Through the CKNP to discover the natural beauty and cultural heritage of Karakorum mountains.
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This booklet is the outcome of an exhibit that took place, on 2013, at the Italian K2 Museum in Skardu, access point to the Karakorum mountains region in the north of Pakistan.

The event has been promoted by EvK2Cnr Committee and Karakorum International University in the framework of SEED Project (Social Economic Environmental Development), funded by the Governments of Italy and Pakistan.

Eco-sustainable tourism is an economic sector with a high potential in Gilgit-Baltistan region and furthermore, it is compliant with the national park's vision, objectives and regulations. It has the potential to generate funds which could sustainably support the park management and open up new perspectives for local communities, which are key to foster local support for the park’s vision and regulations.

SEED is a project for the social and economic development in the Gilgit-Baltistan region, funded by PIDSA (Pakistan Italian Debt for Development Swap Agreement) and it supports the adoption of sustainable local resource management practices, and, the development of eco-sustainable park and tourism facilities.

The booklet as well the exhibit Through the CKNP present some of the main aspects of Central Karakorum National Park and want to be an invitation for all to visit and discover the beauty of its natural environmental, history and cultural heritage and it has made possible thanks to the contributions by EvK2Cnr researchers.

We wish you an informative and joyful reading discovering the magnificence of the CKNP

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The Central Karakorum National Park (CKNP), officially gazetted as national park in 1993, is the largest protected area of Pakistan, covering over 10,000 km² in the Central Karakorum mountain range. It falls into five administrative districts of Gilgit-Baltistan Region.

CKNP is a mountain area endowed with rich biodiversity, natural beauty and important resources. The Park compasses the world’s largest glaciers, outside the Polar Regions.

It is characterized by extremes of altitudes that range from 2,000 m a.s.l. to over 8,000 m a.s.l., including K2, the second highest peak in the world.

Several activities aiming at safeguarding the environment, preserving the cultural heritage and promoting rural development in Gilgit-Baltistan are being carried out by different agencies and organizations, who largely share the same objectives.

To support an integrated social, economic and environmental development of the area, Ev-K2-CNR, has launched SEED project, which is implemented in collaboration with Karakorum International University, local institutions and international agencies, and funded by the Governments of Italy and Pakistan.

The SEED project aims at catalysing an integrated social, economic and environmental development, including the realization of CKNP.

The objective is to improve the quality of life of local communities and the conservation of environment, architectural and cultural heritage, and enhance the capacity of local communities and institutions to adapt to climate change in the Central Karakorum, promoting sustainable development in the Karakorum area through coordination of on-going efforts and initiatives; strengthen the decision support system; strengthen institutional mechanism to better manage the CKNP, and enhance capacity of local communities and institutions to face climate change.
KNP can therefore ideally be divided into two main ecological zones: a southwest part, around Gilgit district, which is relatively warmer and partially influenced by the summer monsoon and the northeast part, felling mostly in Skardu district which is characterized by a more continental climate. This climate patterns have a major influence on vegetation characteristics and distribution. Overall, the South-Western sector is characterized by a forest composition and structure which is richer both in area, biomass and species. Most of the largest forest of KNP are located in the Southern lateral valleys of the main Gilgit river valley (with few exceptions on the southern border of KNP along Indus river). Good examples of those rich forest ecosystems can be found in Haramosh, Khaltaro, Bagrote, Jaglot Gor and Astak valleys among others. On the contrary, in the North-Eastern valleys, mainly plant adapted to cold and xeric environment can be found. Forest cover is more fragmented and sparse with lower densities, stand biomass and increments. Forests areas here are therefore more scattered. The zones rich in vegetation (green), and the areas occupied by glaciers are clearly visible in the false colours satellite image.
The great altitudinal range and the climatic conditions, low precipitation and the effects of westerly humid winds, have carved out distinctive ecological zones, which have been identified on the basis of researches on vegetation and on the rich faunal component associated to each zone. The distribution of natural vegetation is closely linked to climatic and topographic conditions. The decreasing diversity in natural vegetation towards the north, it is due to increasing aridity; thus, the expansion of forests declines northwards.

A major cause of this, it is the significant difference in precipitation, humidity, and the varying periods of snow coverage. The vegetation of lower sub alpine areas is influenced by arid to semi-arid conditions, whereas plants of the alpine and sub-nival level are influenced by humidity. Each valley in CKNP provides agricultural lands and pastures at several distinct altitudinal levels. Most of the cultivated area and major settlements are along the beds of the major rivers, crops include Wheat, Maize and Potato while Apricot and Pomegranate are the most common fruit trees of the orchards. Populus plantation is very common within the cultivated areas and also as separated plantation for domestic timber use.

The CKNP is a refuge area not only for threatened species (e.g. Schaller, 1977), i.e. markhor, musk deer, Ladakh urial, Marco Polo sheep (stable presence to be confirmed in CKNP) and snow leopard, but also for not threatened but important “flag” species, i.e. blue sheep, Himalayan ibex, Himalayan lynx and grey wolf. The status of those large mammals in the park is almost unknown, but information collected indicates that numbers of snow leopard and especially of markhor are very low and close to their biological threshold. Over-hunting, habitat loss and isolation of small populations have probably been the main reasons for this depletion.
Steep valley sides, in particular at low elevation (<2300 meters), are covered by fragmented and sparse vegetation in between high rock outcrop. This is a harsh environment for plant life: little precipitation and a soil layer almost absent, means little fertility and humidity. Additionally, the large, bare and dark rocks heated by the sunlight during daytime, reach extremely high temperatures. In those conditions, only a particular type of flora, with specific physiological adaptation can develop. Unique for this environment, it’s characterized by extremely drought resistant species like Capparis himalayensis, Ephedra spp and Cardus spp among the others. Their cover is always sparse and fragmented, as only few location can support their life.

How to recognize:
Generally, those species are characterized by small and thick leaves with waxy surfaces to reduce evaporation, deep, strong and long root systems to catch each drop of water in the soil and a short, robust and woody stem to protect and “insulate” the water inside the plant. Lastly, strong and spiky thorns are common to defend those plant against herbivores!

Main uses:
Those plants are mostly used as winter grazing ground for livestock. However, Capparis himalayensis’s fruits and floral buds are seldom used for condiments.

Markhor
A large wild goat, formerly found throughout the mountains from Kashmir and Turkestan to Afghanistan, but now greatly reduced in numbers and range. Habitat loss, overhunting (for meat and trophies), and competition with livestock are the main causes of its decline. The markhor stands about 95–102 cm at the withers and has long corkscrew-shaped horns. Its coat is reddish brown in summer and long, grey, and silky in winter. The male has a long, heavy fringe on its throat and chest. The markhor is well adapted to live in very arid mountains and foothills, with rocky and steep slopes and scanty food resources. The markhor is mainly active in early morning and late afternoon. During the spring and summer months it is a grazer, while in the winter it turns to browse for feeding.

Weight: 40-100 kg (90-225 lb)
Body length: 140-180 cm (4.5-6 ft)
Tail length: 8-20 cm (0.3-0.6 ft)
Time of mating: early winter
Time of delivery: April-June
Number of offspring: 1-2
Moving at higher elevations (above 2200 m), precipitation and water availability gradually increase, allowing the development of a steppe-like community of perennial herbs/shrubs adapted to dry environment. Among the most representative species, Artemisia (Artemisia brevifolia, Artemisia wellby, Artemisia fragrans, Artemisia brevifolia) are common all over the CKNP and characterize this vegetation belt (Artemisia shrub-land).

Other species include Agrostis spp, Astragalus spp. Few tree species, adapted to grow in xeric locations as Junipers can be found in protected location. Those perennial herbs are widespread in many different environments: in the drier and cooler North-East CKNP valleys, they can be found on the Southern exposed valley sides up to 3500 meters, while in the humid South-West they are mainly confined at lower elevation, being substituted by higher shrubs and trees as the elevation, and so water availability, increases. Artemisia shrub-land can be found also where more fertile vegetation belt (as Juniperus shrub-land/forest) have been degraded by excessive cutting or grazing for a prolonged time.

How to recognize: Artemisia species are varying in colours and leaves shapes. However, some common characteristics can be highlighted: the stem is multiple, woody and robust, the leaves are spirally arranged, of a light green to pale grey colour and with a typical strong fragrance as leaves are rich in glands filled with oil to discourage animal browsing.

Main uses: Artemisia shrub-land is the preferred grazing ground for livestock during autumn and winter months. In the coldest and driest valleys of CKNP (like Brolud or Hushey) the stems and roots of those herbs are collected and used as firewood.
In close proximity to river/streams, in all KNP valleys, a plant community adapted to this seasonally humid but disturbed environment, characterized by frequent floods, draughts, and rock fall/soil disturbances is common: riparian vegetation. Broadleaved species as sea-buckthorns (Hippophae rhamnoides ssp. Turkestanica), willows (Salix spp.) and rose (Rosa webbiana) are the prominent species. Unlike the other vegetation belts, the distribution of this community is not altitude driven (it can be found from 1800 up to 3000 m) but its limited by air and soil moisture derived from the water bodies. For this reason it can be described as an “azonal” vegetation which usually has a linear shape, few tens of meters large, as a buffer around streams.

Those plants are large water consumers, fast growing species, with specific adaptations to couple with a very disturbed environment. Their ability to sprout (make new stems from root collar after stem breakage) is very useful to easily re-establish a canopy, the strong and deep roots anchor them to the rockish ground and large quantities of light-easily dispersed seeds are produced at an early age to favour colonisation of new land. Some of those plants, sea-buckthorns and rose in particular, have spiky needles to protect its leaves from wild and domestic ruminants, attracted by their green and nutrient rich leaves.

Main uses: The thorny stem of rose is used for fencing and, rarely, also for fire.

How to recognize: Shrub up to 3 m tall, with. The leaves are composed by 5-7 leaflets, variable in size and shape, but usually between 2-6 inch long, elliptic in shape of a bright green color. The stem is covered by 0.5 inch long thorns, with the typical shape of rose thorn. The flowers are usually solitary with 1-2 inch in size, pink/red or white while the fruit, variable in size, is globose of a bright red color when mature.

Main uses: Sea-buckthorn berries are edible and nutritious. The fruit of the plant has a high vitamin C content - about 15 times greater than oranges – placing sea-buckthorn fruit among the most enriched plant sources of vitamin C. Different parts of sea-buckthorn have been used as traditional therapies for diseases. Bark and leaves have been used for treating diarrhea and dermatological disorders. Berry oil, taken either orally or applied topically, is believed to be a skin softener. In the villages portion of branches with needles are used as fences, and in the drier valleys of KNP wood is used for fire. The nitrogen-rich leaves are important soil fertilizer.

How to recognize: The leaves are lanceolate (1.5-2.5 inch long and 0.5 broad) of a pale green/grey colour, often protected by 2 inch long needles. Female plants carry the typical orange berry-like fruits, which are filled with fragrant oils. It’s usually appearing as a 2-3 meters high multi-stemmed shrub.
Livestock

Livestock is one of the primary resources for KNP villages. Among livestock, goat is the dominant species, followed by sheep, cows and yaks (including crossbreds). Donkeys are also present in lower numbers. The number and type of livestock reared is related to the quantity of grazing areas as well as to the local climatic conditions (environment, climate and altitude vary widely in KNP) and the number of households. In most villages, small ruminants are preferred to lactating cows since they are less demanding in labour during summer, when cash crop and other off-farm opportunities may be available. In addition, small ruminants are believed to be more resilient to the dry climate and the fodder shortage in winter months. In contrast to small ruminants and lactating cows, yaks and crossbreds are allowed free ranging in the high pastures beyond the traditional June-September grazing season. Local communities use wild rose and seabuckthorn branches to protect threes and vegetation from the debarking done by livestock (mainly goat).
Junipers are very frugal conifer species, which often grow on rocky, poor soils with little water availability. Morphological adaptations at various level like the strong, deep and ample root system and the scale-like leaves, thick and covered by a wax layer, allow Junipers to grow where other trees just cannot, as in dry and hot location at low altitude or on sandy dry soils at higher elevation. The availability of resources is reflected in the growth habits, which can change from a small and contorted shrub-like tree in the less fertile area to a medium size tree with large stem where environmental condition are favorable (up to 15 meters tall). Due to their slow growth, the Junipers growing in fertile locations are usually substituted by more vigorous species like pine, spruce or birch. Juniperus are abundant in all CKNP, mainly located on southern exposed dry sites, or at low elevation. In western CKNP junipers can be found as low as 2,400 meters to up to 4,000 meters. Juniperus semiglobosa is found all over the park, while J. turkestanica and J. excelsa are limited to the westernmost valleys.

How to recognize: Juniperus are conifers of the Cupressaceae family. Its perennial foliage is different both from that of broadleaves and from that of Pine and Spruce as well, being formed by tiny scale leaves partially overlapped one to each other. The colors are variable from bright to almost-pale grayish green. Juniperus are not very high trees, reaching usually 15 to 20 meters maximum but their diameter can reach very high dimension up to 1.5 meters. Their age, as well, can be very long, up to more than a 1000 years! The trunk is grey and can be multi-stemmed especially after being cut. The flowers are small appendix on the outer leaves, with brown to yellow color: male plant are different from female, and only these are bearing the seeds. Those are not protected by the typical conifer cones, as in Pine and Spruce, but are hold in a spherical fruit with a berry-like appearance.

Main uses: In Central Karakoram National Park, Juniperus woods is mainly used as firewood. This is thanks to its dry, fragrant and smoke-free burning qualities. Juniperus leaves were often used by shaman for their rituals: inhalation of green-leaves burning smoke is sad to produce a state of ecstasy in the shaman body. In the driest area of CKNP, where other conifer or tall trees are absent, Juniper trunk was used also for roof construction. However, nowadays is often replaced by fast-growing poplar plantation.

Typical species: Juniperus excelsa subsp. oxycedrus; Juniperus semiglobosa; Juniperus turkestanica
**Conifers forests**

Typical species: Morinda Spruce (*Picea smithiana*), Himalayan Blue Pine (*Pinus wallichiana*). Conifer forests are common in the South Western humid valleys of CKNP but are absent towards North East. Those forests are composed by two big trees: spruce and pine. Spruce is an exigent tree, which need large amount of water and dislike dry and hot weather. For this reason is mainly confined in Northern or Eastern slopes where is often found mixed with birch (at higher elevation) or with pine.

Himalayan Blue Pine is the biggest tree in the CKNP, being able to reach more than 40 meters height with diameter up two 2 meters. Its needle leaves are longer than in Spruce, up to 8 cm, narrow and flexible. Their color is light green to bluish/grayish. The stem is massive, deeply ribbed, light grey when young, reddish to brown when old. The shape of the canopy is rounded compared to spruce and the color is much lighter: this characteristic make it simple to distinguish from spruce.

**Main uses:** Pinus wallichiana wood is the most appreciated timber for construction purposes: its softness makes it easy to carve but its strengthens and durability are everywhere famous. Traditionally, local shepherd cut little portion of its stem which filled with resins, are the local lights for enlightening the long and cold nights of shepherds.

Spruce is a tall (up to 40 meters) trees (stem diameter up to 150 cm), growing in South-West CKNP. It is an evergreen conifer therefore keeping the leaves all year around. Those leaves, called needles, are short (1.5 cm long) and narrow (0.1 cm) of a dark green color. The arrow like shape of spruce tree canopy is typical of conifers, and this characteristic together with the dark green color of its leaves make it simple to recognize it even from distance.

**Main uses:** Wood is mainly used for construction purposes thanks to its straightness and resistance. Young foliage was, and sometimes is still, used as additional fodder for young goats. The wood is fragrant.

It prefers deep, fresh and fertile soils where water is available during all the growing season (from May to September). Spruce seedlings have to ability to grow well also under the canopy of other trees. For this reason, spruce is a "shadow tolerant" species. Himalayan Blue Pine is a pioneer species. It’s ability to colonize barren soil is its evolutionary advantage: where few other plants are able to grow, pine can grow easily, especially on fresh, sandy, unconsolidated soils, like moraines or landslide-prone areas. Even if it needs less water than spruce, Himalayan Blue Pine is still a quite exigent species, therefore it is absent from arid areas like Northern and Eastern part of CKNP or at low elevation (below 3000 meters).
Typical species: birch (*Betula utilis*), ash (*Fraxinus xanthoxyloides*), mountain ash (*Sorbus tianshanica*), willows (*Salix*).

The most common broadleaves tree in CKNP is birch, a 15 to 20 meters tall tree which forms large forests at high elevation (usually above 3000 meters up to the treeline, at 4000 meters). Ash and mountain ash, on the contrary, are rarely forming pure forests, but can be found scattered below conifers (ash) or in birch forests (mountain ash) mostly in the South Western humid valleys. Willows are also common, mainly in the surrounding of rivers. The physiological characteristic of high altitude broadleaves trees make them very large water consumers. For this reason most of their forests are located on humid, deep and fertile soils.

Birch forests, in particular, are to be found where snow accumulate during winter months and, as the warm season arrive, an important additional water reservoir becomes available for the plants. Willows, instead, are mainly found in proximity to rivers or where morphological depression on earth surfaces favor water accumulation and stagnation. Due to the cold weather which characterize the area where those trees are growing, their foliation (the emergence of new leaves) is occurring relatively late in the season: birch leaves, for example, emerge mainly from early to mid June. Similarly, in autumn, as the cold season approach, birch is also the first tree to lose them, usually between mid September to early October. At this time of the year their foliage assume splendid changing colors: from golden yellow to burning red. Local people from CKNP valleys are often saying that when birch leaves change color, this is the sign that cold months are coming!

**How to recognize**: In summer, its leaves are bright green with a heart-like shape (3-4 cm long and 2-3 cm large), rounded at the stalk and with a short tip. Its trunk’s cork has a distinctively white color created by a layer of protective “papery” plates attached one to each other. This characteristic is typical of young small to medium size trees, while as the trees grows older, the layer of sheets cracks into smaller sections. Male and female flowers are small, carried in aments blossoming in early autumn. The small seeds, released in June are dispersed by wind even on very long distances.

**Main uses**: Young and flexible twigs were traditionally used for bridge construction, while the outer cork layer, collected from the stem, were used as writing papers. Today, they are mostly by shepherd for butter packing.

**Ash**

How to recognize: Ash is a broadleaves tree, with “composed” leaves: each leaf seems to be made-up by 7/9 smaller leaves. Their color is bright green during growing season turning to yellow and brown during autumn. The stem is grey and the cork is smooth, compact.

**Main uses**: Leaves are used as fodder for livestock and its wood is well-known for its strengthens and durability. Often it is used for making utensils.
Musk deer are primitive, antlerless deer, with a pair of tusk-like upper canines. Both sexes have well-developed canines, and in males these grow 7-14 cm (3-5 inches) long and protrude from the corner of their mouth in a fang-like manner. The canines are constantly growing, but they may break easily, due to their mobility and fragility. It looks like a small deer with a stocky build, and hind weight: 11-18 kg (24-40 lb) Body length: 86-100 cm (2.8-3.3 ft) Tail length: 4-6 cm (0.1-0.2 ft) Time of mating: early winter Time of delivery: April-June Number of offspring: 1 legs longer than front legs. The general color of the coat is a slightly grizzled dark brown. The ears are large and rounded, generally lined with whitish fur. The musk gland is found only in adult males. It lies in a sac located between the genitals and the umbilicus, and its secretions are used to attract mates and mark the territory. Musk deer have been hunted for their scent glands which can fetch up to U.S. $45,000/kg on the black market. It is rumoured that ancient royalty wore the scent of the musk deer and that it is an aphrodisiac. Musk deer live mainly in forested and alpine scrub habitats in the mountains of southern Asia. Musk deer are herbivores, living in hilly, forested environments. Like true deer, they eat mainly leaves and grasses, with some mosses, lichens and bark. It is hard to spot a musk deer, because they are solitary animals, with well-defined territories, generally shy, mainly nocturnal and crepuscular. As an indirect sign of presence, their pellets be easily identified, because musk deer defecate always in the same places, called “latrines”, where pellets accumulate.
Above 3800-4000 m, the short growing season and the low temperatures do not allow the growth of trees. Here, only herbs and few shrubs are capable of living, identifying the Alpine meadows and shrubs-land biome. Thanks to the relatively high summer rainfall and the large amount of water available from snow melting, alpine meadows have good fertility and productivity.

Poa and Carex genus are the most common plant members, but many other species are present such as Kobresia, Polygonum and Rhododendron. Those plants are generally classified as hemi-cryptophytes or chamaephytes: the former have gems at the soil surfaces, the latter have woody stems with gems near the ground (below 30 cm). The insulating effect of snow pack, which ensures that temperature will rarely fall below -2/-3°C at the ground level, indeed, is essential to protect the gems from the cold winds of Karakorum winter. Alpine pastures are home to a very high level of plant biodiversity, which is evident during the summer blossoming when thousands colours from different flowers appears. Alpine pastures are easy to recognize: their green colours is striking against the bare rocks surrounding them, and is a consequence of the dense thickets of plants, growing closely together. Alpine pasture are a key-asset for the sustainment of local communities which relies heavily on this belt for the grazing of livestock (during summer). Through the centuries, alpine meadows inferior altitudinal limit have been lowered in elevation by local communities through clearings of sub-alpine broadleaved forest, mountain dry temperate forest and Juniperus shrub-land/forest to increase pasture area size.

Geranium himalayense
Wild mountain ungulates living mainly on alpine meadows, but close to cliffs, and above 3000 m a.s.l. are ibex, urial (rare) and bharal (very localised), while markhor prefers steep rocky slopes, below 3000 m a.s.l. In all these species, both sexes have horns: males wear massive horns (different in shape species by species), while females show slender and shorter ones. All these species are gregarious and forage in small herds, females with young descending to lower altitudes than mature males. By the autumn both sexes congregate into larger herds. Being mainly diurnal, they spend the day in alternating periods of activity (mainly in the early morning and late afternoon) and rest.
Marmots are large rodents, with flat head and short neck, living in colonies and digging deep burrows, which are shared by colony members during hibernation. Their body shape and size reflect the partly subterranean life, being streamlined and flexible: marmots are capable of pushing their way through narrow holes. The large eyes are close to the top of the head, allowing the animal to see the terrain above ground while remaining inside the burrow.

Woolly hares are a crepuscular small species (total body length is 40-48 cm). During the day, usually they stay in hollows made scraping terrain and grass with their paws. Their diet includes herbaceous plants, seeds, berries, roots and twigs. Hare may undergo parturition from one to three times a year and litter size ranges from 3 to 10 youngs.
Large carnivores

Large carnivores, as wolf, lynx, snow leopard and brown bear, are elusive species. Therefore they are difficult to be seen and sightings are rare. Their presence in an area however may be assessed through indirect signs of presence, i.e. pugmarks, scats and territorial signs.

Brown Bear

The brown bear differs from the other large carnivores in feeding behavior, as well as in the ways he walks. It primarily feeds on vegetable matter, including roots, and mushrooms; therefore, a bear scat will usually be substantial in volume, with seed and vegetable matter inside and a sweet smell. Furthermore, brown bears are plantigrades (i.e. walking with the podials and metatarsals flat on the ground) and can stand up on their hind legs for extended periods of time. Thus, their pugmarks are similar to human feet (with 5 toes), but wearing large, curved and not retractable claws, those present on the forelimbs being longer than those on the hind limbs.

Snow leopard

Snow leopards are solitary wild cats, which use to scrape their back paws in loose soil to mark their territory, leaving a small heart-shaped depression with a mound of soil next to it. Furthermore, they mark rocks, bushes and boulders with a pungent secretion from a scent gland near the tail base, sprayed with urine. Pugmarks left by a snow leopard have the heel-pad with two anterior lobes and a rectangular shape. Front pugmarks are distinctly larger than rear ones. Pugmarks left by a lynx are very similar, but smaller in size and with a triangular shape, and central toes slightly longer than external toes. As in all felids, no claw marks are present in both species (but in very soft terrain).

Wolf

Wolves often stay together as a pack, but in disturbed, man populated areas they become solitary hunters. Territory may be marked by scats, similar in shape to those of snow leopard. Conversely, pugmarks are completely different: pugmarks left by a wolf have a heel-pad with a single anterior lobe and a triangular shape; as in all canids, claw marks are conspicuous.
KNP holds unique diversity of raptors species within its fragile high altitude deserts including vultures, falcons, hawks and eagles. Alpine and moraine lakes are important stopovers on the Indus flyway, one of the largest migratory birds routes in the world. Both migratory and resident birds are observable in the KNP area. The Golden Eagle, Himalayan griffon vulture, Kestrel and falcons, are present year-round.

**Raptors**

Golden Eagle (*Aquila chrysaetos*) frequents open and deserted areas, mountains, plateaux and steppes. Adult individual has fairly uniform dark brown upperparts, except the paler crown, nape and median coverts which show pale fulvous-tipped feathers. Wings are broad and rectangular, and tail is fairly long and broad with rounded tip. Feet are yellow with strong, long and curved black claws. Female has similar plumage but she is larger than male, while juvenile is dark chocolate-brown with white bases to flight feathers. Golden Eagle feeds on medium-sized mammals such as rodents, rabbits and hares, birds (such as game-birds), less frequently reptiles, but it also takes carrion. It may hunt young and injured or vulnerable animals.

The Himalayan Griffon Vulture (*Gyps himalayensis*) is the largest of all the species of the genus *Gyps*; the wingspan ranges from 2.5 to 3.0 m (8.4 to 10 ft). It inhabits mountains between 1500 and 4000 meters of elevation and may perform altitudinal movements during winter. The plumage is pale overall, with whitish to creamy-white body and wing-coverts. As in other vultures *Gyps*, the flight feathers and the tail are dark brown, while the underparts are very pale, with white thighs and underwings, and creamy-white body. Both sexes are similar. Juveniles are darker than adults. The Himalayan Griffon Vulture feeds only on carrion.
Common kestrel (Falco tinnunculus) inhabits numerous kinds of open or slightly wooded areas with tall grass and low shrubs (i.e. grasslands, steppes or cultivated fields) and it is found from sea-level to tree-line in mountains. Adult male has reddish-chestnut upperparts, heavily spotted with drop-like spots; rump and tail are bluish grey, the tail shows black subterminal bar, while tail feathers are finely white-tipped. Underparts are yellowish-brown, streaked and speckled black. Undertail feathers are narrowly barred and show black subterminal band. Female has browner upperparts with conspicuous dark bars, while juvenile is heavily streaked. Common kestrel feeds primarily on small mammals (voles, mice, shrews), but it is also able to catch some passerines in open areas, as well as lizards and insects. It hunts by performing a very typical hovering flight at height between 10 and 40 metres, carefully searching for prey on the ground: when the prey is detected, it swoops down onto the prey in rapid short flight.

Eurasian Sparrowhawk

Relatively small bird of prey (60-75 cm wingspan), the Eurasian Sparrowhawk (Accipiter nisus) is unobtrusive and difficult to observe. It leaves in varied types of forests and more open woodlands, from sea-level to mountains, foraging in summer up to the tree-line. The male show white underparts, arred reddish on flanks and greyer on breast and belly. Underwing has white barred dark grey coverts, and white flight feathers with more conspicuous dark grey bars. The female is larger than male and she has grey upperparts with brownish wash, but white barred grey underparts (she lacks the reddish tinge of the male). This raptor is a very good hunter and its preferred preys are birds, especially small passerines for the male, and mostly thrushes, starlings and even pigeons for the larger female. Adult male has blue-grey upperparts, including wings and tail.
The Central Karakoram National Park area is ca. 12,162 km², and roughly 40% of it is covered by ice (30% of the glacier surface of the entire Karakoram range in Pakistan). There are some glaciers that intersect the park boundary, and therefore including all glacier outlines CKNP boundary covers an area of 13,199 km². The attention paid to this area is increasing, because the evolution of its glaciers recently depicted a situation of general stability, known as “Karakoram Anomaly” and more recently the “Pamir-Karakoram Anomaly”, in contrast to glacier retreat worldwide. An inventory, based on 2001 satellite images, displayed 711 glaciers within the CKNP region spanning a broad range of size, geometry, type, and surface conditions.

Most of the glaciers are typical debris covered glaciers, that is glaciers with the largest part of their tongue or ablation zone continuously covered by rock debris; moreover for most glaciers there is lack of real accumulation basins and they are nourished largely or wholly by snow and ice avalanches. Some glaciers are more than 60 km long (for instance Hispar, Biafo, Baltoro).

The Baltoro, one of the most prominent, most walked and known all over the world glaciers in the park, is one of the largest debris covered glaciers worldwide (604 km²). Baltoro glacier has been studied for more than one century, within several scientific expeditions, among others those led by Ardito Desio, a most renowned Italian scientist and explorer. In a more recent inventory, based on 2010 satellite images, the number of glaciers is slightly lower than in 2001, with 707 glaciers (due to some individual glaciers advancing to merge with neighboring glacier bodies), covering an area of 4,613 km² (±38 km²). Then the total glacier surface increased slightly, by ca. +27 km² during 2001-2010. The relative area change is not remarkable (+0.6% of the 2001 area), thus suggesting rather stable conditions. Moreover, 40 glaciers (over the whole sample of more than 700) are found with changed area, i.e. only 0.06% of the CKNP glaciers varied its surface, confirming the stability of this glacierized region. In spite of the overall stable situation, when focusing upon those 40 glaciers witnessing surface change (i.e. due to advance or surge events), noticeable variations are found. In some cases they even advanced on top of their bigger neighboring glaciers.

A most prominent example is given by Panmah’s tributaries, some of which have experienced surges, that is sudden and rapid advances, from 2001 and 2005, now protruding far onto the main trunk of the Panmah glacier, which may or may not result into a surface area increase.
With the term “Non Wood Forest Product” (NWFP) are identified all the products of biological origin other than wood derived from forests, other wooded land and trees outside forests.

Central Karakorum National Park is home to a great diversity of those products, from mushrooms to spices and medicinal plants. Forest dweller relies on their indigenous knowledge for collection, processing, packing, drying, marketing and consumption of various non timber forest products.

Among the most common mushrooms, morels have a great importance in CKNP community income generating opportunities. They are edible mushroom, well known for their unique taste, but traditionally are considered also a medicinal products.

Other important plants are Cumin (Cuminum cyminum), an annual plant growing in the high mountain pastures, which seeds are dried and frequently used in traditional cuisine for their particular taste, and thymus an aromatic plants.

Growing at high elevation in CKNP pasture, thymus is famous for the fragrant smell of its flowers which are used to prepare a very tasty tea. The flowers and leaves are also said to have a strong antiseptic as well as expectorant and antispasmodic properties.
Mountains: the highest peaks

The Park protects the greatest concentration of high mountains on earth. It is consisting of four peaks over 8,000 m including K2, 8611 m, Gasherbrum II, 8035 m, Gasherbrum I, 8080 m, Broad Peak, 8051 m and sixty peaks higher than 7,000 metres. The majority of the highest peaks are in the Gilgit–Baltistan region of Pakistan. Baltistan has more than 100 mountain peaks exceeding 6,100 metres (20,000 ft) height from sea level. The area is internationally renowned for mountaineering and trekking opportunities.
CKNP notable peaks in restricted zone

K2  8611
G1  8080
Broad Peak  8051
G2  8035
G4  7952
Mashabrum  7821
Chogolisa  7665
Baintha brak  7285
K6  7282
Latok 1 (Biafo)  7151
Latok 2 (Choktal)  7145
K7  6934
Angel peak  6858
Paju peak  6610
Uli Bhiafo towers  6417
Trango towers  6363
Marble peak  6256
Pastore peak  6205
Cathedral towers  5828
Distaghil Sar  7885
Mashabrum (Hushey)  7821
Rakaposhi     7788
Trivor        7577
Diran peak    7266
Spantik peak  7027
Laila peak (Hushey)  6986
Haramosh peak 6666
Broad Peak 8051 m.
Heritage is a broad concept and includes the natural as well as the cultural environment. It encompasses landscapes, historic places, sites and built environments, as well as bio-diversity, collections, past and continuing cultural practices, knowledge and living experiences (Icomos International cultural tourism charter 1999).

Through the development of knowledge of architectural and historic monuments belonging the ancient routes, it’s possible to allow the use/preservation of architectural and cultural heritage of CKNP territories.

The main ancient routes connect:
- the Upper Braldo Valley with Shigar (through the Skoro La Pass, m. 5080). It’s a trek that requires about two days and crosses Thal Brok (m. 3850), a pasture shared by the villages of Testey and Monjong. It is used from the end of July/beginning of August to October.
- the Upper Braldo Valley with Khaplu village via Hushe. Hushe Valley is a historic base of many voyages of exploration and expeditions to the mountains in this region of Karakoram (eg. G. T. Vigne, T. Longstaff, ...)
- the Shigar village with Khaplu village via Thally. The Thalle La Pass (about m. 4500) is a path that, (as an alternative Tusserpo, about m. 5000), was the main ancient connection between the Shigar Valley and the south-east territories.

The cultural heritage in the CKNP territories and its neighbouring areas comes from the stratifications of different influences and traditions: the movements of populations, travelling traders and religious missionaries, that treading along the Indus Valley and seasonal routes crossing Karakoram Range and connecting South and Central Asia.

These extra regional connection have left deep impression on the cultural evolution of the entire region, that is still clearly visible in the heritage and in the sociocultural traditions evolved over the centuries in each singular valley, due to fusion with other ethnic groups, influx of different languages and religions, trade of material goods and mobility of ideas.

The stratifications of cultures and traditions have produced a complex cultural and built heritage.

The itinerary proposed pass through places where are present buddhist rock carvings and remarkable examples of wooden architecture.
One of the two entry point in the eastern part of the KNP is located near Askole, the last village before the glaciers region, and the historical place where the mountaineering expeditions and trekkers stop. Here the valley is open and it is characterized by many villages located on fluvial terraces next to the alluvial cone side occupied by torrents to allow a better use of the fertile small areas. During the permanence in Askole, it is possible for the trekkers to visit and discover the cultural heritage of the area on the hiking route that connect each village along the steep mountain slopes. The richness of the cultural heritage is documented by the presence of the traditional Balti houses with fine carved wooden decorations, the religious buildings and the organization of the agricultural land with terraces and water channel for irrigations. At the Askole House Museum, an exhibition explain the history of the area and its cultural heritage through a collection of object coming from the villages of the Upper Braldo Valley.
Located at 3,048 meters of altitude above the sea level, Askole is a small village of 584 inhabitants (data collected in 2006), the largest and, according to tradition, it’s also the oldest in the Upper Braldo Valley. Its Mosque is known as the most important of the area and, thanks to its strategic position, Askole has increased its importance and size, becoming a privileged stop for all expeditions that purchase supplies and hire porters. Many people and travelers have described the village of Askole and its inhabitants, including Fosco Maraini, who tells about a sort of “magic shangri-la, a city lost in time and space. [...] But everything here is legendary and in some sense charming. [...] Men are finally really related to their land [...] the Balti from this faraway land have a behaviour which is more daring than that of men from Shigar or Skardu”.

On the steepy mountain slopes around Askole, it’s present a colony of Urial. The urial is a medium-size wild sheep, reddish-grey in colour, with a greyish face and creamy-white legs and belly. Adult rams show a chest ruff, predominantly white in the throat region and black as it extends down to the sternum. In summer coat the ruff is much shorter, but still conspicuous. Urial males have large horns, curling outwards from the top of the head, turning in to end somewhere behind the head. On the contrary, females have shorter, compressed horns. Urial are generally found in arid countries, at relatively low altitudes. They usually live in open habitats, with few or no trees.

**Weights:** 40-60 kg (90-132 lb)
**Body length:** 130-160 cm (4.3-5.3 ft)
**Tail length:** 10 cm (3.9 in)
**Time of mating:** mid November
**Time of delivery:** early April
**Number of offspring:** 1-2