



From left Sierra el Tigre landscape. Photo courtesy Dale Turner. View of Presa Angostura and the Sierra el Tigre. Photo courtesy Ana Lilia Reina-G.

Madrean Discovery Expedition to the Sierra el Tigre

by Thomas R. Van Devender and Ana L. Reina-Guerrero¹

The Sierra el Tigre is a massive mountain range, one of about 55 Sky Islands found in the Mexico-United States borderlands between the Sierra Madre Occidental in Sonora and Chihuahua and the Mogollon Rim in central Arizona. These isolated Sky Islands mountain ranges in the Madrean Archipelago were recognized as a global biodiversity hotspot by Conservation International in 2008.

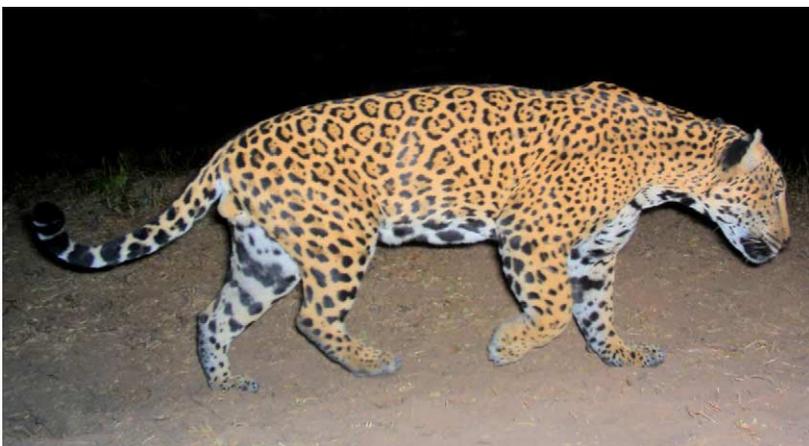
The Sierra el Tigre is the closest Sky Island to the northernmost Sierra Madre Occidental. It is within a great loop of the Río Bavispe, which flows north from Bavispe on the east side to Colonia Morelos and southward on the west, eventually joining the Río Áros to form the Río Yaqui. The Sierra el Tigre rises from 743 m (2437 ft) at the Presa Angostura dam to 2350 m (7709 ft) on Cerro el Tigre, an elevational range of 1607 m (5270 ft). The mountain is 31

km (19 mi) from north to south, and 21 km (13 mi) from east to west.

The lowland vegetation along the Río Bavispe ranges from foothills thornscrub near the Presa Angostura dam, to Sonoran desertscrub on the west side, and then to Chihuahuan desertscrub and desert grassland on the north side. The patch Sonoran desertscrub was mapped as a disjunct eastern part of the Arizona Upland subdivision, but is distinct and worthy of its own designation. At higher elevations, the vegetation changes to oak woodland and pine-oak forest. Many of the trees are typical of the Sierra Madre Occidental (*Arbutus xalapensis*, *Juniperus durangensis*, *Quercus jonesi*, *Q. mcvaughii*, and *Q. viminea*). Other trees and shrubs are southern populations of northern temperate species (*Cercocarpus montanus*, *Pinus discolor*,

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From left Un tigre. Photo courtesy Ron Thompson, Primero Conservation, Inc. Stephen White and José Vera-Santos in the Sierra el Tigre in October 1941. Photo courtesy the University of Michigan Herbarium.



From left Sue Carnahan and Frank Reichenbacher pressing giant coral-root. Photo courtesy Caroline Treadway. Giant coral-root (*Hexalectris grandiflora*). Photo courtesy Sue Carnahan. Red columbine (*Aquilegia skinneri*). Photo courtesy Caroline Treadway.

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Pseudotsuga menziesii, *Robinia neomexicana*, and *Quercus toumeyi*).

The village of San Miguel de Bavispe was founded in 1645 by the Jesuit missionary Cristóbal García. Bavispe is derived from the word “Bavipa” in the Ópata Indian language, which means “place where the river changes direction.” The language is no longer spoken as the Ópatas were assimilated into the *mestizo* culture. On May 2, 1887, a strong earthquake destroyed every home in the village. Cliffs collapsed in Sabino Canyon near Tucson (280 km [175 mi] northwest), windows cracked in Albuquerque (555 km [344 mi] north-northeast), and bells rang in Mexico City (1565 km [970 mi]) southeast). Colonia Morelos was established as a Mormon settlement in 1900, but during the Mexican Revolution in 1912–1914 residents were forced to leave. The Sierra el Tigre was named by American prospector James Taylor in 1900 when *un tigre* — as the jaguar (*Panthera onca*) is called in Mexico — was killed near newly discovered

gold and silver deposits. Jaguars were said to be abundant at that time.

From 1938–1941, Stephen S. White led three botanical expeditions to collect plants in the Río Bavispe region of northeastern Sonora. In 1941, he was assisted by Filipino grass specialist José Vera-Santos. Published in 1948, White’s dissertation reported 1,200 species (currently 995 taxa after revision) and 549 genera in 114 families, many collected from the Sierra el Tigre and along the Río Bavispe.

GreaterGood.org is continuing a tradition of expeditions of large groups of biologists to document the animals and plants in the Sonoran Sky Islands of Sonora, Mexico, for conservation, research, and education. The first Madrean Discovery Expedition (MDE) went to the Sierra el Tigre in August 2015. The Expedition was cosponsored by the Ajos-Bavispe National Forest Reserve and Wildlife Refuge, a reserve in the Mexican Comisión de Áreas Naturales Protegidas (CONANP) system. With five large Sky Islands, Ajos-Bavispe is the Sonoran counterpart to the U.S. Coronado National Forest.

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From left Santa Cruz beehive cactus (*Coryphantha recurvata*) in Sonoran Desert east of Presa Angostura. Photo courtesy Tom Van Devender. Matuda claret cup cactus (*Echinocereus arizonicus* var. *matudae*). Photo courtesy Caleb Weaver.



From left Wild begonia (*Begonia gracilis*). Photo courtesy Chris Roll. White phacelia (*Phacelia platycarpa*). Photo courtesy Caroline Treadway. Mexican tiger lily (*Tigridia pavonia*). Photo courtesy Frank Reichenbacher.

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MDE participants from Canada (Alberta), United States (Arizona, Colorado, and North Carolina), and Mexico (Sonora, Mexico City) camped the first night in the mining ghost town of Pilares de Nacozari. In the 1890s, the mine was developed by American Meyer Guggenheim and later sold to the Phelps Dodge Company, an important mining company in Arizona. Pilares was a town of 6,800 people when the mine closed in 1931.

On the second day of the expedition, 14 vehicles caravanned over the top of the Sierra Nacozari through the Mina la Caridad, crossed the Río Bavispe on the dam that forms the Presa (reservoir) la Angostura, and traveled north through Sonoran Desert between the Sierra las Iglesias (*little churches*) and east into the Sierra el Tigre.

The MDE Sierra el Tigre Expedition was a huge success. From the base camp at Rancho el Tigre, 51 participants went on hikes or rode in CONANP pickups to study areas. Activities included botanizing, bird-, butterfly- and reptile-watching, photography, and always sharing discoveries.

Botanists Sue Carnahan, George Ferguson, Chris Roll, Frank Reichenbacher, Steve Hale, Reina-Guerrero, and Van Devender observed, collected, and pressed plants — about 400-500 species!! Six species of ground orchids were seen, including giant coral-root (*Hexalectris grandiflora*). The Matuda claret cup cactus (*Echinocereus arizonicus* var. *matudae*) was common. Herbs typical to the Sierra Madre Occidental included a red columbine (*Aquilegia skinneri*), a wild begonia (*Begonia gracilis*), a red honeysuckle (*Lonicera pilosa*), and a white phacelia (*Phacelia platycarpa*). The Mexican tiger lily (*Tigridia pavonia*) was spectacular. Northern herbs included spotted wintergreen (*Chimaphila maculata*), the Huachuca Mountain lupine (*Lupinus huachucanus*), and Thurber skyrocket (*Ipomopsis thurberi*). Processing all of the biological observations will take months of transcribing notes and identifying unknowns. But it is clear that there will be a thousand or more records, hundreds of them with images, documenting the biodiversity of another Sky Island in the Madrean Archipelago. All of these observations and images will be publicly available in the GreaterGood.org Madrean Discovery Expeditions database that will be online soon.



From left Spotted wintergreen (*Chimaphila maculata*). Photo courtesy Chris Palting. Huachuca Mountain lupine (*Lupinus huachucanus*). Photo courtesy Tom Van Devender. Sunset view of Presa Angostura from the Sierra el Tigre. Photo courtesy Caroline Treadway.