



From left Perilla (*Lopezia gracilis*) flowers. Photo courtesy Jeff Sartain. Monsoon rain storm. Photo courtesy Tom Van Devender.

## Sierra la Mariquita — A New Sky Island Reserve

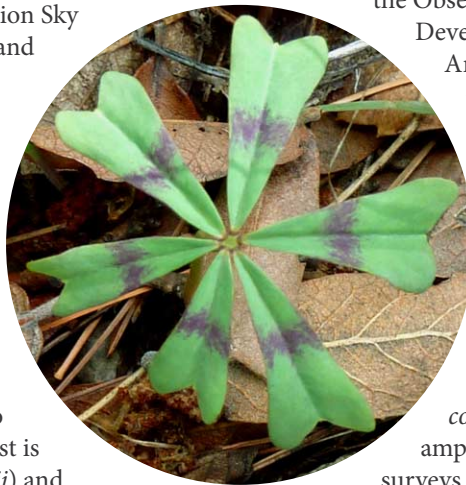
by Thomas R. Van Devender and Ana L. Reina-Guerrero<sup>1</sup>

The Sierra la Mariquita is a Sky Island mountain in northern Sonora owned by the Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE), the Mexican national astronomy agency. The Observatorio Astrofísico Guillermo Haro was built on the summit in 1987. It is located northwest of the copper mining town of Cananea, only 26 km south of the Arizona border. The Sierras la Mariquita and Elenita form a high elevation Sky Island complex connected by oak woodland in Puerto Cananea, north and south of Mexico Federal Highway 2. They are sister ranges to the Huachuca Mountains of Arizona.

The Sierra la Mariquita rises from 1230 m elevation at the base of the southwestern bajada to 2498 at the summit, an elevational range of 1268 meters. The vegetation of the Sierra la Mariquita ranges from desert grassland and oak woodland on the lower slopes to pine-oak forest above. The montane forest is dominated by Apache (*Pinus engelmannii*) and southwestern white pine (*piñón*, *P. strobiformis*) pines. The eastern slopes drain into the San Pedro River, which flows north into Arizona, where it is managed as the San Pedro Riparian National Area. The western slopes of the Sierra la Mariquita drain into the Río Bacanuchi, a major tributary of the Río Sonora, which passes through Hermosillo and at one point ran all the way to the Gulf of

California. In 2014, 11 million gallons of a copper sulfate acid solution spilled from a leaching pond at the Buenavista Copper Mine, polluting the Ríos Bacanuchi and Sonora and affecting 25,000 people in seven *municipios* (counties).

In June 2009, September 2010, and August 2013, observations of plants and animals were made on trips to the Observatory area. Plants were recorded by Van Devender, Reina-G., and Chris Roll from Arizona, J. Jesús Sánchez-Escalante, Curator of the Universidad de Sonora Herbarium in Hermosillo, and Guillermo Molina of the Instituto Tecnológico Superior de Cananea. John Palting documented moths, Roll chased butterflies, and Tom collected beetles and scorpions. This Sky Island was named for the *mariquitas* that congregate on the summit — convergent lady beetles (*Hippodamia convergens*). Erik Enderson searched for amphibians and reptiles. Aaron D. Fleisch did surveys of breeding birds and tree transects in pine-oak forest in the Sierra la Mariquita.



Several plants in the Sierra la Mariquita are noteworthy. A mustard (*Draba helleriana*) with yellow flowers is a rare plant in Arizona and New Mexico. Pale bastard toadflax (*Comandra umbellata* ssp. *pallida*) is a subshrub with white flowers that is widespread in the western United States. Both

*continued next page*

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Inset Tenleaf woodsorrel (*Oxalis decaphylla*) leaves. Photo courtesy Ana L. Reina-G.



From left View to the north-northwest from Sierra la Mariquita. Convergent lady beetles on southwestern white pine (*Pinus strobiformis*) needles. Photos courtesy Tom Van Devender.

## Sierra la Mariquita *continued*

species were not previously reported for Sonora or Mexico. Other plants with northern distributions that are rare in Sonora are Arizona wheatgrass (*Elymus arizonicus*), quaking aspen (*álamo temblón*, *Populus tremuloides*), cardinal catchfly (*metatera*, *Silene laciniata* ssp. *greggii*), Gambel oak (*Quercus gambelii*), Huachuca agave (*Agave parryi* var. *huachucensis*), mountain mist grass (*Blepharoneuron tricholepis*), New Mexico locust (*Robinia neomexicana*), prairie Junegrass (*Koeleria macrantha*), and sweetclover vetch (*Vicia pulchella*). Perilla (*Lopezia gracilis*) is a white-flowered annual in the Onagraceae commonly found in tropical deciduous forest that has not yet been found in the United States. The Sierra la Mariquita represents a significant northern range extension.

These biological inventories have documented 292 species in the Sierra la Mariquita — 174 plants and 118 animals. These results are mostly of plants, insects and, birds, with a few

casual observations of other animals. Insects, amphibians, reptiles, and mammals are especially poorly known in the fauna. All of these observations and many images are available publicly in the Madrean Archipelago Biodiversity Assessment (MABA) database ([Madrean.org](http://Madrean.org)).

The Comisión de Áreas Naturales Protegidas (CONANP) is the federal agency that manages parks and reserves in Mexico — equivalent of our National Forest Service and National Park Service combined. Major CONANP reserves in Sonora are the Ajos-Bavispe National Forest Reserve and Wildlife Refuge in the northeast, Sierra de Álamos-Río Cuchujaqui Wildlife Refuge in the south, and the El Pinacate and Gran Desierto de Altar Biosphere Reserve in the northwest. In 2011, Rancho el Aribabi in the Sierra Azul was designated as an Área Natural Protegida (ANP), under the category of Voluntary Land Conservation. In 2015, the Sierra la Mariquita became the latest Sonoran ANP with INOAE's participation. The observations by American biologists provided documentation of the biodiversity.



From left Gambel oak (*Quercus gambelii*) leaves and acorn. Sunset. Photos courtesy Tom Van Devender.