PARKSWATCH
Strengthening Parks to Safeguard Biodiversity

Park Profile – Venezuela
Morros de Macaira Natural Monument

Date of last onsite field visit: July 2004
Publication date: December 2004
Location: Guárico State
Year created: 1978
Area: 99 hectares
Ecoregion: Montane forests of the Cordillera de la Costa
Habitat: Semi deciduous forests, semi deciduous scrublands

Summary

Description
Morros de Macaira* Natural Monument is located in Guárico State, southeast of Guatopo National Park. The monument protects three massifs of limestone rock that have great scenic and landscape value and that contain many caves that have been carved out by small watercourses and vertical chasms (MARNR 1992).

Biodiversity
Vegetation consists of tropical dry scrublands, both deciduous and semi deciduous, as well as submontane moist forest and semi deciduous seasonal forests (MARNR 1992), where extremely tall trees like the grand kapok stand out (*Ceiba pentandra*). Fauna is limited to cave dwelling creatures such as bats, insects, and spiders.

Threats
Lack of institutional presence is the primary threat since there are no park guards and no patrol stations. The natural monument, which lacks physical border markers, could be threatened by increased demand for land for expanding agricultural fields in the future. As a result, we have determined that this natural monument **vulnerable**.

The Morros de Macaira stand out in this lowland piedmont landscape (photo © Rodolfo Castillo)

Description

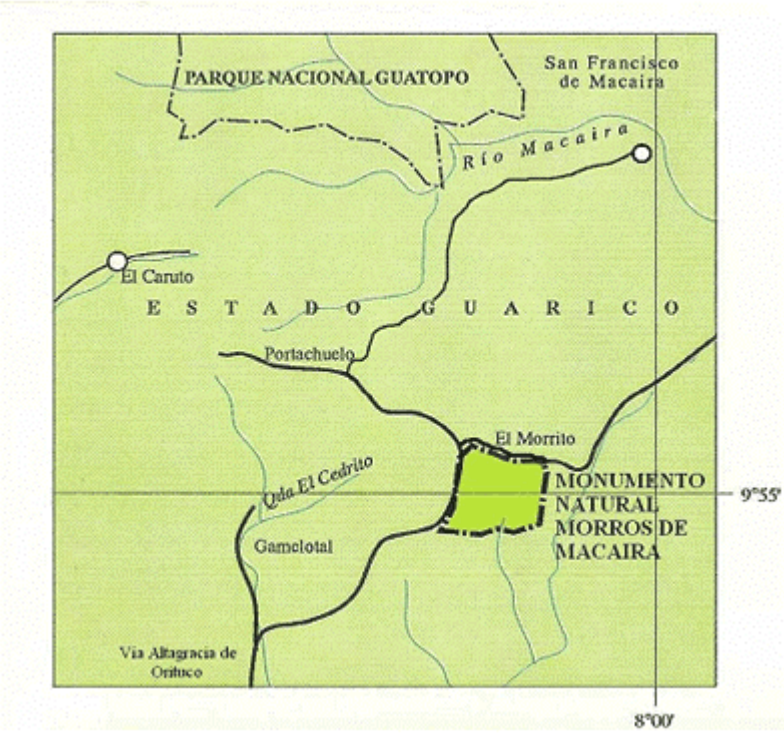
Geography

Morros de Macaira Natural Monument is located in the municipality of José Tadeo Monagas in Guárico State, southeast of Guatopo National Park, in a geographic complex called the Interior Range, close to the Lowland Piedmont, which form part of the Interior Range of the Cordillera de la Costa (Bellizia 1967, Yerena 1985).

* "Morro" means hill or knoll.

The Morros de Macaira is esthetically valuable within the Lowland Piedmont. The monument is made up of three limestone rock massifs full of caves carved out by small watercourses and vertical chasms (MARNR 1992). These rocks are of reef origin and date from the Inferior Cretaceous of the Mesozoic Era (Zambrano 1970, MMH 1970), when the entire region of the Cordillera de la Costa was underwater (Schuchert 1935, Woodring 1964). It wasn't until the end of the Cretaceous Period that the range began to push up. The process continued until the end of the Eocene Epoch (Balda 1974).

The climate is hot, rainy and savannah-like, with annual temperatures between 24 and 26 ^{o}C. Annual precipitation is between 1,000 and 1,250 mm, with maximum precipitation during August (MARNR 1992). The dry season is not marked enough to say that there are two seasons (Yerena 1985), nonetheless, the driest months are typically between January and April, February being the driest (Walter and Medina 1971). Predominant winds come from the north, although the winds from the south exert a certain influence as well (Yerena 1985).



Map Source: INPARQUES (1994)

Biodiversity

Huge kapok trees stand out among the monument's vegetation (photo © César Aponte)

Vegetation is made up of deciduous and semi deciduous dry scublands and submontane moist forests and semi deciduous seasonal forests. There are no plant inventories for the protected area, but immense trees like kapoks (*Ceiba pentandra*) are easily identified. The natural monument's fauna is limited to cave-dwelling species such as bats, insects, and arachnids (MARNR 1992). There are no fauna inventories for the protected area either.

Management

Morros de Macaira was declared a Natural Monument on December 12, 1978 in order to protect a notably impressive geologic formation (República de Venezuela 1979). The National Parks Institute (INPARQUES), which is responsible for administering Venezuela's National Parks System, is responsible for its administration and management. From its creation to 1992, the Guatopo National Park authorities also managed and patrolled Morros de Macaira, but these responsibilities were passed onto another department within INPARQUES. This protected area has never had a patrol station and currently it lacks staff. Its borders are not physically marked aside from the four roads surrounding it (one is paved, two are dirt roads, and the last is a maintenance road for electrical lines) that act as border markers. There are only two signs along the paved road that goes to the town of San Francisco de Macaira.

Legally, there are many restrictions associated with natural monuments. Among prohibited activities include sport and commercial hunting, introducing or raising domesticated animals, sporting events, massive recreation, carrying arms, and extracting flora and fauna species. Permitted activities include hiking and scientific research. This protected area does not have a specific management and use plan. The mentioned regulations are the ones established in the general regulations of the Administration and Management of National Parks and Natural Monuments (República de Venezuela 1989).

One of the two signs along the road to San Francisco de Macaira (photo © Rodolfo Castillo)

Human influence

There are several agricultural zones around the monument that have been in existence for many years, many of which date back to the XV century when the town of San Francisco de Macaira was founded. The monument's borders were determined by referencing the access routes to the agricultural zones. The road between Altagracia de Orituco and San Francisco de Macaira determined the monument's western border. This road is used to transport farm products from the Maciara and Cuira River Valleys. A dirt road, accessible only by 4 X 4 vehicles, makes up the northern limit. This road it used to access the agricultural zones of the community of El Morrito, which has 83 homes and 232 inhabitants (OCEI 1994), to the northeast of the monument. South of the monument there are additional agricultural zones, but the homes are less concentrated. The southern limit is a small dirt road called "La Ceiba."

Farms surround Morros de Macaira Natural Monument (photo © Rodolfo Castillo)

There are four families living within the natural monument's borders that are also dedicated to farming. Apparently, they have

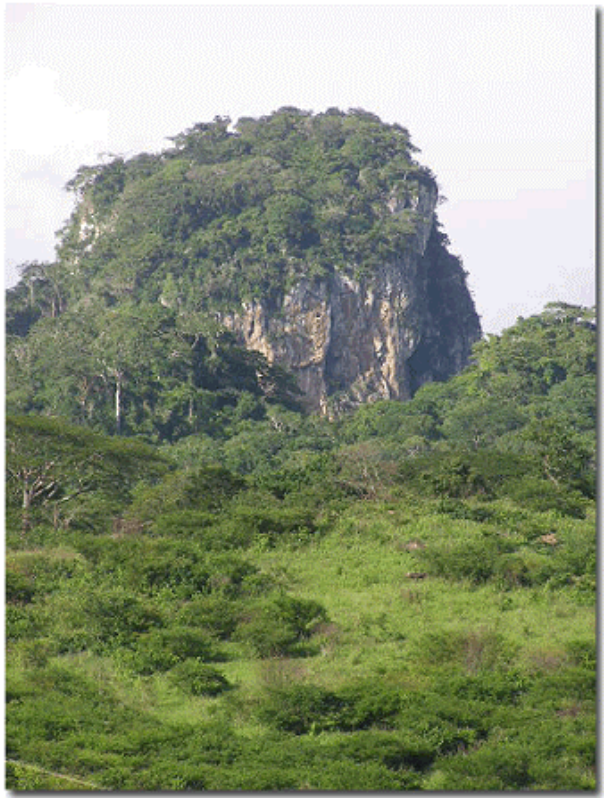
been living there for many years and do not represent a threat to the morros' protection since these limestone-based hills are still intact and well conserved. The families live close to the western border, near the road going to San Francisco de Macaira.

Tourism

Morros de Macaira has a tourism and recreation potential. Its principal attraction are the limestone-based hills which stand out from the surrounding landscape and can be seen from the road going between Altagracia de Orituco and San Francisco de Macaira. At kilometer 15, a dirt road forks off going towards the community of El Morrito. It is here that one can appreciate and observe the massifs up close. There are no recreation zones determined for the natural monument or visitor paths; however, because of the dense forests immediately surrounding the hills, large infrastructure should not be built anyway. Any construction built should be limited to lookouts, footpaths, and other low-impact services like drinking fountains and restrooms. There have been a few attempts by visitors to climb the hills' limestone walls, in some cases these attempts have ended tragically (Yerena 1985). There are no official data regarding the number of visitors or their activities.

Conservation and research

There is very little information on this natural monument. Carlsen (1999) does not report any research for the area. One study conducted by Yerena (1985) in Guatopo National Park located to the northwest provides some significant information for this monument, and even includes a zoning and use proposal. The study recommends establishing an "Integral Protection Zone" for all the massifs, and a "Naturally Managed Environment Zone" for their piedmont, where passive recreation and minimal services like drinking fountains and restrooms would be located. Regarding the caves found within the limestone massifs, there is no detailed information available.



There are no studies of Morros de Macaira (photo © Rodolfo Castillo)

Threats

- Lack of institutional presence
- Expansion of the agricultural frontier

Lack of institutional presence

This natural monument's principal problem is lack of institutional presence. INPARQUE's department responsible for managing the protected area does not even have staff assigned to it. On occasion, staff from Guatopo National Park carries out patrols in the natural monument, but this is not on a regular, planned basis. As a consequence, neither visitors' access is controlled nor their activities, which should be restricted to passive recreation and contemplation. Sport rock climbing should be prohibited because the nails and other equipment used damages the hills' soft limestone rock walls. In addition to lack of staff, the monument lacks signs. The only two, mentioned earlier, are located along the road going between Altagracia de Orituco and San Francisco de Macaira.

View of the small farms along the western access route
(photo © Rodolfo Castillo)

Future threats

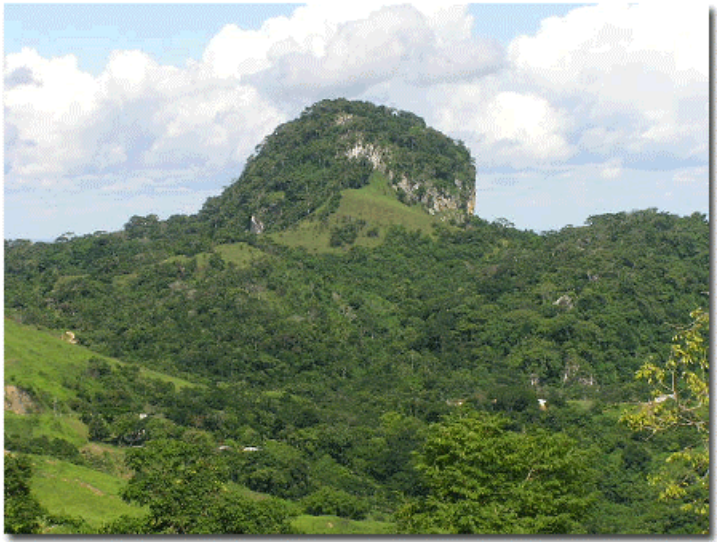
Expansion of the agricultural frontier

The natural monument is completely surrounded by farmlands, the principal agricultural zone is El Morrito located north of the protected area where most homes (approximately 83) are concentrated (OCEI 1994). Population growth in these zones will increase demand for land to live and/or farm, which could impact the protected area because its borders are not physically marked. According to municipal data for José Tadeo Monagas Municipality (where the

monument is located), the growth rate for 1990-2001 was 1.8%, which is below Venezuela's 2.2% national growth rate. While agricultural expansion is not a serious or current threat, the monument is vulnerable to any growth in nearby human settlements.

Proposed solutions

Lack of institutional presence and expansion of the agricultural frontier



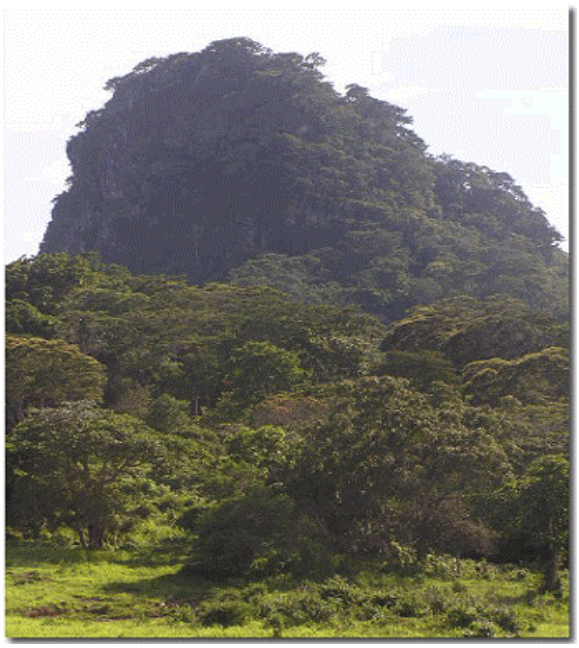
Certain measures are needed to guarantee the conservation of the Morros (photo © Rodolfo Castillo)

Previously, Yerena suggested several solutions (1985). First, a park guard station should be built and staff assigned to carry out vigilance and control activities as well as provide services and orientation for visitors. A small recreation area could be developed, but because of the dense forests surrounding the hills, any infrastructure should be limited to lookouts, footpaths, drinking fountains, and restrooms. Hiking trails should be built in appropriate places so they are safe for visitors and far enough away from any possible caves. Sport rock climbing damages the limestone walls and should be restricted since the massifs constitute this natural monument's conservation target. In addition to park guard presence, the borders must be well established and marked in order to discourage possible farmland expansion in the monument's territory.

Conclusions

Morros de Macaira Natural Monument is esthetically valuable as its three limestone-based hills stand out in the landscape. The monument has not been studied and there are no flora or fauna inventories. The main threats making this monument and its forests **vulnerable** include lack of park guards or staff to carry out vigilance or control activities and the possible increase in agricultural activities in the surrounding areas. The monument needs park guards and a park guard station in order to lessen these threats and guarantee continued conservation of Morros de Macaira Natural Monument.

Morros de Macaira has contemplative tourism potential (photo © César Aponte)



View of Morros de Macaira and its surrounding vegetation (photo © Rodolfo Castillo)

References

- Balda, F. 1974. Ideas sobre la paleogeografía y paleogeología del oriente y occidente de Venezuela. Boletín del Instituto Oceanográfico de la Universidad de Oriente. 13 (1-2): 87-106.
- Bellizia, A. 1967. Rocas ultrabásicas en el sistema montañoso del Caribe y yacimientos minerales asociados. Boletín de Geología Vol. VIII, Nº 16.
- Carlsen, M. 1999. Recopilación y reproducción de información sobre las investigaciones en el Sistema de Parques Nacionales. INPARQUES. Dirección General Sectorial de Parques Nacionales. División de Evaluación, Inventario y Monitoreo Ambiental.
- MARNR. 1992. Áreas naturales protegidas de Venezuela. Serie Aspectos Conceptuales y Metodológicos. DGPOA/ACM/01. Ministerio del Ambiente y de los Recursos Naturales Renovables. Caracas.
- MMH (Ministerio de Minas e Hidrocarburos). 1970. Léxico Estratigráfico de Venezuela. Boletín de Geología. Publicación Especial Nº 4. Dirección de Geología.
- OCEI. 1994. Nomenclador de centros poblados. Total nacional. Oficina Central de Estadística e Informática. Caracas. 540 p.
- República de Venezuela. 1979. Decreto Nº 2.988 del 12 de Diciembre de 1978, mediante el cual se declara Monumento Natural la región conocida como "Morros de Macaira", comprendida dentro de los linderos señalados y ubicado en jurisdicción del Distrito Monagas del Estado Guárico. Gaceta Oficial Nº 2.417. Caracas, 7 de marzo.
- República de Venezuela. 1989. Decreto Nº 276 del 7 de Junio de 1989: Reglamento Parcial de la Ley Orgánica para la Ordenación del Territorio sobre Administración y Manejo de Parques Nacionales y Monumentos Naturales. Gaceta Oficial Nº 4.106, 9 de Junio.
- Schuchert, C. 1935. Historical geology of the Antillean Caribbean Region. John Willey and Sons. Inc .N.Y.
- Walter, H y E. Medina. 1971. Caracterización climática de Venezuela en base a climadiagramas de estaciones particulares. Boletín de la Sociedad Venezolana de Ciencias Naturales 29 (119-129): 211-240.
- Woodring, W.P. 1964. Caribbean Land and Sea through the Ages. Bulletin of Geological Society of America. Vol. 65.
- Yerena, E. 1985. Caracterización y análisis de los recursos naturales del Parque Nacional Guatopo: Zonificación y bases para el plan de manejo biológico. Trabajo Especial de Grado. Universidad Simón Bolívar. Caracas. xx + 600 p. + anexos.
- Zambrano, A. 1970. Estudio fisiográfico regional de la Cuenca del Tuy. Boletín de Geología. Vol. XI, Nº 21.

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