

# Equilibrio

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Trabajamos por el bienestar integral de las Sierras por su gran valor ambiental, social y cultural para BCS. Protegemos hábitats prioritarios terrestres y costeros mientras promovemos el desarrollo sustentable de las comunidades en la región.

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# Keepers of the Sierra

**P**aradise does exist, it is located in Baja California Sur. In paradise, water transforms into oases, deserts merge into the sea and time has stood still for over three centuries; in paradise, there are animals that have never been seen in other parts of the world and vestiges of ancestral human groups can be found. And, as expected, these societies are surrounded by countless legends and myths.

This region is home to an unrivalled natural beauty, a unique historic wealth and a sociocultural heritage of which very little is known. Paradise is approximately 350 kilometers in length and to explore it, one must trek, ride and drive through cliffs, plateaus and summits; although two weeks—at least—are required to complete the expedition, a lifetime would not suffice to visit every corner.

This wonderful land, rich in mountains, valleys and plateaus, is home to 4,400 people only, most of them elderly men and women who keep the flame of the rancho culture alive, from which we have so much to learn. They are the keepers of paradise; they watch over its ecosystems, its plants and animals, make a sensible use of its resources and pass over their knowledge to the new generations.

This place is real, but unknown to most Mexicans. It is called sierras **La Giganta** and **Guadalupe**; and we are not overstating, it is indeed paradise.

Despite being almost deserted, practically unexplored and so far away from civilization, this fantasy land is facing grave threats.

Aware of the situation, Beta Diversidad has joined the current efforts—some of which started 12 years ago—to protect the region upon which the development of the peninsula of Baja California has hinged. We see ourselves as true keepers of the Sierra and work arduously with the local communities to achieve an efficient conservation model.

As part of this titanic effort, we are launching, as a call to action, a special edition of the *Equilibrio* magazine; through its pages we are not only meticulously describing and illustrating the extraordinary beauty of this paradise, but also analyzing the challenges the area is encountering and putting forward solutions.

This edition includes texts and images from academics, researchers, journalists and adventurers who have dedicated most of their career to study, learn from and make this incomparable landscape known.

We are optimistic and trust that the protection of the Sierras will become a reality in the short term, and will make us incredibly proud of this effort, certainly worth repeating in other parts of Mexico and the world.

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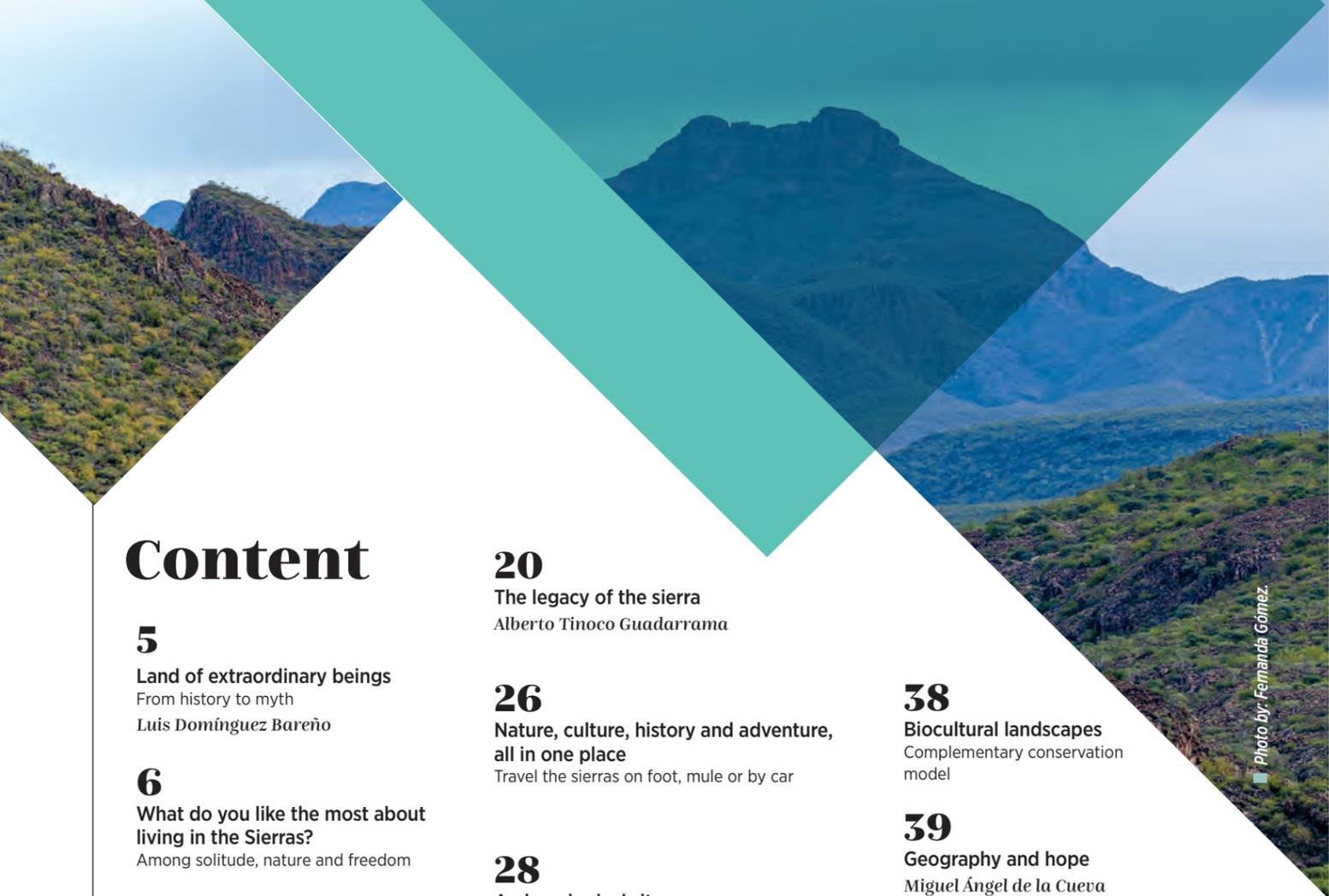


Photo by: Fernanda Gómez.

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# Land of EXTRAORDINARY BEINGS

## From history to myth

By: Luis Domínguez Bareño | @AStiller0



5

The Spanish had already been 150 years in our territory and the Viceroyalty was well established in the central plateau of the New Spain; nonetheless, in the late XVII century there were still vast territories in the North which remained impenetrable and the peninsula of California was thought to be an island.

The Jesuit missionary Francisco Eusebio Kino and his admiral, Isidro Atondo y Antillón, were entrusted with the conquest of California in 1683, after the failure of their brief settlement in the cove of La Paz (today's capital of Baja California Sur). Kino and Atondo attempted once more to establish further north where they founded Real de San Bruno, a small settlement close to the Gulf of California, where they could control the plains of San Pablo (now the San Juan Londó Valley, north of Loreto) and, where they visualized in the background an insurmountable mass of rock known as Sierra La Giganta.

The famous father Kino, whose religious fervor was as deep as his fervor to explore "the biggest island on Earth" and discover the mysteries of the unknown California, soon set eyes on the sierra and decided to climb it. The Cochimies of the flatlands (who they called Didius) volunteered to guide the explorers, although they warned them about the mystery surrounding the sierra. Father Kino talks about this in his diaries: "for being so high up that from the Yaqui it reveals itself when the sun sets, and also because in other times some said and believed there were giants in these Noy lands, we called it *La Giganta*".

The surprises did not await in the newly named sierra La Giganta, and after traversing the valleys of warm and dry sand, the impossible happened: almost biblically, water streamed out of a rock and trickled down to form ponds where the travelers quenched their thirst. The interest for those peaks increased and, 29 explorers plus 5 indigenous guides went deeper into La Giganta. On one of the summits, where it

was possible to see San Bruno and part of the Gulf, they decided to put up a cross. Soon the crags made it impossible for horses to move forward, and they had to continue on foot, making way through steep scarps to find a route that would lead them to the other side, where Kino knew they would reach the Southern Sea (today the Pacific Ocean).

The soldiers removed their shoes, left their arms behind, tied ropes around their waists and pulled each other up, and that is how they crossed what father Kino called "the Santa Barbara passes". On 14 December 1683 Atondo wrote: "we travelled about six leagues and came across a valley with eight waterholes, one of them was as big as a lagoon, measuring three leagues, and here we settled, and because I was exhausted and blistered, I sent a couple of soldiers and reverend Kino to discover the inland".

Around the hour of the winter solstice, some of the explorers Atondo sent reached the summit of La Giganta and, although the air was fresh and the weather pleasant, the effort of the quest lessened the spirits of more than one of these travelers who left testimony of their ascend to La Giganta. They knocked down a dry cardon and bound it to a cactus to form a cross to put up on that peak, which they called Santa Cruz.

Kino continued with his journey and discovered more waterholes, plains, willow and oak forests as well as plants that grow high up in California such as purslane, pigweed and calabash. The Noys, native dwellers of La Giganta, were neither giantic nor imposing as they had been described. Father Kino was able to communicate with them and finally found the pass to the opposite coast.

Although these discoveries were not sufficient for the Spanish Crown, and the expedition of Kino and Atondo was terminated two years later, their journeys were ground-breaking. La Giganta, the backbone of the state of Baja California, is still an enigma today.

“

For being so high up that from the Yaqui it reveals itself when the sun sets, and also because in other times some said and believed there were giants in these Noy lands, we called it *La Giganta*”.

Jesuit missionary Francisco Eusebio Kino.

### — ABOUT THE AUTHOR

Master degree in Regional History by the University of Baja California Sur. He has worked for the State of Baja California Sur Education Department as liaison with Federal Education Department. He was also the Chronicler for the municipality of La Paz. Today he is Head of the State Historic Archive "Prof. Pablo L. Martínez".

# What do you like the most about living in the Sierras?

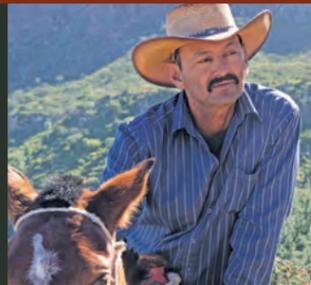
*Among solitude, nature and freedom*

It would seem that time stopped at La Giganta and Guadalupe, and therefore its almost 4,400 inhabitants still abide by customs and traditions from 300 years ago. Although for most of us it is difficult to imagine such a lifestyle, it is not so complicated as it is based on simplicity, order and constant effort.



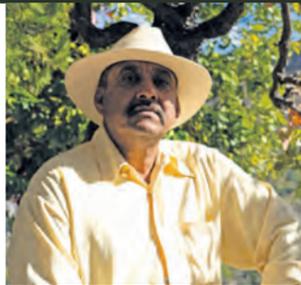
*"Spend my days horseback riding".*

■ Francisco Javier Higuera Alameda (aka Quico), 68 years old. Ejido Tepentú.



*"The gift of solitude".*

■ José Mario Amador Amador, 52 years old. La Soledad.



*"I am grateful for living away from pollution and for being able to eat natural foods".*

■ Javier Cervando Amador Amador, 56 years old. La Soledad (Rancho Buenavista).



*"What I enjoy the most is that I have a lot of work and at the same time peace of mind".*

■ Mónica Meza Espinoza, 49 years old. San José de Comondú.



*"I have everything I need and no time at all to be bitter. I am going to live over 100 years".*

■ Luis Guillermo Bastida Delgado, 74 years old. San Javier.



*"I enjoy each day of my life in the company of animals".*

■ Edgar Benjamín Romero Cota, 47 years old. San Isidro.



*"Everything can be done with freedom: eat freely, work freely, breath freely".*

■ Manuel Vicente Rousseau Aguilar, 48 years old. Rancho San Juan.



*"There is nothing more beautiful than the flora and fauna that surround me".*

■ José Luis Chavarría Valdés, 55 years old. Ejido Alfredo V. Bonfil.



*"It is a privilege to enjoy the beautiful nature that exist in the oasis of the mountain range".*

■ Óscar Aguiar, 50 years old. San José de Comondú

## Ranch Men and Women



# Mountain society and culture\*

Owners of an ancient culture and unique knowledge in Mexico, the dwellers of sierras La Giganta and Guadalupe are the living representatives of an ancestral past we are obligated to preserve.

By: Lorella Castorena Davis | Photos by: Miguel Ángel de la Cueva

The origin of Sud Californian ranchers goes back to the XVII century, when poor peasants from Southern Spain started to migrate, overwhelmed by rural nobility and the crisis of the empire. Poor and deracinated, these peasants occupied the isolated territories of Western and Northern Mexico; they started living in remote, small, rustic housing and emulated the agricultural techniques of their native Andalusia, adapting them to their new conditions. They reinvented themselves in isolation and scarcity.

The size, intensity and diversity of the migrations to the New Spain gave as a result different styles of land appropriation for the also diverse pre-Hispanic territory, where slowly, but inexorably, these settlers ended up building the modern Mexico.

Settled in wild places, these minuscule and forgotten groups, originally from the poorest part of Spain, have survived for centuries now

scattered in the Mexican geography. Isolation and dispersion are their common traits and although they do not share a single territory, these men and women identify themselves as ranchers. This name distinguishes them from the rest of the Mexican peasants, because they have not been part of the land and power disputes which have characterized Mexican rural history.

During the XVIII century, the region's indigenous population decreased dramatically while the rancher families flourished. Their offspring, which was neither missionary nor indigenous, slowly repopulated the peninsula and by the time Mexico became independent, ranchers already dominated the vast and inhospitable Sud Californian territory.

Positioned in sites near water sources, ranchers developed a modest but varied horticulture and local stockbreeding. They built rustic homes for themselves and for a very



*Ranch men and women are in a very vulnerable situation and face extinction.*

long time together with miners, traders and fishermen, they constituted the pillars of the regional economy.

Ranchers consolidated over the prolonged colonial period and they constituted a completely different group to the traditional rural communities and separated themselves from the rural and urban creole elites.

Up until the middle of the xx century, ranchers guaranteed the supply of horticultural products and livestock to the Sud Californian towns and small cities. Ranchers in other parts of Mexico had to share the complex rural space with other peasant and indigenous

communities, and have always been disadvantaged in terms of demographics, territory and cultural significance. The case in Baja California Sur is different, ranchers and their culture represent the regional ancestry, a sui generis continuity to colonial history and the regional identity.

This historical and cultural process started precisely at sierras La Giganta and Guadalupe, where the first missions settled and started to intertwine the relationships with coastal missions, mines and ranches, laying the foundations for the social, economic and cultural life in Baja California Sur.

In these sierras it is possible to find small rural communities which are part of Loreto, Comondú, Mulegé and La Paz. These communities make up towns and ranches whose main productive activities are the foundation of the Sud Californian rural scene: stockbreeding as the number one economic activity and horticulture as number two.

These communities represent one of the oldest land appropriation strategies in the Baja California peninsula. During the xix century and the first half of the xx century, rancher families were the

only representatives of the rural scene in Baja California Sur. Their predominance was lost in the 1940's with the arrival of the first agricultural colonies and the ejido distribution program. The agricultural colonies of Santo Domingo Valley were given to a group of peasants coming from Central Mexico (Jalisco and Querétaro mainly) and, the other land was distributed among other peasants and residents of the peninsula; these are the 20 rancher families who own ejidos in the area.

The social and cultural organization of rancher communities is determined by the demographic element: few, scattered inhabitants in isolated locations. Ranches are small, productive units whose economic structures have been labeled as shepherd societies, which depend on stockbreeding. Traditionally, ranchers own their production units which are vast, uninhabited lands for free grazing, historically located near permanent water sources.

The rancher culture is of the utmost importance. Although the rancher culture is recognized as the corner stone of the regional identity, the attention it has been given has not translated into actions to preserve it and, given the demographical behavior of its population, it is bound to extinction. On the other hand, the rancher socioenvironmental strategies could be used to make policy for the sustainable use of water and land in the region.

Ranch men and women make up a social group which is numerically disadvantaged

both nationally and regionally, they possess common characteristics and at the moment they are in a very vulnerable situation and face extinction. Although always a minority, this group played a part in the creation of our Nation and was instrumental for the construction of the Sud Californian identity. Today they represent one of the oldest links of our cultural identity and an essential part of our heritage.

The extinction of the ranch culture and its consequences must be evaluated in the wider context, beyond the regional aspects. The loss of this cultural heritage could have implications in the search for the sustainability of the arid and semi-arid ecosystems in Mexico and the continent.

#### — ABOUT THE AUTHOR

Sociologist and PhD in Latin American Studies from the National University (UNAM). Professor and researcher at the University of Baja California Sur, expert in cultural, gender and socioenvironmental studies; she has over 20 publications including books, chapters and articles.



\* This text derives from various research projects the author has done over the last couple of decades, particularly for the books *Sud California: The face of an identity* (2012) and *Up the Zorra Canyon, ranches and ranchers*

at the Sierra La Laguna (2008), as well as for the technical study for the proposal for the declaration as Biosphere Reserve for Sierras La Giganta and Guadalupe.

■ Dawn at Ejido Tepentú, Sierra La Giganta.  
Photo by: Ramón Castellanos.

# Behind the silhouette of the | sierra

By: Gabriela Anaya | @ganayare

## — ABOUT THE AUTHOR



Consultant in philanthropist strategy and collaboration. Advisor in Mexico to the NGOs Resources Legacy Fund and Packard, dedicated to support the conservation effort at the sierras La Giganta and Guadalupe through the work of Mexican civil organizations. She coordinates the support

team for the initiative Collective Impact for Mexican Fishing and Aquaculture. She is a member of many boards of civil organizations and technical committees, including the Natural Protected Areas Fund, the Fund for the Conservation of Nature and the Center for Civic Collaboration.

The aridness of the desert can make it hard to take in at first sight. I remember on one occasion a consultant burst in anger and refused to continue the field visit to La Giganta and Guadalupe until the heat subsided a bit. The temperature was above 40°C and a ranch dog joyfully decided to mark its territory on the shoes of the distinguished specialist. I cannot possibly judge his reaction too harshly. The extreme temperatures of the lowlands of the sierras make them inaccessible for people who are not used to the desert. The intense heat during part of the year and the scarce rainfall do not make it easy to adapt, live or thrive there.

Desert ecosystems are quiet and do not manifest life like jungles do; however, they have the biodiversity, and they have it in abundance and exclusivity.

The ascetic silhouette of La Giganta and Guadalupe conceals a territory whose importance is not possible to understand or appreciate at first sight. There, geography, nature, history and culture converge in a unique and isolated way. These sierras act as a rocky backbone to the southern end of Baja California. Their steep peaks, up to 1,750 meters above the sea level, their valleys and oases are home cacti species and land vertebrates that cannot be found anywhere else in the world. The mountain forests in the most elevated regions of Sierra Guadalupe are also home to endemic species.

Not only the plants and animals at the sierras present characteristics which make them unique and relevant for the planet. The same occurs with the approximately 45 oases located there. A desert oasis indeed has the value the metaphor suggests: they are essential. These ecosystems allow for different groups of plants and animals to survive and evolve in an arid environment and they are also a stop for birds which migrate within or through the peninsula. Equally important, oases in the region are true social landscapes and cultural, economic and demographic centers.

*Now it is the time, as a country, to reduce the isolation and care to preserve the ecological integrity of the sierras and foster the well-being and prosperity of their inhabitants.*

The historic and cultural values of sierras La Giganta and Guadalupe go beyond local or national importance. The cave paintings made by the indigenous groups at the sierras show patterns and designs that are exclusive to them. The vestiges of the missionary culture are also unique. Towards the end of the XVII century, a group of Jesuit missionaries went to the sierras to teach the Gospel to the locals, and together with religion, they also taught them a series of land management and production techniques that are still used today.

The creation of a Biosphere Reserve to protect La Giganta and Guadalupe, and to have clear guidelines for the sustainable use of the land, is not a trivial matter or an elitist whim. Up until now, the natural life, history, economy and rancher culture have been shaped by the desert conditions and isolation of the sierras. Now it is the time as a country to reduce the isolation and care to preserve the ecological integrity of the sierras and foster the well-being and prosperity of their inhabitants.

# Oases

## Biocultural heritage

By: Micheline Cariño

*It would be impossible to think about the past or the present of Baja California Sur, or imagine its future without the existence of oases. These socioecological systems shaped the traditions that prevail today in ranch culture and can potentially guarantee a sustainable future for Sud Californians.*

### What is the definition of oasis?

The official definition of the word oasis, as per the Royal Spanish Academy Dictionary, has two entries:

1. Site with vegetation and sometimes springs which is isolated in the deserts of Africa and Asia.
2. Truce, break or refuge from life's hardship or mishaps.

Thanks to the research done within the Interdisciplinary Network for the Sustainable Development of the Sud Californian Oases over the last 15 years, it is possible to contest the first entry and confirm the second.

This research has also allowed us to modify the generally accepted scientific view on oases: natural science considers to be an oasis any wetland located within an arid zone, and this is not necessarily true. However, we agree with ecologists that both wetlands and oases are instrumental for the existence of human and non-human life in this type of regions and they both have abundant biodiversity.

Oases are man-made socioecological systems and biocultural

landscapes based on the transformation of wetlands to develop agriculture. This transformation implies managing water through the construction of complex irrigation systems, altering the biota with the introduction of domestic plants and animals and modifying the orography to create agricultural terraces to contain the fertile soil.

Agriculture is based on a stratified system to maximize the very fortunate, yet scarce combination of permanent water plus fertile ground: the upper level has date palms, the intermediate level orchards and the lower level green-leaf vegetables. Stockbreeding is reserved for the dry land surrounding the wetland, as it represents a source of food for the neighboring communities and fertilizer for the crops.

The construction of oases requires hard and continuous work; the objective is to attain food self-sufficiency for the local communities and —whenever possible— obtain a surplus for trade exchanges and/or provide for temporary residents or visitors.

Oases are man-made socioecological systems and biocultural landscapes based on the transformation of wetlands to develop agriculture.

## History of the Sud Californian Oases

Baja California Sur and the Sonora Desert are part of the world's regions where oases can be found. The indigenous peoples of Baja California Sur—known as Californios— did not build oases, but the indigenous peoples of the Sonora Desert region did. Nevertheless, Californios did use the wetlands for survival and built around them a unique and resilient culture based on an energy economy, the use of biotic diversity and a profound understanding of the terrain and the peninsular ecosystems.

Californios roamed the abrupt narrow passes of the sierras La Giganta and Guadalupe, from mountain peaks all the way down to the coast, in a well-demarcated territory. They were nomads who organized themselves in groups of pickers, hunters and fishermen and based their activities on the annual wet and dry seasons. In this territory, they found shelter, medicinal plants and a variety of foods. They left testimony of their existence in beautiful

cave paintings, some monumental and other smaller, as well as countless petroglyphs and seashell works.

The Spanish explorers arrived to the Baja California Peninsula in 1533, but it was not until 1697 that they managed to settle. The aridness and isolation of the region delayed the colonization, and it was the Jesuit missionaries who did it in the end thanks to their knowledge of the oasis culture. They chose the biggest wetlands to establish 18 missions, and each of these, plus a few other smaller ones, were transformed in oases.

To do this Herculean task, they required the help of a few rancher families, carefully selected. This was only possible because the Ignatian order controlled the migration to the Peninsula and all the activities which took place there. This occurred because of the exceptional circumstances in which the Spanish crown gave the authorization for the colonization of this region.

The Jesuit chronicles give a detailed account of the extraordinary effort it entailed to build the oases: the preparation of the terrain, the construction of canals and dikes and the careful sowing of crops. And all this work was at risk every summer. The intense rainfall from hurricanes could eliminate in a few hours the work of years and it meant starting all over again.

Oases agriculture met two ends for the Jesuit missionaries: obtain enough food to turn the nomad Californios into sedentary people and convert them to Christianity through arduous labour. After seven decades, the enormous effort put into this project proved unfruitful: the Ignatian order was expelled from the Spanish Empire in 1768 and the indigenous peoples were decimated by disease, war and the systematic destruction of their culture.

In the end, the colonial effort was successful as the oases gradually turned into towns and ranches and the agriculture prospered. The Sud Californian oases culture is the result of the blend of the universal oases culture and the ancient environmental knowledge of the old Californios. Based on this cultural heritage, oases have dual adaptability, firstly to the aridness and secondly to the isolation. The Peninsula is home to magnificent oases landscapes and to the almost unknown rancher culture; these two things are the key components of the Sud Californian biocultural heritage, which together with the vestiges of the Californio civilization provide La Giganta and Guadalupe with unique and invaluable wealth.

Sadly, this heritage faces multiple threats such as migration, unemployment, lack of education and health services, land ownership security issues and in general, the total disregard of the oases culture as a means to guarantee the sustainability of Baja California Sur.



■ Mulegé Oasis, Sierra Guadalupe. By: akramer.

### — ABOUT THE AUTHOR



Environmental historian and full-time Professor and Researcher at The University of Baja California (UABCS) since 1989. She is also a member of the National System of Researchers. She holds a PhD in History from the École des Hautes Études en Sciences Sociales in Paris.

The Sud Californian oases culture is the result of the blend of the universal oases culture and the ancient environmental knowledge of the old Californios.

# La Giganta and Guadalupe

*The keepers of life in the Peninsula*

By: Rodrigo de Alba | @preguntalearod  
Photos by: Fernanda Gómez.

Baja California Sur is not just sea and sunshine, it is also thousands of kilometers of mountain ranges that stretch across and beyond the limits of the Peninsula and of which so little is known. However, their effective and thorough conservation is crucial as the natural, social and historical heritage of the region depends on it. We are still on time.

Viewed from above, it is possible to observe the footprint millions of years of geological history has left on the peninsula situated in the north of Mexico; the southern region is a rugged mass that stretches all across. We are talking about the sierras La Giganta and Guadalupe, an almost unexplored territory that starts (or ends, however the reader wishes to see it) in La Paz and stretches over 350 kilometers with a width that varies between 35 and 55 kilometers and encompasses four out of the five existing municipalities in Baja California Sur: La Paz, Comondú, Loreto and Mulegé.

The enormity of the mountain range makes it necessary to split it in three regions: north, center and south. It is obvious each region has its own trademarks and complexities, and those who study them have also defined zones and sub-zones because the sierra is home to deep canyons, extensive valleys, plateaus, peaks and coastal flatlands.

Sarahí Gómez, analyst at the Mexican Center for Environmental Law (Centro Mexicano de Derecho Ambiental, CEMDA), explains that the sierras are “territories environmentally, biologically, socially and economically important for the region. Within them, it is possible to find shrub forests, oases, seasonal ponds and oak forests, among other ecosystems, which are home to endemic species, many of them under the protection of environmental law”.

Furthermore, the expert mentions that in the light of high-level global warming alert, we must be aware of the essential environmental services the sierras provide, such as the production of oxygen and the absorption of carbon dioxide.

La Giganta and Guadalupe keep many secrets. However, one secret has been revealed: “water is scarce in the entire region it is a desertic zone”, tells us Sarahí but, she adds, “the sierras are responsible for providing water to the entire region”. How does this happen? Due to their peculiar orography and geology, rainfall or condensed water gathers on hillsides and then trickles down to form springs or lagoons or infiltrate aquifers and waterbeds that then emerge on the oases, those “green islands” that support date palms, pumas, hawks and, of course, ranchers. It is important to mention that without the vegetation layer on the sierras, rainfall or condensed water would simple trickle down to the sea, leaving behind a barren land.

In the book *La Giganta and Guadalupe*, with photos by Miguel Ángel de la Cueva and texts by Bruce Berger and Exequiel Ezcurra, the water phenomena is explained as follows: “the water comes from the Sierra, and without this vein network, the region dies. All forms of life come from the mountains as the mountains are the origin of water”. Therefore, the Sierra’s big secret is also a warning: the future and survival of Baja California Sur depends on the conservation of its mountain ranges.



## NO WATER, then nothing at all

The ecological importance of these mountains was pointed out in the *Justification Study for the Declaration as Natural Protected Area of the Biosphere Reserve of La Giganta and Guadalupe*, elaborated by the National Commission of Natural Protected Areas (CONANP, 2014): “the survival of the communities in and around the Sierras depends on the water that infiltrates and trickles down underground; this water is also the replenishment mechanism for the coastal aquifers”.

According to this study, 50% of the state’s communities depend on mountain water, communities such as: Santa Rosalía, Mulegé, Loreto, San Ignacio, La Purísima, San Isidro, San José de

Comondú, San Miguel de Comondú, Ciudad Insurgentes, Ciudad Constitución, Las Pocitas and La Soledad, among others. The mountains also provide water for the Santo Domingo Valley, located in the Comondú municipality and where over 70% of the state’s agricultural output comes from.

Let us not forget the oases: there are 171 in total and Baja California Sur possesses 93% of the existing oases in the entire peninsula. Only 2 oases have a surface bigger than 2 km<sup>2</sup>; however, as the biologist Juan Hernández points out, “although the majority are small (some are even 50 meters), any source of water amidst the desert is crucial”.



## The dwellers of the SIERRA

These mountains, as the rest of the peninsula, have not been thoroughly explored. There are canyons and peaks which biologists, or visitors, have not reached yet. “The entire peninsula is quite isolated”, says biologist Hernández; “in fact, many view the peninsula as an island because of the existence of so many endemic species”.

What we do know is that the Sierra is home to 64 mammal species, 12 of them endemic. The big horn sheep is the most representative, but let us not forget the mule deer, the Fennec fox or the wildcat. “Pumas have returned recently”, adds biologist Hernández, “this is a good indicator of the conservation state of the ecosystem”.

There are 199 bird species which live there, many of them endemic, like the Xantus humming bird or the pygmy owl and of course, the birds that arrive as part of their migration journey. Amphibians and reptiles? 37 species have been identified and it is precisely among this group where we find the most endemic species.

In terms of the flora, the assortment includes mesquites, ironwood, oaks and even a rare type of ambrosia that only grows in some of its plateaus. Also important are the date palms found in oases, although artificially introduced, their commercial value is key for the region. Lastly, there is the king of the desert: the cardon. It can be found all over the peninsula and it is the tallest cacti, it can grow up to 20m tall. Many of them are over 200 years old, their flowers feed insects and birds and “their fruits are edible, besides ranchers use them as wood to build roofs and fences”, explains Mr. Hernández.

However, there is so much more to learn. Take for example the case of bats, a key species for the ecosystem but, as the National Commission for the Understanding and Use of Biodiversity (CONABIO) points out, only a few studies have been undertaken to understand them better, despite the fact they are the second largest group of mammals in Baja California Sur. One important case

is the long-nosed bat, which was at the brink of extinction in Mexico and the United States. After intense work, their populations recovered and since 2015, it has been taken off the list of endangered species in Mexico, although it continues to be under special protection. The long-nosed bat is an important pollinizer and seed disperser in the Sierra. Same as bats, how many other species urgently need to be studied? Discovered? Undoubtedly, the first step to do this is the protection of the sierras.

### THE THREAT OF CARBON

- Traditionally, mesquite has been very important for ranch culture: houses, fences and pens are built out of this wood. However, ranchers have discovered another use, you can obtain excellent carbon from mesquite. The problem is that carbon can only be obtained from older specimens, which is decimating the species. Because young specimens are not usable for this activity, the species is still viable. Ironwood trees are also used for carbon: “it has export quality”, mentions expert Sarahí Gómez. Same as mesquite, it is being overexploited and older specimens, some millenary, are being lost, and with them, the natural history of the sierra which has been kept in their rings. Which is the solution? “Regulated logging to avoid over-exploitation, while still offering an economic alternative for ranchers”. The use of solar pots and Patsari cookers, both eco-friendly technologies, will also decrease the carbon foot print of homes in the Sierra.



## Guardians of SECRETS

Apart from the fauna and flora of the sierras La Giganta and Guadalupe, the region also owns a historical and cultural heritage which includes cave paintings, petroglyphs, religious missions and of course the ranch culture, unique in the country and giver of identity to Baja California Sur.

The origins of the ranch culture go back to the XVIII century, when the Spanish soldiers and the Jesuit missionaries encountered the indigenous populations, cochimies, waicuras and pericues, resulting in the blend of two cultures which gave birth to a new society.

Foreigners contributed with agriculture (unknown by locals), stockbreeding and trades, and the locals contributed with traditional knowledge such as herbal medicine and water-rationing techniques. Since then, the ranchers are the keepers of distant secrets which have allowed them to survive in the inhospitable desert, and their isolation (to get to some ranches, it is necessary

to travel three days on mule) has made them preserve their way of living exactly as it was centuries ago.

Regarding current human presence, it must be said that a key element to the good conservation of the region is that it is scarcely populated: the most recent census (2015) indicates that Baja California Sur is the least populated state in the country. Specifically, the Sierra's population barely reaches 4,000 people; over 80% of them live in single-family ranches.

Yet, many areas have been disturbed and the entire sierra might be threatened, together with their culture which is living history. "The threats are well-known", mentions Sarahí Gómez, "the introduction of new species for stockbreeding, agriculture which displaces native species, illegal logging and poaching. In the end, biological issues affect the population of the region, which has managed to survive in this environment for centuries".



### A VALUABLE RESOURCE TO CONSIDER

- **Could tourism potentially be beneficial for the conservation of the Sierras?**

"Yes, as long as it is low impact", the CEMDA expert told us. Nature tourism, camping and mule rides could be economically beneficial for the ranchers and the small communities at the sierras.

Currently, tourism is practically inexistent, but experience proves it is possible to develop it: there are small expeditions to visit the cave paintings or the missions. The same occurs with the oases and hunting tourism has shown potential. The challenge? Benefit the sierra communities.

## The caves that SPEAK

At least 10,000 years before the arrival of the colonizers to Baja California, nomad peoples used to roam the peninsula. The encounter with the Jesuits was their doom. However, they left traces of their presence: the collection of cave paintings and petroglyphs that exist in La Giganta and Guadalupe.

Only in Guadalupe, there at least 800 known sites with traces of the cochimi culture. Possibly

the most enigmatic cave paintings are those found on San Borjitas cave. María de la Luz Gutiérrez, an archeologist who has studied cave paintings in Baja California Sur for over 30 years, has catalogued 120 large motifs all over the San Borjitas cave. The researcher suspects these are the oldest "mural style" cave paintings, monumental paintings representing people, deities and fauna.

The paintings at San Borjitas might be as old as 7,500 years, which is long before the Aztecs developed their culture.

The importance of Sud Californian cave paintings located in the neighboring Sierra San Francisco led to them being declared UNESCO World Heritage in 1993. Undoubtedly, the declaration should be extended to La Giganta and Guadalupe, given their beauty and importance.

## The great CHALLENGE

It has been made abundantly clear the cultural and ecological value of La Giganta and Guadalupe, but how to preserve them? The answer is simple, declare them Biosphere Reserve. The declaratory would not only protect their ecosystems, species, ranch culture and archaeological vestiges, but most importantly, it would protect the precious water.

Furthermore, the protected territory would be part of the other nine protected areas that exist in Baja California Sur, like the Vizcaino, north of the state and the largest one in the country. It would also be part of other conservation efforts such as the Conservation Plan for the Corridor San Cosme - Punta Mechudo, fostered by Niparáj Project since 2011 or the Units for the Conservation of Wildlife (UMA), which have been instrumental for the rescue and responsible use of the bighorn sheep through regulated hunting schemes.

But what could possibly threaten such an isolated and scarcely populated region? The biologist Juan Hernández claims that, "opposite to what is generally believed, the desert is an extremely fragile ecosystem and it is easy to upset its balance. For the case of the sierras, there are disruptions around the populated areas and weather phenomena such as hurricanes have also hit the ecosystem, and recovery is slow".

Undoubtedly, brushing aside the region's ancient knowledge is having an effect. Most importantly, we are talking about the water-rationing. Francisco Olmos, Executive Director for Niparáj, mentions the resource is in crisis: "the sierras provide water to the Valley of Santo Domingo which, according to data from the National Water Commission (CONAGUA), it is the aquifer with the largest deficit in the state (around 40 million cubic meters). This means that the amount of water extracted is larger than what it manages to replenish. And this is getting worse each year".

Modern times have brought with them the construction of tourist and housing developments, unfortunately with no adequate planning. Other problems are caused by roads that cut off natural corridors, poaching, illegal logging and the presence of alien flora and fauna. The introduction of goats has become a nightmare for the entire peninsula, including the islands. Other species that have been artificially introduced are tilapia, pigs and even donkeys, — the last two species become feral—, or the Virgin Mantle plant, which invades oases and consumes all the water.

And there is of course the temptation of mining, which is highly damaging for the environment

and roams the sierras: up until now 16 concessions have been granted but none has started operating yet. The rancher culture is also under enormous pressure: "according to the National Institute of Geography and Statistics (INEGI), 700 to 1,000 people leave the sierra each year", explains Francisco Olmos; "it is expected that by 2,040 only the elders will remain in the rural communities". According to the expert this is due to the high level of deprivation in the area.

Land ownership is another problem, in many cases ranchers do not have property titles or, as Francisco Olmos mentions, "even if they do, when they migrate and abandon their property, developers take over it to build hotels". In addition to this, globalization has brought in external products, devaluing local products and crafts creating a "social void", as the expert mentions and with this comes the loss of part of the national history.

Mario Sánchez, Northwest Regional Director for the Mexican Center for Environmental Law (CEMDA), mentions it is easy to understand the concept of Natural Protected Area if we think about it as environmental stock: "imagine you have a warehouse and to operate it you need a reserve of water, oxygen, animals or forests that we can use".

However, the expert mentions that the concept of Natural Protected Area is commonly misinterpreted: "people think it is about expropriating land, but it is not the case; the point is to set healthy limits that even benefit those who live in the protected area. In fact, the population is always taken into account. Juan Hernández gives an example: "Baja California has always had stockbreeders, ranchers raise goats and cows, is the declaration as natural protected area about imposing a ban on their livelihoods and traditions? No, the idea is to teach them how do it responsibly." The biologist believes there are productive activities which have a positive effect and generate income for the communities.

As Francisco Olmos told us, before thinking about the Biosphere Reserve status, conservationists are already working with ranchers on productive projects, therefore the declaratory "would only complement the actions that have already started."

Considering all the above, the creation of the Biosphere Reserve at Sierras La Giganta and Guadalupe would bestow a legal framework, which is the first step to resolve the current issues and afterwards, assure that the entire area will be preserved for future generations of Mexicans.



### THE SYMBOL OF MEXICO

- One of the dwellers of these mountains is the golden eagle (*Aquila chrysaetos*). Yes, the majestic predatory bird which is on our national emblem, lives in the Sierra under special protection. This bird acts as regulator for the ecosystem as it controls the population of hares, rabbits and insects. The actions taken for its preservation have been successful. There were 70 couples accounted for nationwide in 2010. Records for 2019 show the number went to 159. For the case of Baja California, they are found at the Biosphere Reserve Sierra La Laguna, but can also be seen at La Giganta and Guadalupe.

### — ABOUT THE AUTHOR

Journalist. His texts have been published in México, Argentina, Chile and Spain.

■ Photos by: Ramón Castellanos.

# The legacy

*of the*

# sierra

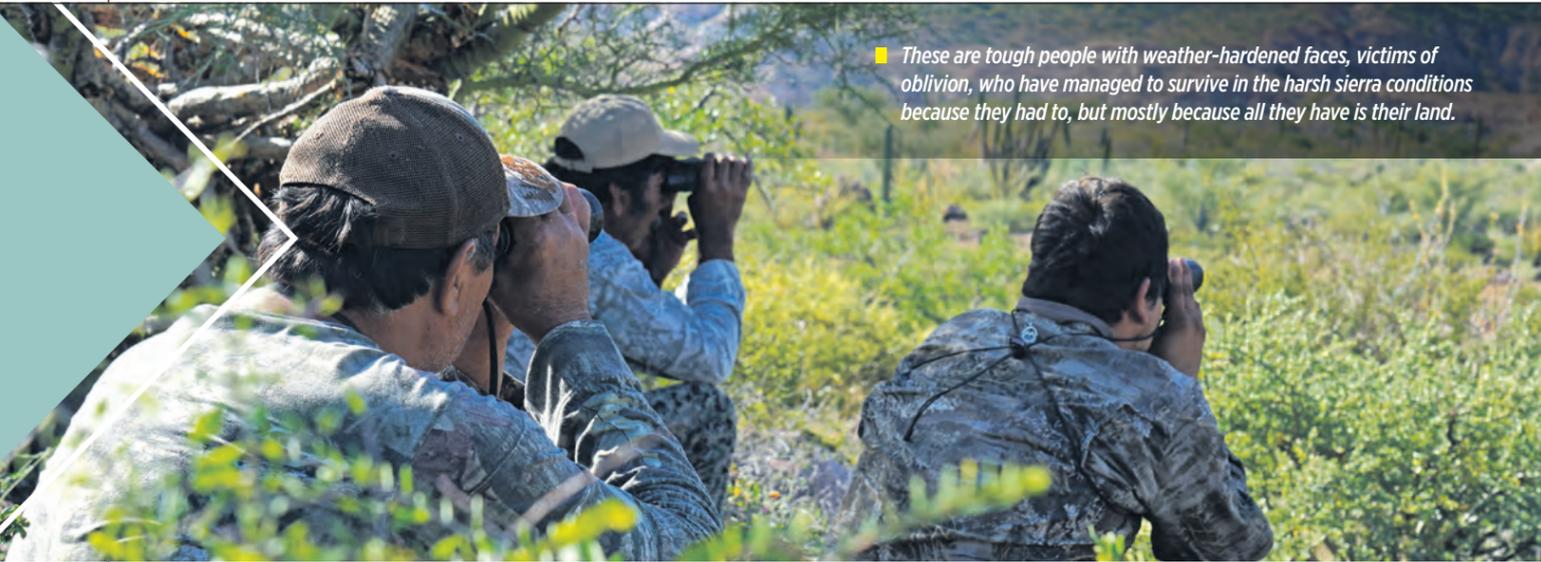
La Giganta possesses a dramatic charm, with its scenic landscapes with mountain tops, ledges and peaks, which seem to have been stolen from a Hollywood Western set.

By: Alberto Tinoco  
Guadarrama  
@albertotino

**I**t is five in the morning. Temperature barely reaches 9°C, but the wind and chill factor rack the body, nothing that cannot be solved with a good cup of coffee. We start our way to Sierra Guadalupe, after having gone through Sierra La Giganta, which extends from La Paz to Loreto. Both Sierras stretch over more than one million 600 thousand hectares and comprise the topography of today's Baja California Sur.

This is the land of the mountain lion, the bighorn sheep and the mule deer, the old "Californios", the foundation stones of the missionary houses and the contending waters, givers of life and revealers of the secrets of this biological corridor of which so little is known.

Starting in Mulegé, we have got into some dirt tracks and creeks. We are looking for El Carpintero ranch, our starting point to make our way into the heart of the Sierra. I am in the company of Miguel Ángel de la Cueva, one of the few Mexicans who has made it to the International League of Conservation Photographers (ILCP). Miguel Ángel is probably the nature photographer who best knows the scenic views of the Sierra Guadalupe. We are also accompanied by naturalist Ramón Castellano, from Beta Diversity, with whom I have shared endless chats about la Baja. Trekking these roads is not easy, everything looks exactly the same. Once dawn dies away and morning reveals itself, we realize that, we are lost!



■ *These are tough people with weather-hardened faces, victims of oblivion, who have managed to survive in the harsh sierra conditions because they had to, but mostly because all they have is their land.*

## What we left behind

We have left behind La Giganta and its desert ores that blur up the aridness and color its thorns. La Giganta possesses a dramatic charm, with its scenic landscapes with mountain tops, ledges and peaks which seem to have been stolen from a Hollywood Western set.

But most of all, La Giganta is renowned for its sunsets with the moon still awake at late hours and the twilight that paints the mountain clouds in ochre, red and pink shades. It was in La Giganta that we met the “Chepos” from the Tepentú Ejido, who have dedicated their lives to the sustainable management of the bighorn sheep. How can I forget the warm afternoon in which we saw a group of ten bighorn sheep at La Cuesta de Federico? All of them with growing horns, a sign that difficult times shall pass. Hopefully these mountain men, Chepo, Rogelio, Don Quico and Sergio, will succeed in this community development effort.

We left behind El Portezuelo, a natural protected area that will now extend to 12 thousand hectares as part of a sustainable project lead by Francisco Olmos and its people from the Niparajá Natural History Society. We have also left behind the oas-

ses of Los Comondús, with its missionary vestiges, its ranches and most of all, the hospitality of its ranchers, who still make their knives by hand and dye their leather hats using divi-divi pods, not to mention the goats cheese they produce and the wine they ferment on leather barrels belonging to Don Manuel Amador. These are tough people with weather-hardened faces, victims of oblivion, who have managed to survive in the harsh sierra conditions because they had to, but mostly because all they have is their land.

In average, 2 out 10 people in Baja California Sur live in small ranches in the sierra, in remote, scattered communities, who have managed to survive thanks to their cultural identity and their ancestral ways, and who should be entitled to a better quality of life. We also came across the rural economy projects at Rancho Matancitas, located in the middle of the Sierra, which fosters a community development model. The Hecho en Rancho program, an effort driven by Niparajá, has allowed local rural communities to commercialize their products with no intermediaries, therefore potentiating their earnings. Their activities include the elaboration of crafts using dead wood and the production of fruits in syrup, pure honey, leather goods and textiles.

We now left behind the Sustainable Management Unit at El Bonfil, one of the best community examples of sustainable use of the wildlife and ecotourism in Baja California Sur. It is impossible to forget the assortment of images of big horn sheep captured by Ramón Castellanos and Luis García from

a three-thousand-meter distance, using a drone. The most amazing part of what we left behind are the unsuspected oases that exist in these remote mountain areas: green narrow passes with palm trees and orchards, desert squirrels roaming about, humming birds hovering at dawn and frogs croaking in ponds.

It is estimated that between La Giganta and Guadalupe exist more than 171 relict oases, bursting with ancient vegetation, which once used to cover the Baja California Peninsula, vital for endangered or endemic species and for sheltering migratory birds. Rain is the main source of water; it trickles down the sierra, infiltrates the aquifers and gives birth to wetlands.

Hidden in the cliffs remain, almost untouched, the cave paintings that are testimony of the existence of the old “Californios”, depictions of ancient times in the history of the Guaycuras and Cochimies, according to archaeological interpretations.

Over the course of 17 days, by car, on foot or on mule-back, through dried creeks, narrow passes or trails, we have managed to traverse more 1,200 kilometers from La Giganta to Guadalupe, the mountain range which is the backbone of Baja California Sur. If the Sea of Cortez is the beating heart of *La Baja*, the mountain rivers are the veins where Sud Californian life flows with more than 700 taxa of plants, shrubs and trees, 49 species of mammals, 39 species of reptiles and 238 species of birds. Out of the total recorded fauna, 27 species are endemic and 56 are listed on norm NOM-059-SEMARNAT-2010 for environmental protection.



*Over the course of 17 days, by car, on foot or on mule-back, through dried creeks, narrow passes or trails, we have managed to traverse more 1,200 kilometers from La Giganta to Guadalupe, the mountain range which is the backbone of Baja California Sur. If the Sea of Cortez is the beating heart of La Baja, the mountain rivers are the veins where Sud Californian life flows.*



## High up the mountain

After being lost for a few hours, we found our way. We arrived to San Estanislao, as we observed how the sun lit up the Trinidad Hill. We are at the San Pedro region and we are getting ready to go high up the Sierra Guadalupe. This might be the last untouched speck of the Sud Californian geography, a pristine corner of natural riches which the deaf and the blind have not known how to or perhaps, have not wanted to protect. This is a subgroup of small hills which emerge from a range of much taller mountains. Its main feature is that it possesses high peaks which rise above their surroundings and steep slopes with mountain tops which end into nothingness.

We left our vehicles at El Carpintero ranch, prepared the equipment and the mount. Our guide Miguelito and his cowboys look at us with suspicion, wondering whether we will be able to go up. And they are not mistaken, one thing is to look at the sierra from the bottom, and a very different one is to go up through its slopes and narrow passes and finally reach the top. For this journalist, going deep into the Sierra in a 4x4 vehicle has its touch of excitement, especially when managing to pass over dry creeks and between canyon walls that seem to close on you. But it is a very different thing when it comes to going up one thousand 700 meters above the sea level on mule-back.

Our quest begins at 11 AM. We start our ascend via the plateau known as Palos Verdes. The expedition crew: Gaspar and Luis, who have been with me on many roads, and I am sure they will be in more to come; Fernanda, who found her vocation in photography and perhaps does not even realize she inherited her gift; Nora, who writes down her ideas and those of others, and is always ready to help; Teresita, born and bred Sud Californian; Miguel, our guide and custodian

from the National Institute of Anthropology and History (INAH) for Guadalupe; Carlos Antonio who, unlike other youngsters from the region, did not migrate and stayed in his ranch and lastly, Chente, who sings and scares away the wild animals. We have ten mules and two donkeys that carry cameras, lenses, tripods, tents and supplies. In the beginning, riding on mule is fun for the gang. If going uphill, you need to lean your body frontwards to help the animal, and when going downhill, you need to lean backwards, keep your feet on the stirrups and do not let go off the reins. Although noble creatures, mules do not always cooperate and they might rear and throw you off the mount. After the initial noise quiets down, silence becomes your sole companion and you discover in each watershed, gorge and pass the secrets of the Sierra, it is like having an internal dialogue with an ecosystem bursting with life.

We pass through Los Pozos, to go round a hilly area known as La Palmita. There are some really complicated narrow passes where we need to dismount and let the mules pass by themselves and we follow them on foot. As time elapses, and you start going up, the mountain exerts a hypnotic effect. Narrow passes, thorny shrubs and gorges do not matter anymore. Sooner rather than later, everything you see starts making sense. Each hill overcome is a small triumph. “Bad passes” are almost everywhere, particularly around watersheds, where you cross from one mountain to another. Sometimes the way ahead looks inaccessible, but mules know what they are doing. You need to tighten your knees while on the mount to reassure the mule. Going across a watershed overlooking a gorge can be very stressful, but it is also a signal that you are reaching a peak. It is precisely here at this point that the Sierra Guadalupe reveals itself. The photographer Miguel Angel de la Cueva knows it; that is the reason why when he looks at us in awe, simply smiles quietly. He has been photographing these mesmerizing mountains for 10 years, they constitute his life project.

■ *This might be the last untouched speck of the Sud Californian geography, a pristine corner of natural riches which the deaf and the blind have not known how or perhaps, have not wanted to protect.*

For this journalist, going deep into the Sierra in a 4x4 vehicle has its touch of excitement, especially when managing to pass over dry creeks and between canyon walls that seem to close on you. But it is a very different thing when it comes to going up one thousand 700 meters above the sea level on mule-back.



After the initial noise quiets down, silence becomes your sole companion and you discover in each watershed, gorge and pass the secrets of the Sierra, it is like having an internal dialogue with an ecosystem bursting with life

360°

We have arrived to El Barco, a plateau where we set camp. In the morning, after a chilorio (condiment-rich pork dish) and beans breakfast, we set out to the highest peak, which is four hours away on mule-back. The view at the top is simply astounding. From there, it is possible to have a 360° view of Sierra Guadalupe, its valleys and settings. The group splits in teams: team one stays to take images overlooking the Sierra del Potrero; team two moves westward to observe the Vivelejos Canyon; team three heads eastward to have views of El Valle basin, where the narrow pass La Joya is located. It is really hard to say who or why were these

names given to this very complex, abrupt, hostile, inclement, yet sometimes charming orography. The peaceful afternoon is interrupted with the yelping of a red tail hawk that folds its wings while it swoops for prey. A bird of prey, swooping down at more than 300 km/h is not something you see every day. Miguel, our guide, tells us to hurry up, we must not risk heading back late in the day, but we want to stretch time and remain here for as long as possible, all the way up the Guadalupe peaks. The way turns more hazardous at dusk, but we trust the mules. We finally make it to camp. We turn our eyes to the sky, and it is inundated with stars. Time to set up the cameras, again!

# The secret

The heat is overwhelming under the scorching sun. We take a rest at a ravine known as Brincos Feos and let the mules quench their thirst. We move to a spot called La Montosa, where the temperature abruptly drops. The croaking of frogs is only interrupted by the sound of trickling water coming from a stream that runs from a mountain peak and ends in a series of ponds. The wind blows and rackets the leaves on trees and shrubs, which seem to be aliens in this remoteness. The vegetation in Guadalupe is characterized by bushes with twisted, thick, fleshy stems growing in rocky, volcanic soils. The most common shrub species are cane cholla, cardon, wax plant and mesquite. We are talking about a shrub community, as referred to by specialists, associated to arid ecosystems. But, on hillsides and narrow passes where water flows, the landscape is very different. Not just because of the abundance of species, but also because these biological corridors shelter larger mammals.

Miguel Ángel de la Cueva points and tells me:  
 — Do you see?  
 — Yes, they are ferns, I answer.  
 — And over there? And points out again. Those are oak trees and the trunks are big (nods his head in disbelief).

In arid ecosystems, oak tree forests account for less than 1% of the total surface, but these cliffs have a good number of small oaks and even some larger ones. The shade and the water that trickles down from the mountain tops have made it possible to have a true botanic garden at the heart of Sierra Guadalupe. It is possible to distinguish white wood trees as well as iron wood trees, which are the oldest dessert trees. We also spot a some güeribos, which are a poplar tree sub-species and we even see a few cedar trees. There are also palm trees, almost as spectacular as the ones on the oases below. This is the secret of the Sierra. The runoff rain water has created microclimates in the Sierra Guadalupe, which have allowed for the growth of different tree and shrub species, even flowers: Miguel Ángel de la Cueva once photographed an orchid in a canyon known as Vivelejos. While we rest, we look at the horizon, which shines upon the San Pedro hills, painted in all shades of green,

like if a velvet layer covered all the valleys. Ramón Castellanos says we are lucky, it is very rare to see so much green. The expedition was originally postponed for a few weeks due to the rains, nobody imagined then that the sierra would be so full of life and color afterwards. Exequiel Ezcurra, bio researcher, describes the full dimension this biological corridor represents in his book *La Giganta and Guadalupe*: “Desert vegetation gives in to huge ferns and willows, and ponds of pristine water are formed on the cavities of volcanic rock, which have been eroded over thousands of years. Cooler climate vegetation starts to appear. Grapevines —parrones, as the cowboys call them— climb up the tree trunks seeking out for light above the canopy. Evening primrose inhabits the somber depths of the canyon and anacardiaceous —a group of highly toxic plants characteristic of the Floristic Californian Province— emerge here as a memoir of the cooler climates of the past: poisonous ivy, a beautiful liana with glossy green leaves, competes with the grapevines to climb up the tallest güeribos, and the vines expand their foliage forming thick canopies. Everything that occurs in the Sierra Guadalupe is determined by the presence or lack of water”.

# Fresh Looks

In the eyes of those of us who live in the cities, we see the peaks of the sierra as the limit, the frontier, where it all ends and there is nothing beyond. But, in the eyes of the wise mountain people, it is precisely there where everything starts. It is the beginning, not the end.

Clouds condense in the sky and rain falls, later turns into dew, and that is how the circle of life starts, as a spring that sings among the creeks, the underground rivers and even the water that trickles down from the

cliffs to the waterbeds where it stores. The canyons of the sierra, such as La Montosa, where we were, have a vital role for the ecosystem: retain rainfall and slowly let it run to the plains. This is the origin of life in the desert, where life flourishes in the way of ferns or amphibians. It is the water that trickles down from La Giganta and Guadalupe that makes it possible to see up above the shadow of the puma or the bighorn sheep and down below, the crops at Valle de Santo Domingo, the region’s most important agricultural area. This is the same water that feeds the waterbeds of the southern part of the peninsula and allows water to flow to houses in La Paz or hotels in Los Cabos.

Life as we know it would not be possible if it was not for the runoff water that comes from the Sierra.

Now I know it. But at an altitude of one thousand 722 meters, in the heart of Guadalupe, where we thought there was no one, it is possible to listen to cowbells. Extensive stockbreeding is devouring the last pristine corner of Baja California Sur. Over the course of 10 years we have sought for these areas to become Biosphere Reserve, which would protect its ecosystems and foster the sustainable development of its communities. However, it seems senseless politics are winning the battle in favor of dark interests, because someone wants the water from the Sierra for its personal advantage. La Giganta and Guadalupe are the cultural and natural heritage of Sud Californians, and it is up to them to use this legacy wisely and sustainably.



— ABOUT THE AUTHOR Journalist and associate producer of the TV show Por el Planeta.



**Nature, culture, history and adventure, all in one place**

■ *Travel the sierras on foot, mule or by car*

**The objectives of protecting this mountain region are:**

- 1 Preserve the invaluable Mexican natural heritage.
- 2 Encourage traditional productive activities.
- 3 Defend the Sud Californian rancher traditions.
- 4 Use the wildlife sustainably.
- 5 Foster productive projects to increase local income.
- 6 Strengthen the development of communities while preserving the natural balance.
- 7 Implement actions to tackle climate change (drought and hurricanes).

\* Information from the Department of Environment and Natural Resources (SEMARNAT).



■ BAJA CALIFORNIA SUR  
■ SIERRAS LA GIGANTA AND GUADALUPE BIOSPHERE RESERVE

■ The "Caguama de San Julio" is located in San José de Comondú and it is about 7,500 years old.

# ARCHAEOLOGICAL SITES

## Traces of the past

By: Carlos Mandujano

■ Photo by: Ramón Castellanos.

I will dedicate this text to outline the importance of the existing archeological sites at sierras La Giganta and Guadalupe; many of them unknown, even for the residents of this magnificent Sud Californian region.

The two immense sierras which are the subject to this special edition have been witnesses to Baja California Sur's amazing natural, cultural, archeological and historical wealth. Both sierras were home to cultures extinct today, groups of hunters and gatherers which basically lived on the resources the surroundings had to offer, this according to what we know from the writings of Jesuit missionaries dating from the late XVII century and early XVIII century. The groups which inhabited these territories were Guaycura and Cochimi.

We also know that these groups were not acquainted with clay or ceramic and did not practice any kind of agriculture (not until the arrival of Spanish settlers to the peninsula). The groups that inhabited the sierras had to move across the territory to fulfill their basic needs: water, food and shelter. To make this lifestyle sustainable, they had to move residence several times a year, depending on the availability each season would bring.

The locations in which today is possible to find traces of human activity and remains of certain objects are called archeological sites.

The National Institute of Anthropology and History (Instituto Nacional de Antropología e Historia, INAH) has registered more than 1,700 archeological sites in Baja California Sur; many of them located precisely at the sierras. Because of the immensity of the territory, and despite the efforts of the INAH to research the area, it is estimated that just a meagre 10% has been explored. Hence, the importance of protecting and preserving the few known sites and of raising awareness among communities, businesses and authorities of their value in terms of research, history and the potential development of cultural tourism activities that could be beneficial for the entire society.

Archeological sites are places where ancient communities lived and went about their regular activities, such as:

- Cooking and eating.
- Manufacturing tools for hunting, gathering and fishing.
- Organizing ceremonies or rituals for which they used stone walls as canvas to portray their cosmivision.

Today we know these graphic expressions as Cave Art.



■ Photo by: Carlos Mandujano.

Archeological sites can be categorized depending on the characteristics of the site and its use: open air campsites, cave camps, hunting sites, cave art sites, trails, workshops and quarries, among others.



## ARCHEOLOGICAL evidence



The campsites represent each spot where the hunters and gathers did their activities. We will talk more specifically about the manufacturing of stone tools and utensils, which becomes of interest because they have survived to this day and there are archeological remains of mortars, pestles, scrappers, brushes, spears and hammers as well as leftover material from the manufacturing process such as chippings. It is worth mentioning that when the sites are located near the coast, it is normal to find remains of seashells, sometimes in great quantities.

These groups also processed plants like the agave to take advantage of their fibers, which they used to make cords and weave baskets. Although remains of baskets are seldom found on the sites, it is possible to find weaving tools made of bone.

Other elements that can be found on the archeological sites are fire starting tools for bonfires, grinding tools for food preparation (land or sea foods) and rests of iron oxide which was used to obtain red color, perhaps for decorating objects, body painting and in some cases, caves painting.

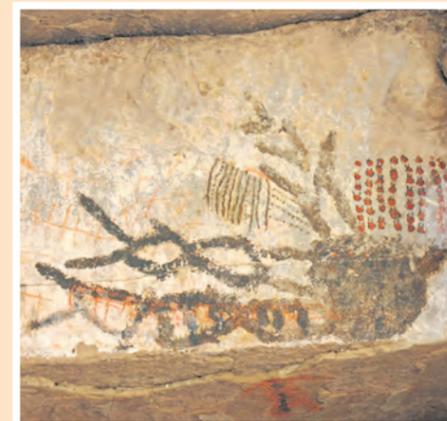
Let us not forget La Giganta and Guadalupe are nestled in the dessert and temperatures go over 40 °C in the summer and plummet to 0 °C during winter nights, this is why caves were very important, they provided shade for the hottest hours and shelter for the low night temperatures.

Considering the benefits offered by these rocky formations, it is no surprise groups of hunters and gatherers set their camps in and around them and they were the bases for social and survival activities.



■ Photos (pages 30 and 31) by: Carlos Mandujano.

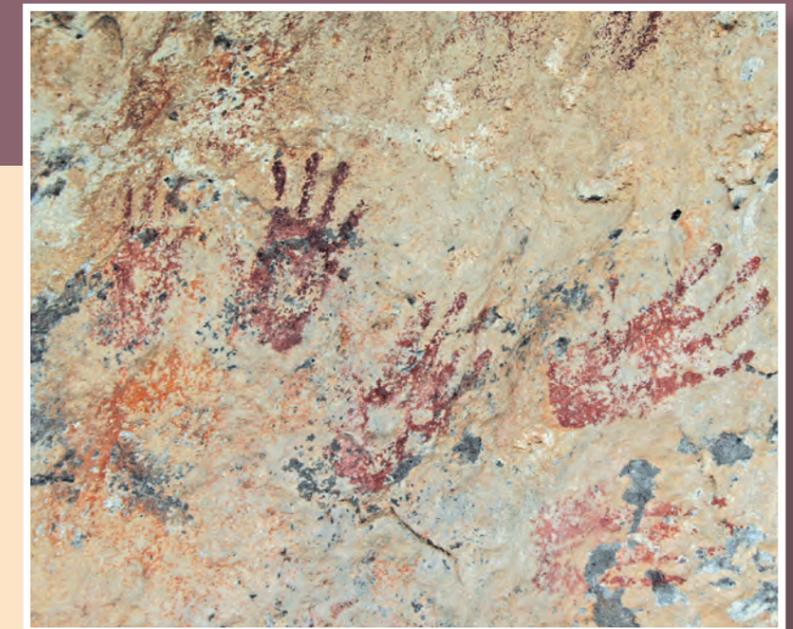
Looking at these images undoubtedly boosts our imagination. What were the creators thinking about when they were doing them? Were they aware they would stand the test of time?



## GRAPHIC representations

The amount of designs, colors and line quality is different for each of the sites. Most of the paintings in La Giganta are abstract, lines, dots, grids, although there are some representations with human and animal shapes, mainly fish. On the other hand, the mural style is present in Guadalupe and San Francisco and it depicts humans and animals, sometimes hunting scenes.

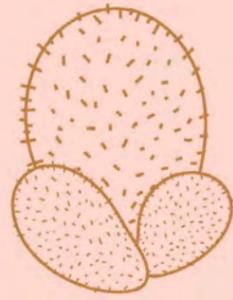
Archeological sites are inevitably exposed to irreversible change and damage due the action of humans and/or natural elements, the latter can even wipe out entire archeological sites. Considering this, it is very important to encourage their protection and preservation as they are the legacy from the original peoples which inhabited the peninsula and the magnificent sierras La Giganta y Guadalupe.



### — ABOUT THE AUTHOR



MA in Archeology from the National School of Anthropology and History. Since 2004, he is a researcher at the INAH in Baja California Sur and Director of the Archeological Research Project at La Giganta.

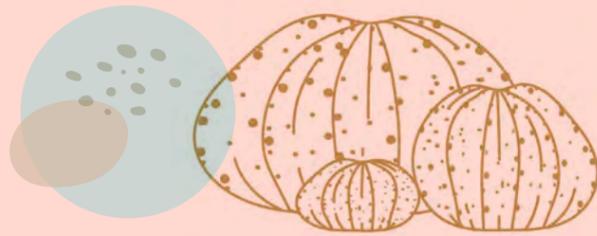


# THE PROTECTION of *biodiversity*

## IS OUR LIFE INSURANCE

By: Fasha Piña

The loss of biodiversity, just as climate change, is a constant threat to our planet and to those who inhabit it. The fast-paced degradation of ecosystems which we have experienced over the last decades is inevitably leading us to the collapse of biological diversity.



It is estimated that approximately 75% of land ecosystems and 66% of marine ecosystems have been significantly altered by human activity. To make matters worse, approximately one million species of plants and animals could be extinct within the next couple of decades. The destruction of ecosystems is accelerating climate change and enabling the transmission of diseases and infections from other species to humans, such is the case of coronavirus.

In order to stop and reverse this trend, it is imperative to redefine our relationship with nature. At all levels.

The pandemic has forced us to postpone important international conservation commitments, such as the 15 Conference of the Parties to the Convention on Biological Diversity (CBD COP15), which was meant to take place in October 2020 in Beijing. The meeting has now been moved to Kunming, China, date to be defined in 2021. It is time to make the most of this unique opportunity to coordinate actions on a global scale to safeguard the future of wildlife and humanity.

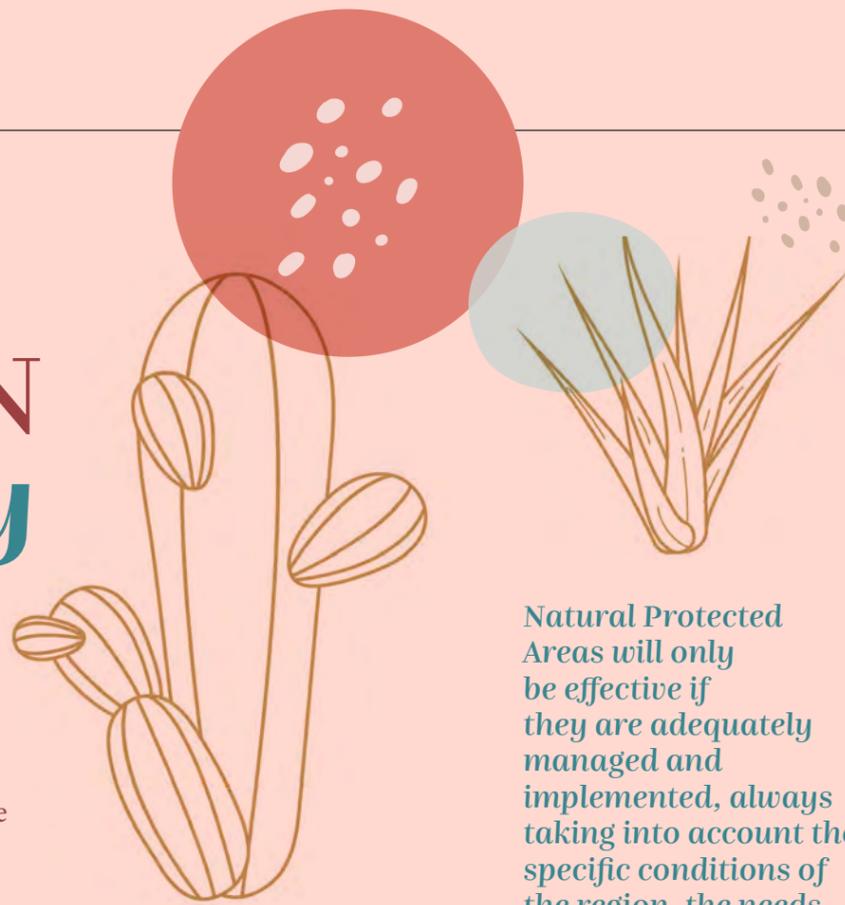
Between the CBD framework, created in 2010, and the goals set in Aichi, Japan, it was determined that at least 17% of the planet's land surface and 10% of its oceans should be under some sort of protection scheme by 2020. There has been some progress in that direction, but,

today, only 15% of the planet's land surface and 7% of its oceans are protected.

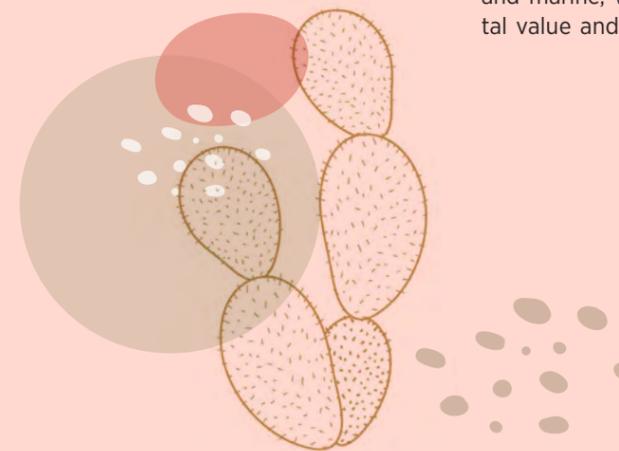
The Aichi goals have not been met, however 2020 gave the international community an opportunity to consider new and more ambitious nature protection goals to tackle the existing climate change and biodiversity crisis, while looking for solutions to the issues arisen from the current health crisis

The CBD parties are currently undergoing the negotiation process to define the goals that will determine the environmental global agenda for the next 10 years. 2021 should be the biodiversity call for action year. During the upcoming CBD COP15, the new Global Framework for Biodiversity will be defined (Post-2020 Framework).

Furthermore, the governments of Costa Rica and France are leading the High Ambition Coalition for Nature and People (HAC), which proposes that 30% of the land and 30% of the oceans should be protected by 2030 (30x30). This goal was set based on the scientific advice and recommendations of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and the International Union for Conservation of Nature (IUCN), amongst other international organizations. Experts worldwide agree that Protected Areas (PA) are essential and effective solutions for the conservation of species and ecosystems; moreover, they are useful tools to tackle both the biodiversity and the climate change crisis. Needless to say, Natural Protected Area will only be effective if they are adequately



**Natural Protected Areas will only be effective if they are adequately managed and implemented, always taking into account the specific conditions of the region, the needs of the local communities and the existing connection between the two.**



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managed and implemented, always taking into account the specific conditions of the region, the needs of the local communities and the existing connection between the two.

It is worth mentioning that the governments which are part of HAC will strive to ensure the 30x30 goal is contemplated in the final text of the Post-2020 Framework, which the CBD COP15 will adopt, committing to double efforts to protect land ecosystems and quadruple efforts to protect the oceans.

On 12 December 2020, Mexico announced it had joined the HAC and it is now one of the 50 countries committed to push forward the 30x30 goals. We must act in accordance to this positive decision and show regional leadership through actions such as the creation of marine protected areas, fishing exclusion zones and protection schemes for land ecosystems which possess high environmental and social value, as well as strengthening the existing Natural Protected Areas Program.

It is imperative to remember that Protected Areas, both land and marine, play a crucial role in safeguarding and restoring biodiversity, and will certainly be a decisive element to revert the current trend.

In Mexico there are many areas, both land and marine, which have huge environmental value and are facing grave threats. For

example, Sierras La Giganta and Guadalupe; if Mexico decided to make them Biosphere Reserves, it would send the world a clear signal of our commitment to increase the protection of land. At the moment, there is extensive work being done with local communities to ensure the effective management of the land and, with national and international organizations to guarantee the necessary funding to implement the projects.

Efforts to fight biodiversity loss must always combine the work of local, national and international organizations. Actions must be taken collectively, considering local stakeholders first, working with state and federal authorities and opened to the participation of academia and society. Natural Protected Areas must be designed based on scientific criteria and must be well-managed so they can offer long-term benefits in conservation. In some cases, certain sectors will benefit, while others encounter losses, but high-level political decision makers must consider the overall impact on the economy, not just the impact on specific sectors.

The global health crisis caused by the coronavirus pandemic has been a reminder of the importance of biodiversity in our daily life. We are still in time to shift our priorities; Mexico is no exception. The message is loud and clear "biodiversity is our life insurance."

### — ABOUT THE AUTHOR



Foreign Policy Graduate from ITAM and MA in Policy and Environmental Management from the University of Miami. General Director at Beta Diversidad, an organization specialized on biodiversity conservation projects, natural resources management and design of sustainable solution projects for marginalized communities.



## CONSERVATION FOR PRODUCTION AND PRODUCTION FOR CONSERVATION

Interview with Biologist Roberto Aviña. Head of The National Commission for Natural Protected Areas (CONANP).

As part of the celebrations of the 20th Anniversary of the creation of the National Commission for Natural Protected Areas (CONANP), Biologist Roberto Aviña talks about the institution he heads, the importance of strengthening the Natural Protected Areas scheme and their commitment to the creation of new protected areas. Furthermore, he stresses his conviction to include rural and indigenous communities which inhabit these areas in the decision-making processes; he is convinced that inclusion is the key to resolving current conflicts and avoiding future ones.

In Mexico, there are 182 Natural Protected Areas which account for almost 21 million hectares of land (10.88% of the total national land surface) and almost 70 million of sea. Within this context, an institution such as the CONANP is incredibly relevant as it responsible for the safeguard and management of this wealth of biodiversity, one of the most diverse in the world.

Although not an easy task, the Commissioner for the Natural Protected Areas, Roberto Aviña, is convinced that over the last two decades, the Commission has been instrumental for the conservation efforts and environmental protection. "Great challenges make us rise to the occasion," he says.

Photo by: CONANP.

### ■ Which is the scope of the CONANP?

It attends to directly to 9 regions in the country and its structure includes directors, deputy directors, area managers and of course, forest rangers. It also has a National Council and it is completely independent from the Environment Department (SEMARNAT).

### ■ What are its specific objectives?

Apart from the emission of decrees to validate the creation of new Natural Protected Areas, we also design the management programs for such areas. Our vision is to encourage a social development approach in all our programs, which involves local communities living in or around the Natural Protected Areas in their management and operation.

We operate under a conservation for production and production for conservation scheme, and we not only involve local communities, but also tourism, private sector and ONGs, what we seek is the participation of people.

The latter derives into a comprehensive land management approach and, in this sense, conservation goes beyond bans and no-touch policies. We make the most of the existing success stories in natural resource management which involve the community in production projects such as bee keeping, sawmills etc.

*"The creation of Natural Protected Areas should be an incentive for people to live better", Roberto Aviña.*

### — ABOUT THE INTERVIEWEE



- Biologist from the University of Veracruz.
- Founder and Director of the Guanajuato Ecological Foundation.
- Graduate of the Lead Cohort 6 Program for Advanced

### ■ Why is it fundamental to involve the community in these projects?

It is paramount to involve communities and landowners alike in every aspect concerning the creation, operation and management of Natural Protected Areas, as this triggers a collaborative environmental management.

This guarantees people will truly encourage a green management of the land, resources and species because it benefits them directly, not only from a utilitarian point of view with higher earnings, but also because it means better quality of life, clean air, clean water and food.

Giving ownership of the processes to the people encourages best practices in land management. Inclusion is also instrumental to resolve existing conflicts and avoid future ones. In other words, the creation of Natural Protected Areas should be an incentive for people to live better, communities should be requesting the creation of such areas. People should build, work and live in these areas.

### ■ Where is the CONANP heading to?

I see the Commission growing its institutional capabilities [...] to operate constantly and optimally. I also visualize it as an institution that gives more to the society with new agreements and the creation of new instruments such as the Forestry Management Units, the Environmental Management Units, the Biological Corridors and the Biocultural Landscapes.

It is vital for the Commission to become an entity that works across the board with other agencies to update laws and regulations and to strengthen the budget. We need to work on the environmental, social and economic arenas.

- Environmental Studies and Sustainable Development.
- Former President of the Biology Society of Guanajuato and President of the Environmental Council of Guanajuato.

# Active social participation in the creation and management of Natural Protected Areas

By: Francisco Olmos

*Developing a Collaboration Model for all stakeholders involved in Natural Protected Areas which guarantees their active participation in the long run will foster the effective conservation of the environment in Mexico.*



In June 2014 the Mexican Government informed about a decree to create the Biosphere Reserve of Sierras La Giganta and Guadalupe. With a surface of 1.6 million hectares and productive activities and communities within the area, its efficient and effective management implies various challenges, especially if the aim is to guarantee social, economic and productive benefits for locals.

This article hopes to document briefly the legal, social and managerial elements necessary for a Natural Protected Area to function under an innovative [1] co-management scheme that would ensure that the creation of the reserve will indeed strengthen the economic development of the local communities and the adequate management of the natural resources.

## • What does co-management mean?

According to Girot *et al.*, (1998), it is a shared management scheme. It must be understood as the joint involvement of locals from a certain territory or natural area and conservation groups in the management and administration of a Natural Protected Area. It is also an institutional arrangement that implies shared responsibilities and competences and a clear partition between local authority and the guidelines for use, access, control and management of the resources of the NPA.

Co-management also goes beyond the simple authorization for the use of a resource or providing a service. It is the democratization and decentralization of the management of the natural resources among all those involved.

## • Legislation

The most important laws that allow and encourage social involvement in the creation and management of Natural Protected Areas in Mexico are the *General Law for Ecological Balance and Environmental Protection*, specifically the section on creation of Natural Protected Areas and the recently published *Guidelines for the Creation, Organization and Operation of Social Participation Movements in Federal Entities*.

The above legal framework, together with organized and representative social participation, can be a useful tool to collaborate with the management of Natural Protected Areas for both residents and visitors, which more often than not are unaware of the existing means of participation.

## • Possibilities for social participation

Social participation, although contemplated in the legislation for the creation and management of NPAs, does not always happen. Unfortunately, there are “strategies” for theoretical participation where in reality, decisions are made unilaterally by the government or the top management of the NPA. Therefore, it is important to find new ways for effective participation, particularly through organized groups or perhaps by encouraging the creation of such groups.

Highly marginalized people and groups live La Giganta and Guadalupe, and their views are mostly based on a survival logic. Under these conditions of extreme vulnerability, it is impossible to think about participation, and even less so about co-investment. However, there some local initiatives that can contribute to resolve the situation from a participation perspective, stretching the scope and benefits so they can be part of the decision-making processes.

## Conclusions

Social participation is the corner stone for co-managing Natural Protected Areas, but unfortunately this is not common practice in Mexico. The creation of new areas, such as Biosphere Reserve of Sierras La Giganta and Guadalupe, represents an opportunity to develop a strategy for organized society, local producers, landowners and residents to influence the decision-making process and the day to day management of the NPA, not only to ensure environmental protection but also the welfare and development of the local communities, creating a power balance which is essential for our country.

This requires a high level of social responsibility from the government and organization and awareness from all the stakeholders involved in the strategy, all this in a region which has shown willingness to collaborate in a model with these characteristics.



To look at the **Justification Study** for the Creation of the Biosphere Reserve of Sierras La Giganta and Guadalupe, scan this code.

### — ABOUT THE AUTHOR



Environmental Engineer with an MA in Ecoregional Development and Natural Protected Areas. He has 15 years' experience working in the north of Mexico; he has coordinated projects involving conservation and management as well as social organization and sustainable development initiatives.

[1] It is understood as the ability to make collective decisions in a territory or community. It does not refer to the existing government or public policies, but rather to the system put in place by the stakeholders and institutions to make decisions.

# BIOCULTURAL landscapes

## COMPLEMENTARY CONSERVATION MODEL

### 1. Firstly, what is biocultural diversity?

In just a few words, biocultural diversity is the combination of nature and culture. The Department of Environment and Natural Resources (Secretaría de Medio Ambiente y Recursos Naturales, SEMARNAT) defines it as follows: “biocultural diversity encompasses language, knowledge and environment”. The Institute of Ecology, on the other hand, defines it as: “the connection between biological diversity and the cultural diversity of

indigenous peoples. This heritage includes ancestral knowledge, traditional uses of biodiversity and spiritual values which are passed on from generation to generation”.

We must take into account that Mexico is a megadiverse country, it occupies the fifth place worldwide in number of indigenous languages and second —after Indonesia and ahead of India, Australia, Brazil and China— in biocultural heritage.

### 2. So, what is a Biocultural Landscape?

Biocultural Landscapes are territories where an enormous biocultural diversity is found or, as explained on the book *The Biocultural Landscapes, they are tool for the development of rural communities and the conservation of the Mexican natural and cultural heritage*. “Biocultural landscapes are the new proposal of the Mexican gov-

ernment to aspire to an integrated territory management system to protect the natural and cultural heritage within a delimited territory. This is done through careful planning of the traditional use of land and the economic growth of local communities through sustainable rural development and harmonic urban development”.

### 3. What are the main characteristics of a Biocultural Landscape as a conservation model?

First of all, to establish a Biocultural Landscape, those who live in the area must sign up voluntarily to be part of this scheme. The scheme works through a Territorial Management Program, which is previously agreed among federal and local authorities as well as external stakeholders, such as conservationist groups. The communities that are part of the scheme get an emblem

or seal from the federation or the county and to keep it, they must stick to the previously agreed sustainability criteria. Lastly, the idea is that the scheme has a duration of 15 years, in which time it is possible to evaluate, reassess and update. It is important to mention that this scheme is in addition to the Natural Protected Areas or Units for the Conservation of the Wildlife schemes.

### 4. What are the benefits for the communities which choose to encourage Biocultural Landscapes?

As a starter, the scheme gives a voice to the indigenous peoples and identity to the new inhabitants; it is also a mechanism to trigger the economy through activities such as green tourism or sustainable rural development. They are also a way to protect the biocultural heritage of the more than 60 indigenous peoples of our nation, which are threatened today. Currently, the West Sierra in Jalisco is working towards the creation of the First Biocultural Landscape in the country.

### 5. Can the sierras La Giganta and Guadalupe be considered a Biological Landscape?

Of course, it is a territory with its own unique culture, the rancho culture, desert people who have learnt to coexist with the biological diversity that surrounds them. In addition to this, they have the oases, ecosystems where man-made and nature connect. Hence, taking on a Biocultural Landscape scheme would be the ideal complement for a Biosphere Reserve Declaratory.

■ *Dasyliiron plants demarcate the dramatic heights of the Sierra Guadalupe.*

## Geography and hope

Photos and text by  
Miguel Ángel de la Cueva  
@miguelangeldelacueva

The first time I visited the Sonora Desert, I was 16 years old. I was on a road trip and I remember perfectly well the dramatic and eroded landscape, and also my need to become this primordial distance.

It was not until years later, in 1995, that I got to Baja California Sur and encountered face to face the majestic Sierra La Giganta. While I observed its contours disappear into the Gulf of California, I was absolutely mesmerized and had the urge to share the power and beauty of this vision.

Regrettably, in our daily life we have traded the wonderful for the commercial, the world's eloquence for our comfort and yet, we do not comprehend the source of our alienation and sadness. As a photographer, I ask myself, how could I tear apart the artificial world we have all contributed to create?

The discovery of the Sierra was a ren-

ovation for me. I developed an obsession to explore in detail each foothill and discover the secrets aridness and isolation have so jealously kept. Its topography appeared to me as intimidating, a feeling I needed to overcome. It took me a long time to get to know this land and feel totally at ease in it, and then I commenced my exploration journey, full of constant, marvelous encounters.

The surprises La Giganta and Guadalupe offer are extravagant and encompass the miracle of life itself. Their austerity seems as vital as their silence. Their rugged shapes remind us of a history more ancient than ours, and demand our complete understanding and respect for the life of their inhabitants.

Almost 50% of this southern state has been designated as Biosphere Reserve or National Park. However, it is faced up against grave threats: tourist and housing developments and mining



■ Created by torrential rains, seasonal pools support wildlife and ranch life at the Sierra.

megaprojects, which could redesign completely thousands of years of pristine landscapes and ancestral cultures.

In 2009, I started —together with biodiversity expert Exequiel Ezcurra and the support of the ONG Niparájá— the sierras exploration project called “La Giganta and Guadalupe, water insights, landscapes of hope”, to create a book that through images and texts would build a new conscience and highlight the urgency to determine which kind of biocultural legacy we wish to inherit to the generations to come. Finally, in 2011 the book was published with the support of the National Commission for Natural Protected Areas (Comisión Nacional de Áreas Naturales Protegidas, CONANP).

The Sierras give us the possibility to find the meaning of the simple things in life, in their secret corners it is possible to rediscover our sense of awe: La Giganta and Guadalupe is where hope and geography merge together.



■ The peaks of La Giganta support relict vegetation from cooler climates, for example small oaks.



■ Waterholes or springs in the Sierra Guadalupe are the life support system in this very arid landscape.

The discovery of the Sierra was a renovation for me. I developed an obsession to explore in detail each foothill and discover the secrets aridness and isolation have so jealously kept.



■ The El Portezuelo natural reserve stretches across the Gulf of California.



■ Sting rays and cetacean traces found at Guadalupe are testimony of the constant sea-desert interaction which once existed.

#### — ABOUT THE AUTHOR



Documentary photographer specialized in natural and cultural heritage. Fellow IUCN, winner of the Foreword silver medal for his book *Stone Oasis*, ExpoBook America, NY 2006. Editor and photographer of the book *La Giganta and Guadalupe*, with texts from Exequiel Ezcurra and Bruce Berger.



Photo by: Fernanda Gómez.

# THE POWER OF *mountain water*

By: Raúl Avilés

I grew up in an insular homeland whose motto was “Water is life”. This motto was created in 1965 by Don Francisco King Rondero, radio and television pioneer in Baja California and tireless advocate for the responsible use of water. Now, as an agronomist and producer at the Sierra, I understand the full extent of this idea and I go to great lengths to convey the same message regarding the importance of water for rural communities and cities alike, as well as the productive activities for both.

The Sud Californian climate is generally dry and hot, with a very specific rainy season defined by the hurricanes and tropical storms which occur between August and October. During these months, the highest peaks of La Giganta and Guadalupe (1,000 meters above the sea level) receive most of their yearly rainfall: 120 to 200 mm for La Giganta and 200 to 300 mm for Guadalupe; Rain is scarcer for the rest of the region and even more so towards the valleys. It is important to mention that Baja California Sur is the state with less rainfall nationally. Hence, the importance of mountain water for the State.

The Peninsula is dry and inhospitable, and life would not have been possible if it was not for the existence of underground water and mountain springs. This is how critical water in La Giganta and Guadalupe is.

Thanks to water presence, life was made possible in the Peninsula and indigenous cultures developed, leaving behind numerous vestiges such as cave paintings and petroglyphs which give us some idea of how they lived, dressed, hunted as well as the utensils they had for cooking and eating.

**Baja California Sur is the Mexican state with less rainfall. However, La Giganta and Guadalupe possess important water catchment and infiltration systems, as well as natural hydrological systems to satisfy the water demand of the State. Hence, the conservation of these natural areas is a national priority.**

La Giganta and Guadalupe are paramount for Sud Californians, from mountain-top rural communities all the way down to coastal cities, because of the hydrological service they render. The region is extremely arid, therefore the water these mountains provide is of the utmost importance, not just for Baja California Sur, but for the entire country.

Likewise, mountain water supports the peninsular oases, which are the only source of

water in the entire region and therefore what makes possible the social, cultural and economic systems for both in-land and coastal geographies. The productive activities of more than 400 communities located in Loreto, Constitución, Mulegé, San Ignacio, La Purísima, San Isidro, San José y San Miguel de Comondú, Insurgentes, Las Pocitas, La Soledad y Santa Rosalía depend on mountain water, 18.5% of the state population relies on this water and the most important agricultural region in Baja California Sur, the Valley of Santo Domingo, which accounts for 76% of the total agricultural output of Baja California Sur, depends on mountain water too.

Coastal and land ecosystems, waterbeds and aquifers and populations in and around the sierra totally rely on mountain water for survival, needless to say, for the essential productive activities. The future of generations to come will depend on the responsible use of this resource and, of course, the shifts derived from global climate change.

Oases are one of the most attractive and relevant ecosystems in the Peninsula, both biologically and from a landscaping point of view. Oases provide shelter to relict species adapted to living in environments with permanent water availability, humidity and abundant vegetation. These species are now restricted to living in these small isles among a sea of desertic shrubbery.

There are 200 oases in Mexico, 171 are in Baja California Sur. The main ones are located in Mulegé, San Ignacio, Santa Rosalía, Loreto, San Francisco Javier, Comondú, La Purísima-San Isidro, San José de Guajademi, Cadejé and Los Naranjos. Furthermore, nestled in the sierra, it is possible to find smaller oases and waterholes which have permitted the establishment of numerous rural communities. These communities have developed backyard agriculture and nomadic sheep and goat ranching techniques.

Therefore, oases are clear manifestation that mountain water is responsible for the existing natural balance between biological, cultural and economic systems.

## — ABOUT THE AUTHOR

Sud californian agronomist, lives in the Valley of Santo Domingo (Comondú). He has worked for over 35 years in topics related agriculture, forestry and sustainable use of water for productive activities on the social sector.



# Cornucopia

Text and photos by: Ramón Castellanos / @tu3rc45

Over the past 25 years, the legal, science-based hunting of the bighorn sheep has become an effective strategy for the protection of the species and its habitat in Baja California Sur. The strategy has proven to be tremendously successful, and thanks to it there has been growth in the population numbers of wild bighorn sheep, economic development of the local communities and it has also served as protection for other wildlife.

Between 1749 and 1767, the Jesuit missionary Juan Jacobo Baegert got to know at first hand the aridness and complexity of the Baja California peninsula. However, since the beginning of the XVI century, there was talk about the wonders and riches of this mythical land, particularly since the Spanish writer, Garcí Rodríguez de Montalvo, let his imagination run free in his book *The Adventures of Esplandian*: “Know that East of the Indies, there is an island named California, close to the edge of Eden, where dark-skinned women dwell with no men, women who lived such lives as the Amazons. They had strong bodies and passionate hearts and great virtue. The isle as such was one of the wildest in the world...” The tale describes how Queen Calafia commanded an invincible army of Amazons on horses, with weapons made solely of pure gold, aided by 500 griffins, mythological creatures whose head was that of a giant eagle and their body that of a lion, trained to kill any man they encountered. In this context, in 1532, the first conquerors arrived to Baja California and, to their surprise, they neither found the Queen nor the Amazons nor Paradise. In contrast, they found an unbelievably arid land whose dwellers were groups of semi-nomad hunter-gatherers (guaycuras, monqui, cochimies and pericues), who practically lived in the Paleolithic and fiercely defended their territories. After 163 years and 9 colonization attempts, Father Salvatierra finally managed to settle in Loreto and from that moment evangelization started and 23 missions were founded across the Californias.

Father Baegert, from Alsatian origin and educated in Literature and Philosophy, was a professor at the Haguenu School just before he was sent as a missionary to the *New World*. As soon as he arrived to Baja California, he knew straightway that the fantastic tales of writers and soldiers were completely false. After 17 years of travels across the Peninsula, north to south, coast to coast, he wrote in his book *Observations about Baja California*: "Everything related to California is of so little importance that it is almost worthless to grab a pen and write about it". However, he devoted 10 chapters and 173 pages to describing in detail the characteristics of its climate, vegetation, fauna and people as well as the conquest and evangelization process of this unique territory. Amongst the wild animals native to the peninsula, two caught his attention: the puma (the Spanish called it leopard) and the bighorn sheep. "Across the mountain range that stretches from north to south in Baja California, there are some animals that resemble our rams, but their horns are thicker, longer and rounder. When chased after, they are capable of jumping off the tallest cliff and landing on their horns without causing them any damage. Their numbers cannot be high as I have never seen an Indian own one of these animals or even their pelt however, they do own leopard pelts". Baegert described as almost impossible to hunt them, and as a result the scarce meat available in Baja California came from lizards, snakes, hares, rats and mice.

The bighorn sheep (*Ovis canadensis*) chooses the highest cliffs for foraging, except on the occasional harsh winter when they descend to middle-mountain narrow passes seeking for shelter. These characteristics kept the bighorn sheep safe for a long time, until the colonization of the North American Wild West and the North Mexico started, and bighorn sheep—as well as deer and pronghorn—served as food sources for the scouting expeditions during the XIX century. Such expeditions almost drove them extinct.

■ "When chased after, they are capable of jumping off the tallest cliff and landing on their horns without causing them any damage", Jesuit missionary Juan Jacobo Baegert.

**The hunter is only allowed to take one specimen, previously authorized by the guide and the technical expert, and the kill must be ethical and respectful (fair chase).**

In 1922, President Alvaro Obregon banned the hunt of bighorn sheep nationally; unfortunately, this protection measure was not paired with the required actions to implement it and in the 1960s massive extinctions of bighorn sheep were documented in Chihuahua, Coahuila and Nuevo León, as well as steep decrease in the populations of Sonora and Baja California.

Between 1964 and 1968 several experimental hunting expeditions took place in an attempt to further understand the species and its habitat, while trying to implement a conservation strategy. The trophy hunting period started in 1969 for the Northeastern states. For the case of Baja California, 625 bighorn sheep hunting permissions were granted between 1980 and 1990 until the State Congress declared a closed season in December 1990. The Congress argued there was a discretionary management of the 'permits', and there were no real benefits for landowners. Furthermore, there was a complete lack of the technical knowledge required to define accurate exploitation rates.

During the 1990s, Mexico achieved significant progress in terms of legislation and international agreements for the protection of wildlife, for example, the creation of the Mexican Official Norm (Norma Oficial Mexicana NOM059-ECOL-1994), the General Law for Ecological Balance and Protection of the Environment (Ley General del Equilibrio Ecológico y Protección al Ambiente, LGEEPA), the General Law for Wildlife (Ley General de Vida Silvestre, LGVS) and the incorporation to the Convention on International Commerce of Endangered Wildlife (Convención sobre el Comercio Internacional de Especies Amenazadas de Fauna y Flora Silvestres, CITES). This newly created legal framework, together with the creation of the Department of Environment and Natural Resources (Secretaría del Medio Ambiente, Recursos Naturales y Pesca, SEMARNAP), catalyzed the beginning of the so-called Units for the Conservation of Wildlife (Unidades de Manejo para la Conservación de la Vida Silvestre, UMA), with the purpose of regulating the management of wildlife, seeking to achieve sustainability and co-responsibility between the society and the government in the use of resources.

The protection and sustainable management of the bighorn sheep started in 1996 in Baja California Sur and Sonora, through the use of UMAs. After more than 20 years the results are encouraging, particularly in terms of the knowledge acquired about the species and its habitat, but also in terms of the increase in the numbers of managed populations of

bighorn sheep and other species which share the habitat. Results are also positive in terms of land conservation and economic resources generated by landowners and communities using a sustainability model. A little over 17% of the national territory is registered under the UMA scheme, which implies the direct involvement of landowners in the protection of natural habitats through surveillance and sustainable management practices, resulting in a positive impact for hundreds of species at a minimal cost for the treasury.

UMAs changed the logic of wildlife exploitation. The new hypothesis suggests that if the sustainable management of resources renders economic benefits to the community, and not to intermediaries, as it had been happening, there is a positive effect in terms of conservation of habitats and resources. In optimal sustainable management conditions, one single bighorn sheep specimen coming from a biosphere reserve can reach a market value of around 65,000 dollars, therefore its conservation can prove to be a profitable business for the community, and in the long term, for the entire region. This pairing—conservation and development—creates a virtuous circle between landowners and their lands, encouraging them to maintain adequate condi-

tions for the wildlife and allowing the continuity of biological processes for the bighorn sheep as all the other species which share the mountain.

There are three main action items to be developed as part of UMAs: 1) Participatory monitoring and surveillance; 2) Habitat and population management; and 3) Environmental education. It is key to stop the elements that exert pressure on wildlife and its habitat. Specifically for bighorn sheep, it is key to achieve the following: remove introduced cattle, not only because it is competition for food, but also because it is a disease carrier; provide access to water; decrease depredation by pumas; establish a permanent surveillance and monitoring system with the help of locals offer an environmental education program for locals and visitors to explain the management and conservation efforts.

There is a set of very specific rules for bighorn sheep hunting. The first one is that it is only allowed to hunt a pre-determined number of male adults (Classes III and IV), this measure seeks to guarantee that those specimens had a chance to reproduce. The number of specimens for hunting is defined each year based on a population monitoring system and an algorithm that allows optimal herd management.

At the start of the hunting season, which typically runs from mid-December to mid-March in Baja California Sur, the hunter is guided on foot in search of the trophy by UMA personnel, including a technical expert. Once a specimen with the required characteristics is located, the hunter has 10 days to do the killing, which means he has time to decide if it proceeds or if he wishes to continue searching for another specimen. The point-based trophy system, which considers the width and length of the horns, makes hunters to be very picky about their specimen, which benefits the general population because the older the specimen, the larger the horns.

The hunter is only allowed to take one specimen, previously authorized by the guide and the technical expert, and the kill must be ethical and respectful (*fair chase*). Once the kill is done, the team proceeds to remove the skin and then return to camp. A portion of the meat is eaten that night in camp, and the rest is distributed among the local community. The trophy (head, horns and skin) is treated with salt to be able to transport it and the hunter must present it to the environmental authorities (PROFEPA) before exiting the State.

After 24 years of sustainable management, perhaps the most important achievement in Baja California Sur is that landowners have really taken seriously the protection of wildlife as well as the development of teams of expert handlers. This has made possible not only to increase the numbers of bighorn sheep through surveillance, monitoring and management of the habitat, but also through the implementation of best practice hunting schemes. The professionalization of the hunting practices has gained regard amongst potential clients, and these clients are mostly wildlife lovers associated to the conservationist society which gathers most hunters worldwide: Foundation for the North American Wild Sheep (FNAWS).

Sustainable hunting takes us back to a remote past, where a group would go out on the hunt to provide for the family, without taking more than what it was necessary. This is completely different to poaching, which is always harmful for the wildlife and the rural economy. Science-based hunting seeks to maintain the ecological balance while it generates benefits for local communities and landowners, allowing for the conservation of the land as it increases its value. The long quests and hazardous chase on difficult, harsh terrains are the motivations for the hunters. The killing is the culmination of this 'love-affair'.



#### — ABOUT THE AUTHOR



Explorer and conservationist. He has worked for over 20 years with osc and other national and international government agencies in sustainable development, monitoring conservation, and natural resources, wildlife and habitat manage-

ment programs. Dive Master and Technical Rescue Diver, ultralight aircraft pilot, nature photographer and cinematographer. He currently collaborates with Beta Diversity and Wildlife Conservation Services.

# RURAL ECONOMY

## Key to rescue our natural, social and cultural legacy

*Over the last six years, ranchers have joined efforts to create a Model of Regional Sustainable Economic Development, and the results have been positive as there has been an improvement in the living standards of those who dwell on the Sierra. It is, without a doubt, a model worth replicating.*

By: Paloma Gutiérrez

Photos by: Miguel Ángel de la Cueva.



There is quite a number of rural communities located on La Giganta and Guadalupe, embedded in a very complex orographic landscape, which is itself cut off by deep narrow passes. These narrow passes are of great significance, as the first human settlements that surrounded these oases where initially established there.

These remote mountain areas witnessed the arrival of Jesuit missionaries, who taught native Californians productive activities such as agriculture and livestock, and introduced to the area Mediterranean species such as olives, vines and date palms, which set the foundations for the first trades: carpenters, blacksmiths and saddlers, these being the origins of the regional South Californian history.

In this context, the “ranch culture” carries an enormous historical and social value, which ought to be recognized and appreciated as one of the most important cultural heritages in our country. Sadly, this ancestral wisdom becomes more and more vulnerable by the day, as it faces great challenges related to:

- Lack of development of the rural economy.
- Inadequate management of the local natural resources.
- Scarce employment generation.
- Lack of fair-trade schemes.

The latter has forced ranchers to leave behind their entire ranch life to migrate to urban centers in search of better conditions; these movements have caused the decrease or considerable loss of traditional mountain activities.

*The South Californian “ranch culture” carries an enormous historical and social value, which ought to be recognized and appreciated as one of the most important cultural heritages in our country.*

### AN EFFECTIVE SOLUTION DOES EXIST

In the light of the urgent need to reverse this situation, a group of local ranchers joined forces to create the social organization Productores Sustentables de la Sierra La Giganta PSSG (Sierra La Giganta Sustainable Producers), first of its kind and which today has over 500 members, representing 600 families and 82 ranches.

One of the main projects it has launched is the implementation of a Model of Regional Sustainable Economic Development, which has managed to increase the net profits obtained from local products trade up to 300%. Likewise, it has driven the creation of new environmentally-friendly production initiatives and has aided the transformation of traditional production methods into sustainable practices, all this in conjunction with local and regional social organization processes.

Despite the adversity, this project has been able to successfully continue for six consecutive years

and remain in the consumers’ radar, who already identify the wording “Hecho en Rancho” (Made in Rancho) and know it fosters the development of the rural productive sector towards more competitive markets, creating value through sustainable practices and zero intermediaries, therefore guaranteeing higher earnings for producers.

This model has become an efficient and sound means for the economic development of rural communities in the mountain areas, while it fosters the sustainable use of resources and safeguards the socio-cultural heritage of La Giganta and Guadalupe. It is amazing to coordinate such a big project and have the opportunity to work with people whose ranch culture is still intact.

The PSSG also works with a group of organized women who are dedicated to basket-making using palm leaves and the growth of aromatic and medicinal herbs such as oregano and chaparral. Stone sculptures made by local carvers are also impressive, they still make grinders, mortars, pots and jars.

And what to say about the collaborative work we are doing with other organizations to create the first Regional Wood Transformation Workshop, where artisans make pens, book markers, frames and jewel boxes using local cactus species.

Meanwhile, seeking to protect the main activity at the Sierra —livestock—, a pilot project called Rancho Modelo (Model Ranch), is currently being implemented at the Matancitas Ranch, to transform extensive livestock activities into sustainable livestock practices.

Undoubtedly, organization and common purpose make of this group of producers an example to follow among ranchers.

The sum of all these initiatives proves that organized groups can work with honesty, discipline and most importantly, co-responsibility, in search of social, economic and sustainable development schemes.

For more information visit [www.productoressustentableslagiganta.mx](http://www.productoressustentableslagiganta.mx)

#### — ABOUT THE AUTHOR

Coordinator for the rural product trade project, responsible for the stock management, community development and direct sales as well as the promotion of the initiatives for economic, sustainable rural development.

# The devil's pearl

By: Fabián Torres | @bdemontork

Undoubtedly, one of the most representative sites at the sierras La Giganta and Guadalupe is El Mechudo hill, which owes its name to a peculiar local legend involving the Virgen, the devil, pearls, divers and promises



In Baja California Sur, the sierra is deeply connected to the sea, it is impossible to talk about one without referring to the other because many hill-sides run into the Sea of Cortes, creating mesmerizing landscapes which merge the aridness of the desert and the turquoise Sud Californian waters.

El Mechudo raises 1,000 meters above the sea level and is located in the fishing community of San Evaristo. It is an iconic landmark of Sierra La Giganta and it owes its name to a mythical story which encompasses elements of the life style and idiosyncrasy of the region.



*The legend of El Mechudo tells that at the end of the pearl season divers, loyal to the tradition, would reserve the last extracted pearls and consecrate them to the Virgen of Loreto, patroness of the community; hence the expression seek the pearls for the Virgen, as a way of saying the work is done or completed.*

*One day, a diver, emboldened and blasphemous, decided to dive in one more time. His anxious peers explained to him that they had already taken out the last pearls and were ready to go home; however, he contradicted them and said:*

*— I am not getting a pearl for the Vir-*

*gen; I am getting a pearl for the devil.*

*He dived in the sea and never came out. Some say his body was never found; others say it was found the next day at the bottom of the sea with his head trapped on an oyster. In any case, it seems the devil took his offer and the pearl took the diver's life.*

*Since then, it is believed that if someone dares to visit that place, the only thing it will see is a ghost with beard and long, thick hair, clenching the devil's pearl. The thick hair is the reason why the ghost, the hill and the region are known as El Mechudo (the word mechudo means shaggy).*

The story of El Mechudo has been passed on from generation to generation, and each time the version is updated, which means the ghost is reborn each time the legend is told.

## — ABOUT THE AUTHOR



Studied history, proofreader and author of many journalistic and academic articles.

# SIERRAS DE LA GIGANTA Y DE GUADALUPE

• Son la columna vertebral de los ecosistemas terrestres de Baja California.



• De sus montañas brotan manantiales de agua cristalina que abastecen los oasis.

• Poseen un paisaje volcánico asombroso en el que han evolucionado sus propias formas de vida.

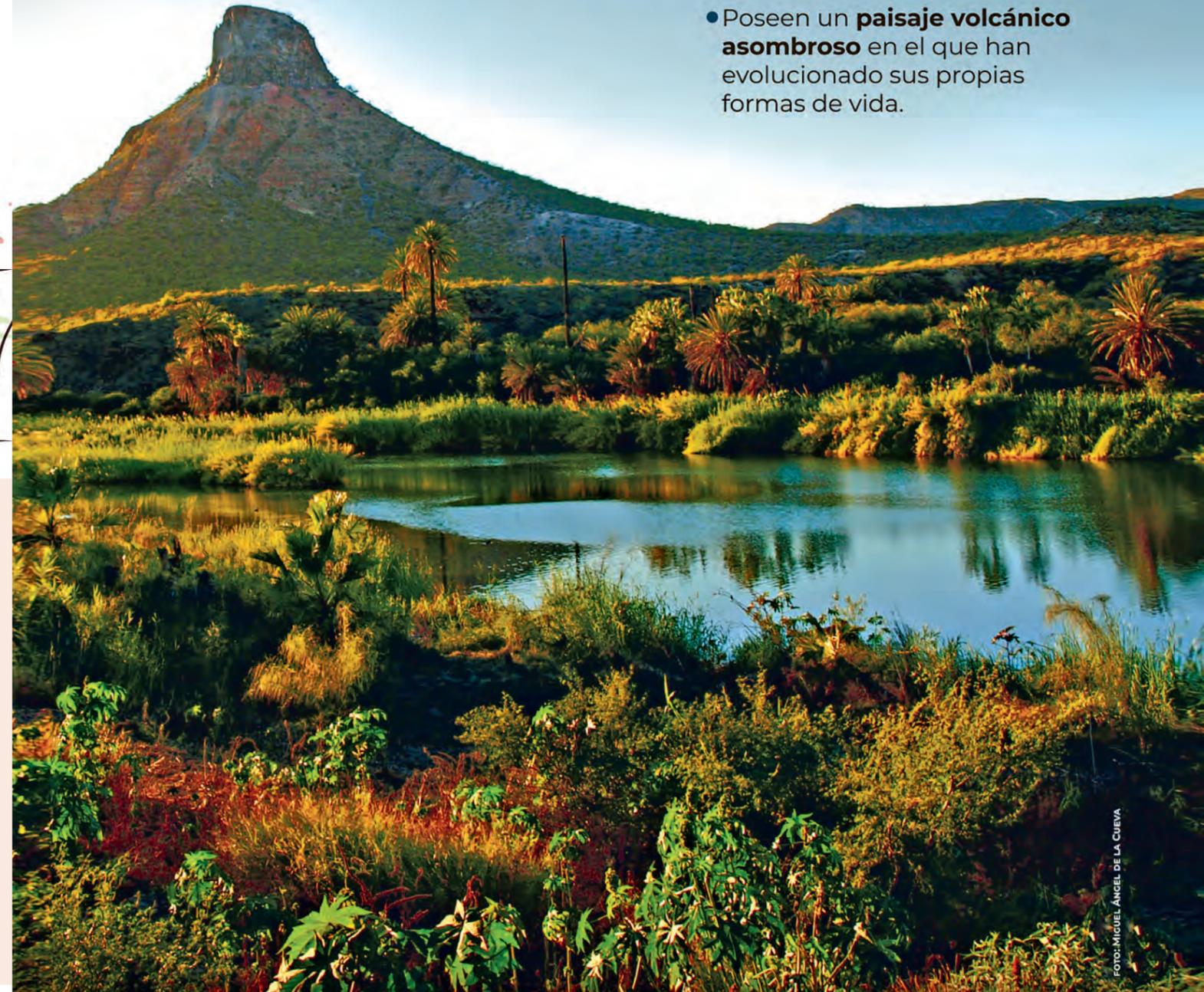


FOTO: MIGUEL ÁNGEL DE LA CUBA



GOBIERNO DE MÉXICO

MEDIO AMBIENTE  
SECRETARÍA DE MEDIO AMBIENTE Y RECURSOS NATURALES



# SIERRAS LA GIGANTA AND GUADALUPE, BAJA CALIFORNIA SUR

The paradise that we must protect



**beta**  
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