The Kanas National Geopark: the ‘Alps of Asia’

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Introduction
How many intrepid travellers have dreamt of the perfect foreign destination meeting all of their botanically minded desires? Their wish list may include the need for a remote, under-populated setting with superlative natural beauty and a rugged landscape inundated with a rich diversity of plants. Kanas National Geopark (KNG) is one such revelation. This park occupies one of China’s northern-most frontiers, close to the borders of Kazakhstan, Russia and Mongolia. The central Altai (or Altay) Mountains, in the heart of Asia, dominate the Kanas landscape.

The greater Kanas region, situated in Burgin (or Bu’erjin) County of China’s largest province, Xinjiang, was until the 1980s isolated and unknown to the world outside it, even to the Han Chinese because the lack of road infrastructure prohibited access to the region. Despite the recent development drive by the Chinese Government, the relaxed and traditional Mongolian-like way of life still persists. The native inhabitants are Tuvans (or Tuvinians), a group of Turkic people with a strong Kazakh and Mongolian influence (Mongush 1996; Breitung 2005). Tuvans are historically cattle-breeding nomads, living in traditional yurts (a Russian term for felt-lined tents, sometimes covered with birch bark or animal hides). The yurts (or ‘gers’ in Mongolian) are relocated seasonally, up to three times per year, as the nomadic herders seek newer pastures. Sedentary Tuvans reside in quaint hamlets comprising simple wooden log cabins made from pinewood, with lazy curls of smoke wafting from chimneys and the pungent odour of aromatic, boiled mutton permeating the thin, crisp air. The Tuvan ancestry is shrouded in mystery and speculation, with some believing they originated from the elite blue army legion of Genghis Khan (Kanas Tourism 2008).

KNG covers a total area of c. 2200 km², with further plans afoot to expand it to a mega-area of 10 000 km² by absorbing neighbouring regions, and ultimately into the Altai Transboundary Biosphere Territory (TBT) by incorporating portions of Kazakhstan, Mongolia and Russia (Vinokurov et al. 2006). A biosphere reserve is an international conservation designation given by UNESCO under its Man and the Biosphere (MAB) Programme, created to promote a balanced relationship between cultural and natural landscapes. The proclamation status of KNG is unclear; the Kanas National Nature Reserve was established in 1986 by the State Council of the People’s Republic of China, and officially opened in 2004 as the Xinjiang Kanas National Geopark (Kanas Tourism 2008).

Access
The Kanas region is difficult to access. The arduous two-day, 1000 km journey by bus begins at Urumqi, the capital city of Xinjiang. Once leaving behind the bustling spice and cashmere markets of the charismatic ‘Great Silk Road’ trade route, made famous by the High Meadow Grassland in Kanas National Geopark. These species-rich grasslands form part of the World’s Temperate Grassland Biome, recognized as the most threatened terrestrial biome on the planet.
The mist-shrouded Kanas Lake, icon of the greater Kanas region. This morainal barrier lake is China’s largest and deepest freshwater lake.

The Taiga-dominated mountain slopes of Kanas National Geopark.
Fireweed, also known as the Rosebay Willowherb, *Epilobium angustifolium*, of the family Onagraceae, is native throughout the temperate Northern Hemisphere. This species forms dense stands (as shown in the photograph), often in disturbed sites such as the verges of roads and footpaths. It is a tall perennial, flowering from June to September and is pollinated by bees and moths (Streeter and Garrard 1998).

Tufted Vetch, *Vicia cracca*, of the legume family Fabaceae, with its brilliantly coloured purple-blue flowers, is native to Europe and Asia. This species is a perennial, flowering from June to August. Its compound leaves are characterised by terminally positioned leaf tendrils, which are used for climbing and support. It stands out in sharp contrast to a dense patch of a white-flowered Bedstraw, *Galium* sp. (Rubiaceae), most likely pollinated by small flies.
Venetian merchant Marco Polo, the journey involves negotiating another very contrasting obstacle, the brittle heat of the Junggar Basin in the sizzling Gobi Desert, a world-renowned dinosaur graveyard regarded as the real ‘Jurassic Park’. The Junggar basin is predominantly a gravel plains semi-desert ecoregion of the Dzungarian Gobi. The route bisects the Kalameili Nature Reserve, a wildlife sanctuary for the reintroduced Przewalski’s Horse (Takhi). Other resident wildlife includes the Bactrian Camel, Mongolian Wild Ass (Khulan) and the Black-tailed (Goitered or Persian) Gazelle. The area is also famous for its Yadan topography (wind-eroded geological wastelands). Finally, after ascending a series of mountain passes, the goal is eventually reached; the Kanas region lies deeply embedded within mountainous terrain that rises sharply out of the desert basin. KNG is poorly known, even in China, but particularly so to the western world (Breitung 2005). More recently, however, it has begun to attract the Chinese tourist by the busload, although access is limited to only five months of the year (mid-May to mid-October). During the remaining seven months, the park is subject to solitary confinement thanks to its bleak Arctic-influenced winter climate that buries the region under a blanket of snow and ice.

Biophysical environment
Dominating the natural landscape of KNG are rugged, snow-covered mountains (although snow cover is limited to mountain tops in summer), deep U-shaped glaciated valleys, and fast-flowing, gin-clear mountain streams. Its highest point is Friendship Peak (4 325 m a.s.l.), shared also by Russia and Mongolia. The iconic Kanas Lake (48° 49’ N, 87° 02’ E), at an altitude of 1 374 m a.s.l., is fed by snow melt from the embracing central Altai Mountains. This finger-like lake, some 24 km long, with a mean width of 2 km and a depth of up to 188 m (average depth 120 m), is China’s largest and deepest freshwater lake (Breitung 2005). The lake is a true morainal barrier lake, formed by strong exaration by glaciers. Water leaving Kanas Lake gives rise to the Kanas River, a true moraine river. The river is an impressive cauldron of seething white-water, over a hundred metres wide in places. It joins the Burjin River, and ultimately the Ertix (or Irtysh) River, the only river in China that flows into the Arctic Ocean (Kanas Tourism 2008).

Flora and vegetation
The landscape is sharply compartmentalized into forest and grassland because it is at this latitude where the vast Taiga forests, so typical of Siberia, reach their southern limit, and where the temperate meadow grasslands, transitional to the expansive, more arid Steppe grasslands of central Asia, begin. ‘Taiga’ refers to the conifer-dominated forests of the boreal (cool temperate) zone. The forests, accounting for c. 90% of the vegetation cover in the Kanas landscape, dominate the warmer and wetter south-facing slopes, while swaths of grassland are able to survive the colder and drier north-facing slopes. The flora of the greater Kanas region comprises some 800 native species (in 83 families and 298 genera) (Kanas Tourism 2008).

Forests
The boreal Taiga forests (‘woods’), when compared to the temperate forests of South Africa, are very species-poor. The consequence of past epochs of heavy glaciation is clearly evident, both in the paucity of woody species diversity and in the shaping of the landscape. The Taiga forests of KNG are dominated by the evergreen conifers Siberian Spruce (*Picea obovata*), Siberian Pine (*Pinus sibirica*), and Siberian Fir (*Abies sibirica*), and by the deciduous conifer Siberian Larch (*Larix sibirica*), all of the family Pinaceae. Non-conifers include the evergreen Siberian Silver Birch (*Betula platyphylla*), and the deciduous broadleaf Common Aspen (*Populus tremula*). The forests extend in altitude to the alpine tree line. Certain woody species, such as the Siberian Pine, are long-lived, with a lifespan of up to 850 years (Conifer Specialist Group 1998). Visiting KNG in autumn is apparently a phenomenal spectacle, with deciduous members of the Taiga displaying their senescing leaves in glorious colours ranging from russet to golden-yellow.
Grasslands

The minority grasslands of KNG are reputedly the most species-rich of China’s cold temperate zone and are, therefore, important gene pools of biological diversity. The emerald-green blankets are classified as High Meadow Grassland, one of six temperate grassland types in China, and one of the most threatened (Peng et al. 2008). Meadow grasslands in general are naturally a transitional grassland type from temperate forest to the vast Steppe grasslands of Eurasia. The mean annual temperature of the grassland environment ranges from -4 °C to 2 °C, and annual rainfall ranges from 300 mm to 800 mm (Peng et al. 2008). Despite periods of low rainfall, moisture availability is augmented by a low evaporation rate and the additional supply of snow- and ice-melt (Breitung 2005). Mean above-ground biomass is c. 2 500 kg ha⁻¹. The grassland vegetation of KNG is dominated by graminoids (mainly tufted grasses and rhizomatous sedges) and forbs (Peng et al. 2008).

Some 35% of the temperate grasslands in China are formally protected (Peng et al. 2008), far more than the 2% formal protection afforded to temperate grasslands in South Africa, Lesotho and Swaziland (Carbutt et al. 2008). The Temperate Grassland Biome is the World’s most threatened and altered terrestrial biome, with only 5.5% under formal protection (Henwood 2006). The World Temperate Grasslands Conservation Initiative (TGCI), under the umbrella of the Grasslands Protected Areas Task Force of the IUCN World Commission on Protected Areas, has set a global target of 10% protection by 2014 (Peart 2008).

The grasslands of KNG in summer are simply charming given the myriad species in full bloom. The summer flowering period is brief and, therefore, understandably intense; the showcase of species diversity is accompanied by a mélange of colour, size and form. From a distance, the brightly coloured flowers packed throughout the almost pasture-like grasslands resemble blobs of pastel paint on an artist’s palette. Synchronized with the flowering period, pollinator activity reaches its crescendo in summer, with bees, flies and butterflies, amongst others, all vying for the lion’s share of pollen and nectar.

The floristic connection with southern Africa

The flora of KNG is typical of the Boreal Zone, one of the Earth’s six great floristic kingdoms, extending throughout the Northern Hemisphere, which includes the Taiga, Steppes and Arctic Tundra. The temperate

The umbellifer Wild Parsnip, *Pastinaca sativa*, of the family Apiaceae, is a native of Eurasia. This yellow-flowered, robust forb has pinnately lobed, pubescent leaves and is a biennial, flowering from July to August in its second year (Streeter and Garrard 1998). Umbrellifers are also well represented in the Drakensberg Alpine Centre of southern Africa.
element of the Boreal Zone is well represented in the mountains of sub-Saharan Africa, having dispersed southwards along high-altitude corridors when the climatic regime of the time was conducive to their range expansion. With sheer delight, many of the plant genera well represented in the predominantly temperate grasslands of the Drakensberg Alpine Centre (DAC), tens of thousands of kilometres away, were observed in the grasslands of KNG (compare with Carbutt and Edwards 2004, 2006). Specific examples (either as natives or aliens) included species belonging to the genera *Achillea* (Yarrow or Milfoil), *Artemisia* (Wormwood) and *Cirsium* (Thistle) of the family Asteraceae; *Dianthus* (Wild Carnation or Pink) of the family Caryophyllaceae; *Echium* (Viper’s-bugloss) of the family Boraginaceae; *Galium* (Bedstraw) of the family Rubiaceae; *Geranium* (Crane’s-bill) of the family Geraniaceae; *Hypericum* (St John’s-wort) of the family Clusiaceae (or alternatively Hypericaceae); *Lepidium* (Pepperwort) of the family Brassicaceae; *Menchia* (Mint) of the family Lamiaceae; *Papaver* (Poppy) of the family Papaveraceae; *Plantago* (Plantain) of the family Plantaginaceae; *Rosa* (Rose or Briar) and *Rubus* (Bramble) of the family Rosaceae; *Rumex* (Dock or Sorrel) of the family Polygonaceae; and *Ranunculus* (Buttercup) of the family Ranunculaceae, amongst others. The umbellifer family Apiaceae and the Wild Strawberry (*Fragaria vesca*) of the family Rosaceae, were also frequently encountered.

Concluding remarks

KNG is truly a unique asset in China in that it contains the only extension of the Siberian Taiga forest into China (and as a result a fauna more typical of Siberia; e.g. Brown Bear, badger, wild boar, moose, wolf, Siberian ibex, Siberian lynx, fox, wolverine etc.); a temperate Eurasian grassland flora; the headwaters of the Irtysh (or Ertix) River, China’s only river to flow into the Arctic Ocean; the only area in China inhabited by the rare Tuvan Tribe; the only national park in China bordering on three other countries; and the most continental region of Asia furthest from the sea.

Although tucked away in one of China’s remotest border areas, KNG has in recent years become an increasingly sought after tourist destination. However, its distance from Urumqi, combined with the Gobi desert and mountains in between, has to some degree kept it from being swamped by tourists who tend to favour more accessible sites. Such unspoiled natural beauty is increasingly rare in China. Kanas is truly the “beautiful and mystical place” as one interpretation of its name refers (Kanas Tourism 2008). The value of KNG, particularly in terms of its biodiversity asset and contribution to ecosystem goods and services that underpin the livelihoods of many people, should not be taken lightly. Recent, unregulated and rampant development in the park, at questionable densities that may be exceeding the carrying capacity of such a sensitive region, coupled with rapidly flourishing tourist volumes in summer, threaten to destroy this “little piece of Siberia dipping into China”, or alternatively “the only Swiss landscape in Asia”, regarded by many as the most beautiful place in all of China.

References


