i> H. Smith	
	<i>Geranium donianum</i> Sweet	
	<i>Geranium pratense</i>	
	<i>Geranium procurrens</i>	
	<i>Geranium refractum</i> Edgew. & Hook. f.	
	<i>Geumsikkimense</i> Prain	
	<i>Girardinia diversifolia</i>	
	<i>Gnaphalium affine</i>	
	<i>Goodyera fusca</i>	
	<i>Goodyera recurva</i>	
	<i>Gueldenstaedtia himalaica</i> Baker	
	<i>Gymnadenia orchidis</i> Lindl.	

	<i>Gypsophila cerastioides</i> D. Don	
	<i>Habenaria</i> spp	
	<i>Hackelia bhutanica</i>	
	<i>Halenia elliptica</i> D. Don	
	<i>Hedychium spicatum</i>	
	<i>Helenia elliptica</i>	
	<i>Hemiphragma heterophyllum</i>	

Common name	Scientific name	Remarks (Synonyms)
	<i>Hemiphragma heterophyllum</i> Wall.	
	<i>Heracleum nepalense</i> D. Don	
	<i>Heracleum obtusifolium</i>	
	<i>Heracleum obtusifolium</i> Wall.	
	<i>Herminium duthei</i>	
	<i>Herminium josephi</i> Rechb.f.	
	<i>Herminium monorchis</i>	<i>Heracleum candicans</i>
	<i>Herpetospermum pedunculatum</i>	
	<i>Himalaiella auriculata</i> (Wall. ex DC.) Raab-e	
	<i>Houttuynia cordata</i>	
	<i>Hymenidium amabile</i> (Craib & W.W. Sm.)	
	<i>Hypecoum leptocarpum</i>	
	<i>Hypericum elodeoides</i>	
	<i>Ilydia serotina</i> (L.) Rechb.	
	<i>Impatiens scitula</i>	
	<i>Impatiens stenantha</i>	
	<i>Impatiens sulcata</i>	
	<i>Impatiens tuberculata</i>	
	<i>Iris clarkei</i> Baker ex Hook.f.	
	<i>Iris kemaonensis</i>	
	<i>Iris tectorum</i> Maxim.	
	<i>Jurinea dolomiaea</i>	
	<i>Koenigia campanulata</i> (Hook.f.) T.M.Schust. & Reveal	

	<i>Koenigia forrestii</i> (Diels) Mesicek&Sojak	
	<i>Koenigia hookeri</i> (Meisn.) T.M.Schust. & Reveal	
	<i>Koenigia mollis</i> (D.Don) T.M.Schust.	
	<i>Koenigia polystachya</i> (Wall. ex Meisn.)	
	<i>Koenigia tortuosa</i> (D.Don) T.M.Schust.	
	<i>Lagotis kunawurensis</i>	
	<i>Lagotis kunawurensis</i> Rupr.	
	<i>Lamium amplexicaule</i> L.	
	<i>Lancea tibetica</i> Hook. fil. & Thomson	
	<i>Laportea terminalis</i>	
	<i>Leontopodium hima/ayanum</i> DC.	
	<i>Leontopodium jacotianum</i> Beauv.	
	<i>Leontopodium stracheyi</i>	
	<i>Lignariella hobsonii</i>	

Common name	Scientific name	Remarks (Synonyms)
	<i>Ligularia amplexicaulis</i> (Wall.) DC.	
	<i>Ligularia atkinsonii</i> (C. B. Cl.) S.W. Liu	
	<i>Ligularia fischeri</i>	
	<i>Ligularia hookeri</i> (C. B. Cl.) Hand.-Mazz.	
	<i>Ligularia mortonii</i> (C. B. Cl.) Hand.-Mazz.	
	<i>Ligularia retusa</i>	
	<i>Ligularia virgaurea</i> (Maxim.) Mattf. ex Rehder& Kobuski	
	<i>Lilium nanum</i> Klotzsch	
	<i>lobelia erectiuscula</i> H.Hara	
	<i>Lobelia nubigena</i>	
	<i>Lobelia seguinii</i>	
	<i>Loydia flavonutans</i> H.Hara	
	<i>Lucas spp</i>	
	<i>Lumatogonium sikkimense</i> (Burkill) H.	
	<i>Lysionotus serratus</i>	

	<i>Maharanga emodi</i> (Wall.) A. DC.	
	<i>Mandragora caulescens</i> C. B. Cl.	
	<i>Mcianthemum purpureum</i> (Wall.) LaFrankie	
	<i>Mclaxis muscifera</i> (Lindl.) Kuntze	
	<i>Meconopsis bella</i>	
	<i>Meconopsis bella</i> Grey-Wilson	
	<i>Meconopsis grandis</i>	
	<i>Meconopsis horridula</i> Grey-Wilson	
	<i>Meconopsis paniculate</i> Grey-Wilson	
	<i>Meconopsis simplicifolia</i> (D. Don) Walpers	
	<i>Meconopsis sinuata</i>	
	<i>Meconopsis sinuate</i> Prain	
	<i>Megacodon stylophorus</i> (C. B. Cl.) H. Smith	
	<i>Myricaria rosea</i> W.W. Sm.	
	<i>Nannoglottis hookeri</i> (Clarke ex Hook. fil.) S. Kitam.	
	<i>Nardostachys grandiflora</i>	
	<i>Nardostachys jatamansi</i> (D. Don) DC.	
	<i>Neopicrorhiza scrophulariiflora</i> (Pennell) D.Y. Hong	
	<i>Nepeta lamiopsis</i>	

Common name	Scientific name	Remarks (Synonyms)
	<i>Noccaea andersonii</i> (Hook.f. & Thomson) Al-Shehbaz	
	<i>Notholirion macrophyllum</i> (D.Don) Boiss.	
	<i>Odontostemma glandulosa</i> Benth.	
	<i>Odontostemma melandryiforme</i> (F.N.Williams) Rabeler	
	<i>Onopordum acanthium</i>	
	<i>Onosma modi</i> Wall.	
	<i>Onosma hookeri</i> C. B. Cl.	
Scotch thistle	<i>Ophiopogon clarkei</i>	

	<i>Orbanche spp</i>	
	<i>Orchis chusua</i> D.Don	
	<i>Oreorchis foliosa</i> (Lindl.) Lindl.	
	<i>Oreosolen wattii</i> Hook. fil.	
	<i>Oxalis acetosella</i>	
	<i>Oxalis griffithii</i>	
	<i>Oxalis latifolia</i>	
	<i>Oxygraphis polypetala</i> Royle ex D. Don	
	<i>Oxyria digyna</i> (L.) Hill	
	<i>Panax pseudo-ginseng</i>	
	<i>Paris polyphylla</i> Sm.	
	<i>Parnassia chinensis</i> Franch.	
	<i>Parnassia delavayi</i> Franch.	
	<i>Parnassia nubicola</i> Wall.	
	<i>Parnassia ovata</i>	Not in YD/not in FoH
	<i>Parnassia wightiana</i> Wall.	
	<i>Parochetus communis</i> D.Don	
	<i>Pedicularis anserantha</i>	
	<i>Pedicularis bella</i> C. Marquand & Airy Shaw	
	<i>Pedicularis bicornuta</i>	
	<i>Pedicularis bifida</i> (Such.-Ham.) Pennell	
	<i>Pedicularis clarkei</i> Hook. fil.	
	<i>Pedicularis confertiflora</i> (Hand.-Mazz.) Tsoong	
	<i>Pedicularis diffusa</i> Tsoong	
	<i>Pedicularis eiwesii</i> T. Yamazaki	
	<i>Pedicularis excelsa</i>	
	<i>Pedicularis flexuosa</i> Hook. fil.	
	<i>Pedicularis furfuracea</i> Wall. ex Benth.	

Common name	Scientific name	Remarks (Synonyms)
	<i>Pedicularis gracilis</i> Tsoong	
	<i>Pedicularis integrifolia</i> (Pennell & H.L. Li) Tsoong	

	<i>Pedicularis lachnoglossa</i>	
	<i>Pedicularis lachnoglossa</i> Hook. fil.	
	<i>Pedicularis longiflora</i> Rudolph	
	<i>Pedicularis megalantha</i> D. Don	
	<i>Pedicularis mollis</i> Wall. ex Benth.	
	<i>Pedicularis oederi</i>	
	<i>Pedicularis oliveriana</i>	
	<i>Pedicularis prainiana</i> Maxim.	
	<i>Pedicularis hinanthoides</i> (Bonati) Tsoong	
	<i>Pedicularis roylei</i> (Prain) T. Yamazaki	
	<i>Pedicularis siphonantha</i> D. Don	
	<i>Pedicularis trichoglossa</i> Hook. fil.	
	<i>Pedicularis wallichiana</i> Steud.	
	<i>Pedicularis wallichii</i> Bunge	
	<i>Pegaeophyton scapiform</i>	
	<i>Persicaria runcinata</i>	
	<i>Perthenium hysterothorus</i>	
	<i>Philomis spp</i>	
	<i>Phlomis rotata</i> Benth. ex Hook.f.	
	<i>Phlomis tibetica</i> C.Marquand& Airy Shaw	
	<i>Phlomoidea rotata</i> (Benth. ex Hook.f.)	
	<i>Phlomoidea tibetica</i> (C.Marquand& Airy	
	<i>Picrorhiza kurroo</i>	
	<i>Picrorhiza scrophulariiflora</i> Pennell	
	<i>Pieris Formosa</i> (Wall.) D. Don	
	<i>Pilea symmeria</i>	
	<i>Pilea approximata</i>	
	<i>Pilea bractosea</i>	
	<i>Pilea scripta</i>	
	<i>Pilea umbrosa</i>	
	<i>Pinguicula alpina</i> L.	
	<i>Plantago depressa</i>	<i>Plantago tibetica</i>
	<i>Pleione hookeriana</i> (Lindl.) Rollisson	

	<i>Pleurospermopsis sikkimensis</i> (C. B. Cl.) C. Norman <i>Pleurospermum amabile</i> Craib W.W. Sm. <i>Pleurospermum hookeri</i> C. B. Cl.	
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Common name	Scientific name	Remarks (Synonyms)
	<i>Pleurospermum album</i>	
	<i>Pleurospermum amabile</i>	
	<i>Pleurospermum benthamii</i>	
	<i>Pleurospermum hookeri</i>	
	<i>Pleurospermum sikkimensis</i> C. B. <i>Podophyllum hexandrum</i> Royle <i>Polygonatum cirrhifolium</i> (Wall.) Royle <i>Polygonatum hookeri</i> Baker	
sym. Hexandrum	<i>Podophyllum hexandrum</i>	<i>Podophyllum emodi</i>
	<i>Pogostemon aranthoides</i>	
	<i>Polygonatum cirrhifolium</i>	
	<i>Polygonatum hookeri</i>	
	<i>Polygonatum verticillatum</i>	
	<i>Polygonum aviculare</i>	
	<i>Polygonum forrestii</i> Diels	
	<i>Polygonum hookeri</i> Meisn.	
	<i>Polygonum mole</i> D. Don	
	<i>Polygonum polystachyum</i> Meisn.	
	<i>Polygonum tortuosum</i> D. Don	
	<i>Ponerorchis chusua</i> (D. Don) SoO	
	<i>Ponerorchis cucullata</i> (L.) X.H.Jin, Schuit. & W.T.Jin <i>Potentilla arbuscula</i> D. Don	
	<i>Potentilla anserina</i>	
	<i>Potentilla bryoides</i>	
	<i>Potentilla coriandrifolia</i> D. Don	
	<i>Potentilla eriocarpa</i> var. <i>tsarongensis</i> W.E. Evans <i>Potentilla eriocarpa</i> Wall.	
	<i>Potentilla eriocarpoides</i> J. Krause	
	<i>Potentilla microphylla</i>	
	<i>Potentilla penduncularis</i>	

	<i>Potentilla purpurea</i> (Royle) Hook. fil.	
	<i>Poterium filiforme</i> Hook. fil. / <i>Sanguisorba filiformis</i> (Hook.	
	<i>Pouzolziahirta</i>	
	<i>Primula alpicola</i> (W. W. Sm.) Stapf <i>Primula bellidifolia</i> King ex Hook.	
	<i>Primula bhutanica</i>	in red data list
	<i>Primula capitata</i> Hook.	
	<i>Primula denticulate</i>	
	<i>Primula denticulata</i> Sm.	
	<i>Primula geraniifolia</i> Hook. fil.	

Common name	Scientific name	Remarks (Synonyms)
	<i>Primula glabra</i> Klatt	
	<i>Primula glomerata</i>	
	<i>Primula gracilipes</i> Craib	
	<i>Primula munroi</i>	<i>Primula involucrata</i>
	<i>Primula munroi</i> Lindl.	
	<i>Primula primulina</i> (Spreng.) H. Hara	
	<i>Primula rotundifolia</i>	in FOB/not YD/Inet: China, NE India
	<i>Primula sapphirine</i> Hook. fil. & Thomson	
	<i>Primula sikkimensis</i>	
	<i>Primula sikkimensis</i> Hook.	
	<i>Primula smithiana</i> Craib	
	<i>Primula stuartii</i>	<i>Primula obliquo</i>
	<i>Primula tenella</i> King ex Hook. fil.	
	<i>Primula tibetica</i> Watt	
	<i>Primula umbratilis</i> I. B. Balf. & Cooper	
	<i>Primula walshii</i>	
	<i>Primula waltonii</i>	
	<i>Pseudognaphalium hypoleucum</i> (DC.) O.M..	
	<i>Pteranthus spp</i>	
	<i>Pterocephalus hookeri</i> (C.B.C1.) Diels	

	<i>Ranunculus brotherusii</i>	
	<i>Ranunculus pulchellus</i>	
	<i>Ranunculus tricuspis</i>	
	<i>Raphidophora decursiva</i>	
	<i>Rheum acuminatum</i> Hook. fil. & Thorns.	
	<i>Rheum austral</i>	
	<i>Rheum nobile</i> Hook. fil. & Thorns.	
	<i>Rhodiolabu pleuroides</i> (Wall. Ex. Hook.fil. & Thorns.) Fu	
	<i>Rhodiola crenulate</i> (Hook.fil& Thorns.) H. Ohba	
	<i>Rhodiola heterodonata</i>	Inet in India
	<i>Rhodiola himalensis</i>	
	<i>Rhodiola hobsonii</i> (Prain ex R.-Hamet) Fu	
	<i>Rhodiola humilis</i> (Hook.	
	<i>Rhodiola wallichiana</i>	
	<i>Rhododendron aeruginosum</i> Hook. fil.	

Common name	Scientific name	Remarks (Synonyms)
	<i>Rhododendron anthopogon</i> D. Don	
	<i>Rhododendron arboreum</i> Sm.	
	<i>Rhododendron bhutanense</i> D.G. Long & Bowes Lyon	
	<i>Rhododendron campanulatum</i> (Hook.	
	<i>Rhododendron cinnabarinum</i> Hook. fil.	
	<i>Rhododendron lepidotum</i> Wall.	
	<i>Rhododendron setosum</i> D. Don	
	<i>Rhododendron wallichii</i> Hook. fil.	
	<i>Rhododendron wightii</i> Hook. fil.	
	<i>Roscoea alpina</i> Royle	
	<i>Rubus calycinus</i>	
	<i>Rubus fockeanus</i>	
	<i>Rubus fragarioides</i>	
	<i>Rubus nepalensis</i>	

	<i>Rubus pectinaroides</i>	
	<i>Rumex nepalensis</i>	
	<i>Salix serphyllum</i>	
	<i>Salvia spp</i>	
	<i>Sambucus adnate</i> Wall.	
	<i>Sarcococca coriacea</i>	
	<i>Satyrium nepalense</i> var. <i>ciliatum</i> (Lindl.) Hook.f.	
	<i>Saussurea auriculata</i> (Wall. ex DC.) Sch. Bip.	
	<i>Saussurea eriostemon</i>	
	<i>Saussurea gossipiphora</i> D. Don	
	<i>Saussurea graminifolia</i>	
	<i>Saussurea hieracioides</i> Hook. fil.	
	<i>Saussurea nepalensis</i>	found Inet
	<i>Saussurea obvallata</i> (DC.) Sch. Bip.	
	<i>Saussurea pachyneura</i> Franch.	
	<i>Saussurea przewalskii</i> Maxim.	
	<i>Saussurea roylei</i>	Himalaya Inet
	<i>Saussurea simpsoniana</i>	<i>Saussureatridactyla</i>
	<i>Saussurea taraxacifolia</i> Wall. ex DC.	
	<i>Saussurea tridactyla</i> Sch. Bip. ex Hook. fil.	
	<i>Saussurea uniflora</i> (DC.) Wall. ex Sch. Bip.	
	<i>Saxifraga andersonii</i>	

Common name	Scientific name	Remarks (Synonyms)
	<i>Saxifraga bergenoides</i>	
	<i>Saxifraga brachypoda</i> D. Don	
	<i>Saxifraga brunonis</i> Wall. ex Ser.	
	<i>Saxifraga caveana</i>	
	<i>Saxifraga filicaulis</i> Wall.	
	<i>Saxifraga gageana</i>	
	<i>Saxifraga georgei</i>	

	<i>Saxifraga hispidula</i> D. Don	
	<i>Saxifraga humilis</i>	
	<i>Saxifraga lychnitis</i>	
	<i>Saxifraga melanocentra</i>	
	<i>Saxifraga moorcroftiana</i>	
	<i>Saxifraga pallida</i> Wall.	
	<i>Saxifraga parnassifolia</i>	
	<i>Saxifraga saginoides</i>	
	<i>Saxifraga strigose</i>	
	<i>Saxifraga thiantha</i> H. Sm.	
	<i>Saxifraga wardii</i> W.W. Sm.	
	<i>Sedum oreades</i> (Decne.) R.-Hamet	
	<i>Sedum trullipetalum</i> Hook. & Thorns.	
	<i>Selinum candollei</i>	
	<i>Selinum tenuifolium</i>	
	<i>Semenovi acandicans</i> var. <i>obtusifolium</i>	
	<i>Senecio chrysanthemoides</i> DC.	
	<i>Senecio diversifolia</i>	
	<i>Senecio kumaonensis</i>	
	<i>Senecio scandens</i>	
	<i>Sigesbeckia orientalis</i>	
	<i>Silene birgittae</i>	
	<i>Silene birgittae</i> Bocquet	
	<i>Silene gonosperma</i>	
	<i>Silene nigrescens</i> (Edgew.) Majumdar	
	<i>Silene purii</i> Bocquet & N.P. Saxena	
	<i>Skimmia arborescens</i>	
	<i>Smilacina oleracea</i>	
	<i>Smilacina purpurea</i>	<i>Maianthemum purpureum</i>
	<i>Solitaria glanduligera</i> (Edgew.) Sadeghian & Zarre	
	<i>Solitaria ludlowii</i> (H. Hara) comb. Ined.	

Common name	Scientific name	Remarks (Synonyms)
	<i>Sorooseris depressa</i> (Hook. fil. & Thorns.) J.W.Zhang,	
	<i>Sorooseris hookeriana</i> (C. B. Cl.) Stebbins	
	<i>Souliea vaginata</i> (Maxim.) Franch.	
	<i>Spongiocarpella</i> <i>purpurea</i> (P.C.Li)Yakovlev	
	<i>Stellaria decumbens</i>	
	<i>Streptopus simplex</i> D.Don	
	<i>Strobilanthes wallichii</i> Nees	
	<i>Swertia cuneata</i>	
	<i>Swertia hookeri</i> C. B. Cl.	
	<i>Swertia kingii</i>	not found in YD/FOB, 2-2, 630p
	<i>Swertia multicaulis</i>	not found in FOB, in Y.Dorji
	<i>Swertia multicaulis</i> D. Don	
	<i>Swertia petiolate</i>	not found in FOB/YD Inet: India
	<i>Swertia pseudohookeri</i>	
	<i>Swertia wardii</i> C. Marquand	
	<i>Swertia wolfgangiana</i>	not found, Inet china
	<i>Tanacetum atkinsonii</i> (C. B. Cl.) S. Kitam.	
	<i>Taraxacum eriopodum</i> (D. Don) DC.	
	<i>Taraxacum officianalis</i>	<i>Taraxacum sikkimense</i>
	<i>Taraxacum parvulum</i>	
	<i>Taraxacum tibetanum</i>	
	<i>Tetrataenium nepalense</i> (Don) I.P. Mande nova	
	<i>Thalictrum alpinum</i>	
	<i>Thalictrum alpinum</i> L.	
	<i>Thalictrum chelidonii</i> DC.	
	<i>Thalictrum elegans</i>	
	<i>Thalictrum elegans</i> Wall.	
	<i>Thalictrum javanicum</i>	

	<i>Thalictrum reniforme</i>	
	<i>Thermopsis barbata</i> Benth.	
	<i>Theropogon pallidus</i> (Wall. ex Kunth) Maxim.	
	<i>Thlaspi andersonii</i> (Hook.f. & Thomson) O.E. Schulz	
	<i>Thlaspiar vense</i> L.	

Common name	Scientific name	Remarks (Synonyms)
	<i>Tibetia himalaica</i> (Baker)H.P.Tsui	
	<i>Tofieldia himalaica</i>	
	<i>Tricholepi sfurcata</i>	
	<i>Trifolium repens</i>	
	<i>Trillium govanianum</i> Wall. ex D.Don	
	<i>Triosteum himalayanum</i> Wall.	
	<i>Trollius sikkimensis</i> (Briehl) Doroszewska	
	<i>Tupistra nutans</i>	Internet: CONVALLARIACEAE
	<i>Vaccinium spp</i>	
	<i>Valeriana hardwickei</i> Wall.	
	<i>Vernonia volkameriifolia</i>	
	<i>Veronica ciliate</i> Fisch.	
	<i>Veronica ciliata</i> subsp. <i>Cephaloides</i> (Pennell) D.Y. Hong	
	<i>Veronica himalensis</i> D. Don	
	<i>Veronica lanuginose</i> Benth. ex Hook. fil.	
	<i>Viburnum erubescens</i> Wall.	
	<i>Viburnum nervosum</i> D. Don	
	<i>Viola betonicifolia</i>	
	<i>Viola biflora</i>	
	<i>Wulfeniaam herstiana</i>	
	<i>Youngia depressa</i> (Hook. fil. & Thorns.) Babc. & Stebbins.	
LICHENS, MOSS		

White worm lichen	<i>Thamnolia vermicularis</i>	
	<i>Usnea longissima</i>	
	<i>Selaginella spp</i>	
ORCHIDS		
	<i>Aerides multiflorum</i>	
	<i>Agrostophyllum callosum</i>	
	<i>Anthogonium gracile</i>	
	<i>Aorchis spathulata</i>	
	<i>Anoectochilus brevilabris</i> (Lindley)	
	<i>Arundina graminifolia</i>	
	<i>Bulbophyllum affine</i>	
	<i>Bulbophyllum emarginatum</i>	
	<i>Bulbophyllum leopardinum</i>	
	<i>Bulbophyllum umbellatum</i>	

Common name	Scientific name	Remarks (Synonyms)
	<i>Calanthe plantaginea</i>	
	<i>Cephalanthera longifolia</i>	
	<i>Cleisostoma racemiferum</i>	
	<i>Cleisostoma williamsonii</i>	
	<i>Coelogyne corymbosa</i>	
	<i>Coelogyne cristata</i>	
	<i>Coelogyne fimbriata</i>	
	<i>Coelogyne occulaata</i>	
	<i>Coelogyne ovalis</i>	
	<i>Cryptochilus lutea</i>	
	<i>Cymbidium bicolor</i>	
	<i>Cymbidium dayanum</i>	
	<i>Cymbidiumdevonianum</i>	
	<i>Cymbidium erythraeum</i>	
	<i>Cymbidium grandiflorum</i>	
	<i>Cymbidium hookerianum</i>	

	<i>Cymbidium iridioies</i>	
	<i>Cymbidium longifolium</i>	
	<i>Dendrobium aphyllum</i>	
	<i>Dendrobium chrysanthum</i>	
	<i>Dendrobium densiflorum</i>	
	<i>Dendrobium devoninum</i>	
	<i>Dendrobium falconeri</i>	
	<i>Dendrobium fimbriatum</i>	
	<i>Dendrobium hookerianum</i>	
	<i>Dendrobium jenkinsii</i>	
	<i>Dendrobium longicornu</i>	
	<i>Dendrobium nobile</i>	
	<i>Eria acervata</i>	
	<i>Eria amica</i>	
	<i>Eria coronaria</i>	
	<i>Galeala lindleyana</i>	
	<i>Gymnadenia orchidis</i>	
	<i>Hedychium densiflorum</i>	
	<i>Hedychium gardnerianum</i>	
	<i>Ione bicolor</i>	
	<i>Liparis bootanensis</i>	

Common name	Scientific name	Remarks (Synonyms)
	<i>Malaxis muscifera</i>	
	<i>Oberonia acaulis</i>	
	<i>Otochilus fuscus</i>	
	<i>Phalaenopsis taenialis</i>	
	<i>Pholidota articulate</i>	
	<i>Pholidota imbricate</i>	
	<i>Platanthera biermanniana</i>	
	<i>Platanthera leptocaulon</i>	
	<i>Pleione hookeriana</i>	
	<i>Pleione praecox</i>	

	<i>Ponerorchis chusua</i>	<i>Chusua pauciflora</i>
	<i>Schoenorchis gemmata</i>	
	<i>Spathoglottis ixioides</i>	
	<i>Taeniophyllum retrospiculatum</i>	
	<i>Vanda bicolor</i>	
	<i>Vanda cristata</i>	
	<i>Vandonopsis undulata</i>	
	<i>Zeuxine goodyeroides</i>	
SHRUBS		
	<i>Actinidia callosal</i>	
	<i>Aralia cachemirica</i>	
	<i>Ardisia macrocarpa</i>	
	<i>Arundinaria racemosa</i>	
	<i>Berberis angulosa</i>	
	<i>Berberis aristate</i>	
	<i>Berberis asiatica</i>	
	<i>Berberis griffithiana</i>	<i>Berberis bhutanensis</i>
	<i>Berberis hookeri</i>	
	<i>Berberis insignis</i>	
	<i>Berberis virescens</i>	
	<i>Bergenia ciliate</i>	
	<i>Bergenia stracheyi</i>	not in FOB, in FoH
	<i>Brassaiopsis mitis</i>	
	<i>Chimonobambusa callosa</i>	
	<i>Cirsium falconeri</i>	
	<i>Citrus medica</i>	
	<i>Daphne bholua</i>	

Common name	Scientific name	Remarks (Synonyms)
	<i>Daphne mucronate</i>	
	<i>Daphne papyracea</i>	
	<i>Daphne retusa</i>	
	<i>Daphne sureil</i>	

	<i>Debregeasia longifolia</i>	
	<i>Desmodium confertum</i>	
	<i>Elaeagnus lanceifolius</i>	
	<i>Elaeagnus parvifolia</i>	
	<i>Elsholtzia flava</i>	
	<i>Elsholtzia fruticose</i>	
	<i>Enkianthus deflexus</i>	
	<i>Euonymus frigidus</i>	
	<i>Euryacavinervis</i>	
	<i>Gaultheria fragrantissima</i>	
	<i>Gaultheria hookeri</i>	
	<i>Gaultheria pyroloides</i>	
	<i>Gaultheria trichophylla</i>	
	<i>Goldfussia nutans</i>	<i>Strobilanthes nutans</i>
	<i>Hydrangea heteromalla</i>	
	<i>Ilex fragilis</i>	
	<i>Indigofera dousa</i>	
	<i>Jasminum humile</i>	
	<i>Justicia adhatoda</i>	<i>Adhatodavastica</i>
	<i>Maesa chisia</i>	
	<i>Mahonia napaulensis</i>	
	<i>Mureya koenigii</i>	
Mezumalaga-shing	<i>Oxyspora paniculate</i>	
	<i>Persicaria polystachya</i>	
	<i>Pieris Formosa</i>	
	<i>Rhododendron aeruginosum</i>	
	<i>Rhododendron anthopogon</i>	
	<i>Rhododendron baileyi</i>	
	<i>Rhododendron barbatum</i>	
	<i>Rhododendron bhutanense</i>	
	<i>Rhododendron camelliiflorum</i>	
	<i>Rhododendron campanulatum</i>	
	<i>Rhododendron campylocarpum</i>	

Common name	Scientific name	Remarks (Synonyms)
	<i>Rhododendron cinnabarinum</i>	
	<i>Rhododendron dalhousiae</i>	
	<i>Rhododendron flinckii</i>	
	<i>Rhododendron fulgens</i>	
	<i>Rhododendron glaucophyllum</i>	
	<i>Rhododendron kendrickii</i>	
	<i>Rhododendron keysii</i>	
	<i>Rhododendron lanatum</i>	
	<i>Rhododendron lindleyi</i>	
	<i>Rhododendron nivale</i>	
	<i>Rhododendron succothii</i>	
	<i>Rhododendron thomsonii</i>	
	<i>Rhododendron wallichii</i>	
	<i>Rhododendron wightii</i>	
	<i>Ribes glaciale</i>	
	<i>Ribes griffithii</i>	
	<i>Ribes laciniatum</i>	
	<i>Ribes orientale</i>	
	<i>Ribes takare</i>	
	<i>Rosa macrophylla</i>	
	<i>Rosa sericea</i>	
	<i>Rubus acuminatus</i>	
	<i>Rubus biflorus</i>	
	<i>Rubus calophyllus</i>	
	<i>Rubus ellipticus</i>	
	<i>Rubus foliolosus</i>	
	<i>Rubus hoffmeisterianus</i>	
	<i>Rubus hypargyrus</i>	
	<i>Rubus indotibetanus</i>	
	<i>Rubus inopertus</i>	
	<i>Rubus pentagonus</i>	

	<i>Rubus sikkimensis</i>	
	<i>Rubus splendidissimus</i>	
	<i>Salix calyculata</i>	
	<i>Salix lindleyana</i>	
	<i>Salix myrtillacea</i>	
	<i>Salix oreophila</i>	

Common name	Scientific name	Remarks (Synonyms)
	<i>Salix sikkimensis</i>	
	<i>Sambucus adnate</i>	
	<i>Sambucus squamata</i>	
	<i>Sarcococca hookeriana</i>	
	<i>Sarcococca wallichii</i>	
	<i>Schisandra grandiflora</i>	
	<i>Scurrula elata</i>	
	<i>Skimmaia arborescens</i>	
	<i>Smilax ferox</i>	
	<i>Smilax myrtillus</i>	
	<i>Smilax orthoptera</i>	
	<i>Toricellia tiliifolia</i>	
	<i>Viburnum erubescens</i>	
	<i>Viburnum mullaha</i>	
	<i>Woodfordia fruticosa</i>	
	<i>Zanthoxylum oxyphyllum</i>	
SHRUBS/HERBS		
	<i>Aconogonum mole</i>	In FoH; YD: Aconogonon
	<i>Aconogonum polystachyum</i>	In FoH; YD Aconogonum
<i>Artemisia nilagirica</i>	<i>Artemisia vulgaris</i>	<i>Artemisia thellungiana</i>
	<i>Campylotropis speciosa</i>	
	<i>Eupatorium adenophorum</i>	spp not in Y.Dorji list, in FoH
	<i>Eupatorium odoratum</i>	spp not in Y.Dorji list, in FoH
	<i>Lonicera porphyrantha</i>	
banana	<i>Musa sikkimensis</i>	

	<i>Rhododendron lepidotum</i>	
	<i>Rhododendron pumilum</i>	
	<i>Rhododendron setosum</i>	
	<i>Smilax rigida</i>	
	<i>Urtica ardens</i>	
	<i>Urtica dioica</i>	
	<i>Vaccinium nummularia</i>	
	<i>Vaccinium retusum</i>	
	<i>Vaccinium vacciniacuem</i>	
SHRUBS/VINES		
	<i>Lonicera acuminata</i>	
	<i>Rubus paniculatus</i>	

Common name	Scientific name	Remarks (Synonyms)
	<i>Rubus treutleri</i>	
	<i>Skimmia laureola</i>	
TREES		
East Himalayan Fir	<i>Abies densa</i>	
Maple Chalam/ Shermaling-shing	<i>Acer campbellii</i>	
	<i>Acer cappadocium</i>	
	<i>Acer caudatum</i>	
	<i>Acer hookeri</i>	
	<i>Acer pectinatum</i>	
	<i>Acer sikkimensis</i>	
	<i>Acer sterculiaceum</i>	
	<i>Acer thomsonii</i>	
Butter tree	<i>Aesandra butyracea</i>	<i>Diploknema butyracea</i>
	<i>Aesculus indica</i>	
	<i>Albiza lebbeck</i>	
Alder	<i>Alnus nepalensis</i>	
Birch	<i>Betula alnoides</i>	

Birch	<i>Betula utilis</i>	
	<i>Callicarpa arborea</i>	
	<i>Castanopsis hystrix</i>	
	<i>Castanopsis indica</i>	
	<i>Castanopsis tribuloides</i>	
Soksopashing	<i>Celtis tetrandra</i>	
	<i>Cinnamomum glanduliferum</i>	
	<i>Cinnamomum glaucescens</i>	
	<i>Cinnamomum impressinervium</i>	
	<i>Cinnamomum tamala</i>	
	<i>Citrus reticulata</i>	
Weeping cypress	<i>Cupressus corneyana</i>	
	<i>Elaeocarpus lanceifolius</i>	
	<i>Engelhardia spicata</i>	
	<i>Eurya cerasifolia</i>	
	<i>Exbucklandia populnea</i>	
	<i>Ficus auriculate</i>	
	<i>Ficus oligodon</i>	
	<i>Ficus semicordata</i>	<i>Ficus cunia. Ficus semicordata</i> in FOB

Common name	Scientific name	Remarks (Synonyms)
	<i>Gamblea ciliate</i>	
Him holly	<i>Ilex dipyrena</i>	
walnut	<i>Juglans regia</i>	
juniper	<i>Juniperus recurve</i>	
juniper	<i>Juniperus squamata</i>	
Chambaktang shing	<i>Kydia calycina</i>	Inet: tree in India
East Him Larch	<i>Larix griffithiana</i>	
	<i>Litsea elongate</i>	
	<i>Macaranga denticulata</i>	

	<i>Macaranga peltate</i>	
Magnolia, Gong-gong/ Dzamlingmeto	<i>Magnolia campbellii</i>	
	<i>Michelia champaca</i>	
	<i>Michelia doltsopa</i>	
	<i>Michelia kisopa</i>	
	<i>Myrica esculenta</i>	
Pra-goli/Pargulishing	<i>Persea clarkeana</i>	
	<i>Persea duthiei</i>	
	<i>Persea fructifera</i>	
	<i>Persea minutiflora</i>	
	<i>Pinus bhutanica</i>	
Chir pine	<i>Pinus roxburghii</i>	
Him blue pine	<i>Pinus wallichiana</i>	
	<i>Prunus rufa</i>	
Thongpa/Namdhash	<i>Quercus glauca</i>	
	<i>Quercus griffithii</i>	
	<i>Quercus lamellose</i>	
	<i>Quercus lanata</i>	
	<i>Quercus semecarpifolia</i>	
	<i>Rhododendron grande</i>	
	<i>Rhus hookeri</i>	
	<i>Schima khasiana</i>	
	<i>Schima wallichii</i>	
	<i>Sorbus cuspidate</i>	
Ha-shing, yew	<i>Taxus wallichiana</i>	<i>Taxus baccata</i> (sspwallichiana)
	<i>Toona ciliate</i>	
hemlock, Sey-shing	<i>Tsuga dumosa</i>	

Common name	Scientific name	Remarks (Synonyms)
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	<i>Zanthoxylum rhetsa</i>	
TREES/SHRUBS		
	<i>Acer sikkimense</i>	
	<i>Aesandar butyraceae</i>	
	<i>Benthamidia capitata</i>	
macrophylla in FOB	<i>Boehmeria macrophylla</i>	<i>Boehmeria platyphylla</i>
	<i>Daphniphyllum himalaense</i>	
	<i>Docynia indica</i>	
	<i>Emblica officinalis</i>	<i>Phyllanthus emblica</i>
Coral tree	<i>Erythrina arborescens</i>	
	<i>Eurya acuminata</i>	
	<i>Ficus roxburghii</i>	
Star anise	<i>Illicium griffithii</i>	
	<i>Ligustrum confusum</i>	
	<i>Lindera cubeba</i>	Not in YD/not in FoH
	<i>Lindera heterophylla</i>	
	<i>Lindera neesiana</i>	
	<i>Lindera pulcherrima</i>	<i>Lindera thomsonii</i>
	<i>Lyonia ovalifolia</i>	
	<i>Lyonia villosa</i>	
	<i>Machilus parviflora</i>	
	<i>Merrilliopanax alpinus</i>	
	<i>Myrsine semiserrata</i>	
	<i>Persea bootanica</i>	
	<i>Prunus cerasoides</i>	
Bird cherry	<i>Prunus cornuta</i>	
	<i>Rhododendron arboreum</i>	
	<i>Rhododendron falconeri</i>	
	<i>Rhododendron griffithianum</i>	
	<i>Rhododendron hodgsonii</i>	

Aeto-meto/ Thapashing	<i>Rhododendron kesangiae</i>	
	<i>Rhododendron neriiflorum</i>	
	<i>Rhododendron niveum</i>	
	<i>Rhus chinensis</i>	
Wild varnish tree	<i>Rhus succedanea</i>	
	<i>Salix salwinensis</i>	

Common name	Scientific name	Remarks (Synonyms)
	<i>Schefflera impressa</i>	
Lawery	<i>Sorbus foliolosa</i>	
	<i>Sorbus griffithii</i>	
	<i>Sorbus lanata</i>	not found/not in YD/in FoH
	<i>Sorbus microphylla</i>	
	<i>Sorbus thomsonii</i>	
	<i>Symplocos acuminata</i>	
	<i>Symplocos dryophila</i>	was <i>S. drosiphylla</i>
Dhomzim/Zeem shing	<i>Symplocos glomerata</i>	
Dhomm-shing	<i>Symplocos lucida</i>	<i>Symplocos theifolia</i>
	<i>Symplocos paniculata</i>	
	<i>Symplocos pyrifolia</i>	
	<i>Trevesia palmata</i>	
	<i>Viburnum cylindricum</i>	
	<i>Viburnum nervosum</i>	
	<i>Zanthoxylum armatum</i>	
VINES		
	<i>Aristolochia griffithii</i>	
	<i>Aristolochi aplataniifolia</i>	
	<i>Cissus spp</i>	
	<i>Clematis montana</i>	
	<i>Crawfurdia puberula</i>	
	<i>Crawfurdia speciose</i>	
	<i>Cucurbita muschata</i>	
	<i>Hedera nepalensis</i>	<i>Hedera helix</i>

	<i>Holboellia latifolia</i>	
	<i>Lonicera angustifolia</i>	
	<i>Lonicera hispida</i>	
	<i>Parthenocissus himalayana</i>	
	<i>Pueraria peduncularis</i>	
	<i>Vitis semicordata</i>	<i>Parthenocissus semicordata</i> Syn not found in FOB/Y.Dorji, Inet:Y
	<i>Lycopodium clavatum</i>	
	<i>Rubia cordifolia</i>	
	<i>Rubia manjith</i>	
	<i>Borinda grossa</i>	
Common name	Scientific name	Remarks (Synonyms)
	<i>Dendrocalamus hamiltonii</i>	
palm	<i>Plectocomia himalayana</i>	
	<i>Thamnocalamus spathiflora</i>	
	<i>Yushania hirsute</i>	
	<i>Yushania microphylla</i>	
	<i>Yushania pantilingii</i>	

Appendix 3: Checklist of mammals of BWS

Common name	Scientific name	IUCNstatus	CITES	FNCR
Asiatic Golden Cat	<i>Catopuma temminckii</i>	NT	Sch-I	
Assamese Macaque	<i>Macaca assamensis</i>	NT		
Barking Deer (muntjac)	<i>Muntiacus muntjac</i>			
Blue Sheep	<i>Pseudois nayaur</i>			
Capped Langur	<i>Trachypithecus pileatus</i>	VU	Sch-I	
Clouded Leopard	<i>Neofelis nebulosi</i>	VU	Sch-I	Sch-1
Common Leopard	<i>Panthera pardus</i>	NT	Sch-I	Sch-1
Common Pika	<i>Ochotona roylei</i>			
Elegant Water Shrew	<i>Nectogale elegans</i>			
Goral	<i>Naemorhedus goral</i>	NT	Sch-I	
Him Crestless Porcupine	<i>Hystrix brachyura</i>			
Him Ylw-throated Marten	<i>Martes flavigula</i>			
Himalayan Black Bear	<i>Ursus thibetanus</i>	VU	Sch-I	Sch-1
Himalayan Flying Squirrel	<i>Petauris tamagnificus</i>			
Himalayan Leaf-nosed Bat	<i>Hipposideros armiger</i>			
Himalayan Marmot	<i>Marmota himalayana</i>			
Himalayan Mole	<i>Talpa micrura</i>			
Himalayan Musk Deer	<i>Moschus chrysogaster</i>	EN	Sch-I	Sch-1
Himalayan Palm Civet	<i>Paguma larvata</i>			
Himalayan Serow	<i>Capricornis thar</i>	NT	Sch-I	Sch-1
Himalayan Striped Squirrel	<i>Tamiops macclellandi</i>			
Himalayan Weasel	<i>Mustela sibirica</i>			
House Rat	<i>Rattus rattus</i>			
Jungle cat	<i>Felis chaus</i>			
Large-eared Pika	<i>Ochotona macrotis</i>			
Leopard cat	<i>Felis bengalensis</i>		Sch-I	Sch-1

Malayan Giant Squirrel	<i>Ratufa bicolor</i>		Sch-II	
Marbled Cat	<i>Felis marmorata</i>	VU	Sch-I	
Orange-bellied Squirrel	<i>Dremomys lokriah</i>			
Pale Weasel	<i>Mustela altaica</i>			
Red Fox	<i>Vulpes vulpes</i>			
Red Panda	<i>Ailurus fulgens</i>	VU	Sch-I	Sch-1
Common name	Scientific name	IUCNstatus	CITES	FNCR
Pallas Squirrel	<i>Callosciurus erythraeus</i>			
Sambar	<i>Cervus unicolor</i>	VU		
Sikkim Vole	<i>Microtis sikimensis</i>			
Small Indian Civet	<i>Viverricula indica</i>			
Snow Leopard	<i>Uncia uncia</i>	VU	Sch-I	Sch-1
Stone (Beech) Marten	<i>Martes foina</i>			
Tiger	<i>Panthera tigris</i>	EN	Sch-I	Sch-1
White-bellied Rat	<i>Niviventer niviventer</i>			
Wild Dog (Dhole)	<i>Cuon alpinus</i>	EN	Sch-II	
Wild Pig	<i>Sus scrofa</i>			
Soft furred rat	<i>Millardia meltada</i> Grey, 1807	LC	–	–
Wood mouse	<i>Apodemus sylvaticus</i> Linnaeus, 1758	LC		
Himalayan Field Mouse	<i>Apodemus pallipes</i> BarrettHamilton, 1900	LC		
Sikkim large-clawed Shrew	<i>Soriculus nigrescens</i> Gray, 1842	LC		
Hodgson's brown-toothed shrew	<i>Episoriculus caudatus</i> Horsfield, 1851	LC		
Eurasian gygmy shrew	<i>Sorex minutus</i> Linnaeus, 1766	LC		
Himalayan mole	<i>Euroscaptor micrura</i> Hodgson, 1841	LC		
Blyth's horseshoe bat	<i>Rhinolophus lepidus</i>	LC		
Chinese rufous horseshoe bat	<i>Rhinolophus sinicus</i>	LC		

Eurasian Otter	<i>Lutra lutra</i>	NT	IUCN	
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Appendix 4: Checklist of birds of BWS

Common name	Scientific name	IUCN status	CITES	FNCR	Restr Range
	GALLIFORMES				
Partridges, francolins, pheasants, etc.	Phasianidae				
Tibetan Snowcock	<i>Tetraogallus tibetanus</i>		Sch-I		
Snow Partridge	<i>Lerwa lerwa</i>				
Hill Partridge	<i>Arborophila torqueola</i>				
Rufous-throated Partridge	<i>Arborophila rufogularis</i>				
Chestnut-breasted Partridge	<i>Arborophila mandellii</i>	VU			RR
Blood Pheasant	<i>Ithaginis cruentus</i>		Sch-II		
Satyr Tragopan	<i>Tragopan satyra</i>	NT			
Himalayan Monal	<i>Lophophorus impejanus</i>		Sch-I	Sch-1	
Kalij Pheasant	<i>Lophura leucomelanos lathami</i>				
Common Coot	<i>Fulica atra</i>	LC			
	ANSERIFORMES				
Whistling ducks, geese, ducks	Anatidae				
Whistling ducks	Anatinae				
Geese	Anserini				
Bar-headed Goose	<i>Anser indicus</i>				
Ruddy Shelduck	<i>Tadorna ferruginea</i>				
Ducks	Anatini				
Gadwall	<i>Anas strepera</i>				
Mallard	<i>Anas platyrhynchos</i>				
Eurasian Wigeon	<i>Anas penelope</i>				
Common Teal	<i>Anas crecca</i>				
Northern Pintail	<i>Anas acuta</i>				
Common Merganser	<i>Mergus merganser</i>				
Ferruginous Poachard	<i>Aythya nyroca</i>	NT			
Greylag Goose	<i>Anser anser</i>	LC			
Mandarin Duck	<i>Aix galericulatao</i>	LC			
Spot-billed Duck	<i>Anas poecilorhyncha</i>	LC			
Common Shelduck	<i>Tadorna tadorna</i>	LC			
	TURNICIFORMES				
Buttonquails	Turnicidae				
Yellow-legged Buttonquail	<i>Turnix tanki</i>				
	PICIFORMES				

Honeyguides	Indicatoridae				
Yellow-rumped Honeyguide	<i>Indicator xanthonotus</i>	NT			
Wrynecks, piculets, woodpeckers	Picidae				
Speckled Piculet	<i>Picumnu innominatus</i>				
White-browed Piculet	<i>Sasia ochracea</i>				
Rufous Woodpecker	<i>Celeus brachyurus</i>				

Common name	Scientific name	IUCN status	CITES	FNCR	Restr Range
Bay Woodpecker	<i>Blythipicus pyrrhotis</i>				
Rufous-bellied Woodpecker	<i>Dendrocopos hyperythrus</i>				
Crimson-breasted Woodpecker	<i>Dendrocopos cathpharius</i>				
Darjeeling Woodpecker	<i>Dendrocopos darjellensis</i>				
Lesser Yellownappe	<i>Picus chlorophus</i>				
Greater Yellownappe	<i>Picus flavinucha</i>				
Grey-headed Woodpecker	<i>Picus canus</i>				
Asian barbets	Megalaimidae				
Great Barbet	<i>Megalaima virens</i>				
Golden-throated Barbet	<i>Megalaima franklinii</i>				
Blue-throated Barbet	<i>Megalaima asiatica</i>				
	BUCEROTIFORMES				
Hornbills	Bucerotidae				
Rufous-necked Hornbill	<i>Aceros nipalensis</i>	VU	Sch-I	Sch-1	
	UPUPIFORMES				
Hoopoes	Upupidae				
Common Hoopoe	<i>Upupa epops</i>				
	TROGONIFORMES				
Trogons	Trogonidae				
Red-headed Trogon	<i>Harpactes erythrocephalus</i>				
Ward's Trogon	<i>Harpactes wardi</i>	NT			RR
	CORACIFORMES				
Rollers	Coraciidae				
Indian Roller	<i>Coracias benghalensis</i>				
Blue-eared Kingfisher	<i>Alcedo meninting</i>	LC			
	CERYLIDIFORMES				
Pied kingfishers	Cerylidae				
Common Kingfisher	<i>Alcedo atthis</i>				
White-throated Kingfisher	<i>Halcyon smyrnensis</i>				
Crested Kingfisher	<i>Megaceryle lugubris</i>				
	CUCULIFORMES				
Old world cuckoos	Cuculidae				

Large Hawk Cuckoo	<i>Hierococcyx sparverioides</i>				
Hodgson's Hawk Cuckoo	<i>Hierococcyx fugax</i>				
Indian Cuckoo	<i>Cuculus micropterus</i>				
Eurasian Cuckoo	<i>Cuculus canoris</i>				
Oriental Cuckoo	<i>Cuculus saturatus</i>				
Lesser Cuckoo	<i>Cuculus poliocephalus</i>				
Grey-bellied Cuckoo	<i>Cacomantis passerinus</i>				
Drongo Cuckoo	<i>Surniculus lugubris</i>				
Green-billed Malkoha	<i>Phaenicophaeus tristis</i>				

Common name	Scientific name	IUCN status	CITES	FNCR	Restr Range
Coucals	Centropodidae				
Greater Coucal	<i>Centropus sinensis</i>				
	APODIFORMES				
Swifts	Apodidae				
Fork-tailed Swift	<i>Apus pacificus</i>				
Himalayan Swiftlet	<i>Collocalia brevirostris</i>				
White-throated Needletail	<i>Hirundapus caudacutus</i>				
	STRIGIFORMES				
Owls	Strigidae				
Mountain Scops Owl	<i>Otus spilocephalus</i>				
Collared Scops Owl	<i>Otus bakkamoena</i>				
Collared Owlet	<i>Glaucidium brodiei</i>				
Asian Barred Owlet	<i>Glaucidium cuculoides</i>				
Jungle Owlet	<i>Glaucidium radiatum</i>				
Tawny Fish Owl	<i>Ketupa flavipes</i>				
Tawny Owl	<i>Strix aluco</i>				
Nightjars	Caprimulgidae				
Grey Nightjar	<i>Caprimulgus europaeus</i>				
	COLUMBIFORMES				
Pigeons, doves	Columbidae				
Snow Pigeon	<i>Columba leuconota</i>				
Speckled Wood Pigeon	<i>Columba hodgsonii</i>				
Oriental Turtle Dove	<i>Streptopelia orientalis</i>				
Spotted Dove	<i>Streptopelia chinensis</i>				
Barred Cuckoo Dove	<i>Macropygia unchall</i>				
Wedge-tailed Green Pigeon	<i>Treron sphenura</i>				
Common Pigeon	<i>Columba livia</i>	LC			
	ARDEIFORMES				
Herons	Ardeidae				

Cattle Egret	<i>Bubulcus ibis</i>				
	GRUIFORMES				
Cranes	Gruidae				
Black-necked Crane	<i>Grus nigricollis</i>	VU	Sch-I	Sch-1	
Common Crane	<i>Grus grus</i>				
Rails, gallinules, coots	Rallidae				
White-breasted Water Hen	<i>Amaurornis phoenicurus</i>				
Black-tailed Crake	<i>Porzana bicolor</i>				
	CICONIIFORMES				
Woodcocks, snipes	Scolopacidae				
Eurasian Woodcock	<i>Scolopax rusticola</i>				
Solitary Snipe	<i>Gallinago solitaria</i>				

Common name	Scientific name	IUCN status	CITES	FNCR	Restr Range
Wood Snipe	<i>Gallinago nemoricola</i>	VU			
Common Greenshank	<i>Tringa nebularia</i>				
Green Sandpiper	<i>Tringa ochropus</i>				
Common Sandpiper	<i>Actitis hypoleucos</i>				
	CHARADRIIFORMES				
Ibisbill, avocets, plovers, lapwings	Charadriidae				
Ibisbill, avocets	Recurvirostrinae				
Ibisbill	<i>Ibidorhyncha struthersii</i>				
Little-ringed Plover	<i>Charadrius dubius</i>				
River Lapwing	<i>Vanellus duvaucelii</i>	NT			
Black-headed Gull	<i>Charoicocephalus ridibundus</i>	LC			
Black-winged Stilt	<i>Himantopus himantopus</i>	LC			
Brown-headed Gull	<i>Charoicocephalus brunnicephalus</i>	LC			
Common Redshank	<i>Tringatotanus</i>	LC			
Long-billed Plover	<i>Charadrius placidus</i>	LC			
Northern Lapwing	<i>Vanellus vanellus</i>	LC			
Pallas's Gull	<i>Ichthyaetus ichthyaetus</i>	LC			
Red-wattled Lapwing	<i>Vanellus indicus</i>	LC			
	ACCIPITRIFORMES				
Hawks, eagles, vultures, falcons, etc.	Accipitridae				
Hawks, eagles, vultures, etc.	Accipitrinae				
Osprey	<i>Pandion haliaetus</i>				
Crested Serpent Eagle	<i>Spilornis cheela</i>				
Lammergeier	<i>Gypaetus barbatus</i>				
Himalayan Griffon	<i>Gyps himalayensis</i>				

Black Eagle	<i>Ictinaetus malayensis</i>				
Oriental Honey Buzzard	<i>Pernis ptilorhyncus</i>				
Upland Buzzard	<i>Buteo hemilasius</i>				
Golden Eagle	<i>Aquila chrysaetos</i>				
Northern Goshawk	<i>Accipiter gentilis</i>				
Eurasian Sparrowhawk	<i>Accipiter nisus</i>				
Hen Harrier	<i>Circus cyaneus</i>				
Common Buzzard	<i>Buteo buteo</i>				
Long-legged Buzzard	<i>Buteo rufinus</i>				
Mountain Hawk Eagle	<i>Spizaetus nipalensis</i>				
Steppe Eagle	<i>Aquila nipalensis</i>		EN		
Black Kite	<i>Milvus migrans</i>		LV		
Falcons	Falconidae				
Common Kestrel	<i>Falco tinnunculus</i>				
Peregrine Falcon	<i>Falco peregrinus</i>		Sch-I		

Common name	Scientific name	IUCN status	CITES	FNCR	Restr Range
	PHALACROCORACIFORMES				
Cormorants	Phalacrocoracidae				
Great Cormorant	<i>Phalacrocorax carbo</i>				
	PASSERIFORMES				
Fairy bluebirds, leafbirds	Irenidae				
Orange-bellied Leafbird	<i>Chloropsis hardwickii</i>				
Black Drongo	<i>Dicrurus macrocercus</i>	LC			
Lapland Bunting	<i>Calcarius lapponicus</i>	LC			
White-throated Redstart	<i>Phoenicurus schisticeps</i>	LC			
Eurasian Blackbird	<i>Turdus merula</i>	LC			
Shrikes	Laniidae				
Long-tailed Shrike	<i>Lanius schach</i>				
Grey-backed Shrike	<i>Lanius tephronotus</i>				
Corvids	Corvidae				
Corvins	Corvinae				
Jays, magpies, treepies, crows, etc	Corvini				
Eurasian Jay	<i>Garrulus glandarius</i>				
Yellow-billed Blue Magpie	<i>Urocissa flavirostris</i>				
Grey Treepie	<i>Dendrocitta formosae</i>				
Spotted Nutcracker	<i>Nucifraga caryocatactes</i>				
Red-billed Chough	<i>Pyrrhocorax pyrrhocorax</i>				
Yellow-billed Chough	<i>Pyrrhocorax graculus</i>				
Large-billed Crow	<i>Corvus macrorhynchos</i>				

Common Raven	<i>Corvus corax</i>				
Orioles, cuckooshrikes, minivets, etc.	<i>Oriolini</i>				
Maroon Oriole	<i>Oriolus traillii</i>				
Black-winged Cuckoo Shrike	<i>Coracina melaschistos</i>				
Grey-chinned minivet	<i>Pericrocotus solaris</i>				
Long-tailed Minivet	<i>Pericrocotus ethologus</i>				
Short-billed Minivet	<i>Pericrocotus brevirostris</i>				
Scarlet Minivet	<i>Pericrocotus flammeus</i>				
Bar-winged Flycatcher Shrike	<i>Hemipus picatus</i>				
Fantails, drongos, monarchs	Dicrurinae				
Fantails	Rhipidurini				
Yellow-bellied Fantail	<i>Rhipidura hypoxantha</i>				
White-throated Fantail	<i>Rhipidura albicollis</i>				
Drongos	Dicrurini				
Ashy Drongo	<i>Dicrurus leucophaeus</i>				
Bronzed Drongo	<i>Dicrurus aeneus</i>				
Lesser Racket-tailed Drongo	<i>Dicrurus remifer</i>				
Spangled Drongo	<i>Dicrurus hottentottus</i>				

Common name	Scientific name	IUCN status	CITES	FNCR	Restr Range
Dippers	Cinclidae				
White-throated Dipper	<i>Cinclus cinclus</i>				
Brown Dipper	<i>Cinclus pallasii</i>				
Thrushes, shortwings, flycatchers, etc	Muscicapidae				
Thrushes	Turdinae				
Blue-capped Rock Thrush	<i>Monticola cinclorhynchus</i>				
Chestnut-bellied Rock Thrush	<i>Monticola rufiventris</i>				
Blue Rock Thrush	<i>Monticola solitarius</i>				
Blue Whistling Thrush	<i>Myophonus caeruleus</i>				
Orange-headed Thrush	<i>Zoothera citrina</i>				
Plain-backed Thrush	<i>Zoothera mollissima</i>				
Long-tailed Thrush	<i>Zoothera dixonii</i>				
Scaly Thrush	<i>Zoothera dauma</i>				
Long-billed Thrush	<i>Zoothera monticola</i>				
Tickell's Thrush	<i>Turdus unicolor</i>				
White-collared Blackbird	<i>Turdus albocinctus</i>				
Grey-winged Blackbird	<i>Turdus boulboul</i>				
Dark-throated Thrush	<i>Turdus ruficollis</i>				
Gould's Shortwing	<i>Brachypteryx stellata</i>				
Lesser Shortwing	<i>Brachypteryx leucophrys</i>				

White-browed Shortwing	<i>Brachypteryx montana</i>				
Old world flycatchers	Muscicapinae				
	Muscicapini				
Dark-sided Flycatcher	<i>Muscicapa sibirica</i>				
Ferruginous Flycatcher	<i>Muscicapa ferruginea</i>				
Slaty-backed Flycatcher	<i>Ficedula tricolor</i>				
Rufous-gorgeted Flycatcher	<i>Ficedula strophciata</i>				
White-gorgeted Flycatcher	<i>Ficedula monileger</i>				
Snowy-browed Flycatcher	<i>Ficedula strophciata</i>				
Little-pied Flycatcher	<i>Ficedula westermanni</i>				
Ultramarine Flycatcher	<i>Ficedula superciliaris</i>				
Slaty-blue Flycatcher	<i>Ficedula tricolor</i>				
Sapphire Flycatcher	<i>Ficedula sapphira</i>				
Verditer Flycatcher	<i>Eumyias thalassina</i>				
Large Niltava	<i>Niltava grandis</i>				
Small Niltava	<i>Niltava macgrigoriae</i>				
Rufous-bellied Niltava	<i>Niltava sundara</i>				
Grey-headed Canary Flycatcher	<i>Culicicapa ceylonensis</i>				
Chats	Saxicolini				
Indian Blue Robin	<i>Lucinia brunnea</i>				
Orange-flanked Bush Robin	<i>Tarsiger cyanurus</i>				

Common name	Scientific name	IUCN status	CITES	FNCR	Restr Range
Rufous-breasted Bush Robin	<i>Tarsiger hyperythrus</i>				
Golden Bush Robin	<i>Tarsiger chrysaeus</i>				
White-browed Bush Robin	<i>Tarsiger indicus</i>				
Oriental Magpie Robin	<i>Copsychus saularis</i>				
Black Redstart	<i>Phoenicurus ochruros</i>				
Hodgson's Redstart	<i>Phoenicurus hodgsoni</i>				
Blue-fronted Redstart	<i>Phoenicurus frontalis</i>				
White-capped Water Redstart	<i>Chaimarrornis leucocephalus</i>				
Plumbeous Water Redstart	<i>Rhyacornis fuliginosus</i>				
White-tailed Robin	<i>Myiomela leucura</i>				
Blue-fronted Robin	<i>Cinclidium frontale</i>				
Grandala	<i>Grandala coelicolor</i>				
Little Forktail	<i>Enicurus scouleri</i>				
Slaty-backed Forktail	<i>Enicurus schistaceus</i>				
Spotted Forktail	<i>Enicurus scouleri</i>				
Grey Bushchat	<i>Saxicola ferra</i>				
Common Stonechat	<i>Saxicola torquata</i>				

Nuthatches, wallcreepers	Sittidae				
Nuthatches	Sittinae				
Chestnut-bellied Nuthatch	<i>Sitta castanea</i>				
White-tailed Nuthatch	<i>Sitta himalayensis</i>				
Wallcreepers	<i>Tichodrominae</i>				
Wall Creeper	<i>Tichodroma muraria</i>				
Treecreepers, wrens	Certhiidae				
Treecreepers	Certhiinae				
Rusty-flanked Treecreeper	<i>Certhia nipalensis</i>				
Eurasian Treecreeper	<i>Certhia familiaris</i>				
Brown-throated Treecreeper	<i>Certhia discolor</i>				
Wrens	Troglodytinae				
Winter Wren	<i>Troglodytes troglodytes</i>				
Tits	Paridae				
	Remizinae				
Fire-capped Tit	<i>Cephalopyrus flammiceps</i>				
Tits	Parinae				
Rufous-vented Tit	<i>Parus rubidiventris</i>				
Coal Tit	<i>Parus ater</i>				
Grey-crested Tit	<i>Parus dihrous</i>				
Green-backed Tit	<i>Parus monticolus</i>				
Yellow-cheeked Tit	<i>Parus spilonotus</i>				
Yellow-browed Tit	<i>Sylviparus modestus</i>				
Long-tailed tits	Aegithalidae				

Common name	Scientific name	IUCN status	CITES	FNCR	Restr Range
Black-throated Tit	<i>Aegithalos concinus</i>				
Rufous-fronted Tit	<i>Aegithalos iouschistos</i>				
Swallows, martins	Hirundinidae				
Sand Martin	<i>Riparia riparia</i>				
Eurasian Crag Martin	<i>Hirundo rupestris</i>				
Barn Swallow	<i>Hirundo fuligula</i>				
Red-rumped Swallow	<i>Hirundo daurica</i>				
Asian House Martin	<i>Delichon dasypus</i>				
Nepal House Martin	<i>Delichon nipalensis</i>				
Goldcrests	Regulidae				
Goldcrest	<i>Regulus ruguls</i>				
Bulbuls	Pycnonotidae				
Striated Bulbul	<i>Pycnonotus striatus</i>				
Himalayan Bulbul	<i>Pycnonotus leucogenys</i>				

Red-vented Bulbul	<i>Pycnonotus cafer</i>				
Mountain Bulbul	<i>Hypsipetes mcclllandii</i>				
Black Bulbul	<i>Hypsipetes leucocephalus</i>				
Prinias	Cisticolidae				
Hill Prinia	<i>Prinia atrigularis</i>				
Striated Prinia	<i>Prinia criniger</i>				
Rufescent Prinia	<i>Prinia rufescens</i>				
Plain Prinia	<i>Prinia inornata</i>				
White-eyes	Zosteropidae				
Oriental White-Eye	<i>Zosterops palpebrosus</i>				
Warblers, laughing thrushes, babblers	Sylviidae				
Warblers	Acrocephalinae				
Chestnut-headed Tesia	<i>Tesia castaneocronata</i>				
Slaty-bellied Tesia	<i>Tesia olivea</i>				
Grey-bellied Tesia	<i>Tesia cyaniventer</i>				
Brownish-flanked Bush Warbler	<i>Cettia forticeps</i>				
Chestnut-crowned Bush Warbler	<i>Cettia major</i>				
Aberrant Bush Warbler	<i>Cettia flavolivacea</i>				
Yellowish-bellied Bush Warbler	<i>Cettia acanthizoides</i>				
Grey-sided Bush Warbler	<i>Cettia brunnifrons</i>				
Spotted Bush Warbler	<i>Bradypterus thoracicus</i>				
Russet Bush Warbler	<i>Bradypterus seebohmi</i>				
Mountain Tailorbird	<i>Orthotomus cuculatus</i>				
Common Tailorbird	<i>Orthotomus sutorius</i>				
Smoky Warbler	<i>Phylloscopus fulgiventis</i>				
Tickell's Leaf Warbler	<i>Phylloscopus affinis</i>				
Buff-barred Warbler	<i>Phylloscopus pulcher</i>				

Common name	Scientific name	IUCN status	CITES	FNCR	Restr Range
Ashy-throated Warbler	<i>Phylloscopus maculipennis</i>				
Lemon-rumped Warbler	<i>Phylloscopu schloronotus</i>				
Hume's Warbler	<i>Phylloscopus humei</i>				
Greenish Warbler	<i>Phylloscopus trochiloides</i>				
Large-billed Leaf Warbler	<i>Phylloscopus magnirostris</i>				
Blyth's Leaf Warbler	<i>Phylloscopus reguloides</i>				
Yellow-vented Warbler	<i>Phylloscopus cantator</i>				RR
Golden-spectacled Warbler	<i>Seicercus burkii</i>				
Whistler's Warbler	<i>Seicercus whistleri</i>				
Grey-hooded Warbler	<i>Seicercus xanthoschistos</i>				
White-spectacled Warbler	<i>Seicercus affinis</i>				

Grey-cheeked Warbler	<i>Seicercus poliogenys</i>				
Chestnut-crowned Warbler	<i>Seicercus castaniceps</i>				
Broad-billed Warbler	<i>Tickellia hodgsoni</i>				RR
Black-faced Warbler	<i>Abroscopus schisticeps</i>				
Laughing thrushes	Garrulacinae				
White-throated Laughingthrush	<i>Garrulax albogularis</i>				
White-crested Laughingthrush	<i>Garrulax leucolophus</i>				
Striated Laughingthrush	<i>Garrulax striatus</i>				
Rufous-chinned Laughingthrush	<i>Garrulax rufogularis</i>				
Spotted Laughingthrush	<i>Garrulax ocellatus</i>				
Grey-sided Laughingthrush	<i>Garrulax caerulatus</i>				
Streaked Laughingthrush	<i>Garrulax lineatus</i>				
Blue-winged Laughingthrush	<i>Garrulax squamatus</i>				
Scaly Laughingthrush	<i>Garrulax subunicolor</i>				
Black-faced Laughingthrush	<i>Garrulax affinis</i>				
Chestnut-crowned Laughingthrush	<i>Garrulax erythrocephalus</i>				
Babblers	Sylviinae				
	Timaliini				
Rusty-cheeked Scimitar Babbler	<i>Pomatorhinus erythrogegens</i>				
Streak-breasted Scimitar Babbler	<i>Pomatorhinus ruficollis</i>				
Coral-billed Scimitar Babbler	<i>Pomatorhinus ruficollis</i>				
White-browed Scimitar Babbler	<i>Pomatorhinus schisticeps</i>				
Slender-billed Scimitar Babbler	<i>Xiphirhynchus superciliaris</i>				
Scaly-breasted Wren Babbler	<i>Pnoepyga albiventer</i>				
Pygmy Wren Babbler	<i>Pnoepyga pusilla</i>				
Bar-winged Wren Babbler	<i>Spelaeornis troglodytoides</i>				
Spotted Wren Babbler	<i>Spelaeornis formosus</i>				
Rufous-fronted Babbler	<i>Stachyris rufifrons</i>				
Rufous-capped Babbler	<i>Stachyris ruficeps</i>				
Golden Babbler	<i>Stachyris chrysaea</i>				

Common name	Scientific name	IUCN status	CITES	FNCR	Restr Range
Grey-throated Babbler	<i>Stachyris nigriceps</i>				
Red-billed Leiothrix	<i>Leiothrix lutea</i>		Sch-II		
White-browed Shrike Babbler	<i>Pteruthius flaviscapis</i>				
Green Shrike Babbler	<i>Pteruthius xanthochlorus</i>				
Black-eared Shrike Babbler	<i>Pteruthius melanotis</i>				
Black-headed Shrike Babbler	<i>Pteruthius rufiventer</i>				
Cutia	<i>Cutia nipalensis</i>				
Hoary-throated Barwing	<i>Actinodura nipalensis</i>				RR

Rusty-fronted Barwing	<i>Actinodura egertoni</i>				
Blue-winged Minla	<i>Minla cyanouroptera</i>				
Chestnut-tailed Minla	<i>Minla strigula</i>				
Red-tailed Minla	<i>Minla ignotincta</i>				
Golden-breasted Fulvetta	<i>Alcippe chrysotis</i>				
Yellow-throated Fulvetta	<i>Alcippe cinerea</i>				
Rufous-winged Fulvetta	<i>Alcippe castaneiceps</i>				
White-browed Fulvetta	<i>Alcippe vinipectus</i>				
Brown-throated Fulvetta	<i>Alcipp ludlowi</i>				RR
Nepal Fulvetta	<i>Alcippe nipalensis</i>				
Striated Yuhina	<i>Yuhina castaniceps</i>				
Whiskered Yuhina	<i>Yuhina flavicollis</i>				
Stripe-throated Yuhina	<i>Yuhina gularis</i>				
Rufous-vented Yuhina	<i>Yuhina occipitalis</i>				
Black-chinned Yuhina	<i>Yuhina nigrimenta</i>				
White-bellied Yuhina	<i>Yuhina zantholeuca</i>				
Fire-tailed Myzornis	<i>Myzornis pyrrhoura</i>				
Rufous Siberia	<i>Heterophasia gracilis</i>				
Fulvous Parrotbill	<i>Paradoxornis fulvifrons</i>				
Brown Parrotbill	<i>Paradoxornis unicolor</i>				
Black-throated Parrotbill	<i>Paradoxornis nipalensis</i>				
Larks	Alaudidae				
Oriental Sky Lark	<i>Alauda gulgula</i>				
Flowerpeckers, sunbirds, spiderhunters	Nectariniidae				
Flowerpeckers, sunbirds, spiderhunters	Nectariniinae				
Flowerpeckers	Dicaeini				
Fire-breasted Flowerpecker	<i>Dicaeum ignipectus</i>				
Sunbirds, spiderhunters	Nectariniini				
Mrs Gould's Sunbird	<i>Aethopyga gouldiae</i>				
Green-tailed Sunbird	<i>Aethopyga nipalensis</i>				
Black-throated Sunbird	<i>Aethopyga saturata</i>				
Fire-tailed Sunbird	<i>Aethopyga ignicauda</i>				
Crimson Sunbird	<i>Aethopyga siparaja</i>				

Common name	Scientific name	IUCN status	CITES	FNCR	Restr Range
Streaked Spiderhunter	<i>Arachnothera magna</i>				
Sparrows	Passeridae				
Sparrows	Passerinae				
Russet Sparrow	<i>Passer rutilans</i>				
Eurasian Tree Sparrow	<i>Passer montanus</i>				

Wagtails, pipits	Motacillinae				
White Wagtail	<i>Motacilla alba</i>				
White-browed Wagtail	<i>Motacilla maderaspatensis</i>				
Citrine Wagtail	<i>Motacilla citreola</i>				
Yellow Wagtail	<i>Motacilla flava</i>				
Grey Wagtail	<i>Motacilla cinerea</i>				
Olive-backed Pipit	<i>Anthus hodgsoni</i>				
Rosy Pipit	<i>Anthus roseatus</i>				
Accentors	Prunellinae				
Alpine Accentor	<i>Prunella collaris</i>				
Altai Accentor	<i>Prunella himalayana</i>				
Rufous-breasted Accentor	<i>Prunella strophiata</i>				
Maroon-backed Accentor	<i>Prunella immaculata</i>				
Estrildine finches	Estrildinae				
White-rumped Munia	<i>Lonchura striata</i>				
Scaly-breasted Munia	<i>Lonchura punctulata</i>				
Finches, buntings	Fringillidae				
Finches	Fringillinae				
	Carduelini				
Yellow-breasted Greenfinch	<i>Carduelis spinoides</i>				
Tibetan Siskin	<i>Carduelis thibetana</i>				
Plain Mountain Finch	<i>Leucosticte nemoricola</i>				
Dark-breasted Rosefinch	<i>Carpodacus nipalensis</i>				
Dark-rumped Rosefinch	<i>Carpodacus edwardsii</i>				
Beautiful Rosefinch	<i>Carpodacus pulcherimus</i>				
Common Rosefinch	<i>Carpodacus erythrinus</i>				
White-browed Rosefinch	<i>Carpodacus thura</i>				
Red-fronted Rosefinch	<i>Carpodacus puniceus</i>				
Streaked Rosefinch	<i>Carpodacus rubicilloides</i>				
Crimson-browed Finch	<i>Pyrrhula subhimachala</i>				
Scarlet Finch	<i>Haematospiza sipahi</i>				
Brown Bullfinch	<i>Pyrrhula nipalensis</i>				
Red-headed Bullfinch	<i>Pyrrhula erythrocephala</i>				
Grey-headed Bullfinch	<i>Pyrrhula erythrocephala</i>				
Collared Grossbeak	<i>Mycerobas affinis</i>				
Spot-winged Grossbeak	<i>Mycerobas melanozanthos</i>				
Common name	Scientific name	IUCN status	CITES	FNCR	Restr Range
White-winged Grossbeak	<i>Mycerobas carnipes</i>				
Gold-naped Finch	<i>Pyrrhoplectes epauletta</i>				
Buntings	Emberizinae				

Crested Bunting	<i>Melophaus lathami</i>				
Little Bunting	<i>Emberiza pusilla</i>				
Grebe	Podicipediformes				
Great Crested Grebe	<i>Podiceps cristatus</i>	LC			

Appendix 5: Checklist of butterflies of BWS

Common name	Scientific name	Remarks/ other names
SWALLOWTAILS (& Apollos)	PAPILIONIDAE	
Common Redbreast	<i>Papilio alcmenor</i>	Redbreast
Blue Peacock	<i>Papilio arcturus</i>	
Brown Gorgon	<i>Meandrusa sciron</i>	
Common Blue Apollo	<i>Parnassius hardwickii</i>	
Common Mime	<i>Chilasa clytia</i>	
Common Mormon	<i>Papilio polytes</i>	
Common Peacock	<i>Papilio polyctor</i>	
Common Windmill	<i>Atrophaneura polyeuctes</i>	
Five-bar Swordtail	<i>Graphium antiphates</i>	
Glassy Bluebottle	<i>Graphium cloanthus</i>	
Golden Birdwing	<i>Troides aeacus</i>	
Krishna Peacock	<i>Papilio krishna</i>	
Lime Swallowtail	<i>Papilio demoleus</i>	
Ludlow's Bhutan Glory	<i>Bhutanitis ludlowi</i>	Ludlow's Swallowtail - VU (IUCN)
Paris Peacock	<i>Papilio paris</i>	
Red Helen	<i>Papilio helenus</i>	
Six-bar Swordtail	<i>Graphium eurous</i>	
Spangle	<i>Papilio protenor</i>	
Spectacled Swordtail	<i>Graphium glycerion</i>	
Tailed Jay	<i>Graphium agamemnon</i>	
Tailed Redbreast	<i>Papilio bootes</i>	
Tawny Mime	<i>Chilasa agestor</i>	
WHITES (and Yellows)	PIERIDAE	
Chocolate Albatross	<i>Appias lyncida</i>	

Common Grass Yellow	<i>Eurema hecabe</i>	
Dark Clouded Yellow	<i>Colias fieldii</i>	
Dark Jezebel	<i>Delias berinda</i>	
Great Blackvein	<i>Aporia agathon</i>	
Great Orangetip	<i>Hebomoia glaucippe</i>	
Green-veined White	<i>Pieris napi</i>	
Hill Jezebel	<i>Delias belladonna</i>	
Indian Cabbage White	<i>Pieris canidia</i>	
Large Cabbage White	<i>Pieris brassicae</i>	
Mottled Emigrant	<i>Catopsilia pyranthe</i>	
Pale Clouded Yellow	<i>Colias erate</i>	
Pale Jezebel	<i>Delias sanaca</i>	
Plain Sulphur	<i>Dercas lycorias</i>	
Small Grass Yellow	<i>Eurema brigitta</i>	

Common name	Scientific name	Remarks/ other names
Some white – SE China	<i>Pieris extensa</i>	
Spot Puffin	<i>Appias lalage</i>	
Spotless Grass Yellow	<i>Eurema laeta</i>	
Tailed Sulphur	<i>Dercas verhuelli</i>	
Three-Spot Grass Yellow	<i>Eurema blanda</i>	
Yellow Orangetip	<i>Ixias pyrene</i>	
BLUES	LYCAENIDAE	
Albocerulean	<i>Udara albocaerulea</i>	
Assam Silver Hairstreak	<i>Chrysozephyrus assamicus</i>	
Azure Sapphire	<i>Heliophorus moorei</i>	(Green Sapphire = different ssp.)
Bhutan Silver Hairstreak	<i>Chrysozephyrus bhutanensis</i>	
Bi-spot Royal	<i>Ancema ctesia</i>	
Blue Tit	<i>Chliaria kina</i>	
Bright Sunbeam	<i>Curetis bulis</i>	
Cerulean Hairstreak	<i>Neozephyrus suroia</i>	
Chapman's Cupid	<i>Everes argiades</i>	

Chocolate Royal	<i>Remelana jangala</i>	
Common Copper	<i>Lycaena phlaeas</i>	
Common Flash	<i>Rapala nissa</i>	
Common Gem	<i>Poritia hewitsoni</i>	
Common Hedge Blue	<i>Acytolepis puspa</i>	
Common Lineblue	<i>Prosotas nora</i>	
Common Pierrot	<i>Castalius rosimon</i>	
Common Tit	<i>Hypolycaena erylus</i>	
Dark Cerulean	<i>Jamides bochus</i>	
Dark Himalayan Oakblue	<i>Arhopala rama</i>	
Dingy Lineblue	<i>Petrelaea dana</i>	
Dusky Bushblue	<i>Arhopala paraganesa</i>	
Golden Sapphire	<i>Heliophorus brahma</i>	
Gram Blue	<i>Euchrysops cnejus</i>	
Hill Hedge Blue	<i>Celastrina argiolus</i>	
Indian Cupid	<i>Everes lacturnus</i>	
Large Hedge Blue	<i>Celastrina huegelii</i>	
Margined Hedge Blue	<i>Celatoxia marginata</i>	
Metallic Cerulean	<i>Jamides alecto</i>	
Pale Grass Blue	<i>Pseudozizeera maha</i>	
Pale Hedge Blue	<i>Udara dilecta</i>	Celastrinadilectus (P.Yonzon)
Pea Blue	<i>Lampides boeticus</i>	
Plain Hedge Blue	<i>Celastrina lavendularis</i>	
Powdery Green Sapphire	<i>Heliophorus tamu</i>	

Common name	Scientific name	Remarks/ other names
Purple Sapphire	<i>Heliophorus epicles</i>	
Scarce White Royal	<i>Tajuria illurgoides</i>	
Shot Flash	<i>Rapala reactivata</i>	
Spotted Royal	<i>Tajuria maculata</i>	
Tailless Bushblue	<i>Arhopala ganesa</i>	
Yellow Owl	<i>Neorina hilda</i>	
Zebra Blue	<i>Leptotes plinius</i>	
Punches and Judies	Lycanidae - Riordininae	
Dark Judy	<i>Abisara fylla</i>	
Lesser Punch	<i>Dodona dipoea</i>	

Mixed Punch	<i>Dodona ouida</i>	
Orange Punch	<i>Dodona egeon</i>	
Striped Punch	<i>Dodona adonira</i>	
Tailed Punch	<i>Dodona eugenes</i>	
NYMPHALIDS	NYMPHLIDAE	
Beaks	Nymphalidae Libytheinae	-
Common Beak	<i>Libythea lepita</i>	
Boring Browns, Satyrs, etc.	Nymphalidae - Satyrinae	
Banded Treebrown	<i>Lethe confusa</i>	
Blue Forester	<i>Lethe scanda</i>	
Blue-streaked Palmfly	<i>Elymnias patna</i>	Blue-striped Palmfly
Common Evening Brown	<i>Melanitis leda</i>	
Common Fivering	<i>Ypthima baldus</i>	
Common Forester	<i>Lethe insane</i>	
Common Palmfly	<i>Elymnias hypermnestra</i>	
Common Satyr	<i>Aulocera swaha</i>	
Common Treebrown	<i>Lethe rhoria</i>	
Common Woodbrown	<i>Lethe sidonis</i>	
Confusing Threering	<i>Ypthima confusa</i>	
Dusky Labyrinth	<i>Neope yama</i>	
Great Satyr	<i>Aulocera padma</i>	
Himalayan Fivering	<i>Ypthima sakra</i>	
Himalayan Fourring	<i>Ypthima parasakra</i>	
Large Goldenfork	<i>Lethe goalpara</i>	
Large Tawny Wall	<i>Rhaphicera satricus</i>	
Large Threering	<i>Ypthima nareda</i>	
Moore's Bushbrown	<i>Mycalesis heri</i>	

Lilacfork	<i>Lethe sura</i>	
Pallid Argus	<i>Callerebia scanda</i>	
Scarce Labyrinth	<i>Neope pulahina</i>	
Straight-banded Treebrown	<i>Lethe verma</i>	

Common name	Scientific name	Remarks/ other names
Striated Satyr	<i>Aulocera saraswatti</i>	
Tailed Red Forester	<i>Lethe sinorix</i>	
Wood Mason's Bushbrown	<i>Mycalesis suavolens</i>	
Yellow Kaiser	<i>Penthema lisarda</i>	
Yellow Woodbrown	<i>Lethe nicetas</i>	
Tigers and crows, & costers	Nymphalidae - Danainae	
Chestnut Tiger	<i>Parantica sita</i>	
Chocolate Tiger	<i>Parantica melaneus</i>	
Common Tiger	<i>Danaus genutia</i>	Striped Tiger
Dark Blue Tiger	<i>Tirumala septentrionis</i>	
Glassy Tiger	<i>Parantica aglea</i>	
Striped Blue Crow	<i>Euploea mulciber</i>	
Talbots Chestnut Tiger	<i>Parantica pedonga</i>	
Fritillaries, pansies, sailers, etc	Nymphalidae - others	
Autumn Leaf	<i>Doleschallia bisaltide</i>	
Bhutan Sergeant	<i>Athyma jina</i>	
Bicolour Commodore	<i>Parasarpa zayla</i>	
Black Prince	<i>Rohana parisatis</i>	
Blue Admiral	<i>Kaniska canace</i>	
Blue Oakleaf	<i>Kallima horsfieldi</i>	
Blue Pansy	<i>Junonia orithya</i>	
Bluetail Jester	<i>Symbrenthia niphanda</i>	
Broad-banded Sailer	<i>Neptis sankara</i>	
Chinese Nawab	<i>Polyura narcaea</i>	
Chocolate Soldier	<i>Junonia iphita</i>	
Circe	<i>Hestina nama</i>	
Commander	<i>Moduza procris</i>	
Common Commodore	<i>Auzakia danava</i>	
Common Jester	<i>Symbrenthia lilaea</i>	
Common Lascar	<i>Pantoporia hordonia</i>	
Common Leopard	<i>Phalanta phalantha</i>	
Common Map	<i>Cyrestis thyodamas</i>	
Common Nawab	<i>Polyura athamas</i>	

Common Sailer	<i>Neptis hylas</i>	
Common Sergeant	<i>Athyma perius</i>	
Common Yeoman	<i>Cirrochroa tyche</i>	
Creamy Sailer	<i>Neptis soma</i>	Sullied Sailer
Eastern Comma	<i>Polygonia egea</i>	
Eastern Courtier	<i>Sephisia chandra</i>	
Golden Emperor	<i>Dilipa morgiana</i>	
Great Nawab	<i>Polyura eudamippus</i>	
Green Commodore	<i>Sumalia daraxa</i>	

Common name	Scientific name	Remarks/ other names
Green Duke	<i>Euthalia sahadewa</i>	
Himalayan Jester	<i>Symbrenthia brabira</i>	
Himalayan Sergeant	<i>Athyma opalina</i>	
Indian Fritillary	<i>Argyreus hyperbius</i>	
Indian Purple Emperor	<i>Apatura ambica</i>	
Indian Red Admiral	<i>Vanessa indica</i>	
Indian Tortoiseshell	<i>Aglais cashmirensis</i>	
Large Silverstripe	<i>Childrena childreni</i>	
Large Yeoman	<i>Cirrochroa aoris</i>	
Orange Staff Sergeant	<i>Athyma cama</i>	
Painted Lady	<i>Vanessa cardui</i>	
Pale Hockeystick Sailer	<i>Neptis manasa</i>	
Pallas' Sailer	<i>Neptis sappho</i>	
Popinjay	<i>Stibochiona nicea</i>	
Queen of Spain Fritillary	<i>Issoria lathonia</i>	
Red Lacewing	<i>Cethosia biblis</i>	
Scarce Blue Oakleaf	<i>Kallima alompra</i>	
Spotted Jester	<i>Symbrenthia hypselis</i>	Himalayan Jester
Staff Sergeant	<i>Athyma selenophora</i>	
Stately Nawab	<i>Polyura dolon</i>	
Tabby	<i>Pseudergolis wedah</i>	
Vagrant	<i>Vagrans egista</i>	
White Commodore	<i>Parasarpa dudu</i>	
Yellow Coster	<i>Acraea issoria</i>	
Yellow Pansy	<i>Junonia hierta</i>	
SKIPPERS	HESPERIIDAE	
Bevan's Swift	<i>Pseudoborbo bevani</i>	
Brown Bush Bob	<i>Pedesta pandita</i>	
Ceylon Swift	<i>Paranara bada</i>	
Chestnut Angle	<i>Odontoptilum angulata</i>	

Chocolate Demon	<i>Ancistroides nigrita</i>	
Common Banded Awl	<i>Hasora chromus</i>	
Common Spotted Flat	<i>Celaenorrhinus leucocera</i>	
Dusky Yellowbreast Flat	<i>Gerosis phisara</i>	
Grass Demon	<i>Udaspes folus</i>	
Himalayan Grass Dart	<i>Taractrocera danna</i>	
Japanese Awlking	<i>Choaspes benjaminii</i>	
Large Branded Swift	<i>Pelopidas subochracea</i>	
Lucas Ace	<i>Sovia lucasii</i>	
Orange Awl	<i>Burara jaina</i>	Orange Awlet
Plain Banded Awl	<i>Hasora vitta</i>	
Restricted Demon	<i>Notocrypta curvifascia</i>	
Common name	Scientific name	Remarks/ other names
Spotted Demon	<i>Notocrypta feisthamelii</i>	
Straight Swift	<i>Parnara guttatus</i>	
Veined Scrubhopper	<i>Aeromachus stigmatus</i>	
Water Snow Flat	<i>Tagiades litigiosa</i>	
White Yellow-breasted Flat	<i>Gerosis sinica</i>	
Yellow-spot Swift	<i>Polytremis eltola</i>	

Appendix 6: Checklist of Snakes and Lizards of BWS

SNAKES

Common name	Scientific name	source	Remarks and name in JWT '09
(Boulenger striped keelback)	<i>Amphiesma sieboldii</i>	JTW'11	Dungzam; Amphiesmaparallelum
(? Keelback)	<i>Amphiesma spp.</i>	JTW'11	blw Cheng; Cf. Amphiesma spp
Green cat snake	<i>Boiga cyanea</i>	JTW'11	abv Yarab;
Many-banded cat snake	<i>Boiga multifasciata</i>	JTW'11	ChK, PRO-Khoma;
Branded krait	<i>Bungarus fasciatus</i>	JTW'11,'09	not described in JTW'11; Khoma vlg
(False wolf snake)	<i>Dinodon septentrionalis</i>	JTW'11	Trammer blwD'zam; Cf. <i>Dinodon spp</i>
(Bridal snake)	<i>Dryocalamus cf. davisonii</i>	JTW'11	Trammer, Betsamang; Cf. <i>Dryocalamus</i>
White-barred kukri snake	<i>Oligodon albocinctus</i>	JTW'11	BWS-HQ;
(suspected Russel's kukri snake)	<i>Oligodon spp.</i>	JTW'11	HQ, Tshaling; Oligodontaeniolatus

Banded trinket snake	<i>Oreocryptophis porphyraceus porphyraceus</i>	JTW'11,'12	HQ; Elaphe porphyracea / O. porphyracea ('11)
Eastern trinket snake	<i>Orthriophis cantoris</i>	JTW'11,'12	Pangtala Mg, Jabgang Shz; abv Yarab
Striped trinket snake	<i>Orthriophis taeniurus yunnanensis</i>	JTW'11,'12	PRO Khoma;
Mountain pit viper	<i>Ovophis monticola</i>	JTW'11	Ch.Kora;
Jerdon's pit viper	<i>Protobothrops jerdonii</i>	JTW'11	Baregang, Phanteng;
False cobra	<i>Pseudoxenodon macrops</i>	JTW'11	BumdlngSisikang;
Green rat snake	<i>Ptyas nigromarginatus</i>	JTW'11	Bumdeling; Ptyasnigromarginata
Collared blackheaded snake	<i>Sibynophis collaris</i>	JTW'11	ChKora, Beychen;
(Slender snake)	<i>Trachischium spp.</i>	JTW'11	HQ; Trachischium spp- 1

Names in bracket from JWT'09, before reclassification, probably wrong

LIZARDS

Common name	Scientific name	source	remarks
Blood sucker	<i>Calotes versicolor</i>	JTW ,,11	Agamidae, Khoma (same in 2009)
Variiegated Mountain Lizard	<i>Japalura variegata</i>	JTW ,,11	Agamidae, BWS-HQ (same in 2009)
Jerdon's Forest Lizard	<i>Calotes jerdoni</i>	JTW ,,11	Agamidae, Khoma 1200m (same 2009)
	<i>Sphenomorphus spp.</i>	JTW ,,11	Scincidae, Khoma lower school



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