

Narcoherpetology: Searching for Rock Rattlesnakes in the Sierra Elenita

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The Banded Rock Rattlesnake (*Crotalus lepidus* ssp. *klauberi*) occurs from the Franklin Mountains in westernmost Texas to Arizona and south into Chihuahua, Sonora, and Jalisco in the Sierra Madre Occidental. Although the Banded Rock Rattlesnake is common in the Chiricahua, Huachuca, and Santa Rita Mountains in southeastern Arizona, its distribution in Sonora is spotty.

Since 2009, there have been 12 major expeditions to the Sky Island mountain ranges in Sonora to document the diversity of animals and plants, first as the Madrean Archipelago Biodiversity Assessment (MABA) program at Sky Island Alliance, and currently as the Madrean Discovery Expeditions (MDE) program at *GreaterGood.org*. About 1000 biological observations made on each expedition and many images are publicly available in the MDE database (*madreandiscovery.org*). The May 2016 MDE was to the Sierra Elenita (Fig. 1A), a Sky Island located above the mining city of Cananea, 35 km south of the Arizona border.

The Banded Rock Rattlesnake was previously known in Sonora in the Sierra San Luis-Pan Duro Sky Island complex in northeastern Sonora (Fig. 2A), the Sierra de la Madera (= Oposura) above Moctezuma (Fig. 2B), and in the Sierra Madre Occidental near Yécora. In 2004, Terry Basey found two rock rattlesnakes in the Sierra Elenita, 41 km south of the Huachuca Mountains, 135 km north-northwest of the Sierra de la Madera, and 150 km west-southwest of the Sierra Pan Duro.

Verifying the presence of Banded Rock Rattlesnakes in this Sky Island was one of the objectives of MDE Sierra Elenita. The first several days were cool, and windy, and the only snake encountered was an Arizona Ridge-nosed Rattlesnake (*Crotalus willardi* ssp. *silus*) found by entomologist John Palting in the Mina Puertecitos base camp (31.01278°N -110.39°W, 1942 m, 6370 ft). This is the first record of this species in the Sierra Elenita. On the last day of the Expedition, part of the group went to the summit at 2470 m (8102 ft) elevation. Tom Van Devender's 1990 Toyota 4Runner was stopped by a steep loose section of road, but the group continued in two large Dodge Ram pickups, only to be stopped at the next steep section. From that point, 19 hardy explorers continued on foot, but were wary because of reports of an alternative crop worker camp on top. Ultimately, only Guillermo Molina-P., Ana Lilia Reina-Guererro, Isaías Ochoa-G., and a few others reached the summit in pine forest dominated by Arizona pine (*Pinus arizonica*).

Guillermo and Ana Lilia approached the camp and talked to two men living there. They said that they had seen ardillas (Arizona gray squirrel, *Sciurus arizonensis*), cholugos (coatimundi, *Nasua narica*), and cochi jabalís (javelina, *Pecari tajacu*) in the area. The night before, a cacomistle (ringtail, *Bassariscus astutus*) was killed raiding their food cache, and eaten. When asked about snakes, one of them opened his cell phone and showed images of a bark scorpion (*Centruroides sculpturatus*), long-dead víbora de cascabel (ridge-nosed rattlesnake) and falso coralillo (mountain kingsnake, *Lampropeltis*

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Figure 1. Sierra Elenita. **A.** Pine-oak forest. Photo by T. R. Van Devender **B.** View east to Cananea, Mina Buena Vista del Cobre, and the Sierra de los Ajos. Photo by Ana L. Reina-G.

pyromelana), and two living rock rattlesnakes (Fig. 3A)! Rock rattlesnakes were verified in the Elenita in a most unusual way. Back in camp, Tom rushed to tell Dale and Robert. Dale just smiled and said “We saw four of them today. One was a bright green male. Chip Hedgcock photographed one (Fig. 3B).” Of course, they found them in a big talus slide.

The rattlesnake and mountain kingsnake observations and images, along with those of bunchgrass lizard (*Sceloporus slevini*, Fig. 4B), Jarrow’s Spiny Lizard (*S. jarrovi*), Short-horned Horned Lizard (*Phrynosoma hernandesi*, Fig. 4A), Ornate Tree Lizard (*Urosaurus ornatus*), and many plants will go into the MDE database to document the biodiversity of this poorly-known Sky Island. The Banded Rock Rattlesnake is present in at least three areas in the Sierra Elenita. It should

be searched for in the Sierra Mariquita in the northern part of this Sky Island complex. The Sierra Elenita is owned by the huge Mina Buena Vista del Cobre, and riddled with old mines (Fig. 1B). If significant new ore bodies are discovered, this area could be destroyed very quickly.

Acknowledgments—Terry Basey discovered the first Banded Rock Rattlesnake in the Sierra Elenita. Dave Barker shared his image of a Sierra San Luis *Crotalus lepidus*. Isaías Ochoa-G., Zacarías García-T., Martín F. Villa-A., John Palting, Mario Cirett-G., Ana Lilia Reina-G., and Eric Wallace helped search for reptiles on the MDE Expedition. Chip Hedgcock is always an MDE stalwart as a photographer, field companion, and quick wit.



Figure 2. Sonoran Banded Rock Rattlesnakes (*Crotalus lepidus*). **A.** Sierra San Luis. Photo by David G. Barker. **B.** Sierra de la Madera. Photo by Dale S. Turner.



Figure 3. Banded Rock Rattlesnakes (*Crotalus lepidus*) in the Sierra Elenita. **A.** Photo by resident *motero*. **B.** Photo by Charles Hedgcock.



Figure 4. Sierra Elenita. **A.** Short-horned Horned Lizard (*Phrynosoma hernandesi*). Photo by T. R. Van Devender. **B.** Bunchgrass Lizard (*Sceloporus slevini*). Photo by Ana L. Reina-G.

RESEARCH ARTICLE

Desert Tortoise in the Diet of Jaguars in Sonora, Mexico

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The Desert Tortoise (tortuga del monte, *Gopherus agassizii*) is found in the Mohave and Sonoran Deserts from southern Nevada and southwestern Utah south through Arizona and California to northern Sinaloa, Mexico. In east-central and southern Sonora, and northern Sinaloa, Desert Tortoise lives in foothills thornscrub and tropical deciduous forest (Van Devender 2002). In 1702, the Jesuit priest Natal Lombardo published a monograph on the language of the Ópata Indians, a fully acculturated tribe in northeastern and central Sonora (Lombardo 1702). He reported the Ópata name for Desert Tortoise was *muri*. The Mayo and Yaqui Indian name for Desert Tortoise in southern Sonora is *mochi* (Yetman and Van Devender 2002). The jaguar (*Panthera onca*) is found from South America north to Texas, Arizona, and New Mexico. In northern Mexico, jaguars are called *tigre*. Between 1750 and 1767, the Jesuit priest Juan Nentvig worked with indigenous people in Sonora (Nentvig 1971). He reported that the Opata Indian name for jaguar in the Granados areas was *tutzi* (Nentvig 1971). The Mayo Indian name for them in southern Sonora is *yoco* (Yetman and Van Devender 2002). It is the largest cat in the New World, and is known for its spotted pattern, powerful crushing bite, and deep cough-like ‘roar’. Both jaguars and mountain lions (*león*, *Puma concolor*) feed on deer and javelina (*cochi jabalí*, *Pecari tajacu*), but have a very broad diet in Sonora (Brown and López-G. 2001, Cassaigne et al. 2016). Historically, jaguars were occasional in oak woodland in southeastern Arizona and southwestern New Mexico as far north as the Grand Canyon. In recent years, a few males have lived in the Tumacacori Highlands and the Santa Rita Mountains.

Throughout most of its range jaguars live in tropical lowland vegetation. The northern limits of the New World tropics are in Sonora, where tropical deciduous forest reaches the Sierra San Javier (28°38’N) and foothills thornscrub the Arizpe area in the Río Sonora Valley (30°11’N, Van Devender et al. 2013). Thornscrub is transitional between Sonoran desertscrub and tropical deciduous forest in southern Sonora, and desertscrub and oak woodland farther north. At its northern limits, hard freezes convert thornscrub into desert grassland in this elevation and rainfall zone. Many tropical species extend northward into southern Arizona, including the Brown Vine Snake (*Huirotillo*, *Oxybelis aeneus*), Desert Hooknose Snake (*Gyalopion quadrangulare*), Elegant Trogon (*coa*, *Trogon elegans*), coralbean (*chilicote*, *Erythrina flabelliformis*), and many more. Limited by freezes at higher elevations and aridity at lower elevations, their northern limits are wedged out in oak woodland (Van Devender et al. 1994). The distributions of jaguar and ocelot (*tigrillo*, *gato galaviz*, *Leopardus pardalis*) fit this pattern.

In 2015, *GreaterGood.org* began its Predator Conservation program. Project WILDCAT is a collaborative effort with Primero Conservation, Inc. (www.primero-conservation.org/) to protect wildlife and improve cattle management in the Río Bavispe Valley near Granados, Sonora. This area is just north of the Northern Jaguar Reserve. The habitat is steep rocky ridges covered by foothills thornscrub and separated by deep riparian canyons at 688–1312 m (2256–4303 ft). In the first four months, wildlife cameras on six ranches documented 19 species of mammals, including jaguar, ocelot, mountain lion, and bobcat (*gato pochi*, *Lynx rufus*).

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