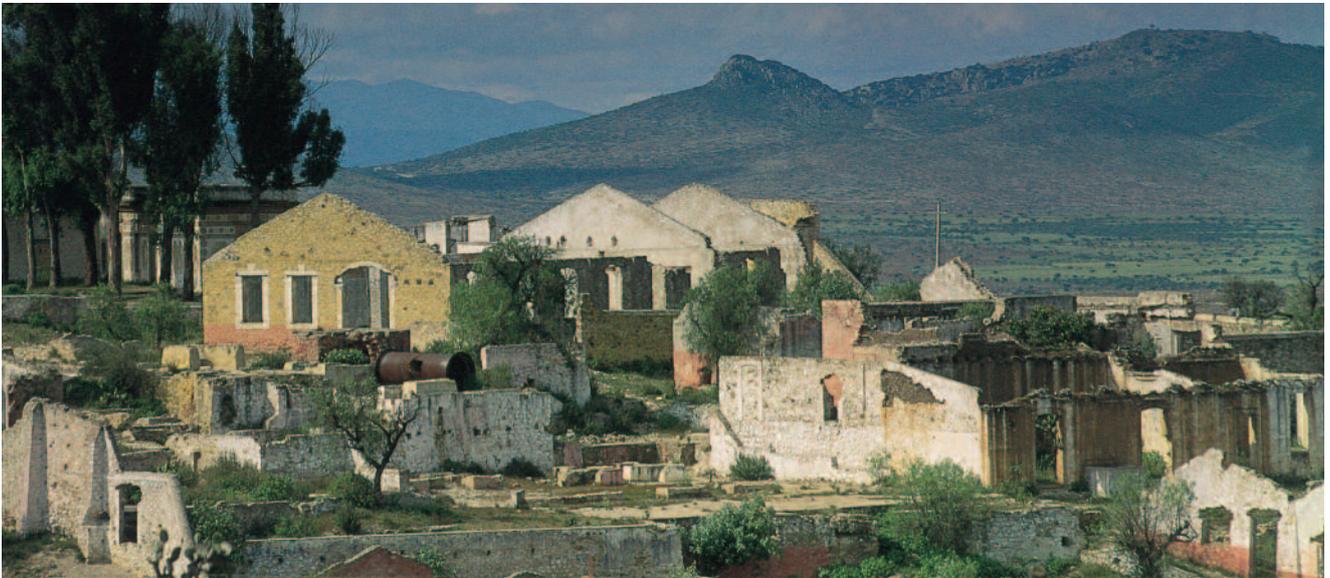


# The Santa Rosa Forest In Guanajuato

Gerardo Vázquez Marrufo\*



Guanajuato State Tourism Office

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Although not very well known for its wild areas, the state of Guanajuato has beautiful, ecologically and economically important natural scenery. The Santa Rosa Forest is one example,<sup>1</sup> crossed by Father Hidalgo and his followers on their march from the town of Dolores to the city

\* Researcher at the National Polytechnical Institute's Center for Research and Advanced Studies (Cinvestav), Irapuato campus.

of Guanajuato where the first battle of the 1810 independence movement, the historic battle for the granary and powder warehouse known as the Alhóndiga de Granaditas, would take place.

Guanajuato is situated in Central Mexico in a transition zone between the temperate climates of the North and the tropics of the South. The Santa Rosa Mountains, in the central part of the state, are part of the Guanajuato Moun-

tain range, on the central highland. It is one of the 151 areas nationwide set aside by the National Commission for the Research and Use of Biodiversity (Conabio) as a priority for conservation.

The forest is made up mainly of holm oak (*Quercus* spp.) that share the ecosystem with other trees like two species of silk-tassel trees (*Arbutus glandulosa* and *Arbutus xalapensis*) and the *pingüica* (*Arctostaphyllum pungens*).

## SOME HISTORY

Not much is known of the peoples who inhabited or crossed what is now the municipality of Guanajuato, particularly the Santa Rosa Forest, in ancient times. The indigenous peoples of the region have been given the generic name of Chichimecs, which seems to

boldt calculated the forest to be 2,815 meters above sea level. Interestingly, his calculation is not far off what modern maps state about the different peaks of the mountain range, that go from 2,350 to 2,800 meters above sea level. In the forest, he discovered, described and named the “carnivorous” plant *Pinguicula grandifolia*, which can still be observed

today the University of Guanajuato. He formed his natural history collection with specimens from the region and others sent from different parts of the country and abroad by friends and naturalists with whom he maintained contact. In addition to his two books *Fauna del Estado de Guanajuato* (Fauna of the State of Guanajuato)<sup>6</sup>



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be the name for a rather heterogeneous group of nomadic or semi-nomadic tribes that inhabited the arid reaches of pre-Hispanic Central and Northern Mexico. Some authors say that the Pamechichimecs and Guamares inhabited what is now the state of Guanajuato.<sup>2</sup> Documentation about these groups' knowledge and use of the forest is scant given that they left very limited traces.<sup>3</sup>

Santa Rosa is an important forest nationally and regionally from the historical-scientific point of view. The Austrian Alexander von Humboldt arrived in Guanajuato in 1803 and wrote up several observations and technical descriptions during his stay, including a map of the city and its environs. Situated at a still unidentified point, von Hum-

during the rainy season from June to September. Today, the specimen collected by von Humboldt is in the Natural History Museum of Paris. He also described the *Cucheria socialis*, “a larva that inhabits the silk-tassel trees and produces the indigenous silk,”<sup>4</sup> but whose existence in the forest has not been documented scientifically.

It was the French doctor, Alfred Auguste Delscautz Dugés, who made the first lists of flora and fauna in the state of Guanajuato. Dugés arrived in Mexico in May 1853, and from 1861 until his death in 1910, he made his home in the city of Guanajuato.<sup>5</sup> In addition to holding several different public posts, the doctor taught zoology and botany at the State College,

and *Flora i Fauna del Estado de Guanajuato* [sic] (Flora and Fauna of the State of Guanajuato),<sup>7</sup> he wrote a number of articles about the region's species. A hundred years later, Dr. Dugés' description is still the most complete compendium of the state's flora and fauna.

Although he was particularly interested in herpetology, Dugés also did botanical work about the flora of Guanajuato. In 1879 for example, he described the new genera of plants from the *Rammaceas* family based on his study of specimens collected at the Mellado Mine in the municipality of Guanajuato.<sup>8</sup> Probably many of the species Dugés included on his list were observed and collected in the mountains; however, the natural history col-

lection he left us requires a new evaluation to see if these species still exist in the forest.

#### BIODIVERSITY AND CLIMATE

Given their extension and location, the Santa Rosa Mountains have an impor-

the golden eagle (*Aquila chrysaetos*), considered an endangered species.<sup>9</sup>

Our working group has found more than 50 species of wild mushrooms in the Santa Rosa Forest, some of which are used for food by local rural communities during the rainy season. For example, several species are in the form of coral from the *Ramaria* genus, others

ters on the large species of holm oak used for firewood and making charcoal, although the silk-tassel trees and the *pingüica* are also logged. The extensive cattle ranching and rain-fed cultivation practiced in the mountains are mainly for subsistence or local markets. The growth of cities, the construction of the Guanajuato-Dolores



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tant influence on the climate, acting as a regulator of temperature in nearby areas, including the state capital. They also have high summer rainfall, which contributes to replenishing water supplies in a wide region that includes some agricultural areas of the very productive Bajío region. However, the importance and breadth of that climatic regulation has yet to be evaluated.

The Santa Rosa Forest is an important center of biological diversity. The white-tailed deer (*Odocoileus virginianus*) still lives here, but its status is unknown and very probably it is subject to capture and clandestine hunting. A great many kinds of birds live in the forest, some of which are migratory and others endemic to Mexico. One is

from the *Amanita* and the *Lycoperdon* genera. The species *Amanita caesarea* and *Amanita muscaria*, found by our working group in collaboration with Joaquín Cifuentes' UNAM team, are included on the list of protected species, the former as deserving special protection and the latter as an endangered species.<sup>10</sup>

Forestry activity and mining—both intense activities for 400 years—are the most important factors in anthropogenic environmental changes on the borders and inside the Santa Rosa Forest. Wood was the first input needed both by mines and residents in the mining towns around the forest, among them the city of Guanajuato and the town of La Luz. Today, logging cen-

Hidalgo highway, tourism and recreational activities are the most recent anthropogenic factors in environmental change whose effect on the ecosystem and local species have still not been determined.

The diversity of wild animal, plant and microorganic species in the Santa Rosa Forest, together with the genetic stock that each one represents, are part of the flows of matter and energy in this ecosystem and are a potential source of new resources, products and processes for local communities' socioeconomic development. Unfortunately, the scant number of ecological studies has slowed the sustainable use of this biological wealth that would allow for the conservation

of the ecosystem and its species in the long term.

The knowledge that the inhabitants of these communities have about many of the plant, mushroom and animal species is in itself a cultural resource that must be preserved. It is in danger of being lost due to the constant migration of local inhabitants to



urban areas and the changes in lifestyles because of regional development.

Santa Rosa is also important as a natural laboratory for the study of the evolutionary processes and ecological dynamics of temperate holm oak for-

ests. In addition, this forest has long been an area for rest and recreation for inhabitants of nearby cities.

#### RECENT STUDIES

Today, knowledge about the animal, vegetable and microorganic species that



inhabit the Santa Rosa Forest has begun to increase thanks to studies by different ecological groups and researchers working in the area. The group from the Center for Research and Advanced Studies, Irapuato campus, to which I

belong, has been documenting the species of wild mushrooms for the last five years in collaboration with researchers from the UNAM. We also study some of the effects that logging for firewood and for making charcoal has on the trees' physiology and the physical-chemical characteristics and microbe composition of the soil. We hope that all these



Photos on this page by Gerardo Vázquez-Mantufo

studies, together with those of other working groups, will make it possible to develop strategies for using, conserving and regenerating the Santa Rosa Mountains so this forest may be admired and enjoyed by future generations. **NM**

#### NOTES

- <sup>1</sup> A large part of the information in this article was taken from the National Commission for Research and Use of Biodiversity's web site: <http://www.conabio.gob.mx>, concretely from the section "2000. Regiones terrestres prioritarias de México," compiled by L. Arriaga, J.M. Espinoza, C. Aguilar, E. Martínez, L. Gómez and E. Loa.
- <sup>2</sup> A. J. J. Dávila, *¡Chichimecatl! Origen, cultura, lucha y extinción de los gallardos bárbaros del Norte* (Mexico City: Universidad de Coahuila/El Ateneo Fuente, 1967).
- <sup>3</sup> Research about Santa Rosa is recent and there are practically no scientific articles about the

- area. Therefore, most of our working group's research results (the author does ecological research on the anthropogenic impact on the structure and function of the Santa Rosa Forest) and that of other researchers have been collected in undergraduate and graduate theses.
- <sup>4</sup> C. Minguet, *Alejandro de Humboldt. Historiador y geógrafo de la América española (1799-1804)*, vol. I, Jorge Padín Vela, trans. (Mexico City: UNAM, 1985), pp. 212-215.
- <sup>5</sup> E. Beltrán, A. C. Jáuregui and A. R. Cruz, *Alfredo Dugés* (Guanajuato: Gobierno del Estado de Guanajuato, 1990).

- <sup>6</sup> Beltrán et al., op. cit.
- <sup>7</sup> Alfred Dugés, *Flora i Fauna del Estado de Guanajuato* (Guanajuato: Impresos de la Dirección General de Educación Pública, Gobierno del Estado de Guanajuato, 1924).
- <sup>8</sup> Alfred Dugés, "Descripción de un nuevo género de la familia Ramnáceas," Elías Trambulse, *Historia de la ciencia en México. Siglo XIX* (Mexico City: Conacyt/Fondo de Cultura Económica, 1985), pp. 58-61.
- <sup>9</sup> The golden eagle was declared endangered by Mexican Official Norm NOM-ECOL-059-94.
- <sup>10</sup> Mexican Official Norm NOM-ECOL-059-94.