

Venezuela: Macarao National Park

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Date of most recent on-site evaluation: February 2001

Date posted: November 2001

Location: Federal District and Miranda State

Year created: 1973

Area: 15,000 ha

Ecoregion: Venezuelan Andes Montane Forest

Habitat: Dry semi-deciduous forest, deciduous forest, savannas, and low montane evergreen forest



Summary

Description

The Macarao Valley was first protected in 1926 as a National Forest under the dictatorship of Juan Vicente Gomez. This was Venezuela's first National Forest and preceded the creation of the National Park System in 1937. In 1973, Macarao National Park was created to protect the watershed of the Macarao, San Pedro and Jarillo Rivers, which are important sources of water for Caracas, the capital of Venezuela. Macarao National Park is one of two national parks that surround Caracas. The park consists of 15,000 ha of the Cordillera de la Costa Central Zone Mountain Range. The park is part of a biological corridor that runs through this mountain range and is rich in biodiversity. Visitors from Caracas, who are attracted by the area's beautiful views and pleasant weather, frequently visit the towns surrounding the park. Unfortunately, the majority of these visitors are unaware that they are within the vicinity of a national park.

Biodiversity

Macarao contains high diversity of fauna and flora. 263 bird species have been documented included globally threatened species such as the helmeted curassow (*Pauxi pauxi*), the Venezuelan bristle-tyrant (*Phyloscartes venezuelanus*), and the Venezuelan wood-quail (*Odontophorus columbianus*).

Threats

Macarao National Park is considered [threatened](#), meaning that remedial action is needed in order to remove threats and preserve its biological integrity. A small park located close to Caracas, Macarao experiences numerous significant threats, including fire, human encroachment, unregulated tourism, the absence of a management plan, poaching, exotic species, and the presence of a military base, telecommunication antennas, and a hydroelectric dam.

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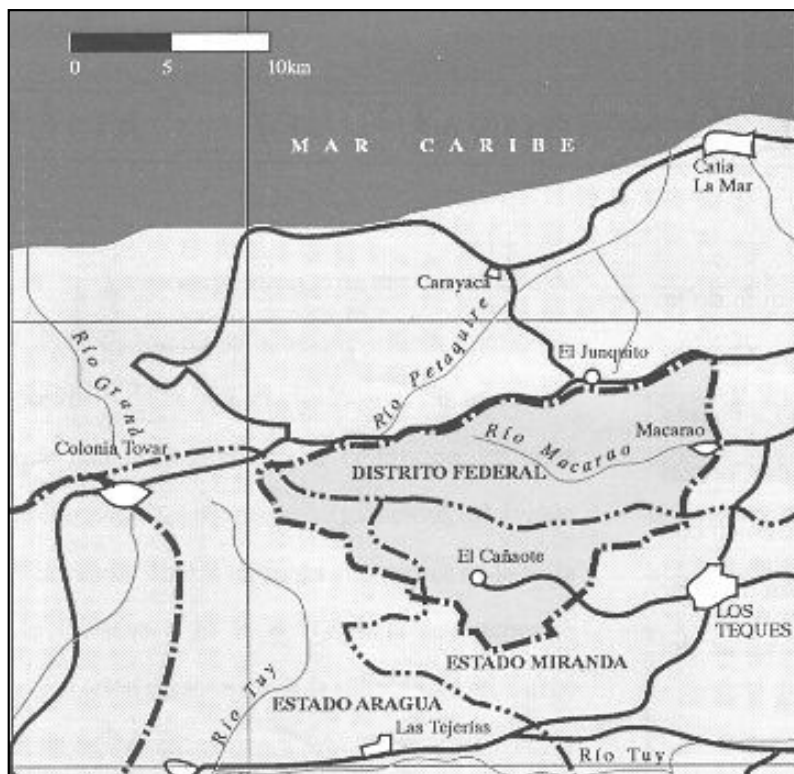
View of National Park Maracao

Description

Physical Description

Macarao National Park covers part of the Federal District and the Miranda State in northern Venezuela. It borders the southwestern edge of Caracas, as well as the towns of El Jarillo, El Junquito and San Pedro de los Altos. The park is shaped as an inverted triangle and is demarcated by three mountain ridges. The road El Junquito-Colonia Tovar is located on a 1,500 m ridge and forms the park's northern boundary. Two other ridges border the park; they extend southward and are bisected by the Macarao River valley. The highest peak in Macarao, Cerro Ño Leon, is located at the southern border of the park and has an elevation of 2,098 m. Throughout the park, the landscape is mountainous and the lowest elevation in the valley is 1,000 m above sea level. The vegetation consists primarily of semi-deciduous forest, evergreen rain forest, and on the mountaintops, dense cloud forest with a height of 25-30 m. Savannas exist in the southeastern region of the park, in the Valle de Argua, and a forestry plantation of exotic species also is located within the park. Like the rest of the country, there is a dry season from November to April, with periodic rains over the rest of the year. The annual mean temperature fluctuates between 16 to 26°C and precipitation is between 1,000 and 1,400 mm per year.

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Map of Macarao National Park

The presence of the hydroelectric dam Agua Fría, located inside the park, deserves special mention. Built in 1944, the dam is one of the most important water reservoirs for Caracas, which has been using the waters from Macarao River since 1847. The ruins of the first Caracas aqueduct are still in the park.

Biodiversity

Macarao is a major part of the ecological corridor that runs through the central section of the Cordillera de la Costa Mountain Range. The other protected areas that comprise this corridor are Avila National Park to the east of Macarao, and Pico Codazzi Natural Monument, Henri Pittier National Park, and San Esteban National Park to the west.

The faunal diversity of the Cordillera de la Costa Mountain Range is well represented in the park. The park is home to numerous mammal species including the red brocket deer (*Mazama americana*), the peccary (*Tayassu* sp.), the crab-eating fox (*Cerdocyon thous*), the red howler monkey (*Alouatta seniculus*) and the brown-throated sloth (*Bradypus variegatus*). Large cats like the jaguar (*Panthera onca*), the puma (*Puma concolor*) and the ocelot (*Leopardus pardalis*) are present as well. There are also reports from locals of the presence of bush dogs (*Speothos venaticus*).

Macarao is home to at least 263 bird species, 12 of which are endemic to Venezuela. They include the tapaculo (*Scytalopus caracae*), the handsome fruit eater (*Pipreola formosa*), the rufous-tailed ant thrush (*Chamaeza ruficauda*), the grooved-billed toucanet (*Aulacorhynchus sulcatus*) and the violet-chested hummingbird (*Sternoclyta cyanopectus*). Globally threatened species such as the helmeted curassow (*Pauxi pauxi*), the Venezuelan bristle-tyrant (*Phyloscartes venezuelanus*), and the Venezuelan wood-quail (*Odontophorus columbianus*) are also present.

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The flora is highly diverse. In the forests of Macarao, the genus *Guarea*, *Gustavia*, *Inga*, *Ocotea* and *Tabebuia* are well represented. The most common tree species are *Cedrella americana*, *Pithecelobium saman*, *Erithrina poeppigiana*, *Tabebuia chrisantha*, *Cordia alliodora*, and the fern *Equisetum giganteum*. The palms *Wettinia praemorsa* and the endemic *Ceroxylom interruptum* are common, as are the epiphytes of the genus *Tillandsia* and *Epidendrum*.

Management

Although the park was created 28 years ago, INPARQUES, the official institute that regulates and manages Venezuela's national parks, has not developed a management plan for the park. The Law for Land Use Regulation, which describes general procedures and regulations for all national parks, is used instead.

INPARQUES rangers are in charge of monitoring and enforcing park regulations. There are only three rangers who work at the two ranger stations and park headquarters. Macarao National Park is the only park to have had a female superintendent and one of the few to have a female ranger. The current park superintendent is new and is also in charge of Pico Codazzi Natural Monument. INPARQUES does not supply the park rangers with the means for communication or transportation, such as radios, phones, cars or motorcycles. There is no fire department; Macarao depends on El Avila and Caricuao fire camps for fire prevention and extinguishing fires.

Human Influence

Although people have not built permanent settlements within the park, there are several neighborhoods, villages, and towns that line the roads surrounding the park. These include larger towns, such as San Pedro de Los Altos, El Jarillo, and El Junquito. As a result of the growth and expansion of these towns, people are beginning to move into the park in search of more land. The development of the road from Caracas to El Junquito is another consequence of urban sprawl. The land along this road is highly valued and homes have been built there since the park was created. These rapidly growing populations are beginning to adversely affect the surrounding area of the park and the park itself. The large numbers of tourists that visit these towns only add to the problem.

There is no public, paved road crossing the park. Two old non-paved roads, built before the park was created, transect it and connect the old town of Macarao with the town of El Jarillo. One was the pathway used by the German naturalist Alexander von Humboldt, who used these trails for travel from Caracas to the Aragua valley in the 19th century. The indigenous occupants living in the area 400 years ago also used the trails. The other road is used to reach the Embalse Agua Fría dam and other cities in the state of Miranda. At present, these roads are closed to the public and only INPARQUES and personnel from the hydroelectric plant, Hidrocapital, can use them.

The ancient indigenous peoples that lived in this area were mainly from the tribes Mariche, Taima and Toromaima. It is possible to appreciate part of their culture through the few petroglyphs located inside and around the Park.

Conservation and Research

Macarao National Park has not had as many research projects conducted in it as other parks, such as Henri Pittier, but some studies on avian diversity and hydrology have been done. The small library at

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the park headquarters contains at least three publications on the hydrological potential of the park; one of them is a doctoral thesis from Cornell University (Guinand, 1987). There also is a 1986 study on the park's sensitivity to several different human impacts as well as suggestions for better management practices. There are a few short reports on the activities of the Fundación Macarao-Rotary, a group that was started by the Rotary Club and has worked in the park since 1996. With the support of the Fundación Cacique, a nonprofit organization linked to the Seagram Company, LTD., the Rotary Club has begun to develop an ambitious program-backed by \$250,000- devoted to protection, restoration, and environmental education the park. The plan includes programs for infrastructure, equipment supply and maintenance, sign posting, and environmental education. With the help of Fundación Cacique, a park headquarters was constructed. Sign posting along the park, mainly on the roads most frequently visited by tourists, has begun. A group of 160 volunteers works with Fundación Cacique to help maintain paths, to teach nearby farmers the correct uses of pesticides and fertilizers, and to establish small businesses, such as snack bars, within the park.

INPARQUES has started a new education program this year with local communities and students. Presently, Macarao National Park is offering guided tours on an interpretation trail behind the park headquarters. It is a short route designed to show the local community and visitors a view of the cloud forest. In 2000, the Venezuelan Audubon Society published the Bird Checklist of the Macarao National Park, which is an excellent tool to attract bird watching tourists and to create environmental awareness among visitors.

Threats

The most significant threats to Macarao National Park are the following:

- o Fire
- o Human encroachment
- o Unregulated tourism
- o Weak management
- o Lack of personnel
- o Poaching
- o Exotic plants

Fire

Fires are a serious threat. They are started primarily by visitors who are careless with their campfires. In 1997, 2,000 ha of the park burned. Each year hundreds of ha are burned partly because INPARQUES does not have the infrastructure or personnel to control the fires. Fires are more common in the southern regions of the park, which are dryer and lower in altitude than along the northern border. During a visit to the park in February 2001, ParksWatch documented the effects of a recent fire along the border of the park near the road to El Jarillo. During the same visit, ParksWatch observed a forest fire within the vicinity of La Culebra Ranger Station.

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Mountains near El Jarillo in Macarao National Park burned by fire

Human Encroachment

Illegal encroachment into the park is one of the most significant threats to the park, as the surrounding towns grow. The parklands near the sprawling area of Caracas are highly valued for development. Newcomers often try to build homes inside the parklands, taking advantage of borders that are minimally enforced. The encroachment problem has been hard to deal with because many of the perpetrators are military personnel, wealthier people, or politicians. In addition, the surrounding towns cause waste management problems. Although the garbage dumps are outside the park, most are located near the border, and contaminate parklands during rainstorms.

In the south, the encroachment problem is different. Close to the town of El Jarillo, the parklands are highly valued for agricultural use and in several cases farmers have extended their farms into the park. One ranger has reported the encroachment of farms near La Culebra Ranger Station to INPARQUES officials. This ranger has also complained about the development of land near park boundaries. INPARQUES has yet to respond to her concerns.



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Neighborhoods of El Junquito along the Northern border of Macarao National Park

Unregulated tourism

The area along the park's northern boundary is a popular tourist destination and experiences a high volume of visitors on weekends. As a result, tourism is the main commercial activity for the people living near El Junquito. Along the road, it is easy to find hostels, restaurants, bars, fruit markets, and hundred of services for weekend visitors who travel to El Junquito or to Colonia Tovar. Several of the attractions for tourists, such as the horse riding trails, are directly affecting the park. INPARQUES allows relatively small areas along the road to be used for riding horses, but INPARQUES authorities have not been monitoring these areas to ensure they are used properly. During our visit, we verified illegal extensions of several riding areas into the park and observed the resulting damage to the vegetation. The high numbers of visitors that visit the areas along the boundaries also generate a large amount of garbage, creating a significant problem.



Garbage piles along the northern border of Macarao National Park

Weak Management

Macarao National Park is having management problems that are at least partly caused by the lack of authority shown by INPARQUES. The presence of a National Guard Military Base inside the park contradicts the permitted uses of a national park. The National Guard uses the park for training exercises, such as survival training and explosives tests. At least two operations, involving personnel from the US Army Special Operation Force, occurred in 1998. In addition, the National Guard restricts access of INPARQUES personnel to some park areas, clearly making the rangers' work more difficult. In the opinion of an ex-superintendent of the park, this is the park's most serious threat: lack of INPARQUES jurisdiction over the entire park. The use of fire guns and irritant gases also is contaminating the park's waters with cyanide and phosphorous.

The presence of telecommunication antennas inside the park is also illegal, yet it is supported by INPARQUES. The antennas, which belong to both private companies and the government, are located on top of one of the park's highest peaks. They occupy a substantially large area of the park and are separated from the rest of the park by fences. Although located inside the park, the antenna area is

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managed as if it were on private land. Only the personnel of the companies that own the antennas have access to these areas. One ranger had to ask for a copy of keys from a company security guard in order to gain access to a forest fire, causing an unnecessary delay. This has happened more than once. We visited the area and verified the presence of a 15-year- old EDELCA antenna and two recent antennas belonging to private companies (TELCEL and FOSPUCA). As one ranger told ParksWatch, thefts of electronic equipment are frequent in the antenna area, adding an extra security problem for the park.



Telecommunication antenna located inside Macarao National Park

A third case demonstrating irresponsible management by INPARQUES is with the Agua Fría Dam. HIDROCAPITAL, the private company that manages the water supply for Caracas, is in charge of the dam. Although INPARQUES built a Recreational Zone inside the area where the dam is located, its personnel cannot access the area without HIDROCAPITAL'S permission. In fact, HIDROCAPITAL'S personnel destroyed these recreation facilities a few years ago, and the company has not paid INPARQUES any compensation.

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View of Agua Fría Dam in Macarao National Park

Lack of personnel

Macarao National Park contains 15,000 ha, yet has only three rangers. Without an adequate number of vehicles or radios for communication, rangers are only effective at patrolling and responding to some problems. One of the rangers is partially disabled and his work is restricted to the park headquarters area, where he takes care of the tourists who visit and camp in the zone. The two other rangers live with their families in the ranger stations in very poor conditions.

In February 2001, the superintendent was moved to another park and the superintendent of Pico Codazzi Natural Monument has taken over the role temporarily. The absence of an adequate number of personnel clearly makes both vigilance and maintenance of the park extremely difficult.

Poaching

Currently, the inhabitants of the towns that surround the park do not depend on hunting for food. Nevertheless, poaching is a problem because increasingly it is used as a source of income as the economic situation in Venezuela worsens. Inhabitants of the communities located in the south are illegally hunting species, such as agouti (*Agouti paca*) and deer (*Odocoileus virginianus*). They are doing this primarily to sell the meat, which is highly coveted by restaurants in the tourist areas. Unfortunately, the actual intensity of poaching is unknown and reports are based solely on rangers' observations. No data has been collected on the frequency with which poaching takes place, nor species being poached.

Exotic plants

The forest of Macarao suffered extensive manipulation by humans in the decades leading up to its designation as a park. During 1935, the use of these lands for agriculture seriously damaged the existing vegetation. Government authorities reforested the area by planting 3,000,000 trees between 1963 and

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1968. Unfortunately, most of these trees were exotic species, primarily pines and eucalyptus. The areas around the park headquarters and the ranger stations are planted with pines; La Culebra Ranger Station is surrounded by two large pine plantations. The ecological consequences have yet to be studied.



Pine plantation located near La Culebra Ranger Station

Recommended Solutions

Fire

Fires are much more prevalent during the dry season, and could be reduced with proper planning. The following preventative measures could be implemented to reduce the harmful effects of fires:

- o Build natural fire barriers
- o Build fire lookout towers
- o Increase monitoring along the roads during weekends and holidays to help prevent fires set by humans
- o Implement educational campaigns to create awareness among visitors about the fire problem and how to avoid it

INPARQUES' capability to prevent and combat forest fires needs to be improved. One possibility is to build on the example of the Pajaritos Fire Combat Camp at El Avila National Park. El Avila camp has a small core of professional park staff, a large network of trained volunteers for ad hoc search and rescue operations, and a rapid response capability based on effective communications, transportation, and fire fighting equipment. During the wet season, personnel work on preparing and implementing fire

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prevention plans and educational programs.

Human encroachment, unregulated tourism, lack of personnel, and poaching

Increasing park personnel and implementing a more intensive monitoring program could reduce the problems caused by human encroachment, unregulated tourism, and poaching. The National Guard should help with monitoring activities. Increasing vigilance also depends on INPARQUES providing rangers with means of communication and transportation, such as phones, radios, motorcycles, and 4 x 4 vehicles. Two or three extra ranger stations with better working and living conditions also are needed.

The encroachment problem is hard to resolve because of the corruption that exists in the courts and law enforcement agencies. The authorities can be swayed by bribery and have been reluctant to enforce the law. Fortunately, this situation is changing. This year INPARQUES won a trial against a citizen who illegally occupied parklands and built several hostels on them for commercial purposes. This caused severe ecological damage to the park such as erosion, degraded soil quality, and changes in sedimentation content in the waterways. The citizen was fined roughly US \$17,800 and sentenced to two years and five months in prison [See ParksWatch "News"](#).

Although the borders are well defined on the map, clear boundaries need to be established in the park using fences and signs. INPARQUES is aware of this problem and is increasing the amount of signs along the road to El Junquito.

The problems caused by visitors in and around the park could be prevented with an aggressive environmental awareness campaign that clearly outlines the regulations and boundaries of the park. Furthermore, trash containers should be placed at every recreational area and at key places along the road. There should be a ranger dedicated exclusively to supervising recreational areas during weekends. More signs, trash containers, and increased enforcement of regulations will also help prevent the misuse of the recreational areas.

Weak management

INPARQUES' lack of authority over the entire park is a problem that needs to be dealt with at a high level within the government. INPARQUES' president should discuss the management problems of the park with the National Guard, HIDROCAPITAL, and the telecommunication companies, as they are part of the problem. ParksWatch has reported this idea directly to the INPARQUES president, in order to bring the issue to her attention. Most of the threats mentioned above also are occurring because there is no legal management plan.

National Guard Base

The National Guard base should be removed from the park. The presence of a military base in a national park is not allowed under the law. It is important to consider that a national park is legally defined as an Area Under Special Management (ABRAE) and, therefore, is regulated by special laws. The Land Use Regulation Law defines the following forbidden uses and activities inside any national park:

- o Experimentation and manipulation of natural resources inside the park area.

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- o Pollutant disposal of any kind.
- o Deforestation and eroding/degrading/moving soils.

This law is ignored on the military base. If removing the military base is not an option, a possible solution would be to declare the base a Special Use Zone as is the case of the Turiamo Military Base in Henri Pittier National Park. Within this Special Use Zone, it will be imperative to also create areas for conservation, free of military activity. If rezoning is not possible, at the very least increased collaboration between INPARQUES and the National Guard is necessary to mitigate the threats it poses to the park.

Agua Fria Hydroelectric Dam

The presence of a hydroelectric dam inside the national park is something that may seem contradictory, but the dam and the importance those waters have for the city of Caracas and other adjacent cities is the reason why Macarao National Park exists. The problem is not the dam itself but the management practices in the area where it is located. INPARQUES should have total control of all the areas inside the park and eventually dam access should be restricted only to them, Hidrocapital personnel, and a limited amount of visitors. The hydroelectric dam has potential for recreational tourism, but Hidrocapital does not want to deal with visitors that might disturb their work. Both INPARQUES and Hidrocapital need to form an agreement on managing the zone, but INPARQUES' plans for potential use of the area for eco-tourism activities should prevail.

The road that goes to the hydroelectric dam is popular among mountain bikers. In Venezuela, bikers, excursionists, hikers, climbers, and other outdoors enthusiasts are some of the best allies of the National Park System, because they generally have a high level of environmental awareness. Bikers are one of the primary users of Macarao National Park for recreation. Their presence is limited to the roads; thus, their use of the park should be considered a benefit rather than a threat. In fact, thanks to their support and collaboration, a ranger at a La Culebra ranger station and another ranger at the Quebrada Honda ranger station have medicines, first-aid kits, and mobile phones.

Telecommunication antennas

Because Macarao National Park has some of the highest mountain peaks in the region, it has become a strategic location for telecommunication antennas. INPARQUES should take advantage of the situation and try to negotiate an agreement with the telecommunication companies to obtain telecommunication services for the rangers. Other agreements should be sought with these companies to try to receive help monitoring and securing other areas of the park. INPARQUES also could ask these companies to have an obligatory number of security men on sight, at no cost to INPARQUES.

Exotic plants

Although exotic plant species have been present in Macarao National Park since the 1960's, it is never too late to consider replanting the forest with native species. However, before doing so, the ecological viability of exotic plant eradication must also be evaluated. INPARQUES should offer support for this research, by looking for alliances with universities and research centers. Funds for this program could be found through the World Bank INPARQUES Program, which works to strengthen the Venezuelan government's capacity to manage their parks and reserves. There is also a large program led by the

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Ministry of the Environment, which includes among its priorities the study of the ecological consequences of invasions from exotic plant species.

Conclusion

Macarao National Park has had a long history of human intervention. Exotic plant species, a military base, recent human encroachments, and other examples of human influence still exist. A management plan, increased infrastructure and personnel, and an environmental education campaign are needed to control human encroachment and other potential damage to the biological integrity of the park. Macarao National Park is a crucial location for biodiversity conservation in the Central Coastal Mountain Range and is depended on by the people of Caracas for a steady supply of clean water.

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