

"Agreed"

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Tajikistan

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" " 2024

Management plan of Tajik National Park for 2025-2029

State Agency of Natural Protected Areas of the Committee for Environment
Protection under the Government of the Republic of Tajikistan



State Institution of Specially Protected Natural Areas

*Prepared by the public organization "Tabiati Yoboi"
within the framework of the "Tajikistan Resilient
Landscape Restoration Project (P171524)" financed by
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ABBREVIATIONS

CEP	Committee for Environmental Protection under the Government of the Republic of Tajikistan
AFUGRT	Agency of Forestry under the Government of the Republic of Tajikistan
ALRI	Agency for Land Reclamation and Irrigation under the Government of the Republic of Tajikistan
CEP	Committee for Environmental Protection under the Government of the Republic of Tajikistan
DF	Dekhkan farms
GBAO	Gorno-Badakhshan Autonomous Oblast
IFN	Inter-farm network
IO	International organizations
IUCN	International Union for Conservation of Nature
KDN	Collector-drainage network
MoA	Ministry of Agriculture of the Republic of Tajikistan
MP	Management Plan
NAST	National Academy of Sciences of Tajikistan
OO	Public organization
RIF	Research Institute of Forestry of the Agency Forestry under Government of the Republic of Tajikistan
RO	Representative lake
RT	Republic of Tajikistan
SCLMG RT	State Committee for Land Management and Geodesy of the Republic of Tajikistan
SISPNA	State Institution of Specially Protected Natural Areas
SNR “Zorkul”	State Nature Reserve “Zorkul”
SPNA	Specially Protected Natural Areas
SWMD	State water management department
TNP	Tajik National Park
TJS	Tajik Somoni (currency)
TRLRP	Tajikistan Resilient Landscape Restoration Project
UNESCO	United Nations Educational, Scientific and Cultural Organization
WMS	Water metering structures
WUA	Water Users Associations

INTRODUCTION

The present medium-term Management Plan for the Tajik National Park (TNP) for 2025-2029 was developed by experts from the Public Organization "Tabiati Yoboi" in collaboration with staff from the State Institution for Specially Protected Natural Areas (SISPNA) under the Committee for Environmental Protection of the Government of the Republic of Tajikistan (CEP) and the National Academy of Sciences of Tajikistan (NAST). The development process utilized the "Guidelines for Developing Management Plans for Specially Protected Natural Areas," published as part of the "Tajikistan Resilient Landscapes Restoration Project (TRLRP) (P171524)," funded by the World Bank under the "RESILAND CA+" Program.

The goal of the TNP Management Plan is to improve state governance and planning in the organization and operation of TNP activities in accordance with the Law of the Republic of Tajikistan "On Specially Protected Natural Areas" from December 26, 2011. The plan also considers Tajikistan's international commitments to biodiversity conservation and other international documents.

The Management Plan is intended to play a vital role in informing the public about TNP activities and promoting ecological awareness among the population in the TNP area. Its primary task is to foster respect for nature, creating a sense of personal responsibility for the state of the environment. The foundation for the development of the Management Plan was existing information about TNP resources, an analysis of its practical activities, and a review of existing issues in its operations. The initial data for the work included specially conducted studies, archival materials, and research. An important aspect of this work was interaction with local communities, regional government authorities, local self-governance bodies, landowners and land users, scientific institutions, and non-governmental environmental organizations. Working meetings were held, involving representatives of interested organizations and the local population, where the main directions and opportunities for the further development of TNP were identified and consensus was reached on the discussed issues.

The list of participants in the working group for the development of the TNP Management Plan is provided in *Annex 1*.

CHAPTER 1. GENERAL INFORMATION ABOUT THE TAJIK NATIONAL PARK (TNP)

1.1. Status and Features of TNP Organization

- **Name of the protected area:** Tajik National Park.
- **Managing Authority:** State Institution for Specially Protected Natural Areas under the Committee for Environmental Protection of the Government of the Republic of Tajikistan.
- **National Category:** National Park.
- **IUCN Category:** II.
- **Management Plan Preparation Date:** May 2024.
- **Management Plan Period (5 years):** 2025-2029.

Purpose and Objectives of TNP

The National Park was established with the purpose of preserving the unique landscapes of the Pamirs, the diversity of rare and endangered species of flora and fauna, historical, cultural, and natural monuments, promoting tourism, ensuring the sustainable use of natural resources, and improving the standard of living for the population residing in the TNP zone.

Location of the Main Office:

Republic of Tajikistan, Dushanbe, Druzhba Narodov St. 62, Postal Code 734025,
Phone: +(992 37) 222 14 67; 222 07 97,
Email: tajikpark@yahoo.com

Date of Establishment:

The Tajik National Park (TNP) was established by a decree of the Cabinet of Ministers on June 20, 1992, covering an area of 1.2 million hectares. In 2002, the Government of the Republic of Tajikistan increased the park's area to 2.6 million hectares, and the park's regulation was also approved that year. Thus, TNP is the largest protected natural area in the Republic (and in Central Asia as a whole); its area of 2.6 million hectares constitutes 18% of the total area of Tajikistan, and 60% of the territory of the Gorno-Badakhshan Autonomous Region (GBAO).

Area:

The total area of TNP is 2,611,674 hectares.

The park's area includes the following territories:

- Sangvor District – 306,613 hectares
- Lakhsh District – 69,912 hectares
- GBAO – 2,235,000 hectares, including four districts:
 - o Murghab District – 1,487,000 hectares
 - o Shugnan District – 128,000 hectares
 - o Rushan District – 350,000 hectares
 - o Vanj District – 270,000 hectares

Description of General Borders of TNP

In the north the border of TNP coincides with the state border of the Republic of Tajikistan with the Republic of Kyrgyzstan until Altyn-Mazar. To the west it follows the mountain range along the left-bank of Muksu river until the peaks of Severtsov and Pulisangin in the Lakhsh district. (Annex 2). In the west the border coincides with the borders of "Sangvor" Natural Reserve (*zakaznik*) which belongs to Tavilidara Forestry Enterprise. From here it runs up to 3059 m up to Pieda, Viskharv, Kurgovad mounting passes until Pshikharv settlement of Vanj district. In the southeast borders follow the valleys of Vanj and Yazgulom rivers whose territory belongs to Vanj Forestry Enterprise

and to agricultural enterprises of Vanj district. The southern border of TNP passes the Bartang gorge upwards to Barjadiv village, from here it runs to Patkhor peak in Shugnan district and from there to Yashilkul Lake. Along its eastern border, it runs north of Northern Alichur range, then the border crosses Pshart range and Pshart valley, from there via Akbaytal mountain to the east shore of Karakul Lake, it continues then to Markansu mountain valley and from there to the Kyzyl-Art Mountain pass at the state border of Tajikistan with Kyrgyzstan (*Annex 2*).

1.2. Zones of the Tajik National Park (TNP)

General Characteristics of TNP Functional Zones

The territory of TNP has been divided into the following functional zones, in accordance with the zoning conducted based on the Law of the Republic of Tajikistan "On Specially Protected Natural Areas and Objects" and the procedures of the International Union for Conservation of Nature (IUCN). This zoning was conducted by specialists from the Public Organization "Tabiati yoboi," the State Institution for Specially Protected Natural Areas (SI-SPNA), with the participation of scientists from the National Academy of Sciences of Tajikistan, and representatives of local authorities (*Annex 3*):

- Core zone
- Traditional nature use zone
- Limited economic use zone
- Recreational use zone

Below are the characteristics and features of each zone:

Core Zone

This zone occupies an area of 1,226,500 hectares, or 47% of the total area of TNP (*Annex 3*). It includes several unique natural sites. Among them is the Fedchenko Glacier, one of the largest in the world, stretching 77 kilometers and with ice thickness over 1,000 meters. The core zone serves as the main reservoir of freshwater frozen in ice, feeding rivers across the entire Central Asian region, which supports over 55 million people. Additionally, the presence of some of the highest mountain peaks in these ecosystems makes this zone particularly valuable for science. The largest high-altitude lake, Karakul, located at an altitude of 3,914 meters above sea level, is rich in flora and fauna and hosts many endemic species.

The relative abundance of plant life, which serves as pasture for wild ungulates, further enhances the value of this zone. It is home to the Pamir Mountain sheep (Marco Polo sheep), Siberian (mountain) ibex, snow leopard, Tian Shan brown bear, as well as rare and valuable bird species such as the bar-headed goose, brown-headed gull, and Tibetan and Himalayan snowcocks.

The core zone of the TNP is particularly valuable due to the presence of wild relatives of cereal and woody-shrub plants. It contains centers of origin for several important crops that exhibit rich genetic diversity, including ancestors of cultivated plants and wild relatives that have adapted to local conditions, as well as ancient varieties and those developed through traditional breeding.

The Western Pamir (Badakhshan zone), specifically the TNP territory, stands out for its maximum variety of soft and dwarf wheat. It ranks first globally in the total number of botanical varieties of the genus *Triticum L.* - 151 out of 273 (*Annex 3*). The diversity of unique and endemic local ancient wheat varieties, compact dwarf wheat forms, and their wild relatives in this region is unparalleled worldwide.

In the Bartang River basin, new, previously unknown botanical varieties of glume-free soft wheat were discovered, including: *Triticum aestivum* L. var. *japschorvi* Nigm., var. *ruchczianum* Nigm., var. *meridionale inflatum* Nigm. var. *nova.*, var. *quasimeridionale-inflatum* Nigm. var. *nova.*, var. *quasiheraticum* Nigm. var. *nova.* Additionally, varieties of glume-free dwarf wheat, such as var. *sarezicum* Nigm., var. *Bar-Darai* Nigm., and a spring form of dwarf wheat (*Tr. compactum* Host. var. *Humboldti-inflatum* Vav. et Kob.), were also identified (Annex 4).

The Sangvor section of the Tajik National Park is particularly rich in the diversity of wild fruit and berry plants (Annex 5). According to scientists, the following species are found in this area: Sivers' apple (*Malus sieversii*), Tajik pear (*Purus tadjikistanica*), Bukhara pear (*Purus bucharica*), walnut (*Juglans regia*), Tajik cherry (*Cerasus tadjikistanica*), warty cherry (*Cerasus verrucosa*), domestic plum (*Prunus domestica*), Darvaz plum (*Prunus darvasika*), Bukhara almond (*Amugdalus bucharica*), Vavilov almond (*Amugdalus vavilovii*), Pontic hawthorn (*Crataegus pontica*), Turkestan hawthorn (*Crataegus turkestanica*), Songor hawthorn (*Crataegus songorica*), Hissar hawthorn (*Crataegus hissarica*), and multi-cluster barberry (*Berberis hetrobotrus*).

This botanical richness contributes to the high conservation value of the Sangvor section and highlights the importance of protecting these genetic resources.

Traditional Nature Use Zone

This zone primarily consists of pastures used (particularly high-altitude pastures in the summer) by local shepherds, who may reside within or outside the park. This area is used only by nomadic shepherds, generally for grazing small livestock and yaks during the summer, while in winter, only yaks are grazed.

Limited natural resource use is permitted in this zone under the supervision of TNP employees, provided it does not violate the established regime for the core zone. On land-use maps, this area is designated as pastureland.

Limited Economic Use Zone

This zone includes Lake Yashilkul and surrounding pastures traditionally used by the local population. It also encompasses the area south of Lake Karakul, designated for hunting tourism, the populated area of the Bartang River Valley, and the transport highway leading to the state border with Kyrgyzstan and China at the eastern edge of the park. This zone is proposed as a buffer zone due to its intensive use by the local population for grazing livestock, especially in summer, and for harvesting teresken for fuel. In some years, trophy hunting of Marco Polo sheep and ibex is conducted here.

Recreational Use Zone

This zone allows limited recreation and tourism, as well as the placement of auxiliary facilities. It includes areas around the settlements of Karakul and Bulunkul and the adjacent roads. This zone is marked on the map with the existing road networks and settlements.

The main recreational resources of TNP include mountaineering routes, hunting grounds, natural landscapes, caves, and, primarily, mineral springs with thermal and cold, carbonated, and silicon-rich waters.

A zone for intensive tourist services may be established at a later stage, depending on the results of tourism and recreation planning within TNP.

Transit and Ecological Corridors within and outside TNP

These corridors are created to facilitate animal migration and maintain the viability of their

populations. They are designated in traditional migratory routes used by ungulates moving between winter and summer pastures and back.

Land Classification of the TNP Territory

According to the Decree of the Government of the Republic of Tajikistan No. 253 dated June 11, 2001, the total area of 2,611,674 ha is allocated to Tajik National Park (Table 1).

Table 1.

Land categories within the TNP

Land Categories	Area (ha)	% of Total Area
Pastures	184,525	7.0
Shrublands	34,528	1.3
Water Bodies (Lakes and Rivers)	50,900	2.0
Glaciers	239,930	9.1
Local Dirt Roads	760	0.3
Other Lands	2,101,031	80.3
Total	2,611,674	100

A brief description of land use and corresponding types of socioeconomic activities in areas adjacent to the protected zones of the nature park is provided in table 2.

Table 2

Land use on TNP territory	TNP lands are classified as lands of nature protection purpose. Activities contrary to their intended purpose are prohibited on TNP lands. In order to restrict or prohibit economic or other activities that have or may have a negative impact on SPNA, encumbrances on land plots are legally established. The lands granted to SPNA are not subject to land tax. Withdrawal of lands of SPNA is allowed in exceptional cases, by decision of the Government of the Republic of Tajikistan. In the allocated zone of economic activity on the territory of TNP there is grazing of cattle of farms and, to a limited extent, cultivation of agricultural crops (potatoes and wheat).
Land use in adjacent territories	There is limited natural resource use in the neighbourhood of the TNP area, in the form of livestock grazing and limited crop cultivation.
Impacts of land use in the protected area (if any)	The park does not experience any negative impacts from applicable land uses within TNP and adjacent areas.
Main use of biological resources (wood fuel, timber, etc.)	People living in the TNP area illegally cut down teresken and other vegetation for use as fuel.
Impact of local use of biological resources (if any)	The TNP area suffers from direct and indirect negative impacts due to illegal harvesting of teresken plant, which is the main fodder for the pairs of hoofed animals living here.

1.3. Legal status and history of TNP's creation

Tajik National Park is a nature reserve of national importance. Its legal status is determined by the following state legislations:

- Law of the Republic of Tajikistan "On Specially Protected Natural Territories", No 329, dated 13.12.1996.
- The Decision of the Government of Tajikistan No267, dated 20.07.1992, "On Establishment of Tajik National Park."
- Order of the State Agency of Natural Protected Areas No47, dated 09.11.2005, "On Location of TNP Protected Zone".

Control over the activities and law compliance related to the territory of TNP lies on SANPA.

The authority to protect TNP is reflected in the TNP Regulation, the Law of the RT 'On Specially Protected Natural Territories', the Law of the RT 'On Nature Protection' and other legal acts.

1.4. Natural conditions and TNP features

Overview. The TNP is characterised by huge differences in absolute altitudes and separated mountain ranges. The tops of the mountains are covered with glaciers. The Vanch and Yazgulem ridges reach heights of 5000-6000 metres. The snow border is 4700-5000 metres above sea level. The national park includes the picturesque Sangvor Valley, mountain lakes Karakul and Sarez, the Academy of Sciences and Zaalai mountain ranges with the highest peaks of Somoni (7495 m) and Lenin (7134 m), the huge Fedchenko glacier, hot mineral springs, and other interesting natural objects. Located on the territory of TNP in the Eastern Pamirs at an altitude of 4100 m above sea level, the Cave of Travellers is considered to be one of the largest caves in Central Asia.

The territory of the park belongs to the Central Pamir physiographic region, which covers the northern part of the Eastern Pamirs. Low precipitation, very low temperatures during the winter months causing deep freezing of the soil, extreme insolation and constant winds are factors that give the Pamirs the appearance of a high-mountain desert.

1.4.1. Climate

The climate is typical for Central Asia's high mountain regions with cool summers and harsh winters with little snow. The park is characterized by very low temperatures, high insolation, thin air and short summers.

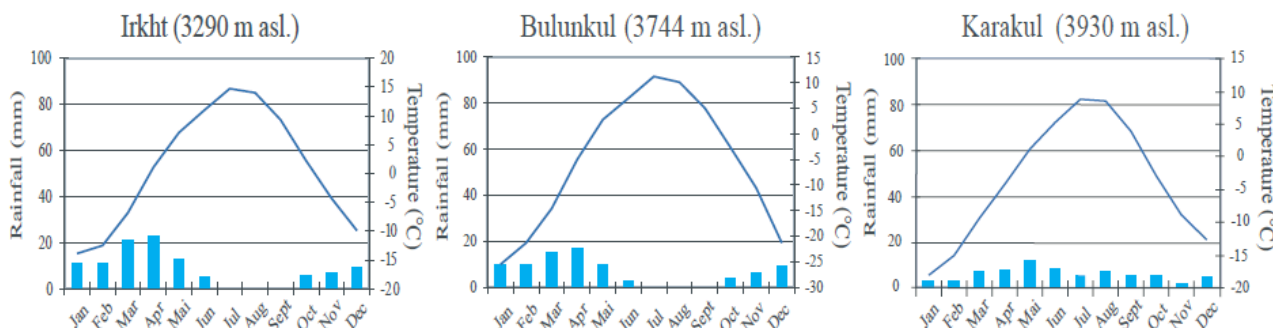
The relief and huge difference in elevations led to the formation of distinctive local types of climate. The park is surrounded by several high mountain ranges, such as the Zaalai range in the north, Kashgar range in the east, the Hindu Kush with its high peaks in the south, and the Kokhi Lal ridge in the west. The inner mountain ranges of the park, such as Academy of Sciences, Zulumart, Muzkul, South Alichur and others are much lower. The park looks therefore like a huge bowl with raised edges. This structure leads to the isolation of the park from the humid air masses coming from the west (Atlantic Ocean via Mediterranean) and the south (Indian Ocean). This isolation, together with other factors is an important reason for the park's aridity in comparison to adjacent territories.

The park is characterized by a sharp continental climate, with large seasonal and daily fluctuations. Lowest temperatures are reported in January at an altitude of 4,000 m with a measured extreme of -63°C (winter 1959, Bulunkul), highest temperatures are reported in July at an altitude of 3,700 m, with +31°C. The annual amplitude reaches 94 degrees. The average temperature for the warmest month, July is 10-13°C; the coldest, January -18 - -25°C.

Precipitation is low. In the Eastern Pamir the mean annual precipitation varies from 63 mm to 117 mm while extreme annual values are from 21 to 159 mm. In the Western Pamir total precipitation is 300 to 500 mm on leeward slopes and increases to 1,200 to 1,800 mm on windward slopes. In the northeastern part of the TNP the annual rainfall is between 1,500 and 1,600 mm. The maximal

amount of rainfall may be registered with a mean of 2,234 mm around Fedchenko Glacier on 4,300 m. Precipitation is much lower at the same altitude in the southern mountain ranges.

The distribution of precipitation over seasons is irregular. In the western parts of the Pamirs rainfall mainly occurs in winter and early spring, in the east highest rain falls in spring and summer. In total during autumn and winter precipitation is about 24% of annual rainfall and during the spring and summer 76%. A small amount of precipitation in spring and summer falls as snow. It should be noted that rainfall varies depending on the location of the valleys and wind direction.



Climate diagrams of different meteorological stations located inside or close to the TNP: Irkht (lake Sarez) and Bulunkul represent the conditions in the centre of the TNP. They are located along the segue from the Western to the Eastern Pamir and show a regime typical for the Western Pamir. Karakul, located in the eastern part of the TNP, indicates the typical climatic conditions of the Eastern Pamir. (Haslinger, 2004, based on data from Meteoservice GBAO, 2002).

Seasonal snow cover stays in some places until the end of April and sometimes until the beginning of May. In some places, depending on slope exposure, snow cover persists till 15-25 May. In general, the region is characterized by irregular snow cover. Its thickness increases with altitude. At altitude of 3,860 m above sea level thickness of snow cover reaches 4-16 cm, while at altitude of 4,760 m it is 1-2 m. Wind and slope exposure have great influence in redistribution of snow cover. At high altitudes, mainly on northern slopes, snow may stay all year round.

The Park is exposed to strong winds that blow almost throughout the year. They reach the greatest strength in wide west to east running valleys, e.g. Markansu valley.

Due to the intense solar radiation, dry climate, low temperatures and limited precipitation the territory is considered as cold high-mountain desert: average annual temperature is below zero, amplitude of diurnal temperature variation is large and reaches 30°C; frost-free period is only 40-80 days; snow may even fall in summer at altitudes above 3,000 m, and may stay for a few days. The meteorological conditions vary considerably due to altitude. In summer, air temperature drops 0.5°C at each 100 m elevation.

1.4.2. Relief

The Pamirs, known as the "Roof of the World," is one of the highest regions in the world; only topped by the Tibetan Plateau. The park includes the highest peaks of the Pamir such as Peak Istiqlol (7,134), Somoni Peak (7,495), and Korzhenevskaya Peak (7,105 m).

The overall picture of the Park's relief is determined by enormous mountain ranges like Academy of Sciences, Zaalai, Beleuli, Zulumart, North Alichur ranges, the eastern parts of the Vanj, Yazgulom, Rushan, and Darvaz ranges. The territory is characterized by large differences of altitudes and heavily dissected terrain and shaped by glaciers in particular during the last glacial period, ending about 12,000 years ago. All forms of glacier morphology are found here, different types of moraines, glacier shaped valleys, glacier mills carved deep into rocks and rock surfaces polished by glaciers.

The main part of the core area is located in the Eastern Pamir. Only Yazgulom range and the eastern part of Darvaz range belong to the Western Pamir.

The Eastern Pamir part of the Park is an elevated plate about 6,000 m above sea level carved by rivers and valleys at 3,600-5,000 m. Some of the river valleys are 10-15 km wide, e.g. Murghab and Alichur.

The Western Pamir section of the Park, in contrast to the east, is shaped by fast running rivers and deep river gorges with steep slopes, for instance 2,000 to 5,000 meters in the Bartang River with its tributaries.

1.4.3. Geology and Soils. The territory of the National Park is part of the grand modern Central Asian uplift. Here, deeply metamorphosed formations of the Precambrian are exposed, represented by gneisses, various crystalline slates, and marbles. Based on paleontological data, the limestone-terrigenous deposits in the northern part of the territory belong to the Cambrian period. Within the Akbaytal pass, coal deposits are represented by slates and limestones. In the northwestern part of the park, Lower Permian deposits consist of terrigenous-slate-limestone accumulations. Upper Permian terrigenous-carbonate deposits are isolated in the northeastern part of the territory. Triassic deposits, which are exposed along the northern border of the Pamirs, are represented by clayey-terrigenous and terrigenous-effusive-pyroclastic formations. Additionally, the park's territory contains intrusive rocks of granitic and granodioritic composition of Paleozoic age. The most significant mineral resources of the National Park include molybdenum ores in the upper reaches of the Vanch River valley and fluorites in the upper reaches of the Tanymas River.

Soils. The soil cover of both the Pamirs and the territory of the park is poorly studied. The automorphic soils in the Pamirs are formed under conditions of weak chemical drainage beneath sparse xerophytic vegetation in a very dry environment, with varying temperatures, on slopes of different steepness, with active washout and stony run-off causing the burial of fine material under a stony mantle of rockfall. Hydromorphic soils are formed under excessive moisture conditions, which are often accompanied by permafrost processes, peat formation, and salinization. Such complex soil formation conditions within the park's territory lead to soil diversity, zonal distribution of soils, and underdevelopment of many soil groups. The varied terrain corresponds to three soil zones: desert, high-altitude desert-steppe, and primitive - rubble. Three zonal soil types are distinguished: dark chernozems, localized in the river valley bottom areas, light brown soils, occupying the lower parts of slopes, and zonal soils, which dominate the upper layers of the mountains.

1.4.4. Hydrology of the National Park. The largest lakes in the territory of the National Park are Karakul, covering an area of 364 km², Sarez (88 km²) (protected area), and Yashilkul (35.6 km²) (economic use zone). In terms of surface area, the largest lake in the Pamirs is Karakul, while the largest by volume is Sarez, which holds 17,000 cubic meters of water and has a maximum depth of 500 meters. In addition to the large lakes, there are over 400 small lakes in the park, with circumferences ranging from tens of meters to 1-2 km.

Lake Sarez, formed in 1911 as a result of an earthquake, is the largest freshwater reservoir in Tajikistan and all of Central Asia. The lake is located between the Muzkul and Northern Aluchur ranges in the heart of the National Park's protected area. It is considered one of the youngest natural formations on Earth. Following a magnitude 9 earthquake on the night of February 18 to 19, 1911, a rockslide of six billion tons dammed the turbulent Murghab River. The resulting lake flooded several large villages, one of which gave its name to the lake.

The territory of the National Park is crossed by hundreds of rushing mountain rivers, which merge to form the major rivers of the Pamirs, such as Gunt, Bartang, Yazgulom, Vanch, and Obikhing, and Obikhing.

flowing westward through the gorges of Western Pamir. The most significant internal rivers of the park include: Alichur, Mardjanoy, Katadara, Pahchakiv, Kokuybel, Murghab, Tanyamas, Gurdara, Khavrazdara, Belyandkiik, Oqjilga, Karajilga, Beleuli, Markansu, Sauksai, and others, with a total length of over 1,000 kilometers.

1.4.5. Glaciers of the National Park. The territory of the National Park is home to the largest glaciers in Central Asia (*Appendix 6*), including the Fedchenko Glacier, which is one of the largest in the world, measuring 77 km in length, covering an area of about 1,000 km², and with a maximum ice thickness of over 1,000 meters. To the east lies the Grum-Grzhimailo Glacier (37 km long and covering 143 km²). The Garmo Glacier, situated between the Peter the Great and Darvaz ranges, has a length of 30.4 km and an area of more than 114 km².

The Fedchenko Glacier, the largest glacier in the world, sits at elevations ranging from 2,900 m to 6,000 m above sea level, making it one of the most stable glaciers in the face of global climate change. Only at its lower part, which features ice tongues with numerous crevasses and is covered by ice lakes, has it shrunk by no more than 5% in total mass. The results of these studies can certainly play a crucial role in the advancement of global climate science.

Additionally, the National Park features glaciers longer than 20 km, including the Oshanin, Akjilga, Vavilov, Chatkalsky, Tanyamas-1, Tanyamas-2, Tanyamas-3, Yazgulom, Small Tanyamas, Moskvina, Fortambek, and Nalivkin glaciers. As for glaciers that exceed 2 km in length, they number in the dozens. It is estimated that the largest river artery of the Amu Darya, the Panj River, carries an average of 26-28 km³ of clean drinking water out of the Pamirs annually. The primary glacier reserves and sources of water for Tajikistan's rivers are located within the National Park, once again emphasizing the uniqueness of this territory. It is important to note that the park's territory has no analogs in Central Asia regarding glacier reserves and freshwater. There is no similar place in any Central Asian country that resembles a gigantic natural refrigerator created by nature, holding vast amounts of clean freshwater.

1.4.6. Mountain Peaks. The territory's exceptional aesthetic significance is enhanced by the eternally ice-covered mountain peaks, which include three seven-thousanders, 40 six-thousanders, and over 100 five-thousanders. The high-altitude waterfalls of the crystal-clear Pamir waters sparkle in the sunlight, and when dispersed, they create rainbows, adding a unique charm to the fairy-tale beauty of the rugged mountain landscape.

The National Park is home to many geothermal, radon, and hydrogen sulfide springs. The most famous of these are the Madiyan, Suman, and Uzyuk springs. The hot springs serve as relaxation and treatment spots for park visitors and local residents. The hot sand of Yashilkul is also well-known, attracting hundreds of people each year for therapeutic purposes.

1.5. Main Ecosystems

The TNP is characterized by the following main ecosystems:

- Nival, above 4,500 meters occupying about 900,786 hectares or 34.5%.
- Cold High Mountain Desert, between 3,500 and 4,500 meters above sea level. Occupying about 11,500 sq km or 44%, it includes Udvardy's "Cold Winter Desert".
- Alpine meadows and High Mountain wetlands area located between 3,200 – 4,000 m above sea level, occupying a relatively smaller area of 1,000 sq km. High Mountain wetlands area covering about 200 sq km.

1.5.1. Nival Ecosystems

Nival Ecosystems are characterized by glaciers and deep snow including rocky terrain and gravel. It is the highest mountainous zone with poor vegetation, located above the 4,500 m. These ecosystems are found in the northern and north-western part of the National Park and cover 900,786 hectares or 34.5 %. This is the summer habitat of Siberian ibex (*Capra sibirica*), Marco Polo sheep (*Ovis ammon polii*), snow leopard (*Panthera (Uncia) uncia*) and sometimes wolf (*Canis lupus*). Birds are Pallas' sand grouse (*Syrrhaptes tibetanus*), Tibetan snow cock (*Tetraogallus tibetanus*) and snow finch (*Montifringilla nivalis*). All these species move to lower altitudes in late autumn.

1.5.2. High Mountain Deserts including “Cold Winter Desert”

High mountain desert ecosystems exist from 2,800 up to 4,500 meters above sea level in the eastern part of National Park (about 11,500 sq km or 44%). The prevailing plants are: Teresken (*Eurotia ceratoides*), wormwoods (*Artemisia pamirica*, *A. korshinskyi*), ajania (*Ajania tibetica*), feather grasses (*Stipa glareosa*), oxytropis (*Oxytropis immersa*, *O. poncinsii*), and thorn cushion plant formations (*Acantholimon diaspensoides*, *A. pamiricum*).

Aridity and a continental climate with stark seasonal temperature differences ranging from +32°C in summer to -48°C in winter, with permafrost, strong winds and intensive insolation is a typical feature of this environment. Such landscapes with gravel plains and stony sandy soil, with no or sparse vegetation, dominated by teresken and wormwoods, are widespread in the sub-alpine and alpine zones (at 4,000 – 5,000 m meters above sea level) in the Eastern part of the National Park.

This habitat type of continental deserts with cold winter is not well covered in WH sites. Adding the Tajik National Park to the World Natural Heritage list would overcome this deficit.

Animals with seasonal use of cold winter desert ecosystems are Marco Polo sheep, snow leopard, Siberian ibex, red marmot (*Marmota caudata*), Pallas' sand grouse, horned lark (*Eremophila alpestris*), desert and red-tailed wheatear (*Oenanthe deserti* and *Oenanthe xanthopyrma*).

1.5.3. Alpine meadows and High Mountain Wetlands

Alpine meadows ecosystems, with rich vegetations, are located between 3,200 up to 4,000 meters above sea level. They are scattered in small patches along mountain ranges in the western and south-western part of the National Park. This ecosystem occupies about 100,000 hectares. They are important grazing areas for wild ungulates and important feeding and breeding grounds for several bird species.

Swampy and wet meadows and bogs, covering about 200 sq km around lakes, along rivers, and streams. They include a rich flora and fauna and several endemic species. Flooding, melting permafrost and buried ice sheets shape the landscape with small hillocks and a large variety of small creeks and water courses between 3,500 and 4,000 m. The rich plant cover is grazed by wild and domestic ungulates. These wetlands represent also critical breeding and feeding habitats for resident and migratory birds such as Indian goose (*Anser indicus*), Brown-headed gull (*Larus brunicephalus*), Tibetan and Himalaya Snow cock (*Tetraogallus himalayensis*) and several species of waders.

The most extensive wetlands of this type are found around Karakul Lake. Valuable species of these ecosystems are: bluegrass (*Poa alpina*), sedge (*Carex melanantha*, *C. stenocarpa*), kobresia (*Cobresia stenocarpa*), oxytrope (*Oxytropis savellanica*), thyme (*Thymus seravshanicus*) and others. In drier areas barley meadow (*Hordeum turkestanicum*) are found.

1.6. Flora

Most of the Park's territory belongs to the Central Pamir which covers the northern part of the Eastern Pamir. The Western Pamir belongs to the southwestern Asia floristic region, the Eastern Pamir to the Central Asian floristic region.

The general character of vegetation in the Park is desert; large parts are classified as "Cold Winter Desert" (Udvardy). There are rare-grass steppes in the central part of the territory. On the slopes of the mountains and especially on the bottom of cliffs the vegetation is somewhat richer due to more moisture with elements of steppe feather grass and onions.

57 families, 248 genera, and 639 species of plants have been identified in the Central Pamir. The largest families of plants are *Poaceae* (32 genera, 92 species), *Asteraceae* (118 species) and *Brassicaceae* (34 genera, 64 species). Next are *Fabaceae*, *Rosaceae*, *Boraginaceae*, *Caryophyllaceae*, *Chenopodiaceae*, *Juncaceae*, *Lamiaceae*, *Liliaceae*, *Polygonaceae*, *Primulaceae*, *Scrophulariaceae*, and *Apiaceae*. The other plant families account for a limited number of species, sometimes only one. The list main plant species in TNP presented in *Annex 7*.

1.6.1 Wild relatives of cultivated plants

According to N. Vavilov the Western Pamir, including the Badakhshan and Sangvor areas of the TNP, is renowned for wild relatives of cultivated plants.

The Badakhshan area includes a large number of varieties of soft and club wheat and ranks first in number of botanic diversity of *Triticum* L. varieties, 151 out of 273 (*Annex 4*). The diversity of endemic local varieties of wheat, compact club wheat, and its wild relatives is unique, it includes: *Triticum aestivum* L. var. *japschorvi* Nigm., var. *ruchczianum* Nigm, var. *meridionale inflatum* Nigm. var. *nova.*, var. *quasimeridionale-inflatum* Nigm. var. *nova.*, var. *quasiheraticum* Nigm var. *nova.*; soft wheat without ligulae: var. *sarexicum* Nigm., var. *Bar-Darai* Nigm.; spring club wheat: *Tr. compactum* Host. var. *Humboldti-inflatum* Vav. et Kob..

The Sangvor area of TNP is an outstanding site for wild relatives of cultivated fruit trees and shrubs; it includes "Walnut-Fruit-Forests". This is a forest ecosystems dominated by wild fruit and berry bearing woody plants, including wild apple (*Malus sieversii*) Tajikistan pear (*Pyrus tadshikistanica*), Bukhara pear (*Pyrus bucharica*), walnut (*Juglans regia*), Tajikistan cherry (*Cerasus tadshikistanica*), veracious cheery tree (*Cerasus verrucosa*), plum (*Prunus domestica*), Darvaz plum (*Prunus darvasica*), Bukhara almond (*Amygdalus bucharica*), Vavilov almond (*Amygdalus vavilovii*), Pontic hawthorn (*Crataegus pontica*), Turkestan hawthorn (*Crataegus turkestanica*), Songor hawthorn (*Crataegus songorica*), Hissar hawthorn (*Crataegus hissarica*), heterobotryoidal barberry (*Berberis heterobotrys*) are found here (*Annex 5*).

1.7. Ichthyofauna

The ichthyofauna of the Pamirs belongs to an ancient group originating from India. It is characterized by poorness of species, absence of prey representatives, resistance to low temperatures and endemism. Tectonic processes and glaciations caused complete isolation and unique environmental conditions; as a result, fishes developed specific adaptive features: black peritoneum, protecting gonads from high radiation, one-time spawning, taking place in a short time and ensuring preservation of offspring during short summer; toxicity of roe, protecting it from spawn-eaters.

False osman (*Schizopygopsis stoliczkai*), in Tajikistan, is found only in the Pamirs. Other populations exist far away in tributaries of Indus and Brahmaputra rivers in India and in some rivers of the Tibetan Plateau. It is the largest fish in the Pamirs. A river and a lake variety are found in TNP. The species is very cold-resistant, adapting to high altitudes and productive, it is of great scientific and economic (sport fishing, farming) interest. Different forms/subspecies of the osman add to its interest for science, in particular in context of evolutionary research and speciation.

Karakul stone loach (*Nemachilus stoliczkai lacusnigri*) is an endemic subspecies. It differs from Tibetan stone loach (*Nemachilus stoliczkai*) by shape of head and longer fins. Its length does not exceed 10 cm. This species lives in salty Karakul Lake (core zone) and in freshwater streams and rivers flowing into it. Its biology has not been studied.

Since the late Pliocene, there have been no considerable changes in Pamir's ichthyofauna. All four species which occur in the Park (Annex 7) belong to a relict fauna, characterized by high isolation over a long time. Barriers formed by glaciers during the Pliocene led to the isolation of individual lakes, leading to high endemism, among others the Karakul stone loach. Relative stability of environmental conditions in the lakes and absence of human disturbance have contributed to preservation of an undisturbed ichthyofauna in the National Park.

An introduced fish species (Sevan trout *Salmo ischchan*) is found in Lake Yashilkul, Bulunkul Lake and few smaller lakes. This species was introduced from Lake Sevan (Armenia) before the park was established. Its impact on the local fauna is unknown and needs to be investigated. Based on the results of these investigations decisions should be made if the introduced fish in future should either be sustainably used or deliberately reduced.

1.8. Avifauna

The Park is inhabited by 162 bird species (Annex 7). 25 species are resident all year round, 30 are only visiting the park for breeding, others use the park for resting and breeding during migrations. Breeding birds are closely related to the avifauna of Tibet.

The area is inhabited by several endemic subspecies: *Charadrius mongolus pamirensis*, *Oenanthe xanthopyrma chrysopygia*, *Montifringilla nivalis alpicola*, *Carduelis flavirostris pamirensis*, *Leucosticte brandti pamirensis*.

Many species of TNP are listed in the Red Book of Tajikistan. These include: mountain goose (*Anser indicus*), Himalayan griffon (*Gyps himalayensis*), bearded vulture (*Gypaetus barbatus*), golden eagle (*Aquila chrysaetus*), Central Asian saker falcon (*Falco cherrug coatsi*), Tibetan snow cock (*Tetraogallus tibetanus*), brevirostrate plover (*Charadrius mongolus pamirensis*), brown-headed gull (*Larus brunnicephalus*), Pallas' sand grouse (*Syrhaptes tibetanus*), snow pigeon (*Columba leuconota*).

1.9. Mammals (Theriofauna)

The terrestrial vertebrate fauna of TNP is very distinctive and has much in common with the fauna of Tibet, and partially Central Tien-Shan. Out of 85 mammal species inhabiting Tajikistan, 33 live inside TNP. This includes: Pamir vole (*Microtus juldaschi*), grey hamster (*Cricetulus migratorius coereulescens*), red marmot (*Marmota caulata*), tolai hare (*Lepus tolai pamirensis*), big-eared pika (*Ochonota macrotis*), silvery vole (*Alticola argentata*), snow leopard (*Panthera (Uncia) uncia*), Alpine weasel (*Mustella altaica* subsp.), caress (*Mustella nivalis pallida*), stone marten (*Martes foina intermedia*), Tibetan wolf (*Canis lupus laniges*), fox (*Vulpes vulpes ferganensis*), otter (*Lutra lutra*), brown bear (*Ursus arctos isabellinus*). Siberian ibex (*Capra sibirica*) is common throughout the park between 3,200 and 4,500 m. Males of ibex carry large horns (length 110 – 130) which have high attraction for trophy hunters as well as Marco Polo sheep (*Ovis omoni polii*) see below (Annex 7).

1.10. Endemic Rare Species

From the above list of mammals *Microtus juldaschi* and *Lepus tolai pamirensis*, *Ovis ammon polii* are endemic species or subspecies, respectively.

Pamir vole (*Microtus juldaschi*) is abundant and occurs throughout TNP in meadows of floodplains and subalpine and alpine regions.

Tolai hare (*Lepus tolai pamirensis*) occurs throughout TNP and inhabits sparsely vegetated slopes.

Marco Polo sheep (*Ovis ammon polii*). Most probably the largest subspecies of wild sheep in the world with the most impressive spirally curved horns. Reaching 60 inches (152 cm) is not unusual, one trophy of 66 inches (168 cm) has been recorded. It is listed in the Red Book of Tajikistan and as subspecies of argali included in the Red List of IUCN (Near Threatened). The body length reaches 150 cm and weight of males is 200 kg or more. Its distribution is limited to the Pamir; inside TNP between 3,200 to 4,500 m. At least 5,000 animals are found inside the Park in Pshart spur, North Alichur, Muzkul, Zulumartsk, and the Zaalaisk ranges. The Park provides all critical habitats, all year round; this includes winter and summer grazing areas and lambing sites.

Rare Species

Many mammal species living in the park are listed in the Red Book of Tajikistan: White-clawed subspecies of brown bear (*Ursus arctos isabellinus*), otter (*Lutra lutra*), Turkestan lynx (*Lynx lynx isabellina*). Marco Polo sheep (*Ovis ammon polii*) and Snow leopard (*Panthera (Uncia) uncia*) and Red wolf (*Cuon alpinus*) are listed as endangered by IUCN.

Otter (*Lutra lutra*) is widely distributed in Western Pamir, in Panj River and its tributaries which are rich in fish. Through Gunt, Bartang and Obikhingou rivers' and their tributaries the otter gets into TNP. It is rare, precise data are missing.

Turkestan lynx (*Lynx lynx isabellina*). It is observed throughout TNP, population numbers are not available.

Snow leopard (*Panthera (Uncia) uncia*). Occurs at high altitudes between 1,500 and 4,500 m, it preys mainly on wild ungulates, but also on livestock, in particular in winter. The total number in Pamirs is unknown, conservative estimates are about 200 individuals, of which about 120 exist in TNP.

Asiatic wild dog (*Cuon alpinus*) may as well occur in the Pamirs and observations have been reported several times. It is possible that Asiatic wild dogs in the past occasionally migrated into the Eastern Pamir. However, so far scientific evidence about the past or current presence of the species is missing.

1.11. Amphibians and Reptiles

Amphibians and reptiles occur only along border areas of the park. E.g. on the borders with Badakhshan in the west and Alai in the east. Snake-eyed skink (*Ablepharus alaicus*), Himalayan agama (*Laudakia himalayana*), water snake (*Natrix tessellata*), and green toad (*Bufo viridis* complex) are observed. The green toads are of high interest from an evolutionary point of view as there are different species with differing genetic characteristics which are morphologically difficult to distinguish. Tadpoles of the green toad were also observed in one of the waters filled glacier mills near the glacier tongue of the RSC glacier at 2,400 m.

1.12. Specific Natural Features

Based on the natural and climatic conditions, the region is divided into the Western Pamir (covering 25.7 thousand km², about 40% of the Pamir's territory) and the Eastern Pamir (a vast high-altitude plateau covering 38 thousand km²).

The climate of the Western Pamir belongs to the Near-Eastern region, characterized by a spring precipitation maximum and a prolonged summer drought. The average duration of sunshine is 2,800-3,000 hours per year. The average January air temperature at elevations up to 2,000 meters above sea level is -8°C, at altitudes between 2,000 and 3,000 meters it drops to -12°C to -15°C, and above 4,000 meters it can drop to -20°C. Precipitation in the Western Pamir is minimal, occurring mostly in winter with small amounts in autumn.

The Eastern Pamir is characterized by a sharply continental climate with cool summers and harsh, low-snow winters. The duration of sunshine here exceeds 3,000 hours per year. Winters in the

Eastern Pamir are very severe, with average January temperatures around -20°C , and absolute minimums reaching -40°C to -50°C . Summer temperatures are also low, with July temperatures at altitudes of 3,600-4,000 meters ranging from $+8^{\circ}\text{C}$ to $+12^{\circ}\text{C}$. Precipitation in the Eastern Pamir is evenly distributed throughout the year, but the total amount is very low (120-150 mm). The average annual temperature at the upper limit of vegetation, at altitudes of 4,000-4,700 meters above sea level, is -8°C . The average temperature during the growing season is around $+1^{\circ}\text{C}$, and the growing season lasts for 60-80 days. The average elevation in the Eastern Pamir is 4,950 meters, and the lowest point exceeds 3,000 meters.

1.13. Geological Development History

Geological research indicates that the uplift of the park's territory, as well as the entire Pamir plateau, began in the Pleistocene and continues to this day. During the Paleogene, the plateau was entirely underwater. The sea gradually became shallower, and in the Oligocene, land emerged in its place. In the Miocene, the Pamir region was generally land with a gently hilly terrain. At the sites of the present-day Zaalai and Academy of Sciences ranges, there were island remnants of the pre-Oligocene landscape. These may have been remnants of islands in the shallow sea that covered the Pamir region in the Paleogene. The reddish-brown coloration of Miocene deposits indirectly points to a hot climate. The shift to gray coloring in the Pliocene suggests a cooling of the climate, possibly caused by increased continentality due to the continued retreat of the sea and the onset of mountain system uplift.

In the late Lower Pleistocene, the uplift of the region continued, and the first significant glaciation of the Pamir began. However, full glaciation of the Pamir was not observed at this time. In the Middle Pleistocene, the glaciers retreated. During this period, the ancient landscape of the park's territory changed significantly, as glacial moraines in many areas acted as dams, creating numerous glacial lakes. The formation of a large number of lakes in the park area is the most characteristic feature of the interglacial epoch of the Pamir. Lake Karakul occupied at least twice the area it does today. Along with the retreat of the glaciers, forest vegetation once again began to penetrate deep into the Pamir region, with cedar and pine becoming the dominant tree species in the ancient park territory.

In the Upper Pleistocene (about 30,000 years ago), the second period of Pamir glaciation began, with its final stage ending just 6,000 years ago. At this time, the park's territory rose above the forest belt and took on its current appearance. The last interstadial period of the second glaciation lasted until the Anthropocene, and the modern glaciers of the Pamir are its remnants. The vast majority of Pamir's glaciers continue to retreat today.

1.14. History of Economic Development

Humans first appeared in the Pamir region shortly after the glaciers began to retreat during the last stage of glaciation, around the 5th-6th millennia BCE. Based on the remains of campsites, it appears that Neolithic people did not live here permanently but likely came only during the summer, attracted by the abundance of wild animals, mainly Marco Polo sheep (argali) and ibex, whose bones are found in large quantities in the cultural layers of the Neolithic and Bronze Age. During the winter, hunters would leave the Pamirs and descend into the warmer valleys of Kashgaria. Over time, nomadic tribes gradually began to settle in the Pamir, and their descendants still live there today. The main occupation of the local population has been livestock breeding since ancient times. Currently, within the park, there are five settlements located in the upper reaches of the Bartang River: Barchidev, Rukhch, Pasor, Bopasor, and Gudara. In the rest of the vast mountainous territory of the park, there are no human settlements.

1.15. History of Nature Conservation

Nature conservation activities in the Pamir region began during the Soviet period. The Tajik National Park was established in accordance with the Resolution of the Cabinet of Ministers of the Republic of Tajikistan No. 267 on July 20, 1992, covering an area of 1.6 million hectares. In 2001,

its area was increased to 2.611674 million hectares by a resolution of the Government of the Republic of Tajikistan No. 253. In 2005, by Order No. 147 of the General Directorate of the State Institution "TNP PAs" dated November 9, 2005, a strict protected area within the park was designated, which has the most stringent nature protection regime, prohibiting almost all forms of anthropogenic activities except for 184,525 hectares where traditional livestock grazing is permitted.

CHAPTER 2. HISTORICAL AND CULTURAL MONUMENTS OF TNP

2.1. Historical Settlements

Remains of different historical settlements, dating back to the 11th century have been discovered, often associated with exploration and extraction of minerals. In some places, remains include entire villages with large public facilities, buildings, roads, and even baths. These are remains of mining settlements in Bazar-Dara, Zurchersek, Ak-Jilga and Sasyk. In particular, silver was mined in the 11th century. The most famous place in Pamir is the old mine in Bazar-Dara.

According to archaeologists (Ranov V., Veber C., 2005) TNP includes the following archaeological sites (table 2).

Table 2.

Summary of Archaeological Sites in the TNP territory

Site	Theme	Date
Karaart	Geoglyphs, kurgans	Iron Age, 8 th -3 rd century BC
Shurali	Geoglyphs, kurgans	Iron Age, 8 th -3 rd century BC
Jalang	Petroglyphs	Middle Ages, 11 th century AD
Bazar-Dara	Mining town	Middle Ages, 11 th century AD
Ak-Jilga	Petroglyphs	Bronze Age to Middle Ages 2000 BC to 1000 AD, 18 th century AD
Yashilkul	Kurgans and megaliths	Iron Age, 8 th -3 rd century BC

2.2. Burial Objects

Most of the detected burial objects are mounds, burial places covered with stones and earth. On the surface they look like round or square hills up to 1.5 meters height. These are typical burial places of nomads; most of the mounds belong to the early Bronze Age. Other different objects have also been found with more complex structure than the mounds, including one object which is considered as mausoleum.

2.3. Other Cultural Features

Geoglyphs, prehistoric stone arrangements on the ground. Most of the figures associated with burial places of Bronze Age's. A most impressive site is near Karakul Lake ([Annex 8](#)).

Petroglyphs, images depicted or carved on rock surface. Most drawings depict animals living in the Pamir such as mountain goat, sheep or yak. The most common images are hunters with bows and arrows. The earliest known petroglyphs refer to the Bronze Age. They are found throughout the park, in particular in the eastern part of the park and around Karakul Lake ([Annex 8](#)).

Rock Paintings are drawings made with colored pigments of plants, minerals, and/or other natural substances on rock surface. Paintings exist in Jalang and Akjilga, they belong to the Mesolithic Period; they are quite fragile and require protection.

CHAPTER 3. BRIEF DESCRIPTION OF LAND USE IN AREAS ADJACENT TO PROTECTED ZONES

3.1. Land Use in the TNP Territory

The lands of the TNP are designated for environmental protection. Activities that contradict their intended purpose are prohibited on the lands of the TNP. To limit or prohibit economic or other activities that have or may have a negative impact on the protected area, legal restrictions are imposed on the land parcels.

Lands allocated to the protected area are exempt from land tax. The withdrawal of lands from the protected area is permitted only in exceptional cases, by decision of the Government of the Republic of Tajikistan. In the designated area for economic activity within the TNP, livestock grazing by farming households is conducted, along with limited cultivation of agricultural crops (potatoes and wheat).

The territory of TNP is legally classified as conservation area. This implies that any activity that contradicts its conservation purpose is prohibited. The area is remote; most of its territory is covered by high mountain habitats which are difficult to access. Land use is limited to small scale subsistence agriculture (potato and wheat), traditional grazing (mainly in summer), hay making and collection of firewood in a few small locations along the Park's borders. Excessive cutting of *tereskent* (*Eurotia ceratoides*) and other vegetation for use as fuel and animal fodder is a problem in some areas, where villages border the park. This applies also to illegal hunting, including Ibex and Marco Polo sheep in the Karakul region and in the upper Bartang in the Ghudara-Aktash area. Although this is limited to a few small areas without known negative impact on the population of both species at this stage, measures have to be taken to stop these illegal activities.

Mountaineering is the main form of land-use around the major peaks of the park; major recreational activities are limited to Lake Yashikul in the south.

There is no pressure from other land developments, mining or roads. Hydropower is only generated from Lake Yashikul which serves as a semi-natural water reservoir for a power station outside the park. This has impacts on the dynamics of the water level, which may affect the suitability of spawning areas for the ichthyofauna.

Direct human impact on the area and its main features is therefore extremely small. Indirect impact on the parks landscape, in particular its glaciers, caused by global warming, is beyond the park's control.

The park management is taking this situation into account when setting its management priorities, these are:

- ☐ Monitoring wildlife populations;
- ☐ Monitoring land-use in areas assigned to local people for agriculture, grazing, hay making, collection of plants and firewood;
- ☐ Facilitating environmental monitoring, in particular impact of global warming on glaciers;
- ☐ Anti-poaching;
- ☐ Guiding and directing tourism, including alpinism;
- ☐ Education and awareness raising among the local population, decision makers, teachers, school children and visitors;
- ☐ Providing guidelines for local community on collection of medical plants and fruits, monitoring and controlling their implementation;

- Developing recommendations for trophy hunting in specifically selected sites of TNP, e.g. for the establishment of community-based wildlife management. Monitoring and control of its implementation.

3.2. Land Use in Adjacent Territories

Limited natural resource use is carried out in the vicinity of the TNP territory, which includes livestock grazing and restricted cultivation of agricultural crops. The park does not experience negative impacts from the types of land use applied in the TNP and surrounding areas. However, residents in the TNP zone illegally cut down teresken and other vegetation for use as fuel. The TNP territory is subjected to direct and indirect negative impacts due to the illegal harvesting of teresken, which is the main feed for the hooved animals living in the area.

3.3. Nature Protection Regime of the TNP

Prohibited: According to the TNP regulations and the Law of the Republic of Tajikistan "On Protected Areas," any activities that contradict the objectives of the TNP are prohibited, specifically: illegal logging, land plowing, livestock grazing in the core zone and during the intensive growth period of plants, poaching, mineral extraction, production and use of chemicals, and significant changes to the hydrological regime.

Permitted: Limited economic activities that do not contradict the objectives of the TNP are allowed under the TNP regulations and the Law of the Republic of Tajikistan "On Protected Areas," namely: limited livestock grazing in compliance with established rules, regulated natural resource use, the organization of ecological tourism, conducting scientific research, implementing fire prevention and biotechnical measures, and limited hunting tourism in the zone of traditional natural resource use.

3.4. Plans for Restoring Degraded Pastures in the TNP

Under the “Tajikistan Resilient Landscape Restoration Project (TRLRP) (P171524)” financed by the World Bank as part of the “RESILAND CA+” Program, efforts will be made to restore degraded pastures with the aim of preserving biodiversity in the TNP and adjacent buffer zones. The area designated for the restoration of degraded pastures in the TNP is outlined in the developed *Map 1* in *Annex 8*. These maps indicate that within the framework of the TRLRP, activities to restore degraded pastures covering more than 100,000 hectares will be carried out in the TNP from 2024 to 2027.

CHAPTER 4. ADMINISTRATION AND RESOURCES OF THE TNP

4.1. The composition of the staff of the TNP as of 2024 is presented in Table 3.

Table 3.

According to the staff schedule	Actual	
	Total	Including staff with higher education
Total number of employees in the TNP		
57	57	22
Management staff		
2	2	2
Chief of TNP district subdivisions		
4	4	4
Number of main specialists		
5	5	5
Number of leading specialists		
4	4	4
Number of rangers		
31	31	6
Number of accounting and planning staff		
1	1	1
Number of service staff		
10	10	

4.2. Financial Support for TNP Activities.

The structure of funds received to support the main activities of the TNP as of 2024 is presented in Table 4.

Table 4.

Source of funding	Thousand Tajik somoni
Funds received from the state budget of the Republic of Tajikistan	
including: employee salaries	840,356
maintenance and services funds	38,527
funds for biotechnological measures	14,000
funds for capital construction	6,500
Funds from foreign grants	0.00
Funds from Tajik sponsors	0.00
Income from own activities	0.00
TOTAL:	899,383

4.3 TNP infrastructure.

The infrastructure of TNP is currently inadequate.

Table 5.

Items	Quantity	Condition
Buildings:		
TNP administration office	1	TNP administration office is in Khorog city, branch offices are in district centers

District Office in Murghab district	1	Currently under construction
District Office in Lakhsh district	1	Jamoat “Sarital”, village Khazorjashma
District Office in Sangvor district	1	Jamoat «Langardara»
Cars		
Niva 3212214	3	Working
UAZ 31-519	2	Working
Riding horses	0	
Telephones - office	All employees have	Working
Mobile phones		
Uniform	Availability of 70%	
- Weapons	-	-
Binoculars	2	Working
Computers	4	Working
Digital photo camera (Panasonic)	1	Working
Digital Camera	1	Working
Navigational aid GPS	1	Working
Camera trap	10	Working

4.4. Main Stakeholders, Excluding the SISPNA

The stakeholders are presented in Table 6.

Table 6.

No.	Stakeholders
1	Committee for Environmental Protection under the Government of the Republic of Tajikistan
2	Ministry of Economic Development and Trade of the Republic of Tajikistan
3	Ministry of Foreign Affairs of the Republic of Tajikistan
4	Committee for Tourism Development under the Government of the Republic of Tajikistan
5	National Academy of Sciences of Tajikistan
6	Local executive authorities
7	Local population residing in the TNP zone
8	Companies engaged in hunting tourism

The protection of the TNP and its conservation zones is carried out by state inspectors who permanently reside within the national park, as well as by employees of the nature protection departments of GBAO regions and areas where the park is located.

The main types of violations include illegal hunting and fishing, unauthorized presence, and passage through the territory of the park.

Scientific research and ecological monitoring within the territory of Tajik National Park and its protection zone are organized and conducted by staff members in collaboration with scientists from the National Academy of Sciences of Tajikistan according to approved joint plans throughout the year. Primarily, scientific work includes: accounting for and assessing the state of wild animals, birds, phenological observations of plants, determining forage reserves, and monitoring the arrival and departure times of birds.

Environmental education activities are carried out by TNP employees and the department of science and eco-education of the State Institution for Protected Areas, with the involvement of NGOs and international organizations.

CHAPTER 5. THREAT ANALYSIS AND RESPONSE MEASURES

5.1. Main Threats

Threats	Description of Threats
Threat 1	Illegal hunting of wild animals.
Threat 2:	Unauthorized collection of plants for heating (teresken plant, which is the main forage base for the ibex).
Threat 3:	Uncontrolled so-called “wild tourism”
Root Causes of Threats:	Low standard of living for most of the local population.

5.2. Goals and tasks of Protected Area Management (in Response to Threats)

Goal and tasks	Response to threats
General Goal/ Result	Preservation of the unique natural landscape, rare and endangered species of flora and fauna, historical, cultural, and natural monuments, development and rationalization of tourism, and support for the population through the rational use of natural resources. (The Decision of the Government of Tajikistan No. 267, dated 20.07.1992, "On Establishment of Tajik National Park").
Vision: Desired situation at the end of 5 years Management Plan	Effective management of TNP. Local people will better understand the value/importance of TNP, effective communications and coordination will be established between local government and TNP. Conservation status of biodiversity, especially rare species of flora and fauna, will be improved as a result of better management with support of local population and better technical and financial capacity.
Tasks to Achieve Goals	● Preservation of pristine natural landscapes and ecological safety of important water areas. ● Conducting scientific research on the actual and potential value of natural resources and the possibilities of their use for the local community and the economy of the region and the country.
Task 1	Prevention of any illegal activities within the TNP (in accordance with the park's regime) aimed at preserving the natural landscapes and water resources in their natural state.
Task 2	Maintaining and improving the ecological condition of the TNP through the implementation of environmental protection measures and activities aimed at restoring the environment, as well as conducting ongoing monitoring of natural biodiversity.
Task 3	Increasing the level of support from the local population due to enhanced awareness and understanding of the value and potential benefits that the park can bring.
Task 4	Improvement of the legislative and regulatory framework.
Task 5	Increasing public awareness of environmental issues.
Task 6	Increasing the opportunities for the local population living in the TNP territory to generate income from sustainable management practices.
Task 7	Providing support in the implementation of alternative energy sources.

5.3. Specific Constraints for Effective Management of TNP

Constraints	Justification	Solutions
Technical Knowledge of Personnel/Training	Management and engineering personnel, as well as rangers, lack opportunities for further training and enhancement of professional and technical knowledge. Young specialists entering the workforce after graduating from universities generally have a very low level of knowledge and a lack of practical skills.	Organizing thematic seminars and training for engineering and technical staff of TNP, involving researchers from the Institute of Botany, Zoology, and Parasitology of the National Academy of Sciences of Tajikistan, as well as staff from the State Institution for Protected Areas and international organizations.
Equipment	Due to a lack of funds, new types of machinery and equipment have not been purchased for many years, and the old equipment, which was acquired during the Soviet era, has completely worn out and been decommissioned. Currently, TNP primarily needs high-mobility vehicles.	Addressing issues related to the basic infrastructure and equipment of TNP.
Financing	Limited funding from the state budget (for infrastructure improvements, purchase of fuel and lubricants, etc.) hinders management actions and capabilities.	Developing a business plan to identify financial needs and sources of funding.
Monitoring	There is a lack of a monitoring mechanism for the effectiveness of management and its positive and negative impacts on achieving the goals and objectives of TNP.	Conducting effectiveness monitoring based on indicators developed in the Management Plan.

5.4. Management Plan for 2025-2029 (for a period of 5 years): Main management objectives and activities to prevent threats.

Tasks and Activities	Actions	Deadlines	Executor	Indicators	Financial costs, thousand Tajik somoni	Sources of financing
1. Task 1	Improvement of the Tajik National Park protection service and the implementation of activities for the sustainable conservation of natural ecosystems, biological diversity, and landscape diversity.					
Activity 1	Provision of the Security Service with Transportation, Uniforms, Communication Equipment, Weapons, Binoculars, and Cameras.	2025-2029	SISPNA	Provision of the Security Service with Transportation, Uniforms, and Communication Equipment.	300.00	Donors and budget
Activity 2	Ensuring Systematic Patrolling by Rangers in Areas with Concentrations of Wildlife and Ecological Corridors During Migrations.	2025-2029	TNP	Reducing Cases of Poaching and Other Violations.	150.00	Budget
Activity 3	Production and Installation of Information Boards with Environmental Content in Areas Frequently Visited by Locals and Tourists.	2025-2029	TNP	Presence of installed signs	200.00	Donors and budget
Activity 4	Implementation of Biotechnical Measures Aimed at Increasing the Population of Rare Bird Species, such as the Bar-headed Goose and Tibetan Snowcock, by Improving Nesting Sites, ensuring a Stable Food Supply, and Strengthening the Protection of their habitats.	2025-2029	TNP	Increase in the number of wild animals	200.00	Donors and budget
Activity 5	Improvement of Habitats for the Marco Polo Sheep, Siberian Ibex (<i>Capra ibex</i>), and Snow Leopard (<i>Uncia uncia</i>) by Restricting or Prohibiting Livestock Grazing, Limiting Local Population Access to These Rare Species' Habitats to Prevent Poaching, and Undertaking Restoration of Natural Pastures for Wild Animals.	2025-2029	TNP	Increase in the number of wild animals	500.00	Donors and budget

- Task 2	Development of Ecotourism through the Creation of Tourist Infrastructure and Building Public Support for the Tajik National Park.					
Activity 1	Development of tourist routes on the territory of TNP	2025	SISPNA, TNP	Availability of Developed Tourist Routes and Promotional Brochures.	50.00	Donors and budget
Activity 2	Establishment of Guest Houses and Training for Locals in Hosting Foreign Tourists.	2025-2029	SISPNA, TNP	Availability of Guest Houses and the Number of Trained Residents for Hosting Tourists.	200.00	Donors
Activity 3	Purchase of vehicles and motorboats, as well as tents, sleeping bags and other materials and equipment necessary for tourism development.	2025-2029	SISPNA, TNP	Availability of tourist equipment	500.00	Donors and budget
Activity 4	Creation of Promotional Brochures and Maps Featuring Tourist Routes, Natural and Historical-Cultural Attractions, etc.	2025-2027	SISPNA, TNP	Availability of Promotional Brochures	20.00	Donors and budget
Activity 5	Assistance to the Local Population in Establishing Production of Souvenirs with Local Symbolism, Food Services Offering National Cuisine, and Studying the Cultural and Ethnic Characteristics of the Population Residing in the TNP Area.	2025-2027	SISPNA, TNP	Number of Souvenirs Sold and Total Profit Earned	500.00	Donors
- Task 3	Establishment of a Monitoring System to Study the State of Biodiversity, Pressure Levels on Natural Resources, and the Effectiveness of Management of the Tajik National Park					
- Activity 1	Monitoring the Implementation of the Standard Annual Activity Plan for the TNP	2025-2029	TNP	Evaluation of the activities carried out	25.00	Donors and budget
- Activity 2	Annual spring and autumn wildlife counts within the TNP, along with assessments of the productivity of habitats and animal ranges.	2025-2029	CEP, SISPNA, TNP	Availability of reliable data on the number of wild animals	100.00	Donors and budget
- Activity 3	Conducting a cadastral evaluation of the forage base for wild ungulates in their permanent habitats within the TNP.	2025-2027	CEP, SISPNA, TNP	Availability of quality materials on cadastral assessment of lands	100.00	Donors and budget

- Activity 4	Preparation and publication of Recommendations for Wildlife Monitoring within the TNP.	2025-2026	SISPNA, TNP NAST	Availability of published Recommendations for Wildlife Monitoring.	50.00	Donors and budget
- Activity 5	Establishment of an Information Center at the TNP.	2025-2027	CEP, SISPNA, TNP	Sustainable operation of the Information Center.	150.00	Donors and budget
- Activity 6	Maintenance of the Natural History Chronicle of the TNP.	2025-2029	TNP	Existence of the Natural History Chronicle of the TNP by year	10.00	Donors and budget
- Task 4	Organisation of research activities in TNP					
Activity 1	Organization of the application of modern monitoring methods for the natural complex and registration of scientific information. GPS mapping of study and conservation objects. Preparation of maps: • Locations of habitats and occurrences of rare animal species (such as argali, ibex, and snow leopard); • Identification of feeding grounds for ungulates.	2025-2029	SISPNA, TNP NAST	Availability of prepared maps, and scientific publications	200.00	Donors and budget
Activity 2	Organization of scientific research on the population status of wetland birds (Indian goose and brown-headed gull): • GPS mapping of bird nesting sites; • Study of biology and influencing factors.	2025-2029	SISPNA, TNP NAST	Availability of prepared maps, and scientific publications	200.00	Donors and budget
Activity 3	Organization of scientific research on the population status of endemic species such as the Tibetan snowcock and Tibetan sandgrouse: • GPS mapping of bird nesting sites; • Study of biology and influencing factors.	2025-2029	SISPNA, TNP NAST	Availability of prepared maps, preparation of recommendations on population protection and sustainable reproduction and	200.00	Donors and budget

				scientific publications		
Activity 4	Monitoring the condition and preservation of habitats of wild forms of cultivated plants. - GPS mapping of the locations of wild forms of cultivated plants; - Study of biology and influencing factors.	2025-2029	SISPNA, TNP NAST	Availability of prepared maps, preparation of recommendations on the protection of wild relatives of cultivated plants	300.00	Donors and budget
Activity 5	Monitoring assessment of the state of the Fedchenko Glacier jointly with glaciologists from the Agency for Hydrometrology: - GPS mapping of the lower part of the glacier; - Study of the condition and influencing factors.	2025-2029	CEP, Agency for Hydrometrology, SISPNA, TNP NAST	Availability of prepared maps, reports and recommendations based on the results of glacier observations	500.00	Donors and budget
Activity 6	Aerial survey of the surfaces of the main glaciers in the TNP. A commission involving glaciologists from Agency for the Hydrometrology, specialists from the SISPNA and the NAST	2025-2029	CEP, Agency for Hydrometrology, SISPNA, TNP NAST	Availability of glaciological data and recommendations	500.00	Donors
Task 5	Implementation of activities for environmental education and improving the living standards of the population residing in the TNP area.					
Activity 1	Establishment of an ecological center and ensuring its continuous operation.	2025-2029	SISPNA	Availability of an active information center.	100.00	Donors and budget
Activity 2	Regular conduct of eco-educational training, meetings, and discussions with local communities about the values of TNP.	2025-2029	TNP	Number of participants	25.00	Donors and budget
Activity 3	Preparation of a film about the nature of TNP, brochures, and promotional leaflets.	2025-2029	SISPNA, TNP	Availability of film, brochures, booklets	100.00	Donors and budget
Activity 4	Media appearances by the management and specialists of TNP.	2025-2029	TNP	Number of presentations	0.00	Budget
Activity 5	Organization of exhibitions about the nature of the Pamirs and Pamir-Alai.	2025-2029	TNP	Number of presentations	25.00	Donors and budget

Activity 6	Conducting "Park March" events with the participation of students, schoolchildren, and media representatives.	2025-2029	TNP	Number of events conducted.	25.00	Donors and budget
Activity 7	Providing local communities with grazing and hay-making areas in the buffer zone of TNP.	2025-2029	TNP with Local Government	Provision of land plots for local communities.	100.00	Donors and budget
Activity 8	Leasing land plots to the population in the buffer zone of TNP for land use.	2025-2029	TNP with Local Government	Provision of land plots for local communities	0.00	Donors and budget
Activity 9	Supporting communities in organizing mini enterprises for producing national souvenirs.	2025-2029	TNP with Local Government	Establishment of mini enterprises for local populations.	200.00	Donors
Activity 10	Assisting local residents in developing pond aquaculture in the buffer zone of TNP.	2025-2029	TNP with Local Government	Existence of organized fish ponds in the buffer zone.	200.00	Donors and budget
Task 6	Monitoring the effectiveness of management					
Activity 1	Annual review of the indicators from the Management Plan to assess the implementation of the activities outlined in the Plan.	2025-2029	TNP	Overview of indicators	0.00	Budget
Activity 2	A brief report on achievements and management indicator metrics during the term of the Management Plan (2025-2029) and impact assessment (whether achieving management objectives has led to results that improve conditions in the TNP).	2025-2029	TNP	Brief report	0.00	Budget
Task 7	Monitoring of key ecological indicators to assess TNP's achievement of its goals and objectives.					
Activity 1	Preparation of a monitoring methodology for tracking key indicator species of flora and fauna.	2025-2026	International and local experts	Availability of prepared methodology.	50.00	Donors

Activity 2	Conducting training for TNP technical staff to develop practical skills in monitoring the species diversity of flora and fauna and natural resources.	2025-2026	International and local experts	TNP staff trained in monitoring methodology.	50.00	Donors
Activity 3	Continuous monitoring of key indicator plant species (coverage and conditions, reproductive success) based on established methodology.	2025-2027	TNP	Indicative data on vegetation.	50.00	Donors
Activity 4	Continuous monitoring of key indicator animal species (presence, quantity, distribution, conditions, reproductive success) based on established methodology.	2025-2027	TNP	Indicative data on wildlife.	50.00	Donors
TOTAL:					5 930.00	

Approved by
Chairman of the Committee for

Environmental Protection
under the Government of the

Republic of Tajikistan

_____ Sheralizoda B.A.

" ____ " September 2024

5.5. Approved Annual Plan for 2025

Activity	Responsible authorities	Indicators	Funding in Tajik Somoni (TJS)	
			Budget	Donors
Organization of continuous environmental monitoring	TNP	Maintaining the Nature Chronicle of the TNP	0.00	50,000.00
Provision of transport vehicles, uniforms, communication equipment, weapons, binoculars, and cameras for the protection service	SISPNA	Availability of vehicles, uniforms, communication equipment, weapons, binoculars, cameras, etc.	0.00	50,000.00
Conducting cadastral assessment of the feeding base for wild ungulates in their habitats on the TNP territory	SISPNA, TNP	Availability of cadastral assessment of pastures for wild ungulates on the TNP territory	0.00	50,000.00
Identification of bird nesting sites around Karakul and Sarez Lakes and restriction of land use in these areas	SISPNA, TNP	Availability of a prepared map indicating bird habitats and nesting areas	0.00	50,000.00
Determination of wintering areas for the argali and conducting calving campaigns within its range, and restriction of land use in these areas	SISPNA, TNP	Availability of a prepared map indicating argali habitats and calving sites	0.00	50,000.00
Development of a simple and practical methodology for monitoring key indicator species of flora and fauna	SISPNA, TNP	Availability of the Monitoring Methodology	0.00	50,000.00

Training for engineering and technical workers (ETW) of TNP to develop practical monitoring skills for biodiversity and natural resources	SISPNA, TNP	Number of seminars, trainings, topics, and personnel trained	0.00	30,000.00
Conducting spring and autumn counts of wild animals on the TNP territory and assessing habitat productivity	SISPNA, TNP	Availability of reliable data on wild animal populations	0.00	50,000.00
Development of tourist routes in the TNP territory	SISPNA, TNP	Availability of developed and approved tourist routes within the TNP	0.00	10,000.00
Establishment of guest houses and training of locals on hosting and servicing foreign tourists	SISPNA, TNP	Number of established guest houses and their capacity to accommodate guests	0.00	100,000.00
Production of promotional brochures, maps with tourist routes, and information on natural and historical-cultural landmarks	SISPNA, TNP	Availability of promotional brochures	0.00	10,000.00
Purchase of vehicles, quadracycle (All-Terrain Vehicles or ATVs), motorcycles, motorboats, tents, sleeping bags, and other equipment for tourism development	SISPNA, TNP	Availability of vehicles, motorboats, tents, and other tourist equipment in TNP's inventory	0.00	200,000.00
Systematic patrolling of wildlife gathering areas and eco-corridors during migrations by rangers	SISPNA, TNP	Reduction in poaching on the TNP territory	0.00	50,000.00
Development of modules, programs, and plans for environmental education for locals, schoolchildren, and government officials on the significance of the TNP	SISPNA, TNP	Number of seminars, trainings, topics, and participants educated	0.00	10,000.00
Provision of pastures and haymaking plots to local residents	SISPNA, TNP	List of beneficiaries and total area of allocated plots	0.00	0.00
Periodic media appearances by management, researchers, and specialists on biodiversity conservation and TNP activities	SISPNA, TNP	Number of articles, appearances, etc.	0.00	0.00

Analysis of the standard annual activity plan for the TNP	SISPNA, TNP	Evaluation of TNP activities for the reporting year	0.00	0.00
Procurement of uniforms			0.00	50,000.00
Employee salaries	SISPNA, TNP		840,356.00	0.00
Maintenance and service costs	SISPNA, TNP		38,527.00	0.00
Funding for biotechnical measures and pasture restoration to improve wild animal habitats	SISPNA, TNP	Improvement of biodiversity in the TNP	14,000.00	100,000.00
Funding for capital construction	SISPNA, TNP		6,500.00	0.00
TOTAL:			899,383.00	910,000.00

Head of SISPNA

Khurshed Shamsiddinzoda.

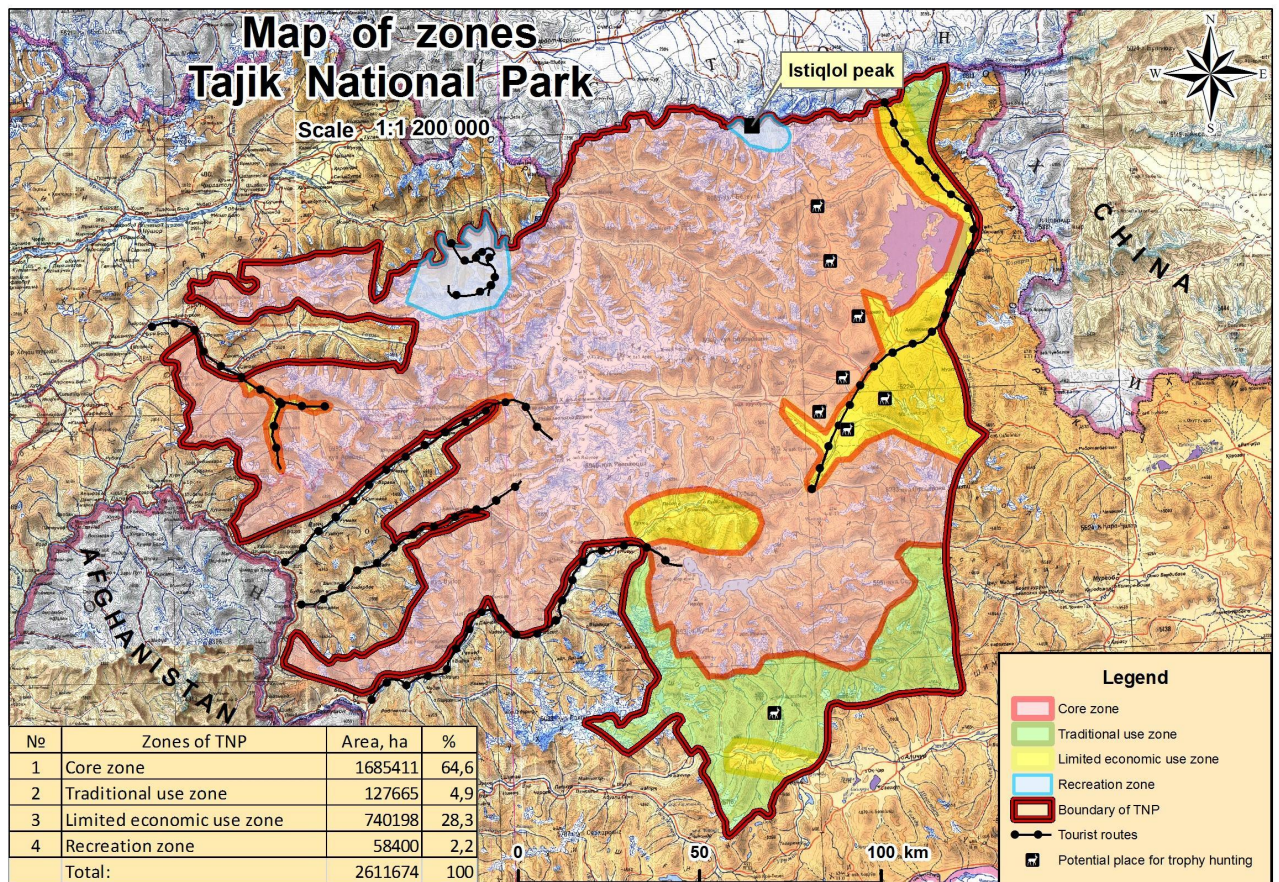
**LIST OF PARTICIPANTS OF THE WORKING GROUP FOR DEVELOPING
THE MANAGEMENT PLAN FOR THE TAJIK NATIONAL PARK**

- ☐ Shamsiddinov Kh. – Head of the State Institution of Specially Protected Natural Areas (SISPNA) of the Committee for Environmental Protection under the Government of the Republic of Tajikistan (CEP).
- ☐ Muborakkadamov Kh. – Director of the TNP, GBAO of the Republic of Tajikistan.
- ☐ Nachmidinov N. - Project manager from the PO “Tabiati Yoboi”.
- ☐ Khudoyorzoda F. – employee of the PO “Tabiati Yoboi”.
- ☐ Fattoev Kh. - employee of the PO “Tabiati Yoboi”.
- ☐ Faizulloev S. - employee of the PO "Tabiati Yoboi".
- ☐ Saidov N. - Specialist in natural protected area management and biodiversity conservation of TRLRP.
- ☐ Abdalnazarov A. – Director of the botanical garden of the Biological Institute of the Pamirs NAST, Khorog city, GBAO of the Republic of Tajikistan.
- ☐ Navruzshoev D. – Chief Researcher of the Biological Institute of the Pamirs NAST, Khorog city, GBAO of the Republic of Tajikistan.
- ☐ Ustyan I.P. – Chief specialist of the Research Institute of Forestry, Tajikistan.
- ☐ Murodov R. – Senior Researcher at the Institute of Zoology and Parasitology of the National Academy of Sciences.
- ☐ Ilazarov Bekhruz – Cartographer and GIS consultant.

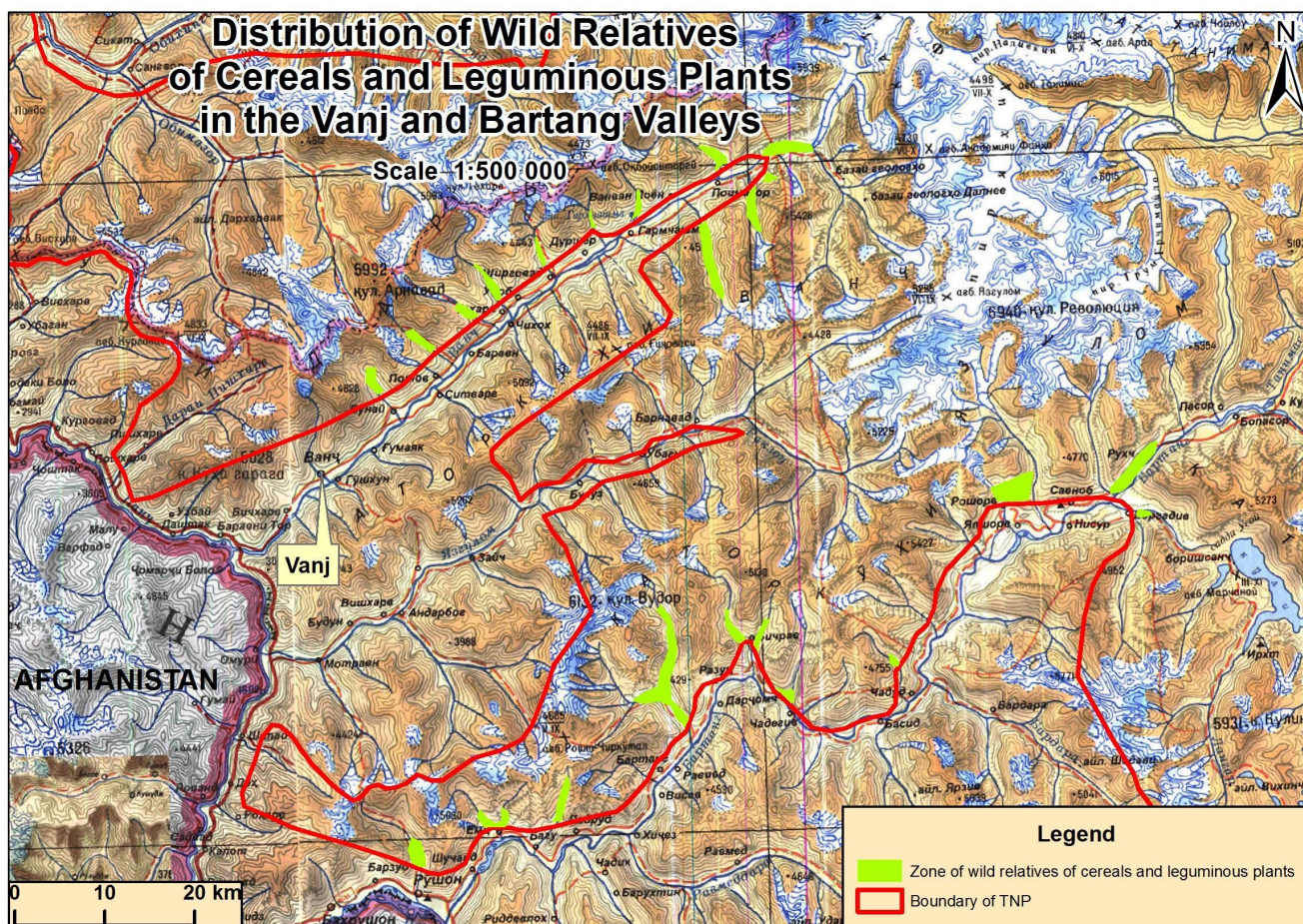
ANNEX 2. Map of TNP View



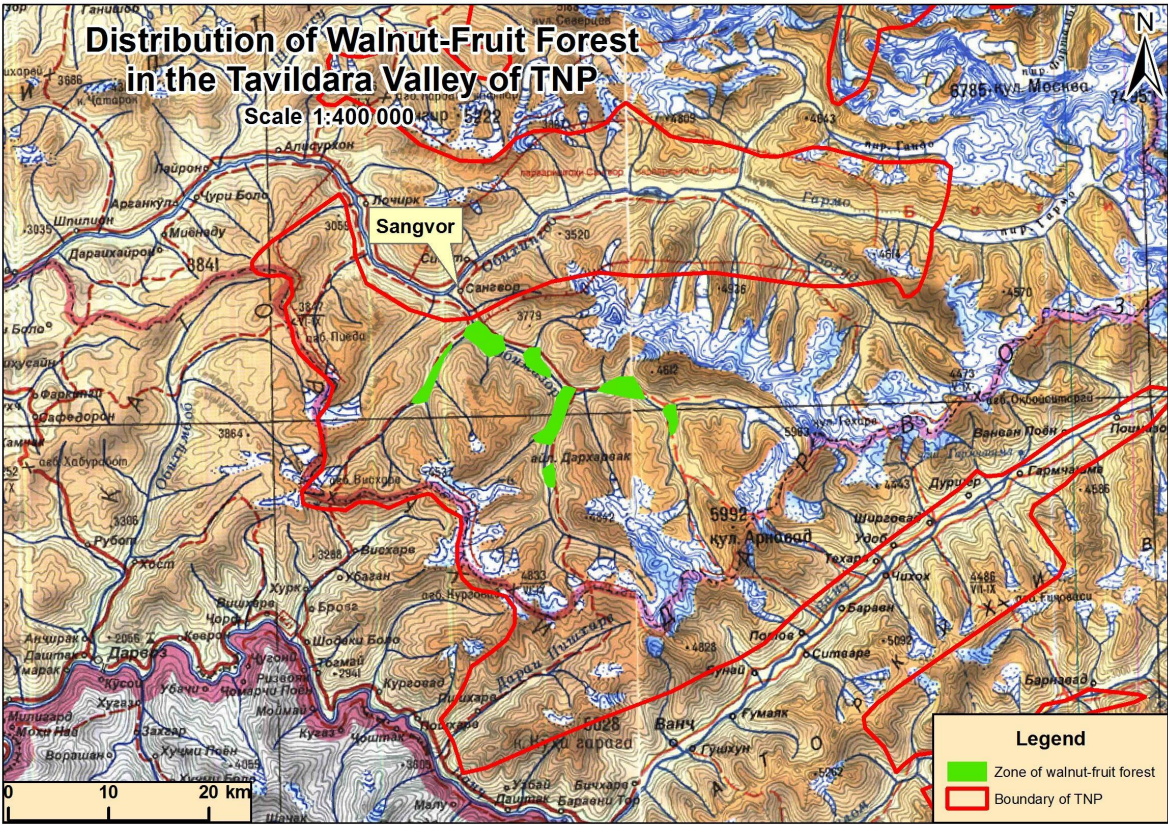
ANNEX 3. Zones of TNP



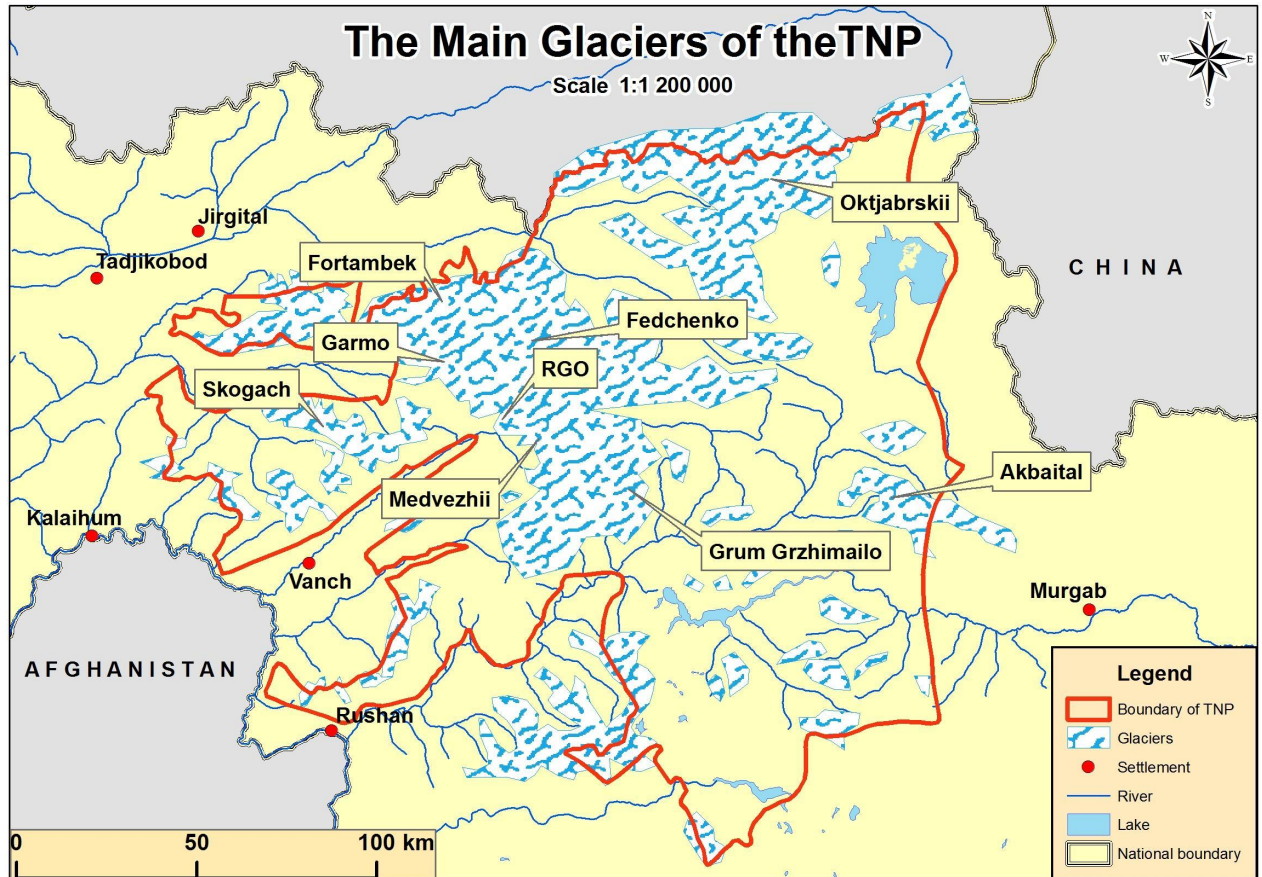
ANNEX 4. Distribution of Wild Relatives of Cereals and Leguminous Plants in the Vanj and Bartang Valleys.



ANNEX 5. Distribution of Walnut-Fruit Forest in the Tavildara Valley of TNP.



ANNEX 6. The Main Glaciers of the TNP.



ANNEX 7. Flora and Fauna

LIST OF COMMON AND RARE SPECIES OF THE PAMIR

Flora	Fauna
PLANT RARE SPECIES (RED BOOK)	ANIMAL RARE SPECIES (RED BOOK)
<i>Acantholimon varivtzevae</i>	Insects
<i>Allium stipitatum</i>	<i>Carabus (Deroplectes) sphinx dardazicus</i> -
<i>Androsace bryomorpha</i>	Carabus beetle
<i>Astragalus darwasicus</i>	<i>Papilio alexanor</i> – Butterfly
<i>Atraphaxis karataviensis</i>	<i>Polyommatus (Eumedonia) kogistana</i> - Small
<i>Bergenia stracheyi</i>	blue-winged butterflies
<i>Bunium persicum</i>	<i>Dolbinopsis grisea</i> - Hawkmoth
<i>Cephalopodium</i>	Reptiles
<i>badachschanicum</i>	<i>Ablepharus alaicus</i> – Alai snake-eyed skink
<i>Chesneya tadshikistana</i>	<i>Vipera lebetina</i> – Levantine viper
<i>Cousinia corumbosa</i>	Birds
<i>Cousinia hilariae</i>	<i>Anser indicus</i> – Bar-headed (Indian/mountain)
<i>Desideria pamirica</i>	goose
<i>Desmatodon altipes</i>	<i>Ibidorhyncus struthersi</i> – Ibis-bill
<i>Erianthera rhomboidea</i>	<i>Neophron percnopterus</i> – Egyptian vulture
<i>Erianthera rhomboidea</i>	<i>Gyps himalayensis</i> – Himalayan griffon
<i>Ficus carica</i>	<i>Gypaetus barbatus</i> – Lammergeyer
<i>Gymnospermium darvasicum</i>	<i>Aquila chrysaetus daphanea</i> – Golden eagle
<i>Gymnospermum darvasicum</i>	<i>Falco cherrug coatsi</i> – Mongol saker falcon
<i>Iris hoogiana</i>	<i>Falco peregrinus babylonicus</i> – Barbary falcon
<i>Jasminum revolutum</i>	<i>Tetraogallus tibetanus</i> – Tibetan snowcock
<i>Juno baldshuanica</i>	<i>Charadrius mongolus pamirensis</i> – Shortbilled
<i>Juno tadshikorum</i>	plover
<i>Jurinea darvasica</i>	<i>Larus brunnicephalus</i> – Brown-headed gull
<i>Keyserlingia mollis</i>	<i>Syrrhaptes tibetanus</i> – Tibetan Pallas sand grouse
<i>Kudrjaschevia korshinskyi</i>	<i>Columba leuconota</i> – Snow pigeon
<i>Kudrjaschevia nadinae</i>	<i>Columba palumbus casiotis</i> – Ring dove
<i>Ostrowskia magnifica</i>	<i>Chaimarrornis leucocephala</i> – White crowned
<i>Oxytropis astragaloides</i>	(water) redstart
<i>Oxytropis hedinii</i>	<i>Myophonus caeruleus turkestanicus</i> – Blue bird
<i>Paeonia intermedia</i>	Mammals
<i>Parasilaus asiaticus</i>	<i>Ursus arctos isabellinus</i> – Tien Shan brown
<i>Petilium eduardii</i>	bear
<i>Polygonum ovczinnikovii</i>	<i>Mustela altaica sacana</i> – Alpine weasel
<i>Primula flexuosa</i>	<i>Lutra lutra</i> – Otter
<i>Pulsatilla kostyczewii</i>	
<i>Rosularia lutea</i>	

<i>Saussurea caprifolia</i> <i>Saxifraga albertii</i> <i>Saxifraga pulvinaria</i> <i>Seseli sclerophyllum</i> <i>Tragacantha alexeenkoana</i> <i>Tulipa anisophlla</i> <i>Tulipa lehmanniana</i> <i>Tulipa linifolia</i> <i>Vassilczenkoa sogdiana</i> <i>Zygophyllum darvasicum</i>	<i>Lynx lynx isabellina</i> – Turkestan lynx <i>Panthera (Unicia) uncia</i> – Snow leopard <i>Ovis ammon polii</i> – Pamir Marco Polo argali sheep
COMMON SPECIES Nival – 4800m+ <i>Melandrium apetalium</i> <i>Ctrastium ctrastoides</i> <i>Tanacetum xhyllorhisum</i> <i>Sibalidia tetranda</i> Alpine-4200-4800m <i>Tanacetium xyllorhisum</i> <i>Oxytropis immerse</i> <i>O. poncinsii</i> <i>Smelovskia calicina</i> <i>Eurotia ceratoides</i> <i>Artemesia skornjakovii</i> <i>Tanacetium xyllorhisum</i> Sub-alpine – 4100-4200m Eurotia and Stipa desert steppe <i>Ceratoides paposa</i> – teresken, gray eurotia <i>Artemesia rhodantha</i> – sagebrush <i>Ajania tibetica</i> <i>Acantholimon diapensioides</i> <i>Oxytropis immerse</i> <i>Subbaldia tetranda</i> <i>Festuca sulcata</i> <i>Stipa glareosa</i> <i>S. oritntalis</i> <i>Christolea crassifolia</i>	COMMON SPECIES Fish <i>Schizopygopsis stoliczkai</i> – false osman <i>Schizotorax intermedius</i> – marinka <i>Nemachilus stoliczkai lacusnigri</i> – Karakul loach (endemic) Amphibians <i>Bufo viridis</i> complex – green toad (species group) <i>Rana ridibunda</i> – sea frog Reptiles <i>Agrionemus horsfieldi</i> – Central Asian tortoise <i>Laudakia himalayana</i> – Himalayan agama <i>Ablepharus brandti</i> – Asiatic snake-eyed skink <i>Natrix tessellata</i> – water snake <i>Hemorrhoids ravergeri</i> – spotted whip snake <i>Agkistrodon halys</i> – halys viper Birds <i>Charadrius mongolus pamirensis</i> (endemic)– Pamir plover <i>Oenanthe xanthoprymna chrysopygia</i> (endemic) <i>Montifringilla nivalis alpicola</i> (endemic) - Alpine snow finch <i>Carduelis flavirostris pamirensis</i> (endemic) - Pamir twite <i>Leucosticte brandti pamirensis</i> (endemic) - Pamir Brandt's rosefinch <i>Phalacrocorax carbo sinensis</i> – Great cormorant <i>Ardea cinerea cinerea</i> – Common heron <i>Eulabea indica</i> – Bar-headed goose

Sub-alpine meadows <i>Carex melanantha</i> <i>C. pseudo-foetida</i> <i>C. orbicularis</i> <i>Kobresia capilliformis</i> <i>K. stenocarpa</i> <i>Artemesia rutifolia</i> <i>A. santolinifolia</i> <i>Waldheimia rutifolia</i> <i>Saussurea glacialis</i> <i>Macrotomia euchroma</i> <i>Medisarum cephalotes</i> <i>Acantholimon pamiricum</i>	<i>Mergus merganser orientalis</i> – Himalayan merganser <i>Aythya ferina</i> – Pochard <i>Anas querquedula</i> – Garganey teal <i>A. platyrhynchos</i> – Mallard <i>Tadorna ferruginea</i> – ruddy shelduck <i>Falco cherrug milvipes</i> - Saker falcon <i>F. tinnunculus</i> - kestrel <i>Milvus korschun korschun</i> –Black kite <i>Neophron percnopterus percnopterus</i> – Egyptian vulture <i>Gypaetus barbatus hemachalanus</i> - Bearded vulture <i>Aquila chrysaetus daphanea</i> – Golden eagle <i>Gyps fulvus himalayensis</i> – Griffon vulture <i>Circus cyaneus cyaneus</i> – Hen harrier <i>C. aeruginosus aeruginosus</i> – Marsh harrier <i>Alectoris kekelik palescens</i> – Keklik <i>Tetraogallus himalayensis himalayensis</i> – Snowcock <i>T. tibetanus tibetanus</i> – Tibetan snowcock <i>Fulica atra atra</i> - Coot <i>Gallinula chloropus chloropus</i> – Gallinule <i>Charadrius dibius curonicus</i> – Little ringed plover <i>Ibidorhyncha struthersi</i> – Ibis bill <i>Tringa hypoleucos</i> – Fiddler <i>Capella gallinago gallinago</i> – Spine <i>Sterna hirundo tibetana</i> – Tibetan scray <i>Syrrhaptes tibetanus</i> – Tibetan or Pallas’ sand grouse <i>Larus ichthyaetys</i> – Great black-headed gull <i>L. brunnicephalus</i> – Brown-headed gull <i>Columba rupestris turcetanica</i> – Blue hill pigeon <i>Athene noctua bactriana</i> – Little owl <i>Otus cops pulchellus</i> – Scops owl <i>Bubo bubo auspicoblis</i> – Eagle owl <i>Caprimulgus europaeus sarudnyi</i> – Nighthawk <i>Alcedo atthis atthis</i> – Halcyon <i>Upupa epops epops</i> – Hoopoe <i>Apus apus pekinensis</i> – Black swift <i>Calandrella acutirostris acutirostris</i> – Western slender-billed lark <i>Eremophila alpestris albigula</i> – Horned lark <i>Hirundo rustica rustica</i> – Common swallow
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	<i>Delichon urbica meridionalis</i> – House martin <i>Riparia rupestris rupestris</i> – Crag martin <i>Oriolis oriolis kundoo</i> – Indian oriole <i>Corvus corax tibetanus</i> – Tibetan raven <i>C. corone orientalis</i> – Eastern carrion-crow <i>Pica pica hemileucoptera</i> – Magpie <i>Pyrrhocorax pyrrhocorax brachypus</i> – Central Asian chough <i>P. graculus forsythi</i> – Central Asian alpine chough <i>Sitta tephronota</i> – Rock nuthatch <i>Tichodroma muraria</i> – Wall creeper <i>Cinclus cinclus leucogaster</i> – White-bellied dipper <i>C. pallassi tenuirostris</i> – Brown dipper <i>Troglodytes troglodytes tianschanicus</i> – Tien-Shan wren <i>Phylloscopus trochiloides viridanus</i> – Greenish warbler <i>Sylvia nisoria merzbacheri</i> – Barred warbler <i>S. communis rubicola</i> - Whitethroat <i>T. ruficollis atrogularis</i> – Black-throated thrush <i>Monticola saxatilis turkestanicus</i> – Rock thrush <i>Myophonus caeruleus turkestanicus</i> – Turkestan whistling thrush <i>Oenanthe oenanthe oenanthe</i> – Common wheatear <i>O. xanthopygma chrysopygia</i> – Red-tailed wheater <i>O. deserti oerophila</i> – Mountain desert wheatear <i>Saxicola torquata maura</i> – Blackcap <i>Phoenicurus ochruros phoenicuroides</i> – Turkestan black redstart <i>P. rythrogaster grandis</i> - Central-Asian Guldenstadt's redstart <i>Chaimarrornis leucocephala</i> – Whitecapped redstart <i>Lesvecica tianschanica</i> – Bluethroat <i>Microcichla scouleri scouleri</i> – Whitefoot <i>Prunella collaris rufilata</i> – Alpine accentor <i>P. himalayana</i> – Himalayan accentor <i>P. fulvescens fulvescens</i> – Tien Shan brown accentor <i>M. citreola verae</i> – Western yellow-headed wagtail <i>M. cinerea caspica</i> – Gray wagtail
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	<i>M. alba personata</i> – Turkestan white wagtail <i>Lanius schach erythronotus</i> – Rufousbacked shrike <i>L. cristatus phoenicuroides</i> – Turkestan red-tailed shrike <i>Passer domesticus griseogularis</i> – Spadger <i>P. montanus pallidus</i> – Turkestan tree sparrow <i>Carduelis flavirostris pamirensis</i> – Pamir twite <i>Bucanetes mongolicus</i> – Mongol trumpeter bullfinch <i>Rhodopechys sanguinea sanguinea</i> – Asian red-winged rose-finch <i>Erythrina rubicilla diabolica</i> – Great rosefinch <i>E. erythrina kubanensis</i> – Scarlet finch <i>Fringilla coelebs coelabs</i> – Chaffinch <i>Leucosticte nemoricola altaica</i> – Hodgson's rosy finch <i>Emberiza bruniceps</i> – Red-headed bunting <i>E. leucocephala leucocephala</i> – Pine bunting <i>E. buchanani</i> – Gray-necked bunting Mammals <i>Microtus juldaschi</i> – Pamir field vole (endemic) <i>Cricetulus migratorius</i> – Migratory field vole <i>Marmota caulata</i> – Red marmot <i>Lepus tolai pamirensis</i> – Tolai hare (endemic) <i>Ochotona macrotis</i> – Piping hare <i>Alticola argentata</i> - Silver field vole <i>Lynx lynx isabellina</i> – Turkestan lynx <i>Panthera(Uncia) uncia</i> – Snow leopard <i>Mustela alticola</i> – Alpine weasel <i>Mustella nivalis pallida</i> – Least weasel <i>Martes foina intermedia</i> – Stone marten <i>Canus lupus laniges</i> – Wolf <i>Vulpes vulpes ferganensis</i> - Fox <i>Lutra lutra</i> – Otter <i>Ursus arctos isabellinus</i> – Tien Shan Brown bear <i>Capra sibirica sakeen</i> – Central-Asian ibex <i>Ovis ammon polii</i> - Pamir argali (endemic)
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Table of TNP Mammalia with Russian names

№	Russian name	Latin name	English name
<i>Artiodactula</i>			

1.	Памирский архар	<i>Ovis ammon polii</i>	Marco Polo sheep
2.	Сибирский козерог	<i>Capra sibirica</i>	Ibex
3.	Кабан	<i>Sus scrofa</i>	Wild boar
Carnivora			
4.	Снежный барс	<i>Panthera uncia</i>	Snow leopard
5.	Туркестанская рысь	<i>Lynx lynx</i>	Lynx
6.	Бурый медведь	<i>Ursus arctos</i>	Brown bear
7.	Волк	<i>Canis lupus</i>	Wolf
8.	Лисица	<i>Vulpes vulpes</i>	Fox
9.	Солонгой	<i>Mustela altaica</i>	Mountain weasel
10.	Ласка	<i>Mustela nivalis</i>	
11.	Горностай	<i>Mustela erminea</i>	Stoat
12.	Каменная куница	<i>Martes foina</i>	
13.	Барсук	<i>Meles meles</i>	Badger
14.	Среднеазиатская выдра	<i>Lutra lutra</i>	
Lagomorpha			
15.	Большеухая пищуха	<i>Ochotona roylei</i>	Royle's pika
16.	Красная пищуха	<i>Ochotona rutila</i>	
17.	Заяц-толай	<i>Lepus tolai</i>	Tolai hare
Rodentia			
18.	Красный сурок	<i>Marmota caudate</i>	Long-tailed marmot
19.	Лесная соня	<i>Dryomys nitedula</i>	
20.	Туркестанская крыса	<i>Rattus turkestanicus</i>	Turkestan rat
21.	Домовая мышь	<i>Mus musculus</i>	House mouse
22.	Лесная мышь	<i>Apodemus sylvaticus</i>	Forest mouse
23.	Серый хомячок	<i>Cricetellus migratorius</i>	Grey hamster
24.	Серебристая полевка	<i>Alticola argentata</i>	Royle's mountain vole
25.	Памирская полевка	<i>Microtus juldaschi</i>	Pamir vole
26.	Арчовая полевка	<i>Microtus carruthersi</i>	Junipers vole
27.	Восточная слепушонка	<i>Ellobius tancrei</i>	
Chiroptera			
28.	Нетопырь карлик	<i>Pipistrellus pipistrellus</i>	
29.	Кожановидный нетопырь	<i>Vespertilio savii</i>	
30.	Усатая ночница	<i>Myotis mystacinus</i>	
Insectivora			
31.	Бухарская бурозубка	<i>Sorex buchariensis</i>	
32.	Белохвостая белозубка	<i>Crocidura perigrisea</i>	

Table of TNP Reptilia with Russian names

1. Степная черепаха – *Agrionemus horsfieldi*
2. Гималайская агама – *Laudakia himalayana*

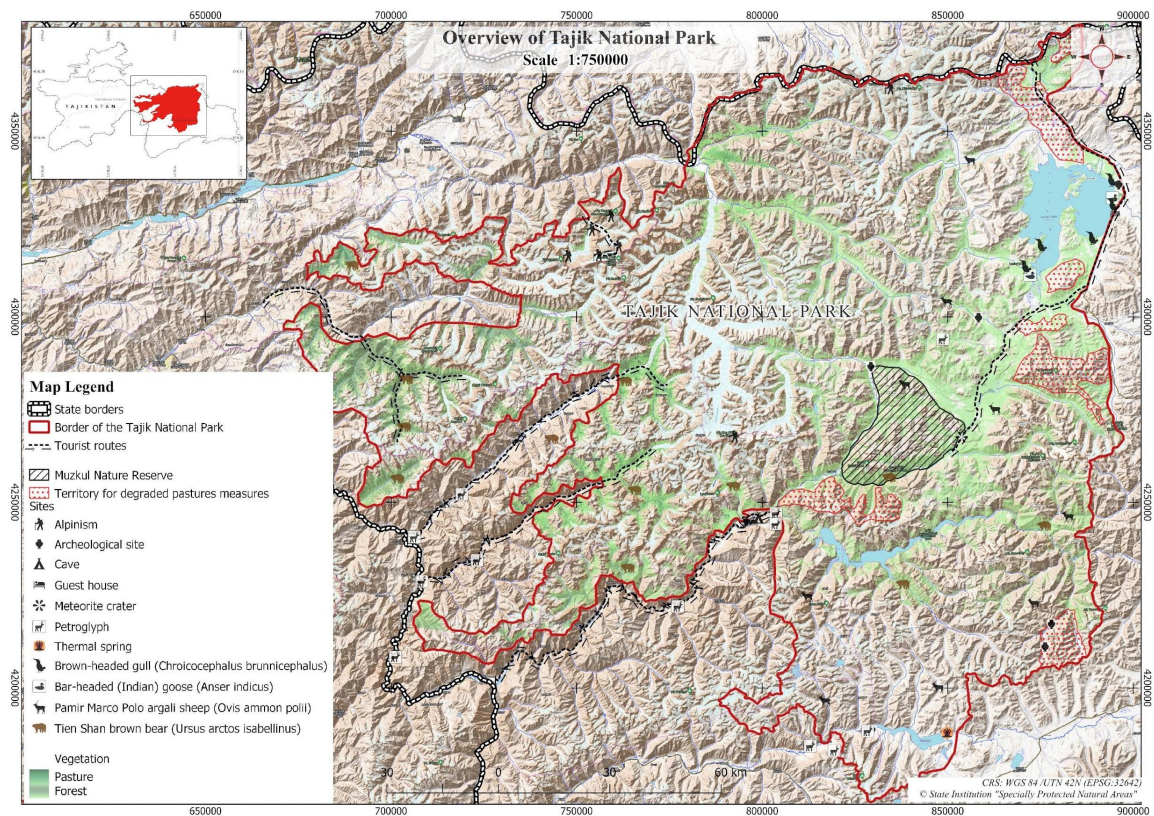
3. Азиатский гологлаз – *Ablepharus brandti*
4. Алайский гологлаз – *Ablepharus alaicus*
5. Водяной уж – *Natrix tessellata*
6. Разноцветный полоз – *Hemorrhois ravergieri*
7. Гюрза – *Vipera lebetina*
8. Щитомордник – *Agkistrodon halys*

Table of TNP Amphibians with Russian names

1. Озерная лягушка – *Rana ridibunda*
2. Зеленая жаба – *Bufo viridis* complex

Table of TNP Fishes (Pisces) with Russian names

1. Обыкновенная маринка – *Schizothorax intermedius*
2. Лжеосман – *Schizopygopsis stoliczkai*
3. Каракульский голец – *Nemachilus stoliczkai lacusnigri*
4. Тибетский голец – *Nemachilus stoliczkai*
5. Иссыкульская форель – *Salmo ischan*
6. Амударьинская форель – *Salmo trutta*
7. Пелядь - *Coregonus peled*



Map 1: Territory for the restoration of degraded pastures in the Tajik National Park