Above Mt Gongga, 6885 m / 22588 ft highest peak in Sichuan of the eastern Hengduan Mountains; Below: broad-leaves forest Tanjiahe Minshan

The ancient Chinese called the southwestern province known as Sichuan “Heavenly kingdom,” and those who explore here discover both its mystery and dramatic scenery. West of the smog-filled city of Chengdu, China, a city of 16 million, the Hengduan Mountains of Minshan and Quionli present a dramatic mountain landscape of incredible beauty: rugged snow-capped peaks, waterfalls, cascading mountain rivers, and forested mountain slopes with deep valleys where exotic birds that include colorful pheasants, parrotbills, rainbow colored sunbirds, and stunningly adorned thrushes live. Here great rivers and gorges dissect lush forests that harbor some of the world’s most endangered and mysterious wildlife. This is the last wild habitat of the giant panda, which lives on the bamboo protected within a network of fragmented but
secluded nature reserves known as the Sichuan Giant Panda Sanctuaries. Some of these less-visited wilderness enclaves also shelter rare Himalayan black bear, golden snub-nosed monkey, the shaggy haired takin, Chinese goral, musk deer, clouded and snow leopards, and exquisite birds, including the Chinese monal, golden pheasant and Temminck’s tragopan. But these reserves have become isolated over the decades, now intersected by highways, dams, mining, agriculture and towns where the forests have been cut down. There is a great need for reconnecting them with mixed forest and bamboo corridors to save the genetic diversity of pandas and for facilitating migration to find new bamboo food sources when large areas flower and die out.

The Hengduan Mountains which include the subranges of Sichuan are a biodiversity hotspot in South China. The extremely rugged geography of the region have kept it largely unexplored. The dense and relatively isolated mountains, as well as the fact that the area was free from glaciation during the Ice Age, makes it a complex habitat with a high level of biological diversity. The mountains are mainly covered by the subalpine coniferous forests rich in vascular plants
and is home to about 40% of China’s 30,000 plant species. About 3,000 of these species, including 30 vascular plants, 100 ferns, and 20 gymnosperms, are endemic to the area. The area is also rich in fungi and mosses. Ranges on the easternmost part of the Hengduan Mountains are home to a wide variety of rare and endangered species of fauna, including the giant panda. Other species that are indigenous to the mountain ranges include the Chinese yew, plus other rare types of primates, deer, and plants.

Golden pheasant (m Nelson), Temmincks tragophan pheasant, robin accentor (k Ross)

In May of 2019, I took the opportunity to explore several nature reserves within the Minshan Range, and attempt to explore several panda reserves. From Chengdu, a modern city of 16 million, I connected with friends, then follow an itinerary that would take me north to the temperate forests of Tanjiahe Nature Reserve, then southwest to Ya’an and explored the surrounding mountains near Bifengxia just south of Baoxing and Fengtongzhai Nature Reserve.

Chengdu, and photographer Kyle Obermanns presentation to Unishare on China natural resource conservation
Reserve where Father Armond David discovered the first panda in 1869. I would encounter the natural scenery of these reserves known for their steep forested valleys, clear rushing rivers, rocky crags, wide alpine meadows and the backdrop of rugged mountains that included Mt. Siguniang. I was reminded that these forested mountains change with the season: snow in winter, carpets of flowers in the deciduous forests in spring, a blaze of alpine color in summer, stunning red and gold leaves in fall and the elegant plumes of bamboo all year round. Strange mists swirl around the crags or settle in the valleys. The Hengduan mountains have lured me for several years in my exploration of NW Yunnan, and now brought me to Sichuan.

The Hengduan Mountain Range lies east and perpendicular to the Himalayas, and are composed of a complex of north-south ridges and river valleys that rise between the western margin of the Yunnan Plateau and the eastern margin of Tibet. Within the rugged north-south mountain ranges shadows are hidden valleys that sustain both a great diversity of wildlife and unique hill tribe cultures that extend from northwest Yunnan into Sichuan. I have explored much of these mountain ranges in Yunnan for the past 2 years, areas that included the
Gaoligongshan and Meili Mountains of Deqen. But there was more to explore in the easternmost area of the Hengduan core ranges that extend deep into Sichuan including the Minshan east of the Yalong River, north of Mount Gongga 7,556 m (24,790 ft), the highest peak east of the Himalaya.

The mystery of the 600km / 372 mi long Minshan and Qionglai Mountains of western Sichuan interested me, a fragmented wilderness that boasts towering peaks that include Mt Siguniang Shan 6250 m/ 20505 ft of the Quiolai Mountains near Wolong Panda Reserve west of Chengdu. These rugged mountain ranges are filled with alpine lakes and cascading waterfalls spilling into remote valleys, areas that one must trek into from the crowded highways and towns interconnecting the reserves. It is remote valleys one must access by hard work hiking cross country to experience what to most is concealed of some of China’s most beautiful landscapes. It is an area unknown to most westerners and the home and final refuge of the great panda and group of mysterious animals most westerners have never heard of. Here Western Sichuan shares with Yunnan the IUCN status as the most biologically diverse temperate forests in the world with multiple species of rhododendrons, birds and mammals. The north-south alignment of the Hengduan Mountains effectively connect the lowlands in northern Myanmar, Laos and Thailand with the lowlands of Yunnan and the Sichuan Basin. Summers provide abundant monsoon rain from the south, and winters are relatively mild, sustaining a natural greenhouse effect. It is an area of incredible biological diversity, and beauty where northern palearctic meets tropical climates that create the ‘heavenly kingdom.’
Situated in the Qionglai and Jiajin mountains fringing the Sichuan basin 100 km west of the city of Chengdu, the mountainous western border of the Sichuan basin and mountains lie on the divide between the east China and Qinghai-Tibetan plateau which support grasslands (3500-4500m). In contrast to the high elevation and cold western Tibetan plateau, the eastern slopes are milder and wetter, steeply ridged, forested, and deeply dissected by perennial rivers cascading from the glaciated snow-covered peaks and alpine meadows that form many scenic gorges and valleys. There are fourteen glaciers formed by
these mountains, creating U-shaped valleys, horns, cirques and arêtes. Between the high ridges is the panda habitat of deep forested valleys, raised terraces and gentler slopes. Southwest of Ya’an lies the highest peak in Sichuan seen from Chengdu, Mt Gongga or Zhong Shan 6885 m / 22588 ft with massive glacial systems and to the north in the Qionglai and Jiajin Mountains NW of Wolong is Mt Siguniang Shan 6250 m / 20505 ft. Southwest near the Yunnan border lies the beautiful three sacred mountains in the Daocheng, Garze, the highest Yangmaiyong 5958 m/ 19547 ft in Yadang. There are spectacular mountains in Sichuan.

The eastern slopes of these mountain ranges support a zone of high mountain coniferous forests at 3000-4000m (99939-14,909ft) elevation. It is this diversity of elevations of forested mountains on the western edge of the Sichuan basin that supports the world’s largest population of giant pandas. The diversity of plants and animals of the eastern edge of the mountains surpasses that of my home in the Pacific Northwest of North America. Olympic National Park west of the cascades is isolated, but wild, with a diverse temperate rainforest that supports some of the world’s largest trees that include Sitka Spruce Picea sitchensis and Western Red Cedar thuja plicata. Olympic National park covers 3696 km 2 (.1,400 square miles) of wilderness mountains and forests, and a coast ecosystem with an altitude range from 0-2428 m/0-7965 feet (Mt Olympus). There are recorded over 1450 species of vascular plants, 306 species of both resident and migrant birds, and 59 species of small and large terrestrial mammals. This pales in comparison to part of the richest temperate rainforests in the world in both Yunnan and Sichuan, which within an altitude range of 600-6250 meters (1962- 20,502 ft) are known to have over 5500 species of vascular and nonvascular plants, over 365 species of birds, and 132 species of both large and small mammals.
What sustains this amazing diversity is the north-south direction of the Hengduan mountains which allow monsoons in the summer period, and more distinct winters that are both mild and quite dry. The altitudinal spread of mountains then sustains a subtropical forest in the lower valleys, to alpine in the mountains. Sichuan's flora is largely characterized by tropical-subtropical plants, but the high mountain areas in Sichuan's west and southwest basin also provide important centers of diversity for temperate genera such as Rhododendron, Primula, Gentian, and Saussurea. Arctic and tropic plants contribute only a minor part to Sichuan's flora.

A typical subtropical evergreen broad-leaved forest consists of bamboo, beech and laurels (*Fagaceae, Lauraceae, Theaceae, Magnoliaceae, Symlocaceae*), and subtropical conifers that include pine, cedar and yew (*Pinaceae, Taxodiaceae, Cupressaceae*). On the colder slopes of the Northeast Sichuan the temperate forests are dominated by birch, beech, hickory, and tea (*Fagaceae, Theaceae*), monkey puzzle tree *Auracaceae, podocarps*, hemlock, true fir and larch with epidendric lichens, ferns and orchids.

The designated reserves in Western Sichuan are also a significant global diversity center for plant groups that include roses, peonies, magnolias, maples, primroses, bamboos and rhododendrons. More than 100 species of rhododendron are found here, more than known from whole countries (Nepal, Bhutan) in the Eastern Himalayas, places famous for rhododendron diversity. Since 19th century, western explorers and collectors had travel extensively in Qionglai Mountains, including the famous British botanist E. Wilson who alone...
Rhododendron sp, R. wardii, Ground Orchid Pleiones sp
had shipped 30 tons of plant seeds to England. The plants brought from Sichuan and Yunnan transformed the development of horticulture in Europe in classical 'English' landscape gardens which are now Chinese species.

Orange bellied leafbird, lady Amherst’s pheasant, Spotted laughing thrush

China is recognized as the global center of pheasant diversity with a total of 63 species, and much of that tremendous diversity is centered in the western mountains of Sichuan. Some of the reserves support 16 different pheasant species; more than known from any other single site. Endangered birds in this area include the white-tailed eagle Haliaeetus albicilla, Chinese monal pheasant Lophophorus lhuysii, white eared pheasant Crossoptilon and Tibetan eared-pheasant Crossoptilon harmani. And there is a center of endemism for some bird taxa, such as leaf warblers, laughingthrushes, rose finches and pheasants.
Giant Panda Bifengxia Panda Reserve, Bifengxia Panda Reserve forest, Yadang Chenrezig (Yading nature reserve), Sichuan near Yunnan Border, Hengduan Mountain Range