

(Translated from “1\_PM BORRADOR FINAL DIC\_AUTORIZADO”)

## **7. ZONING AND SUBZONING**

### **ZONING AND SUBZONING**

In accordance with the provisions of Article 3 Section XXXIX of the General Act for Ecological Balance and Environmental Protection, zoning is the technical planning instrument that can be used in the establishment of protected areas, which allows sorting of territory depending on the degree of conservation and representativeness of ecosystems, the natural vocation of the area and its current and potential use, in accordance with the objectives set out in the same declaration. In addition, there will be a subzonification, which consists of the technical and dynamic instrument of planning, to be established in the respective program and is used in the management of Protected Natural Areas.

#### **7.2.1 Criteria for Zoning and Subzoning**

In order to meet the objectives of conservation and management of the Biosphere Reserve Pinacate and Gran Desierto de Altar, established by Decree declaring natural protected area with the character of Biosphere Reserve, the region known as El Pinacate and Gran Desierto de Altar, located in the municipality of Plutarco Elías Calles, Puerto Peñasco and San Luis Rio Colorado, Sonora, published in the Official Gazette on June 10, 1993, with a surface of 714,556-50-00 hectares, two core and buffer zones were established, taking into account their biological, physical and socio-economic elements, state of conservation and issues, all based on natural land suitability and its current use and potential.

The criteria taken into account to delineate subareas corresponding to the El Pinacate and Gran Desierto de Altar Biosphere Reserve, were provided in the Decree referred to above, as well as the provisions of Article 47 A and 47 A I of the General Act for Ecological Balance and Environmental Protection.

In this amendment of the Management Program, zones and subzones are subject to different regimes in the management and permissible activities in each, as well as intensity, limitations and conditions to which those activities are placed under. According to methodology, field work, and discussions with ejido representatives landowners within the Reserve, academics and members of the Advisory Board, six subzones are defined, 2 in the core zone and 4 in the buffer zone.

- a) Productive activities**
- b) Tourism activities with low environmental impact**
- c) Distribution of species at risk**
- d) Infrastructure and Service Desk**
- e) Conservation targets of the protected area**
- f) Landscape**
- g) Geological Processes**
- h) Land Tenure**

i) Types of vegetation and conservation status.

## **Subareas and management policies**

### **Core Zone**

The main purpose of a core area is the preservation of ecosystems in the medium and long term.

According to the Decree of 10 June 1993, the core zone of the Reserve of the Biosphere Pinacate and Gran Desierto de Altar is composed of two layers, the core area I "El Pinacate and Bahía Adair" with 228.112 to 75 ha, and the core zone II "Sierra El Rosario" with 41.392-50 ha, both comprising a total area of 269,505-25-00 has.

Subzoning the core area

A. Subzone of protection covers an area of 268,920-54-00 has was comprised of four polygons.

B. Subzone of restricted use which covers an area of 584-70-95 was comprised of three polygons.

### **Buffer Zone**

Its main function is to guide harvesting activities towards sustainable development, while at the same time creating the necessary conditions for the long-term conservation of their ecosystems. According to the Decree of 10 June 1993 considered a surface total of 445.051-25 ha and in this modification is subzoned according to their characteristics:

A. Preservation Subzone which covers an area of 440.767-06 was comprised of three polygons.

B. Public Use Subzone comprised of 6 polygons covering a surface 3146-30-00 ha.

C. Sustainable Use of Ecosystem Subzone which covers an area of 573-96 – 62 ha was comprised of five polygons.

D. Special Use Subzone which covers an area of 563-91-93 hectares was comprised of two polygons.

Distribution of the area according to zoning in the Reserva de El Pinacate y Gran Desierto de Altar.

ZONE		POLYGON NAME	AREA (ha)	TOTAL AREA (ha)	%
<b>Core Zone</b>	<b>Protection Subzone</b>	Sierra del Rosario	41392.5000		
		Sierra El Pinacate	210294.3674		
		Cerro Colorado	13147.3906		
		El sahuaral	4086.2797	<b>268,920.54</b>	<b>37.63%</b>
	<b>Restricted Use Subzone</b>	Ruta Escenica Principal	316.7862		
		Ruta Cono Rojo	62.9307		
		Ruta Dunas-Centro de Visitantes	204.9926	<b>584.7095</b>	<b>0.08%</b>
<b>Buffer Zone</b>	<b>Preservation Subzone</b>	Gran Desierto de Altar	430051.7931		
		Sierra Tinajas Altas	10622.6245		
		Sierra Choclo duro	92.6451	<b>440,767.06</b>	<b>61.68%</b>
		Cerro Colorado 1	198.8983		
	<b>Sustainable Use of Ecosystem Subzone</b>	Cerro Colorado 2	153.8152		
		Punta Peñasco	43.4488		
		Los Norteños	110.1813		
		Valle del Pinacate	67.6226	<b>573.9662</b>	<b>0.08%</b>
		Mirador de Borrego Cimarron	2197.6259		
	<b>Public Use Zone</b>	Estacion de Campo Norte	2.0053		
		Ciclopista Pinacate	669.7970		
		Estacion Biologica	4.6107		
		La Bambarria	271.2356		
		Estacion de Campo Costera	1.0272	<b>3,146.30</b>	<b>0.44%</b>
		Norte I	531.1922		
		Norte II	32.7271	<b>563.9193</b>	<b>0.08%</b>
<b>Total</b>			<b>714,556.50</b>	714,556.50	<b>100.00%</b>

## 7.2.2 Methodology

To set establish Reserve subzoning, geographic, ecological and land use elements were considered. We used the mapping developed in 2004 by IMADES (Instituto del Medio Ambiente del Estado de Sonora), with funding from USAID and The Nature Conservancy, subjecting it to treatment allowing for geographic information systems and satellite georeferencing processes. Categories of current and potential land use were employed as coverages in the area. The resulting maps overlaid information corresponding to different types of vegetation and cartographic analysis was conducted based on digital aerial photographs and available satellite imagery.

Usage characteristics of the different areas within the Reserve were identified and the degree of conservation presented by each subarea. Areas with coincidental physical and biological factors were tentatively zoned and then compared with levels of impairment; matrices of biotic and abiotic attributes were developed to then carry out the final zoning.

Field trips were conducted in conjunction with landowners and some ejido authorities to determine in situ conditions of the areas and to define the limits of the subzones.

## 7.2.3 Subareas and management policies

### CORE AREAS

#### Protection Subzone

Are those areas within the protected area Pinacate and Gran Desierto de Altar, which have suffered very little alteration, as well as relevant or fragile ecosystems and natural phenomena, that require special care to ensure their long-term preservation.

In the Protection Subzone diverse scientific research has been conducted, due to the wealth of the ecosystems, so it is necessary that they continue in order to generate greater biological, geological and ecological knowledge, however, such research should be performed without transfer or collection of species, in strict compliance with applicable laws in order to preserve ecosystems and functionality in the medium and long term.

In the Reserva de la Biosfera el Pinacate y Gran Desierto de Altar the Protection Subzone encompasses an area of 268,920-54-00 ha and is comprised of four polygons, of the total area of the Reserve, which are described below:

**Polygon 1 Sierra del Rosario.** Covers an area of 41,392.5000 hectares, corresponding to the entire Core II Sierra El Rosario area, located northwest of the Biosphere Reserve, which comprises an inselberg composed of a granite mountain range with a height of up to 610 m surrounded by the sea of dunes of the Gran Desierto de Altar, including those of a star formation, uncommon or rare in the world. It is characterized by containing the highest

concentration of flora species in the endemic category within the Reserve according to the Mexican Official Standard NOM- 059-SEMARNAT-2010, Environmental Protection-native wild Mexican flora and fauna-Risk categories and specifications for inclusion, exclusion or change-List of species at risk, like *Cistanthe ambigua*, *Fagonia densa*, *Mammillaria tetrancistra* and *Miabilisten viloba* among others. It includes ecosystems in a good state of conservation. Within this polygon there are no human settlements of any kind.

**Polygon 2 Sierra Pinacate I.** Covers an area of 210294.3674 hectares, located in the center of Biosphere Reserve, within the Core Area I "Sierra El Pinacate and Bahia Adair."

**Polygon 3 Cerro Colorado.** Covers an area of 13,147.3906 hectares, located in the East Central Biosphere Reserve, within the Core Area I "Sierra El Pinacate and Bahia Adair."

**Polygon 4 Sahuaral.** Covers an area of 4086.2797 hectares located in the East Central Biosphere Reserve within the Core Area I "Sierra El Pinacate and Bahia Adair."

Polygons 2, 3 and 4 of this subzone include "El Pinacate" volcanic field of the Reserve, containing extraordinary landforms caused by spectacular eruptions in a horizon of more than 2 million years, this shield volcano is composed of more than 400 cinder cones, lava tubes, caves, tinajas, ten giant maar type craters, as well as enormous lava flows, in addition to the dune field of southeastern Gran Desierto de Altar. It is habitat for wildlife species in the risk category according to the Norma Oficial Mexicana NOM-059- SEMARNAT-2010 Environmental Protection-native wild Mexican flora and fauna-Risk categories and specifications for inclusion, exclusion or change-List of species at risk, such as bighorn sheep (*Ovis canadensis mexicana*) in special protection, endangered pronghorn (*Antilocapra americana sonoriensis*); lesser long nosed bat (*Leptonycteris curasoae*), and flat-tailed horned lizard (*Phrynosoma mcalli*), both endangered. There are also plant species in risk category such as the saguaro (*Carnegiea gigantea*); threatened species, the cylindrical barrel cactus (*Ferocactus cylindraceus*), the species known as queen of the night (*Peniocereus greggii*) and the species known as ironwood (*Olneya tesota*), all subject to special protection.

For the features described above, the reasons mentioned in the preceding paragraphs and in accordance with the provisions of Article 47 A, Section I, paragraph a) of the General Act for Ecological Balance and Environmental Protection, which provides that Protection Subzone areas are those within the protected area, who have suffered very little alteration, as well as relevant or fragile ecosystems, or critical habitats, and natural phenomena, requiring special care to ensure their long-term preservation, and where only environmental monitoring activities and non-invasive scientific research without the removal or transfer of specimens or habitat modification are permitted, and in accordance with Article One, Three, Section III, Fifth, Sixth, Seventh, Tenth and Twelfth of Decree is declared protected natural area with the character of Biosphere Reserve, the region known as El Pinacate and Gran Desierto de Altar, located in the municipalities of Plutarco Elias Calles, Puerto Peñasco and San Luis Rio Colorado, Son, published in the Official Journal of the Federation on June 10, 1993 it is determined in this Protection Subzone permitted activities include:

## **SUB-AREA PROTECTION PERMITTED ACTIVITIES**

1. Films, photographs, capturing images or sounds, provided that these do not require teams composed of more than one skilled technician to support the person operating major equipment
2. Noninvasive scientific research that does not involve the removal or transfer of specimens or habitat modification
3. Environmental monitoring

### **Restricted Use Subzone**

This sub-area covers a total area of 584-70-95 hectares including three polygons, which are described below:

#### **Polygon 1 Principal Scenic Route**

It comprises an area of 316-78-62 hectares, located in the center east portion of this reserve, east of the Core Zone I El Pinacate y Bahia de Adair. It corresponds to the current scenic road of the tourism route of low environmental impact with access to the viewpoints of El Elegante and Cerro Colorado craters, as well as camping area "El Tecolote" and several sites of interest on the roadside, with an approximate length of 80 kilometers. By this route one can also enjoy different landscapes of volcanic origin such as flows and different types of lava, cinder cones, sudden changes in "ecotones" with dominant presence of different species of vegetation as one moves down the road, as is the case with ocotillo, creosote, saguaros and ironwood.

#### **Polygon 2 "Cono Rojo Route".**

It comprises an area of 62-93-07 hectares, located in the west portion of the Reserve in the west portion of the Core Zone I El Pinacate y Bahia de Adair. It corresponds to the road to the Cono Rojo camping area, with an approximate length of 12 km. This feature is located mostly in the volcanic zone, using a historic road, to reach the Cono Rojo camping area at a height of 660 m in the foothills of the Sierra Pinacate, on this road one can appreciate landscapes with unique geomorphological elements such as washes and tinajas as well as the Cono Rojo, a volcanic cone of special beauty.

#### **Polygon 3 Dunes Route - visitor center.**

This polygon covers an area of 204-99-26 hectares and is located in the southeast of the Reserve within the Core Zone I El Pinacate y Bahia de Adair. It corresponds to the old road to the parking lot and "Las Dunas" viewpoint with an approximate length of 3.7 km which connects the Shuck Toak Visitor Center with the viewpoint.

It includes areas with well preserved ecosystems, as well as a part of the granite massif of the Sierra Blanca and the Ives lava flow, one of the pahoe hoe type lava flows – the youngest of the volcanic shield at only 8000 years old, the Shuck Toak Visitor Center and several interpretive trails. It also includes the habitat of species such as Sonoran pronghorn (*Antilocapra americana*), bighorn sheep (*Ovis canadensis*), Gila lizard (*Heloderma suspectum*), lesser long-

nosed bat (*Leptonycteris curasoae*). It also includes sites for camping “El tecolote” y “Cono Rojo” where basic facilities are such as picnic tables, shade, signs and interpretive trails.

Due to the characteristics described above, the reasons mentioned in the preceding paragraphs and in accordance with the provisions of Article 47 A, Section I, paragraph b) of the General Act for Ecological Balance and Environmental Protection, which provides that the Restricted Use subzones are those areas in a good state of preservation which seek to maintain the current ecosystem conditions and even improve on the sites if required, and in which exceptional use activities that do not modify the ecosystems and that are subject to strict controls can be conducted; and where only permitted are non-invasive scientific research and environmental monitoring, education activities and tourism with low environmental impact, which do not involve changes to the original natural characteristics or conditions, and the construction of support facilities, exclusively for the scientific research and environmental monitoring, and in accordance with Articles First Third, section III, Fifth, Sixth, Seventh, Tenth and Twelfth Decree laying declared protected area with the character of Biosphere Reserve, the region known as the Pinacate and Gran Desierto de Altar, located in the municipality of Plutarco Elías Calles, Puerto Peñasco and San Luis Rio Colorado, Son, published in the Official Gazette on June 10, 1993 is determined in the Restricted Use Subzones, permitted activities as follows:

#### **RESTRICTED USE SUBZONE PERMITTED ACTIVITIES**

1. Cultural activities
2. Environmental education
3. Noninvasive scientific research
4. Environmental monitoring
5. Low-impact tourism
6. Filming, photography activities, capturing images or sounds by any means, which are subject to strict control measures
7. Maintenance of existing infrastructure
8. Resurfacing and maintenance of roads
9. Construction of infrastructure to support scientific research and monitoring the environment

#### **BUFFER ZONE**

##### **Preservation Subzone**

It covers an area of 440767.0627 hectares, including three polygons, which are described below:

**Polygon 1 Gran Desierto de Altar.** Covers an area of 430051.7931 hectares, and covers virtually all of the buffer zone.

**Polygon 2 Sierra Tinajas Altas.** Covers an area of 10,622-62-45 hectares, and is located in the northern portion of the protected area.

**Polygon 3 Sierra Choclo duro.** Covers an area of 92.6451 hectares, and is located in the central north portion of the protected area.

This subzone includes areas of great importance because they are used as corridors to biological bighorn sheep (*Ovis canadensis*); also in this subzone are the plains and cholla fields used as corridors by Sonoran Pronghorn (*Antilocapra americana*). Also considered is the Sierra de los Tanques, a place that best represents the biological richness of the Sonoran Desert and the Sonoyta River, declared a RAMSAR site for harboring an endangered species, desert pupfish (*Cyprinodon macularius*), and long fin dace (*Agosia chrysogaster*) in the threatened category. Finally there are most of the dunes of the Gran Desierto de Altar, home to many endemic plants, as well as the flat-tailed horned lizard (*Phirinosoma mcalli*).

In this subzone the Federal Highway 2 that runs from Sonoyta to San Luis Rio Colorado is located, along which exists infrastructure such as households, restaurants, and more.

Due to the characteristics described above, the reasons mentioned in the preceding paragraphs and in accordance with the provisions of Article 47 A, Section II, paragraph a) of the General Act for Ecological Balance and Environmental Protection, which provides that the Restricted Use subzones are those areas in a good state of preservation which contain relevant or fragile ecosystems, or relevant natural phenomena, in which development activities require specific management, to achieve suitable preservation; and where only scientific research, environmental monitoring and environmental education activities that do not involve substantial changes to the original natural conditions or characteristics are permitted, promoted by local communities or with their participation, and subject to constant monitoring of potential negative impacts, in accordance with applicable legal and regulatory systems, and in accordance with Articles First Third, section III, Fifth, Sixth, Seventh, Tenth and Twelfth Decree laying declared protected area with the character of Biosphere Reserve, the region known as the Pinacate and Gran Desierto de Altar, located in the municipality of Plutarco Elías Calles, Puerto Peñasco and San Luis Rio Colorado, Son, published in the Official Gazette on June 10, 1993 is determined in the Preservation Subzone, permitted activities include:

## **PRESERVATION SUBZONE**

### **PERMITTED ACTIVITIES**

1. Productive activities with low environmental impact.
2. Wildlife scientific collecting
3. Scientific collection of forest biological resources
4. Environmental education
5. Scientific research and environmental monitoring
6. Photography or capture images or sounds by any means for scientific, cultural or educational
7. Road maintenance, as well as the existing infrastructure
8. Construction of infrastructure, exclusively for scientific research and environmental monitoring
9. Establishment of Units for Wildlife Conservation, with restoration, protection, maintenance, recuperation, reproduction, repopulation, research, rescue, and rehabilitation purposes.

## **Sustainable use of ecosystems subzone**

This subzone comprises a total area of 573.9663 hectares and consists of five polygons, which are described below:

**Polygon 1 Cerro Colorado 1.** Covers an area of 198.8983 hectares and is located in the northeast portion of the Reserve.

**Polygon 2 Cerro Colorado 2.** Covers an area of 153.8152 hectares, and is located in the northeast end of the protected area.

**Polygon 3 Punta Peñasco.** Covers an area of 43.4488 hectares, and is located in the center-east portion of the protected area.

**Polygon 4 Norteños.** 110.1813 hectáreas covers an area of, and is located in the east of the Biosphere Reserve.

**Polygon 5 Valle del Pinacate.** Covers an area of 67.6226 hectares and is located in the southeast of the protected area.

This subzone corresponds to areas where activities for livestock use and agriculture have been sporadically conducted, affecting the original site conditions. The activities carried out there must be aimed at sustainable use. There is also infrastructure for agricultural activity in this subzone, such as wells, canals and wineries.

Due to the characteristics described above, the reasons mentioned in the preceding paragraphs and in accordance with the provisions of Article 47 A, Section I, paragraph b) of the General Act for Ecological Balance and Environmental Protection, which provides that the Sustainable Use of Ecosystems Subzones are those areas with agricultural uses, current fisheries and livestock, and where they can carry out agricultural, fishing and livestock activities of low intensity on the premises or in suitable areas, and in those in which such activities occur on a daily basis, and artisanal fisheries activity, agroforestry and silvopastoral, provided they are compatible with conservation actions in the area, and if they help control erosion and prevent degradation, and where the implementation of the agriculture, fisheries, animal husbandry practice agroforestry and silvopastoral that are not being carried out in a sustainable manner must move towards sustainability and the reduction in use of agrochemicals and external inputs for its implementation, and in accordance with Articles One, Three, Section III, Fifth, Sixth, Seventh, Eighth, Tenth and Twelfth of Decree is declared protected natural area with the character of Biosphere Reserve, the region known as El Pinacate and Gran Desierto de Altar, located in the municipality of Plutarco Elías Calles, Puerto Peñasco and San Luis Rio Colorado, Are published in the Official Gazette on June 10, 1993 is determined in this Sustainable Use of Ecosystems Subzone, the permitted activities following:

## **SUSTAINABLE DEVELOPMENT OF ECOSYSTEM SUBZONE**

## **PERMITTED ACTIVITIES**

1. Agricultural activities, without extending the border.
2. Wildlife scientific collecting
3. Scientific collection of forest biological resources.
4. Environmental education
5. Filming, photography activities or capture images or sounds by any means
6. Scientific research and environmental monitoring
7. Maintenance and rehabilitation of existing infrastructure
8. Construction of infrastructure, exclusively for the development of agricultural activities.
9. Livestock grazing, avoiding extensive grazing, overgrazing and ensuring the regeneration of natural vegetation.

## **Special Use Subzone**

This sub-area covers an area of 563.9193 hectares distributed into two polygons, which are described below:

**Polygon 1 Norte I.** Covers an area of 531.1922 hectares, and is located in the portion center north portion of the Reserve.

**Polygon 2 Norte II.** Covers an area of 32.7271 hectares, and is located at the northeast end of the Reserve.

This subzone corresponds to a strip of land that will be used exclusively for strategic public projects relating to fiber optic lines and electricity conduction.

This subzone includes ecosystems in good condition, and shares characteristics with the Preservation Subzone, which surrounds this subzone.

Due to the characteristics described above, the reasons mentioned in the preceding paragraphs and in accordance with the provisions of Article 47 A, Section I, paragraph b) of the General Act for Ecological Balance and Environmental Protection, which provides that the Special Use Subzones are those areas of generally small size, with presence of natural resources that are essential for social development, and should be exploited without damaging the ecosystem, modifying the landscape substantially, or causing irreversible environmental impacts in the natural elements they constitute, and where public or private works for the installation of infrastructure or exploitation of natural resources can be executed, generating public benefits, which are in harmony with the landscape, that do not cause ecological imbalance serious and that are subject to strict regulations for sustainable use of natural resources, with strict compliance management programs issued by the Secretariat, in accordance with Articles One, Three, Section III, Fifth, Sixth, Seventh, Eighth, Tenth and Twelfth of Decree protected area with the character of Biosphere Reserve is declared, the region known as El Pinacate and Gran Desierto de Altar region, located in the municipalities of Plutarch Elías Calles, Puerto Peñasco and San Luis Rio Colorado, Son, published in the Official Journal of the Federation on June 10, 1993 is determined in the Special Use of Ecosystem Subzone, the permitted activities following:

## **Special Use Subzone**

### **Permitted activities**

1. Wildlife scientific collecting
2. Scientific collection of forest biological resources
3. Environmental education
4. Films, photographs, capturing images or sounds
5. Scientific research and environmental monitoring
6. Maintenance of existing infrastructure
7. Construction of infrastructure exclusively for the development of fiber optic lines and conducting electricity

## **Public Use Subzone**

It covers an area of 3146.3017 hectares, including six polygons, which are described below:

**Polygon 1 Lookout for bighorn sheep.** Covers an area of 2197.6259 hectares, and located in the northwest of the Reserve.

**Polygon 2 North field station.** Covers an area of 2.0053 hectares, and is located in the northern portion of the protected area.

**Polygon 3 Ciclopista Pinacate.** Covers an area of 669.7970 hectares and is located in the east of the protected natural area.

**Polygon 4 Biological Station.** Covers an area of 4.6107 hectares and is located in the eastern end of the Reserve.

**Polygon 5 La Bambarria.** Covers an area of 271.2356 hectares and is located in the south portion of the protected area.

**Polygon 6 Coastal Field Station.** Covers an area of 1.0272 hectares, and located at the southern end of the protected area

This subzone includes recreational sites traditionally used by the inhabitants of the region and tourists, it is also feasible to conduct recreational and cultural activities, mainly in the area of Shuck Toak cultural events and the Ciclopista Pinacate, a site already impacted by material extraction prior to the creation of the Reserve and suitable for use in mountain biking and walks. The field stations: Biological Station, North Station and Coastal Station are used as workplaces for CONANP staff, housing, security, and information and tourist permits. In this subzone bighorn sheep (*Ovis canadensis mexicana*) sighting can be performed, tourism activities with low environmental impact like photographic safaris and camps are conducted.

Due to the characteristics described above, the reasons mentioned in the preceding paragraphs and in accordance with the provisions of Article 47 A, Section I, paragraph b) of the General Act for Ecological Balance and Environmental Protection, which provides that the Public Use Subzones are those areas which have natural attractions for recreation and leisure activities,

where it is possible to maintain concentrations of visitors, within the limits determined by ecosystem carrying capacity; and where it will be possible to carry out facility construction exclusively for the development of tourism support services, research and environmental monitoring, and environmental education, consistent with the purposes of protection and management of each protected area, in accordance with Articles One, Three, Section III, Fifth, Sixth, Seventh, Eighth, Tenth and Twelfth Decree establishing protected area with the character of Biosphere Reserve is declared, the region known as El Pinacate and Gran Desierto de Altar, located in the municipality of Plutarco Elías Streets, Puerto Peñasco and San Luis Rio Colorado, Son, published in the Official Gazette on June 10, 1993 is determined in the Public Use Subzone, the permitted activities following:

### **Public Use Subzone**

#### **Permitted Activities**

1. Opening and maintenance of interpretive trails
2. Wildlife scientific collecting
3. Scientific collection of forest biological resources
4. Environmental education
5. Cultural Activities
6. Establishment of Units for Wildlife Conservation, with restoration, protection, maintenance, recuperation, reproduction, repopulation, research, rescue, and rehabilitation purposes.
7. Campfires and stoves exclusively in sites intended for this purpose.
8. Films, photographs, capturing images or sounds
9. Scientific research and environmental monitoring
10. Maintenance and rehabilitation of existing infrastructure
11. Construction of infrastructure exclusively for the development of tourism support services with low environmental impact, research and environmental monitoring, and environmental education
12. Low-impact tourism
13. Sale of food and crafts

### **ZONE OF INFLUENCE**

In accordance with the provisions of Article 3, Section XIV and 74 of the General Act for Ecological Balance and Environmental Protection in the field of Natural Protected Areas, the zone of influence was defined as the surrounding areas of a natural area polygon that maintain a close social, economic and ecological interaction with the natural area.

The Zone of Influence of the Pinacate and Gran Desierto de Altar Biosphere Reserve, comprises an area of 956361.4662 hectares and corresponds to the rest of the polygons of the 3 municipalities that are part of the ANP: Puerto Peñasco, Plutarco Elías Calles and San Luis Rio Colorado, State of Sonora, by sharing similar characteristics to the area and giving continuity to the represented ecosystems.

The criteria that define the zone of influence of the El Pinacate and Gran Desierto de Altar Biosphere Reserve are:

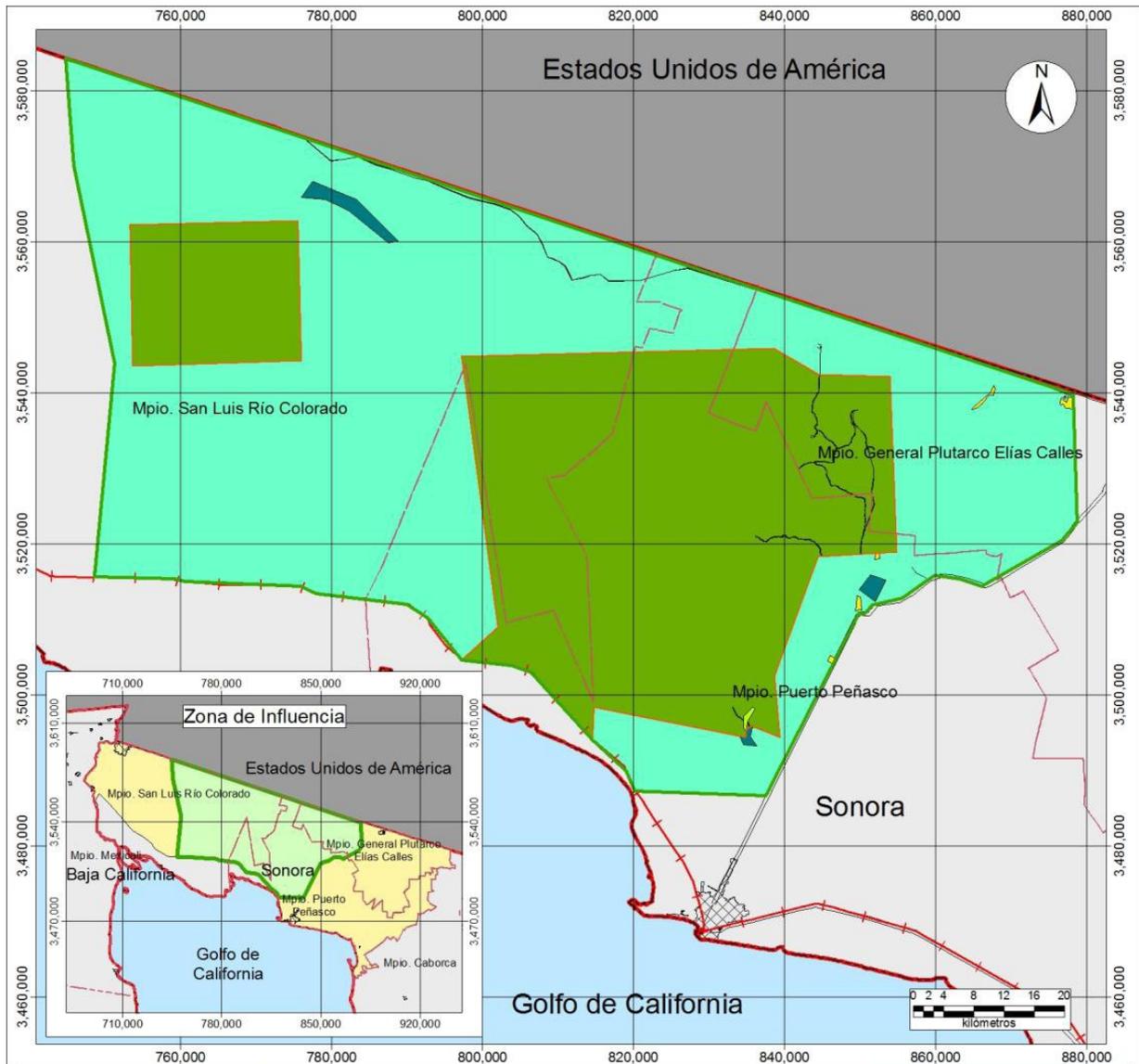
To the west, the municipality of San Luis Rio Colorado, there are large areas of the dunes of the Gran Desierto de Altar, including some of the biggest and different dune types including the star type. In this habitat the flat tail horned lizard and sandfood plant occur, this expanse of dunes extends westward the urban area of the city of San Luis Rio Colorado. This area is threatened by the increase of all-terrain vehicles using these dunes as recreation by crossing the desert; on this matter some negotiations and agreements were aimed at sorting and limiting the number of vehicles in these events in 2014, there have been talks and prior arrangements with the principal organizers and three ejidos who own these lands.

To the south and southeast, within the territories of the municipalities of San Luis and Puerto Peñasco, occur coastal dune plains and the wetlands of Adair Bay, adjacent to the polygon of the sister Biosphere Reserve of the Upper Gulf and Colorado River Delta.

To the east, the territory of the municipality of Puerto Peñasco, and northeast, the territory of the municipality of Plutarco Elías Calles, occur a series of granite mountains such as the Sierra San Francisco, Sierra Pinta, El Cipriano, El Picu, El Cubabi, among others, abutting the urban and agricultural area of Sonoyta, Sonora. These mountains are the habitat of bighorn sheep (*Ovis canadensis mexicana*) and serve as a biological corridor to the Reserve and to the United States, these sites are often used as Units of Environmental Management for the use of the species. Also to the east are great plains of semi-stabilized dunes, in this habitat are the greatest number of Sonoran pronghorn in the wild, an endangered species that has been decimated over time due to several factors, including the opening of roads and construction of fences, activities of exploration and open pit mining exploitation that occur in the area and whose activities will increase, causing habitat fragmentation and generating species isolation among wild communities.

With respect to its functional ecological integrity, there are patches with alteration of ecosystems by poorly planned or executed tourist activities, mining and use of natural resources, however this whole area continues to function as an important biological corridor of fauna that passes between the desert ecosystems of the northwestern Sonora and southern Arizona.

# PLANO DE LOCALIZACIÓN Y SUBZONIFICACIÓN DE LA RESERVA DE LA BIOSFERA EL PINACATE Y GRAN DESIERTO DE ALTAR



## Reserva de la Biosfera El Pinacate y Gran Desierto de Altar



## Simbología

- |  |  |   |
|--|--|---|
| <b>Subzonificación</b>   |  | <b>General</b>  |
| <b>Zona Núcleo</b>   |  | <ul style="list-style-type: none"> <li><span style="border: 1px solid green; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Límite del Área Natural Protegida</li> <li><span style="border: 1px solid orange; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Zonas Núcleo</li> <li><span style="background-color: yellow; border: 1px solid black; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Zona de Influencia</li> <li>• Localidades Rurales</li> <li><span style="border-bottom: 1px dashed black; display: inline-block; width: 15px; margin-right: 5px;"></span> Terracería</li> <li><span style="border-bottom: 1px dashed red; display: inline-block; width: 15px; margin-right: 5px;"></span> Via Ferrea</li> <li><span style="border-bottom: 1px dashed gray; display: inline-block; width: 15px; margin-right: 5px;"></span> Carretera Pavimentada</li> <li><span style="border: 1px dashed gray; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Localidades Urbanas</li> <li><span style="border-bottom: 1px dashed purple; display: inline-block; width: 15px; margin-right: 5px;"></span> Límite Municipal</li> <li><span style="border-bottom: 1px dashed red; display: inline-block; width: 15px; margin-right: 5px;"></span> Límite Estatal</li> </ul> |
| <b>Subzona de:</b>   |  |   |
| <span style="background-color: darkgreen; width: 15px; height: 10px; margin-right: 5px;"></span> Protección                                  |  |   |
| <span style="background-color: lightgreen; width: 15px; height: 10px; margin-right: 5px;"></span> Uso Restringido                            |  |   |
| <b>Zona de Amortiguamiento</b>   |  |   |
| <span style="background-color: cyan; width: 15px; height: 10px; margin-right: 5px;"></span> Preservación                                     |  |   |
| <span style="background-color: yellow; width: 15px; height: 10px; margin-right: 5px;"></span> Aprovechamiento Sustentable de los Ecosistemas |  |   |
| <span style="background-color: red; width: 15px; height: 10px; margin-right: 5px;"></span> Aprovechamiento Especial                          |  |   |
| <span style="background-color: darkblue; width: 15px; height: 10px; margin-right: 5px;"></span> Uso Público                                  |  |   |

## Fuentes de Información Cartográfica

- CONANP
- INEGI
- Especificaciones Cartográficas**
- Zona UTM 11 Norte
- Cuadrícula: 20,000 m
- Elipsoide GRS80
- Datum Horizontal: ITRF92
- Meridiano Central: -93



Subzonificación