

1th PERIODIC REVISION

CAATINGA BIOSPHERE RESERVE

2001 - 2015



Organização
das Nações Unidas
para a Educação,
a Ciência e a Cultura



Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH



Ministério do
Meio Ambiente



OVERVIEW

Fourteen years ago, the Biosphere Reserve of the Caatinga (CABR) had its beginning from the establishment of a set of conservation units of integral protection and sustainable use. They comprise the core areas, the buffer zones and the transition zones of the CABR. Located mainly in northeastern Brazil, the Reserve has 63.3% of the municipalities in the semiarid geographic space within the Caatinga biome.

In this region live about 28 million people, with the most needy and dependent on the biome resources to survive. This has immense potential for the conservation of environmental services, sustainable use and bio prospecting. After all, there is much to preserve, as new studies have increased the list of species of various groups in the region, demonstrating the importance of the Caatinga biome as endemic zone of various groups

However, despite its importance, estimates suggest that about 70% of the biome is anthropized, having only 7.6% of it protected as conservation units. The CABR has about 15 million inhabitants, of which most are extremely poor economically and often socially jettisoned development processes. Thus, the process of implementing the CABR has effectively contributed towards integrating public institutions and policies for the conservation of biodiversity and sustainable development of the region..

The area of the Caatinga biome, as well as the CABR is comparable to many countries, which gives a sense of the challenges of implementing conservation agendas and to develop the MAB / UNESCO program. For example, the Caatinga biome covers an area 2.6 times larger than Germany and the area of CABR represents more than 50% of the area of that country.

Despite the challenges of managing huge areas and and limitations on institutional coordination at the national and regional level within the CABR, the State Committees of the Biosphere Reserve proved very active, promoting various activities and establishing posts advanced as a way to establish capillarity and reach remote areas.

As stated by a member of the Bahia State Committee, it must be shown that the Caatinga is viable and sustainable. The people who live there want to keep in your "DNA Caatinga", developing solutions development and conservation suitable to their reality. In this sense, a collective effort it is necessary to improve the implementation of the Biosphere Reserve of the Caatinga, improving its governance, planning effective actions.

Whereas the idea of MAB / UNESCO Programme is that Biosphere Reserves are "laboratories" or "pilot programs" of successful experiences that combine, in harmony, man and nature, within the paradigm of sustainability and in the face of climate change, We do not rule out the possibility of revising the area of CABR, making its most appropriate dimensions to the idea of "laboratories".

In this context, the CABR has all the conditions to be a big "showcase". After all, it concentrates all kinds of adversities. And yet, its people still can live, have affection for their homeland and do not want to lose its roots. For the MAB / UNESCO program, this is exactly one of the references that a Biosphere Reserve should have.



ACKNOWLEDGEMENTS

- Associação de Plantas do Nordeste – Frans Pareyn
- Comitê Estadual da Reserva da Biosfera da Caatinga – Alagoas/ Instituto de Meio Ambiente – IMA - AL. Afrânio Farias de Menezes
- Comitê Estadual da Reserva da Biosfera da Caatinga-Bahia/INEMA/Monumento Natural Canions do Subaé: Carlos Romero de Carvalho; Márcio Alves Pimentel; Givanildo Lopes de Oliveira; e Ezivaldo Freitas da Silva.
- Comitê Estadual da Reserva da Biosfera da Caatinga-Pernambuco. Marcelo Cavalcanti
- Coordenação de Turismo e Urbanismo – Bahia – COTUR/DIRRE: Indayá Silva e Silva
- Fundação Joaquim Nabuco – FUNDAJ - Pernambuco . Alexandrina S. Sobreira de Moura
- Ministério do Meio Ambiente - SBF - João Arthur Seyffarth
- Ministério do Meio Ambiente - SBF - GCEco – Brenda

SUMMARY



	Page
LIST OF ABBREVIATIONS AND ACRONYMS	5
LIST OF FIGURES	6
PART I: SUMMARY	7
PART II : PERIODIC REVIEW REPORT	8
1. BIOSPHERE RESERVE	9
1.1. Year designation	9
1.2. Year of the first periodic review and any periodic revision following	9
1.3. Follow-up actions taken in response to each recommendation of the previous periodic review, and if not completed/initiated, provide justifications	9
1.4. Other observations or comments related to the previous one	9
1.5. Describe in detail the process by which the current periodic review was conducted	9
2. SIGNIFICANT CHANGES IN BIOSPHERE RESERVE DURING THE LAST TEN YEARS	11
4. THE CONSERVATION FUNCTION	18
4.1. Significant changes in the main habitat types, ecosystems, species or varieties of traditional or economic importance identified for the biosphere reserve, including natural processes or events, main human impacts, and/or relevant management practices	18
4.2 Describe the main conservation programmes that have been conducted in the biosphere reserve over the past ten years as well as current on-going ones.	37
4.3. How the conservation activities are connected or integrated with sustainable development issues?	43
4.4. How do you evaluate the effectiveness of actions or strategies applied?	43
4.5. What are the main factors that influenced (positively or negatively) the successes of conservation efforts throughout the biosphere reserve? Taking into account the experiences and lessons learned in the last ten years, what new strategies or approaches will be most effective for conservation and sustainable development?	44
4.6 Other comments / observations from a biosphere reserve perspective	44
5. DEVELOPMENT FUNCTION	45
5.1. Briefly describe the trends in the last decade in each of the main sectors of the economic base of the biosphere reserve	45
5.2. Describe the tourism industry in the biosphere reserve.	45
5.3. Where applicable, describe other key industries and uses such as agriculture, fishing and forestry.	46
5.4. How do the economic activities in the biosphere reserve benefit the local communities?	47
6. THE LOGISTIC FUNCTION	47
6.1 Describe the main institutions conducting research or monitoring in the biosphere reserve, and their programs. Comment on organizational changes (if any) in these institutions over the past ten years as they relate to their work in the biosphere reserve.	47
6.5. How do you assess the effectiveness of actions or strategies applied?	47
6.6. Describe how the biosphere reserve currently contributes to the World Network of Biosphere Reserves and/or could do so in the future.	48
6.7 What are the main factors that influenced (positively or negatively) the success of activities that contribute to logistical support function? Taking into account the experiences and lessons learned in the last ten years, which new strategies or approaches will be favored to be more effective?	49
7. GOVERNANCE, MANAGEMENT AND COORDINATION OF THE BIOSPHERE RESERVE	54
7.1 What are the technical and logistical resources for the coordination of biosphere reserve?	54
7.2 What is the general framework for the governance of the biosphere reserve? Identify key components and their contributions to the biosphere reserve.	54
7.6 Updates the management and coordination structure:	54
9. SUPPORTING DOCUMENTS	58
10. ADDRESSES	58

LIST OF ABBREVIATIONS AND ACRONYMS



APA - Environmental Protection Areas
APNE- Northeastern Plants Association (APNE)
ARIE – Relevant Ecological Interest Area
ASD- Susceptible to Desertification Area
IDB - Inter-American Development Bank
BNDES - National Bank for Social Development - BNDES
CAR - Rural Environmental Registry
CBD - Convention on Biological Diversity
CERCAAT - State Committee of Reserves the Caatinga Biosphere
CNIP - Northeastern Center for Plant Information
CNRBCA - National Council of the Biosphere Reserve of Caatinga
CNUC - National Register of Protected Areas (or National Register of Conservation Units)
COBRAMAB - Brazilian Commission Man and Biosphere Programme
CODEVASF - Development Company of the Valleys of the São Francisco and Parnaíba
CONABIO National Biodiversity Commission
CRAD - Reference Centres for Recovery of Degraded Areas
DFLOR - Department of Forests
EMBRAPA - Brazilian Agricultural Research Corporation
SBME - State University of Bahia Southwest;
FLEM - Luís Eduardo Magalhães Foundation
FLONA - National Forest
GEF - Fund for Global Environment
IBAMA - Brazilian Institute of Environment and Renewable Natural Resources
IBGE - Brazilian Institute of Geography and Statistics
ICMBio - Chico Mendes Institute
IDH- Human Development Index
INCT_if - National Institute of Science Technology for Pharmaceutical Innovation
INSA - National Institute for the Semi-Arid
IRPAA - Regional Institute of Small Agricultural;
MAB - Man and Biosphere
MI - Ministry of National Integration
MMA - Ministry of Environment
MONA - Natural Monument
NBioCAat - Bioprospecting Center and Conservation of Caatinga
PRSF - Revitalization Program Basin São Francisco River
RBCA - Biosphere Reserve Caatinga
RPPN - Private Natural Heritage Reserves
SBF - Secretary of Biodiversity and Forests
Sedir - Department of Development and Regional Integration
SNUC - National Protected Areas System
UEFS - State University of Feira de Santana;
UFBA - Federal University of Bahia, among others
UFC- Federal University of Ceará
UFCG- Federal University of Campina Grande
UFERSA Semi-Arid Rural Federal University of
UFPB - Federal University of Paraíba
UFPE - Federal University of Pernambuco
UFRB - University of Bahia Reconcavo;
UFRGS - Federal University of Rio Grande do Sul



UFRN - Federal University of Rio Grande do Norte
UFRPE - Rural Federal University of Pernambuco
UNESCO - United Nations Educational, Scientific and Cultural
UNIVASF - Federal University of São Francisco Valley



LIST OF FIGURES

	Page
Figure 1. Areas of the Pantanal Biosphere Reserve	12
Figure 2. Political Division of Brazil - 2010	13
Figure 3. Total population of the North East Region - 2000-2010	13
Figure 4. Municipalities members of the Biosphere Reserve of the Caatinga - North East Region - A	14
Figure 5. Municipalities members of the Biosphere Reserve of the Caatinga - North East Region - B	15
Figure 6. Distribution of the urban population in the biome - 1970 (left) and 2000 (right)	17
Figure 7. Territorial Extension of the geographical areas inside and outside the Semi-Arid	18
Figure 8 - Municipalities Northeastern members of the semi-arid and RBCA	19
Figure 9 - Caatinga within the continental biomes of Brazil	20
Figure 10 - Vegetation Caatinga	21
Figure 11 - Federal protected areas in Caatinga biome within the RBCA	23
Figure 13 - priority conservation areas - Caatinga and RBCA	24
Figure 14 - Biosphere Reserve within the priority areas	25
Figure 15 - Biosphere Reserve within the biome Caatinga and priority areas	26
Figure 16 - Biosphere Reserve within the biome Caatinga and priority areas	27
Figure 17 - Extinction Threat categories Fauna	28
Figure 18 - Bird species threatened with extinction in the Caatinga - The	30
Figure 19 - Bird species threatened with extinction in the Caatinga - B	30
Figure 20 - Bird species threatened with extinction in the Caatinga - C	31
Figure 21 - Bird species threatened with extinction in the Caatinga - D	31
Figure 22 - Bird species threatened with extinction in the Caatinga - E	32
Figure 23 - Mammals and Reptiles of species threatened with extinction in the Caatinga - The	33
Figure 24. Species of Mammals and Reptiles threatened with extinction in the Caatinga -B	34
Figure 25. invertebrates and insects species threatened with extinction in the Caatinga	35
Figure 26. invertebrates and insects species threatened with extinction in the Caatinga - The	36
Figure 27. invertebrates and insects species threatened with extinction in the Caatinga - B	36
Figure 28. Advanced RBCA of stations in the state of Pernambuco	50
Figure 29. State Committee of the Biosphere Reserve of the Caatinga - PE	51
Figure 30. RBCA - State of Bahia	51
Figure 31. RBCA, petroglyphs - State of Bahia	52
Figure 32. Meeting with community leaders in RBCA - Bahia	52
Figure 33. Components of RBCA - Bahia	53
Figure 34. Members of the community and technicians within the RBCA - Bahia	53
Figure 35. Management System Biosphere Reserve Caatinga	55
Figure 36. Composition of the National Council of the Biosphere Reserve of the Caatinga - 2007-2011	56
Figure 37. Composition of the State Committees of the Biosphere Reserve of the Caatinga - 2007-2011	56



LIST OF TABLES

Table Number	Página
Table 1. Representation of municipalities and population in the Northeast Biosphere Reserve Caatinga - 2010 Census (IBGE)	15
Table 2: Number of families, genera, species to groups of mammals, birds, reptiles, amphibians, fish and biome bees Caatinga, including the number of cited endemic species and species with threatened status in Brazil (Threatened or in extinct as 03/03 or 05/04, MMA) in the State of Minas Gerais (MG), the recommendation of the IUCN (2007) and Biodiversitas (2002)	22



PART I: SUMMARY

A. NAME OF BIOSPHERE RESERVE:

Caatinga Biosphere Reserve (CABR)

B. COUNTRY:

Brazil

C. DATE OF APPOINTMENT:

2001

D. YEAR(S) OF PERIODIC REVIEW(S):

2011

E. PREVIOUS MADE RECOMMENDATION(S) BY THE INTERNATIONAL COORDINATING COUNCIL (ICC - MAB), IF ANY:

Not applicable, since there was no Periodic Review of the first ten years of the CABR.

F) WHAT IS MONITORING ACTIVITIES COMPLETED AND IF NOT COMPLETED / INITIATED, PROVIDE JUSTIFICATION.

Not applicable, since there was no Periodic Review of the first ten years of the CABR.

G) UPDATE ON THE IMPLEMENTATION OF MEASURES TO ACHIEVE THE GOALS OF THE BIOSPHERE RESERVE.

Not applicable, since there was no Periodic Review of the first ten years of the CABR, although there is the Reserve's Action Plan. Moreover, the National Council of the Biosphere Reserve is disabled.

H) BRIEFLY DESCRIBE THE PROCESS BY WHICH THE CURRENT PERIODIC REVIEW WAS HELD:

Initially, the work involved career employees of the Department of Protected Areas, belonging to the Secretary of Biodiversity and Forests (SBF) of the Ministry of Environment (MMA). The MMA hired a consulting via SNUG Project - LifeWeb, which is supported by technical and financial cooperation between Brazil and Germany¹. Thus, the coordination of the work was handled by SBF and subsequently also the contracted consultant.

The consultant produced some primary data and especially secondary data collected of the Caatinga Biosphere Reserve (CABR). To this end, interviews were conducted with relevant actors,

¹ The SNUC-Life Web Project is supported by technical and financial cooperation between Brazil and Germany (GIZ - Deutsche Gesellschaft für Internationale Zusammenarbeit), and its top goal "to contribute to improving the management of protected areas in an efficient, sustainable and participatory in favor the preservation of biodiversity and provision of ecosystem services



in some way, have been involved in the past decade with the work of the CABR. There were also interviews with employees and former employees of the Ministry of Environment, and other institutions linked to the Biosphere Reserve program and members of the Biosphere Reserve of the National Council of Caatinga (CNRBCA). There was access to the documentary database of MMA, and has been made available materials by CNRBCA, State Committees and documents scattered on the internet.

PART II: PERIODIC REVIEW REPORT

1. BIOSPHERE RESERVE:

1.1 Year of designation:

2001.

1.2 Year of first periodic review and any periodic revision following:

The First Periodic Review of the Caatinga Biosphere Reserve (CABR) should have occurred in 2011. However, it was not performed. So this is the first time that the CABR submits its report to the International Advisory Committee for Biosphere Reserves and Bureau of the International Coordinating Council of MAB .

1.3. Follow-up actions taken in response to each recommendation of the previous periodic review, and if not completed/initiated, provide justifications.

Not applicable, since there was no Periodic Review of the first ten years of the CABR.

1.4. Other observations or comments related to the previous one.

Not applicable, since there was no Periodic Review of the first ten years of CABR.

1.5. Describe in detail the process by which the current periodic review was conducted.

1.5.1. Which stakeholders (actors) were involved?

Initially, the work involved the staff from the Department of Protected Areas, under the Secretary of Biodiversity and Forests (SBF) of Brazilian Ministry of Environment MMA). To perform the gathering and systematization of information, and the identification of key stakeholders a consultant was hired by the Project - LifeWeb, which is supported by technical and financial cooperation between Brazil and Germany².

Interviews were conducted with relevant actors who, in some way, have been involved in the past decade with the work of the CABR. There were also interviews with employees and former employees of the Ministry of Environment, and other institutions linked to the Biosphere Reserve program and members of the Caatinga Biosphere Reserve National Council (CNRBCA) . There was

² The SNUC-Life Web Project is supported by technical and financial cooperation between Brazil and Germany (GIZ - Deutsche Gesellschaft für Internationale Zusammenarbeit), and its top goal "to contribute to improving the management of protected areas in an efficient, sustainable and participatory in favor the preservation of biodiversity and provision of ecosystem services



access to the documentary database of MMA, and has been made available materials by CNRBCA, State Committees and documents scattered on the internet.

It should be noted that it was not possible to have direct participation of the institutions that make up the CNRBCA because the mandates of its members are past due. However, there was contact with three state committees, Bahia, Alagoas and Pernambuco. The latter made a contribution of utmost importance. The Committee sent the Activity Report of the past ten years. But the State Committee of Alagoas sent the names of the members who make up the State Committee, maps with the integral conservation units within the core area of that state and assisted in the review of this report. The Bahia State Committee informed us about their movement over the past decade, indicating a page of the Institute for the Environment and Water Resources which contains all available material on the performance of the Bahia State Committee in the Caatinga Biosphere Reserve. It also contributed with fundamental questions about their view of CABR, and helped answer some questions in this report that were unanswered. Thus, due to lack of time, due to the deadlines for submitting this report to UNESCO, the State Committees, such as the CERCAAT-BA ceased to enrich with successful contributions that they develop in Bahia's semiarid region.

The committees that were not expressed were Ceará, Sergipe and Piauí, listed as created by 2011 (see Section 7.6.2). The Rio Grande do Norte was there then being created. And Piauí listed as created, but not found the legislation in 2011³.

So, there was no time to undertake a new mandate for the CNRBCA before the end of this report. Moreover, it was not possible to carry out broad consultations with institutions and government sectors, non-governmental, educational and research institutions.

While this report has no formal validation of all the actors who are part of the State Committees of the CABR or the CNRBCA, is expected to present here most of the work that have been developed and contribute to the maintenance and further improvement of this Biosphere Reserve.

1.5.2. Which methodology was used to involve stakeholders in the process

There was a planning meeting to set data collection procedure. The SBF/MMA listed strategic actors who needed to be contacted for the job. Then, telephone contacts were made and e-mail sent to: former president of the National Council of the Biosphere Reserve of the Caatinga (CNRBCA); former coordinator of the State Committee of Bahia's Caatinga Biosphere Reserve; coordinator of the State Committee of Bahia's Caatinga Biosphere Reserve; general coordinator of the Northeastern Plants Association; Executive secretary of the Pernambuco CABR Committee.

Within the MMA, contacts were made with an environmental analysts of SBF, responsible for biodiversity conservation initiatives for the Caatinga biome.

CNRBCA materials were obtained, as well as the DCBio/SBF/MMA to help in data that would support the completion of the report. Also the state committees of Bahia, Pernambuco and Alagoas sent materials (see annex)

³ Sítio: http://201.65.213.154:8080/sapl/consultas/norma_juridica/norma_juridica_mostrar_proc?cod_norma=10262



1.5.3. How many meetings, workshops etc. occurred during the execution of this review process?

Just a few internal meetings between analysts of the SBF and the environmental consultant, to resolve doubts in the Report on the filling and possible sources of information to try to answer as much as possible the questions asked in this report.

Again, it is worth noting the short time allotted to hire consulting and preparing this report. Thus, there was little possibility of articulation between the MMA and the State Committees. It should be noted that the National Council of the Biosphere Reserve of the Caatinga is inactive. And there are gaps in information about the CABR. And when it is, they are scattered. And the MMA employees who are currently ahead of the MAB Programme / UNESCO were not in the past, which further hampered the rescue program memory.

1.5.4. Participation was important, with a complete and balanced representation?

It was not possible, because the report was completed by the MMA / SBF without active participation of the CNRBCA and State Committee. There was only sending the former CNRBCA material, provided by the last president. That's because the CNRBCA is disabled. However, there was active participation through telephone contacts and e-mail exchanges, some State Committees. So, probably many of the problems in RBCA are not covered in this report.

It should be noted that the Report by MMA / SBF has a part referring to four planning workshops, in which participants were members of state government agencies and a number of state committees of the Caatinga area.

The CABR is governed by the National Council of the Caatinga Biosphere Reserve, which is disabled. And this advice is shared, having in his regiment fifteen members representing the governmental sphere (four of the federal government, ten of environmental agencies from each of the state governments covered by the reserve, and a representative of all municipalities) and fifteen representatives of society civil (scientific community, residents, businessmen and non-governmental organizations).

2. SIGNIFICANT CHANGES IN THE BIOSPHERE RESERVE DURING THE LAST TEN YEARS:

2.1. Summary:

Fourteen years ago, the Caatinga Biosphere Reserve had its beginning from the establishment of a set of conservation units of integral protection and sustainable use, that composed their areas - core, buffer and transition. Is one of these areas 63.3 % of the municipalities in the semiarid geographical space. Thus, whenever there was adversity to work MAB / UNESCO program. This is because, initially, it comes to preserving a biome which tends to its desertification in the face of human impacts and climate change process, which only aggravates the aridity of the region. Second, within this geographic setting, it is a population of more than fifteen million people, which is extremely poor economically and often socially jettisoned development processes.

Deploy the RBCA has been a contribution of utmost importance to aggregate institutions and therefore public policies that bring the greatest environmental, social and economic benefits for the region. Added to this, as told by a member of the Bahia State Committee, the search for



communities by "keeping the Caatinga DNA ". In addition, the creation of state committees, outposts and several partnerships have been instrumental in the MAB Programme / UNESCO.

2.2. Updated information of the biosphere reserve history

2.2.1. Updated coordinates (if applicable). In case there is any change in the pattern geographical coordinates Biosphere Reserve, please enter them here (all in WGS 84 projection).

Cardinal points	Latitude	Longitude
Most central point	-9.439S	-41.82W
Northernmost point	-2.809S	-40.499W
Southernmost point	-15.351S	-44.134W
Westernmost point	-14.531S	-44.205W
Easternmost point	-6.848S	-35.206W

2.2.2 If necessary, provide a map in a georeferenced topographic base, with the limits of the three biosphere reserve zones. The maps should be provided in paper and digital media. The shapefile (also in projection WGS84) used to produce the map should be included in the electronic copy of the form (Figure 1).



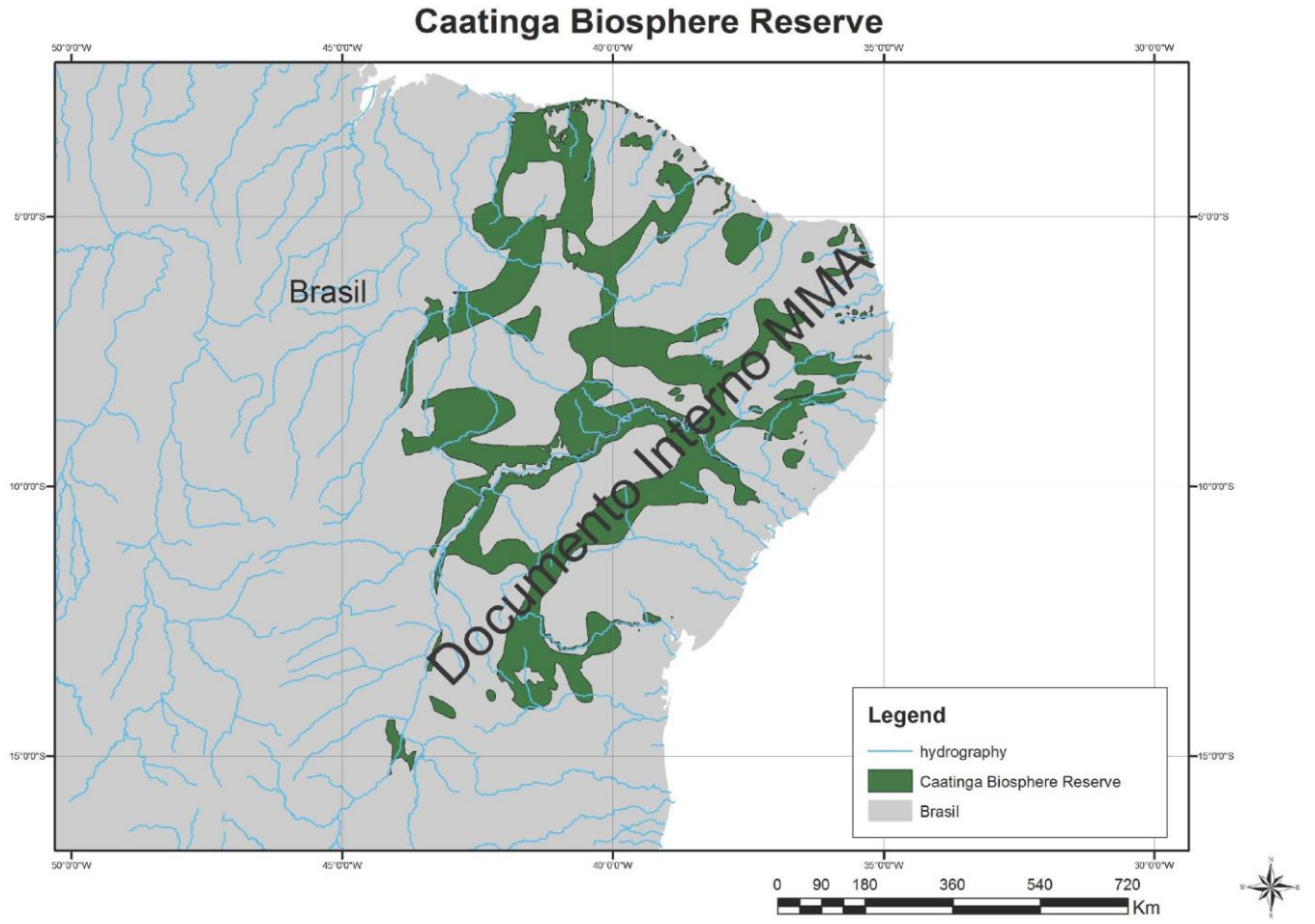


Figure 1. Caatinga Biosphere Reserve in the Brazilian Biomes



2.2.3. Changes in the human population of the biosphere reserve.

BIOSPHERE RESERVE IN SEMIARID, REGIONS AND MUNICIPALITIES - The Caatinga Biosphere Reserve occupies mainly the Northeast region of Brazil. There is a small portion north of Minas Gerais (Southeast Region) which also contains the CABR (Phase III) (Figure 2).



Source: IBGE, 2010.⁴

Figure 2. Political Division of Brasil -2010

The Northeast Region comprises nine Brazilian states: Alagoas, Bahia, Ceará, Maranhão, Paraíba, Pernambuco, Piauí, Rio Grande do Norte and Sergipe. According to the latest Census of IBGE (2010), the Northeast region has 1,794 municipalities. Since 2000, when observing the total population of the Northeast, it turns out that there was an increase of 5,340,239 inhabitants. That is, 11.2 % increase in population (**Figure 3**).

YEAR	TOTAL POPULATION
------	------------------

⁴ IBGE. Divisão Política do Brasil, 2010. Atlas Nacional do Brasil 2010. Pagina 34. Território Brasileiro



2000	47,741,711
2007	51,534,406
2010	53,081,950

SOURCE: Instituto Brasileiro de Geografia e Estatística - IBGE ⁵

Figure 3. Total Population of Northeast Region – 2000 to 2010

MUNICIPALITIES AND POPULATION IN THE CAATINGA BIOSPHERE RESERVE – According to the Northeast Center for Plant Information (CNIP)⁶, 591 municipalities are members of the Northeast CABR. So, in terms of population, that means 15,230,920 million. i.e. 28.7 % of the Northeast population is within the Caatinga Biosphere Reserve (**Figures 4 and 5 and Table 1**).

Alagoas (AL)	Maranhão (MA)	Rio Grande do Norte (RN)	Bahia (BA)
Arapiraca	Água Doce do Maranhão	Açu	Iraquara
Cacimbinhas	Araioses	Angicos	Irecê
Coité do Nôia	Barreirinhas	Appoi	Itaberaba
Craíbas	Paulino Neves	Arco Branco	Itaeté
Delmiro Gouveia	Santa Quitéria do Maranhão	Baradina	Itaguaçu da Bahia
Estrela de Alagoas	Santana do Maranhão	Barcelona	Itatim
Igaci	Tutóia	Calçó	Itiúba
Major Isidoro		Caraubas	Juíú
Mar Vermelho	Sergipe (SE)	Ecuador	Jacobina
Maribondo	Aquidabã	Felipe Guerra	Jaguariari
Mata Grande	Canindé de São Francisco	Fernando Pedroza	Jequié
	Carira	Governador Dix-Sept Rosado	Jeremoabo
	Cumbe	Ipueira	João Dourado
	Feira Nova	Itaú	Juazeiro
	Gararu	Jandaíra	Jussara
	Gracho Cardoso	Jardim de Angicos	Jussiape
	Monte Alegre de Sergipe	João Câmara	Lafaiete Coutinho
	Nossa Senhora Aparecida	Lagoa de Velhos	Lagoa Real
	Nossa Senhora da Glória	Mossoró	Lajedo do Tabocal
	Nossa Senhora das Dores	Ouro Branco	Lapão
	Poço Redondo	Parellhas	Lençóis
	Porto da Folha	Pedra Preta	Livramento de Nossa Senhora
	São Miguel do Aleixo	Poço Branco	Macururê
		Presidente Juscelino	Malhada
		Pureza	Manoel Vitorino
		Santa Cruz	Maracás
		Santana do Matos	Marcelino Souza
		Santana do Seridó	Miguel Calmon
		São João do Sabugi	Milagres
		São Miguel de Touros	Mirangaba
		São Paulo do Potengi	Monte Santo
		São Tomé	Morpará
		Senador Elói de Souza	Morro do Chapéu
		Serra do Mel	Mucugê
		Serra Negra do Norte	Mulungu do Morro
		Severiano Melo	Muquém de São Francisco
		Sítio Novo	Nova Itarana
		Tangará	Novo Triunfo
		Timbaúba dos Batistas	Ourolândia
		Touros	Palmas de Monte Alto
		Upanema	Palmeiras
			Paratinga
			Paulo Afonso
			Pedro Alexandre
			Platã
			Piãó Arcado
			Pindobaçu
			Planaltino
			Ponto Novo
			Presidente Dutra
			Queimadas
			Remanso
			Riacho de Santana
			Rio de Contas
			Rio do Pires
			Rodéias
			Santa Brígida
			Santana
			São Gabriel
			Saúde
			Seabra
			Senhor do Bonfim
			Serra do Ramalho
			Sento Sé
			Serra Dourada
			Sítio do Mato
			Sítio do Quinto
			Sobradinho
			Souto Soares
			Souto Soares
			Tremedal
			Uauá
			Uibaí
			Utinga
			Várzea Nova
			Vitória da Conquista
			Xique-Xique

⁵ IBGE: sitio: <http://www.sidra.ibge.gov.br/bda/popul/default.asp?t=3&z=t&o=25&u1=1&u2=1&u4=1&u5=3&u6=1&u3=3> Acesso: 11/9/15

⁶ Centro Nordestino de Informações sobre Plantas – CNIP. Sítio: http://www.cnip.org.br/lista_municipios.html. Acesso 11/9/15



Ceará (CE)			Paraíba (PB)	
Abaiara	Ibiapina	Potengi	Aguiar	Nazarezinho
Acarapé	Independência	Quiterianópolis	Alcantil	Parari
Aluaba	Ipaporanga	Quixadá	Aparecida	Passagem
Alcântaras	Ipu	Quixeramobim	Araçagi	Patos
Alto Santo	Ipuellas	Quixeré	Areia de Baraúnas	Pedra Lavrada
Antonina do Norte	Itapagé	Redenção	Assunção	Piancó
Aracoliaba	Itapipoca	Reriutaba	Bananeiras	Pilõeszinhos
Ararendá	Itapipuna	Saboeiro	Barra de Santana	Pirpirituba
Araipé	Jaguaratama	Salitre	Barra de São Miguel	Pombal
Arneiroz	Jaguaruana	Santa Quitéria	Belém	Quixabá
Assaré	Jardim	Santana do Cariri	Bonito de Santa Fé	Riacho de Santo Antônio
Aurora	Jati	São Benedito	Boqueirão	Salgadinho
Banabuiú	Juazeiro do Norte	São Gonçalo do Amarante	Borborema	Santa Cecília
Barbalha	Limoeiro do Norte	São Luis do Curu	Cabaceiras	Santa Inês
Barreira	Madalena	Senador Pompeu	Cacimba de Areia	Santa Luzia
Barro	Maranguape	Senador Sá	Cacimbas	Santana de Mangueira
Baturité	Marco	Sobral	Cajazeiras	São Domingos do Cariri
Boa Viagem	Martinópolis	Tabuleiro do Norte	Cajazeirinhas	São João do Cariri
Brejo Santo	Massapê	Tamboril	Camalaú	São José da Lagoa Tapada
Campos Sales	Mauriti	Tauá	Caraúbas	São José de Caiana
Capistrano	Meruoca	Tianguá	Carrapateira	São José de Espinharas
Caridade	Milagres	Trairi	Conceição	São José de Piranhas
Cariré	Missão Velha	Tururu	Congo	São José de Princesa
Caririáçu	Mombaça	Ubaíra	Coremas	São José do Bonfim
Carnaubal	Moraújo	Umirim	Coxixola	São José do Sabugi
Catarina	Murucão	Uruburetama	Curral de Cima	São José dos Cordeiros
Chaval	Mucambo	Urucá	Desterro	São Mamede
Choró	Mulungu	Varjota	Guarabira	Seridó
Chorozinho	Nova Olinda	Viçosa do Ceará	Ibiara	Serra Branca
Coreaú	Nova Russas		Igaracy	Serra Grande
Crateús	Novo Oriente		Imaculada	Serraria
Crato	Ocara		Itaporanga	Taperoá
Croatá	Pacoti		Juazeirinho	Tavares
Frecheirinha	Pacujá		Junco do Seridó	Teixeira
Graça	Palmácia		Livramento	Tenório
Graça	Parambu		Manaíra	Umbuzeiro
Groaíras	Pedra Branca		Maturéia	Várzea
Guaíba	Penaforte		Monte Horebe	
Guaraciaba do Norte	Pentecoste			
Guaramiranga	Pires Ferreira			
Hidrolândia	Poranga			
Ibaretama	Porteiras			

Source: Centro Nordestino de Informações sobre Plantas – CNIP, 2015.

Figure 4. Municipalities that are members of the Caatinga Biosphere Reserve – Northeast Region - A



Piauí (PI)		Pernambuco (PE)		
Acauã	Geminiano	Afogados da Ingazeira	Iguaraci	Serra Talhada
Alegrete do Piauí	Guaribas	Afrânio	Inajá	Serrita
Alto Longá	Inhuma	Agrestina	Ingazeira	Moreilândia
Altos	Ipiranga do Piauí	Águas Belas	Ipubi	Solidão
Alvorada do Gurguéia	Itainópolis	Alagoinha	Itacuruba	Surubim
Anísio de Abreu	Jatobá do Piauí	Altinho	Itaíba	Tabira
Barras	João Costa	Araripina	Itapetim	Tacalombó
Batalha	José de Freitas	Arcoverde	Jataúba	Tacaratu
Benedictinos	Juazeiro do Piauí	Barra de Guabiraba	Jatobá	Taquaritinga do Norte
Betânia do Piauí	Jurema	Belém de Maria	João Alfredo	Terezinha
Boa Hora	Luís Correia	Belém de São Francisco	Jucati	Trindade
Bocaina	Marcolândia	Belo Jardim	Jupi	Triunfo
Bom Jesus	Murici dos Portelas	Betânia	Lagoa do Carro	Tupanatinga
Bom Princípio do Piauí	Nossa Senhora de Nazaré	Bezerrós	Lagoa Grande	Tuparetama
Bonfim do Piauí	Novo Santo Antônio	Bodocó	Limoeiro	Venturosa
Boqueirão do Piauí	Oeiras	Bom Conselho	Machados	Verdejante
Brasileira	Paquetá	Bom Jardim	Manari	Vertente do Lério
Brejo do Piauí	Parnaíba	Bonito	Mirandiba	Vertentes
Buriti dos Lopes	Pau D'arco do Piauí	Brejão	Orobó	Vicência
Buriti dos Montes	Picos	Brejinho	Orocó	Vicência
Cabeceiras do Piauí	Piracuruca	Brejo da Madre de Deus	Ouricuri	
Cajueiro da Praia	Piripiri	Buenos Aires	Palmares	
Caldeirão Grande do Piauí	Ribeira do Piauí	Buique	Panelas	
Campo Alegre do Fidalgo	Santa Cruz do Piauí	Cabrobó	Paranatama	
Campo Maior	Santa Luz	Cachoeirinha	Parnamirim	
Canto do Buriti	Santana do Piauí	Caetés	Passira	
Capitão de Campos	São Braz do Piauí	Calumbi	Pedra	
Capitão Gervásio Oliveira	São João da Canabrava	Camocim de São Félix	Pesqueira	
Caracol	São João da Fronteira	Capoeiras	Petrolândia	
Caraúbas do Piauí	São João da Serra	Carnaíba	Petrolina	
Castelo do Piauí	São João da Varjota	Carpina	Quixaba	
Caxingó	São João do Piauí	Caruaru	Riacho das Almas	
Cocal	São José do Divino	Casinhas	Sairé	
Cocal de Telha	São José do Piauí	Cedro	Salgadinho	
Cocal dos Alves	São Julião	Cumaru	Salgueiro	
Colvaras	São Lourenço do Piauí	Cupira	Salóá	
Coronel José Dias	São Miguel do Tapulo	Dormentes	Sanharó	
Cristino Castro	São Raimundo Nonato	Exu	Santa Cruz	
Dirceu Arcoverde	Sigefredo Pacheco	Flores	Santa Cruz da Baixa Verde	
Dom Expedito Lopes	Simões	Floresta	Santa Cruz do Capibaribe	
Dom Inocêncio	Sussuapara	Frei Miguelinho	Santa Filomena	
Fartura do Piauí	Tamboril do Piauí	Garanhuns	Santa Maria da Boa Vista	
Francisco Macedo	Teresina	Granito	Santa Maria do Cambucá	
Fronteiras	Várzea Branca	Gravatá	Santa Terezinha	
		Iati	São Bento do Una	
		Ibimirim	São Caitano	
			São João	
			São Joaquim do Monte	
			São José do Belmonte	
			São José do Egito	

Source: Centro Nordestino de Informações sobre Plantas – CNIP, 2015.

Figure 5. Municipalities that are members of the Caatinga Biosphere Reserve – Northeast Region - A

Table 1. Representation of Municipalities and Population of the Northeast Region in the Cerrado Biosphere Reserve - Census 2010 (IBGE)

Município	Total Number of counties	Number that integrate the CABR	% of counties integrating the CABR	Total Population of NE	Total Population at CABR	% of population at CABR
Alagoas	102	22	21,5	3.120.494	598.933	19,2
Bahia	417	118	28,3	14.016.906	3.385.655	24,1
Ceará	184	113	61,4	8.452.381	3.542.829	42,0
Maranhão	217	7	3,2	6.574.789	217.175	3,0
Paraíba	223	74	33,2	3.766.528	799.371	21,2
Pernambuco	185	114	61,6	8.796.448	3.643.992	41,4
Piauí	224	88	39,3	3.118.360	1.990.084	64,0
Rio Grande do Norte	167	41	24,5	3.168.027	821.009	26,0
Sergipe	75	14	19,0	2.068.017	231.872	11,2
TOTAL	1794	591	33,0	53.081.950	15.230.920	28,7



Sources: IBGE, Censo Demográfico 2010⁷; CNIP, 2015⁸; INSA - MCTI, Sinopse do Censo Demográfico para o Semiárido brasileiro,

TERRITORIAL OCCUPATION OF THE CAATINGA – About 28 million people live in the region of Caatinga, most needy and dependent biome resources to survive. This has immense potential for the conservation of environmental services, sustainable use and bioprospecting. However, despite its importance, the biome Caatinga has been cleared at a fast pace, especially in recent years, due to consumption of native wood, exploited illegally and unsustainably, for domestic and industrial purposes, overgrazing and conversion to pasture and agriculture. Deforestation reaches 46% of the biome, according to the Ministry of Environment (MMA).

Historically, agriculture practiced in the Caatinga region is shifting. As a result, there was a disorderly land occupation with severe impacts. This, in turn, caused a significant reduction of regional biodiversity. In 1993, agricultural activities occupy almost 28% of the total area of the Caatinga. In 2003, from maps of agricultural activities and major highways Caatinga, it became clear that the region had nearly 50% of its area altered by human activities⁹. Currently, according to estimates, about 70% of this biome is changed by man. Only 0.28% of its area is protected by conservation units. These figures give the Caatinga unless preserved ecosystem condition and one of the most degraded. Hence the importance, among other initiatives, the MAB / UNESCO program.

THE SEMIARID AND MAN FIXING IN RURAL AREA - It is recognized that the Caatinga is known to be a typical semi-arid biome. It is also a poor region where are some of the smallest Human Development Index (HDI) municipalities in Brazil. Life expectancy in the region in 2008 was 60 years, while the national average was 67.8 years. Another worrisome index is the infant mortality rate. For every 1,000 live births, 49.8 died before one year of age, as opposed to the national average of 28 children.

Due to the region's socio-economic context, it is natural that it refers us to reflect on the rural exodus level that occurred in recent decades, and how important the Caatinga Biosphere Reserve Program is, with their projects and plans to secure the people in rural area, through actions that contribute to generate income, reduce the level of deforestation and desertification and increase the degree of reforestation, due mainly to the effects of climate change.

Analyzing the data from the perspective of population stratification of rurality and municipalities, there has been a trend of ruralization, groups of municipalities with smaller populations¹⁰. This demographic trend is partly the result of state action, though timid, which are already scarce

⁷ Instituto Brasileiro de Geografia e Estatística - IBGE: sitio:

<http://www.sidra.ibge.gov.br/bda/tabela/listabl.asp?z=cd&o=5&i=P&c=608>. Acesso 11/9/15;

⁸ Centro Nordestino de Informações sobre Plantas – CNIP. Sítio: http://www.cnip.org.br/lista_municipios.html. Acesso 11/9/15

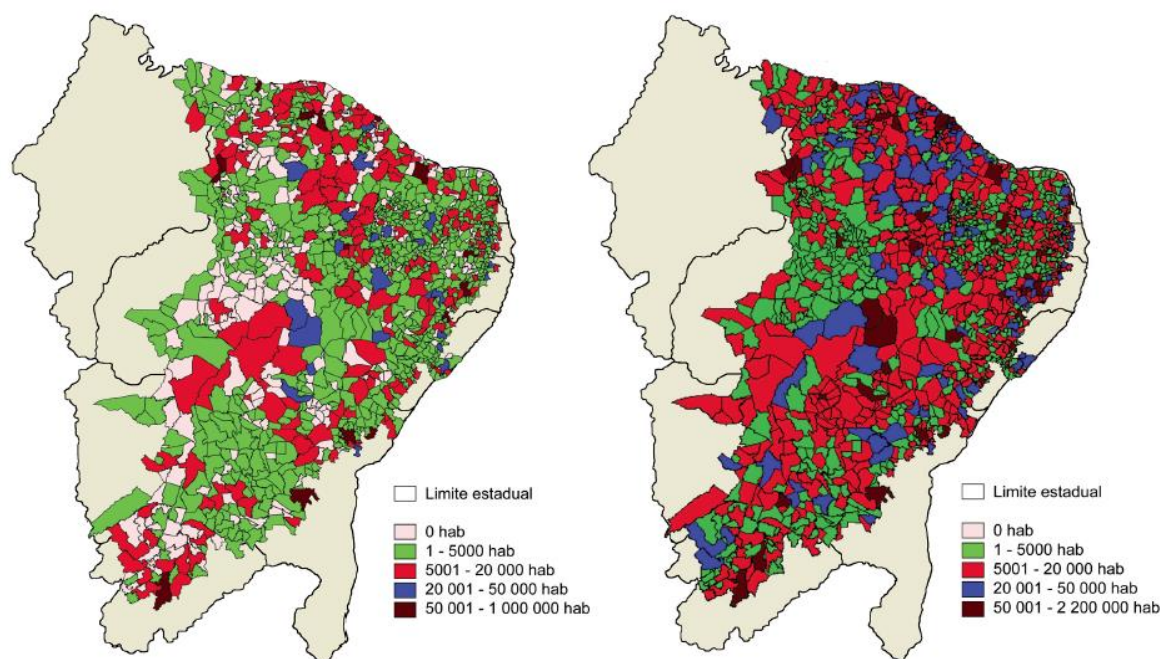
⁹ MMA. Sítio: http://www.mma.gov.br/estruturas/chm/_arquivos/biodiversidade31.pdf

¹⁰ Conselho Nacional da Reserva da Biosfera da Caatinga - CNRBCA. Secretaria de Ciência e Tecnologia e Meio Ambiente. Recife: SECTMA,2004, pg. 153



amount of rural workers in the country except the Northeast, which still has a reservation of migrants; and Investments, even timid, for small producers and family farmers.

There are thus various government social programs to ensure that people find better living conditions in the countryside, although these investments are not considered significant¹¹. Later RBCA's initiatives are shown to increase the attachment of the man in the field (**Figure 6**).



Source: Conselho Nacional da Reserva da Biosfera. Secretaria de Ciência e Tecnologia e Meio Ambiente. Recife: SECTMA, 2004.

Figure 6. Distribution of urban population in the biome - 1970 (left) e 2000 (right)

RURAL EXODUS IN BRAZIL – It is important to remember that the rural exodus in Brazil occurred more intensely in just two decades: between 1960 and 1980. This continued in the following decades, losing momentum in early 2000. According to Embrapa (Brazilian Agricultural Research Corporation), the rural exodus, cited in the first two decades, contributed almost 20% of the urbanization of the country, reaching 3.5% between 2000 and 2010¹².

According to the IBGE Census (2010), the rural exodus has slowed compared to the previous census (2000), when the migration rate of rural-urban per year was 1.31%. The last census recorded a drop of 0.65%. These figures considered the percentages of the total population.

¹¹ Pena, R. A. Geografia humana do Brasil. Sítio: <http://www.mundoeducacao.com/geografia/Exodo-rural-no-brasil.htm>. Acesso em 17/9/15

¹² ALVES, E. et. al. Êxodo e sua contribuição à urbanização de 1950 a 2010. *Revista de Política Agrícola (Embrapa)*. Ano XX – nº 2 – Abr./Maio/Jun. 2011. pg.80-88



If we consider the values of the rural exodus, from the number of migrants in relation to the total size of the population living in the countryside in Brazil, we have between 2000 and 2010, the rural exodus rate was 17.6%, a well number lower than the previous decade, which was 25.1%. In the 1980s, the rate was 26.42% and in 1970, of 30.02%. Therefore, there is clearly a trend of deceleration, while the Midwest and Northern Brazil even have a small growth in the number of rural dwellers.

2.2.4 Update on conservation function, including main changes since last report.

In relation to biodiversity, according to the paper "Representation of the National Protected Areas Caatinga system¹³", the latest Brazilian official information indicates that the Caatinga biome is home to 178 species of mammals, 591 of birds, 177 of reptiles, 79 species of amphibians, 241 fish and 221 bees¹⁴. 419 were also identified plant species. Of these, 25 are unique to the Northeast Region, with 9 of them endemic to the Caatinga and other four are endangered species. As the Caatinga is the least known ecosystem and studied in Brazil, there is still much to discover its wealth.

The plant list has 9,408 species of angiosperms and gymnosperms (phanerogams or higher plants), taken from lists that include territory larger than the Caatinga biome, ie, including all Brazilian northeast and semiarid region¹⁵.

4. THE CONSERVATION FUNCTION:

4.1 Significant changes in the main habitat types, ecosystems, species or varieties of traditional or economic importance identified for the biosphere reserve, including natural processes or events, main human impacts, and/or relevant management practices .

4.1.1. BIOSPHERE RESERVE IN THE SEMIARID – The region where is the Caatinga is also identified as semiarid and Brazilian backlands. For the general population, these three categories mean the same thing¹⁶. The Caatinga means "white forest" in the Tupi-Guarani Indian language: Caa (forest) + tinga (white). That's because during the dry season, most plants lose their leaves, leaving the whitish trunks. Thus, it is a typical semi-arid biome, drought resistant and rich in natural resources. It is considered the most extensive "dry forest" in South America, and one of the richest in the world.

The Northeast Region comprises nine Brazilian states; eight are in the geographic space of the Brazilian semiarid. Thus, the 1,794 municipalities, 1,135 are located in that area. Or almost 63.3% of the municipalities. According to Decree n. 89/2005 of the Ministry of National Integration (MI),

¹³ MMA/PNUD. Representatividade do Sistema Nacional de Unidades de Conservação na Caatinga. PNUD/Projeto BRA/00/021. Shirley N. Hauff, setembro, 2010. Brasília, DF

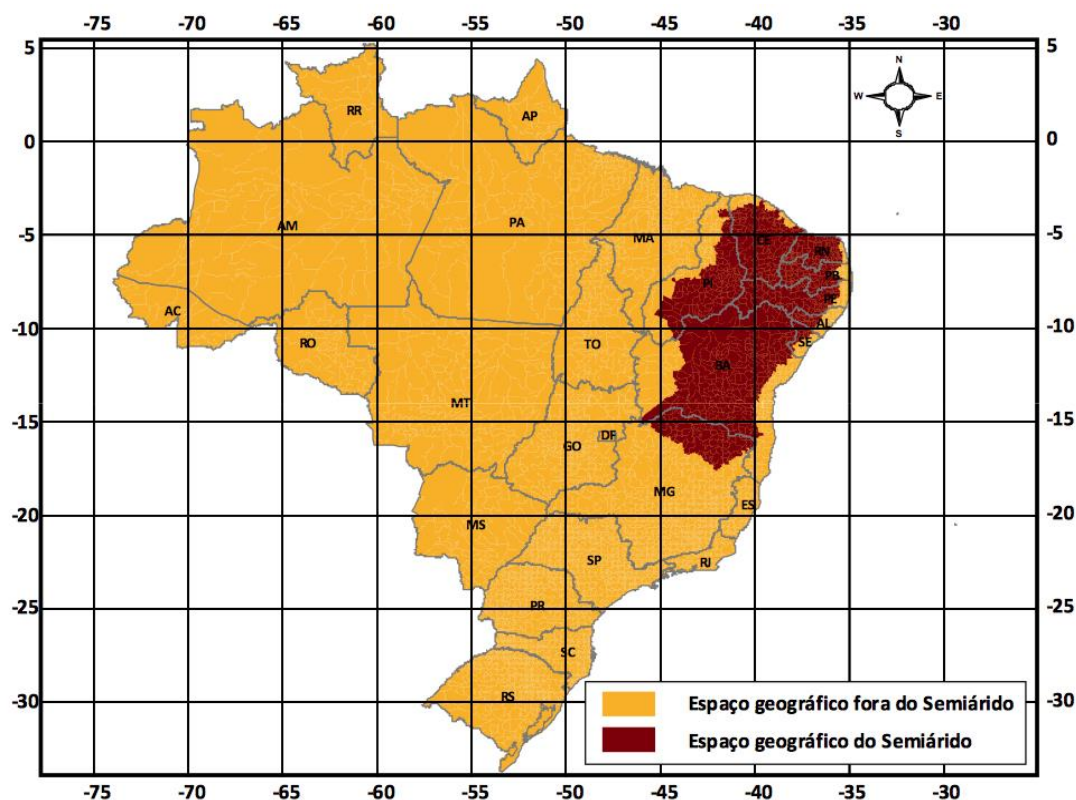
¹⁴ MMA . Sítio: <http://www.mma.gov.br/biomas/caatinga>. Acesso: 17/9/2015.

¹⁵ MMA/PNUD. Op. cit.

¹⁶ CNRBCA/ SECTMA. Op. cit.



the Semi-Arid members municipalities must meet at least one of three official criteria: average annual rainfall less than 800 millimeters, aridity index up 0.5 and higher risk of drought 60%. Most of the Biosphere Reserve is in the semi-arid Caatinga of the Northeast, with a small portion in the Southeast region (northern state of Minas Gerais), representing an area of 980,133.079 square kilometers of semi-arid, corresponding to 11.53% of the territorial size of the country¹⁷(Figure 7).



Source: INSA/MCT. Sinopse do Censo Demográfico para o Semiárido brasileiro,2010.¹⁸

Figure 7. Territorial extension of the geographic spaces inside and outside the Semiárid

Regarding the territorial extension of states, the semiarid region occupies 92.97% of Rio Grande do Norte, Pernambuco 87.6%, 86.74% of Ceará, 86.2% of Paraíba, 69.31% from Bahia, 59.41% of Piauí, 50.67% of Sergipe, Alagoas and 45.28% of 17.49% of Minas Gerais. With the exception is the state of Maranhao, which is not included in the semiarid region, as defined by the Ordinance MI n. 89/2005. All other states that integrate geographic space. Thus, the Northeast region has 56.46% of its territory in the semiarid portion and the Southeast 11.09%¹⁹.

¹⁷ INSA/MCT. Sinopse do Censo Demográfico para o Semiárido brasileiro,2010.

¹⁸ INSA/MCT. Sítio: http://www.insa.gov.br/censosab/index.php?option=com_content&view=article&id=95&Itemid=94
Acesso 18/9/15.

¹⁹ NSA/MCT. Op. cit.



However, not all municipalities in the northeastern semi-arid are part of the Caatinga Biosphere Reserve. As the Northeast Center for Plant Information (CNIP)²⁰ are 591 members of municipalities RBCA. Except the municipalities in the state of Maranhão (7), which is not included in the semi-arid region, it has to be 584 Northeastern municipalities are both in geographical area and in the Semi-Arid RBCA. This corresponds to 51.4% of them (**Figure 8**).

Municipality	Total Counties	Counties in the geographic space of the Semi-arid	% of Counties inserted in the Geographic Space of the Semi-arid	Number of counties integrating the CABR
Alagoas	102	38	37,2	22
Bahia	417	266	63,8	118
Ceará	184	150	81,5	113
Maranhão	217	----	-----	7
Paraíba	223	170	76,2	74
Pernambuco	185	122	66,0	114
Piauí	224	128	57,1	88
Rio Grande do Norte	167	147	88,0	41
Sergipe	75	29	38,7	14
TOTAL	1794	1.135	63,3	591

Figure 8. Northeastern counties integrating the Semi-arid and the CABR

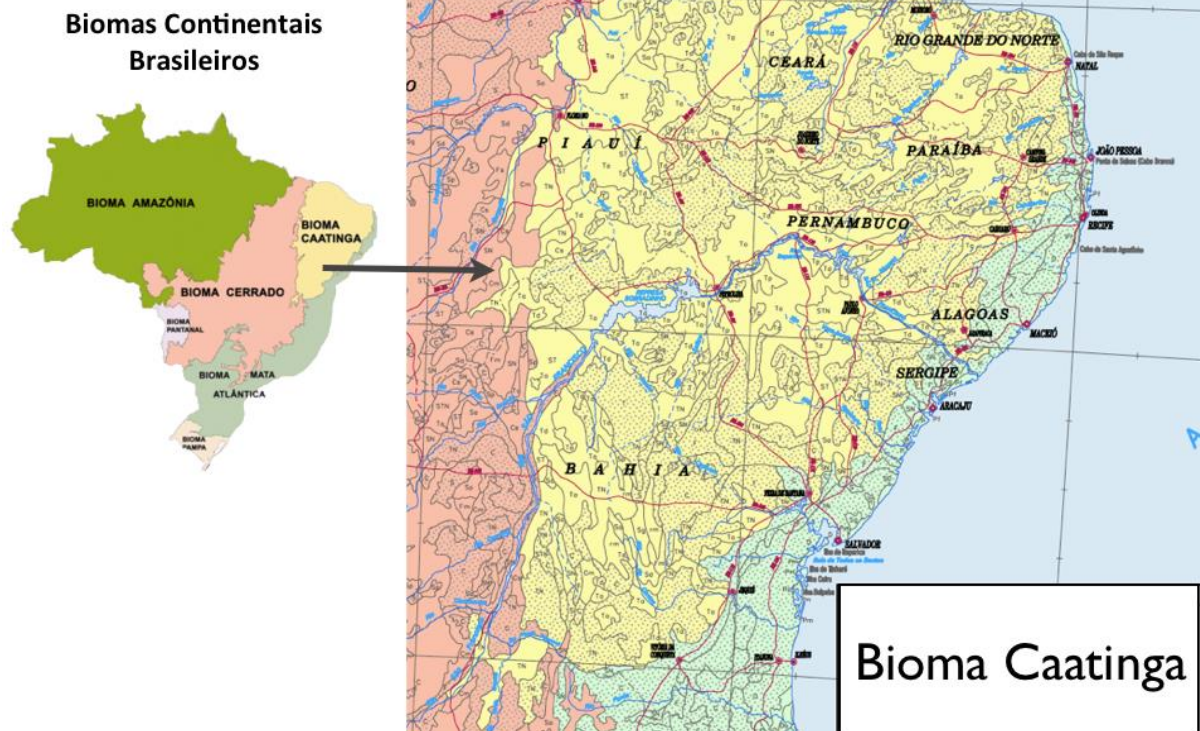
4.1.2. BIOME AREA - according to the MMA / IBGE (2015)²¹, the Caatinga Biome has approximately 844 453 km², representing 9.92 %²² of the country. Encompasses the states of Alagoas (AL) , Bahia (BA) , Ceará (CE), Maranhão (MA) , Pernambuco (PE) , Paraíba (PB) , Rio Grande do Norte (RN) , Piauí (PI), Sergipe (SE) and the north of Minas Gerais (MG) (**Figures 9 and 10**).

²⁰ Centro Nordestino de Informações sobre Plantas – CNIP. Sítio: http://www.cnip.org.br/lista_municipios.html. Acesso 11/9/15

²¹ MMA. Op. cit.

²² IBGE. Sítio. <http://www.ibge.gov.br/home/presidencia/noticias/21052004biomashtml.shtm>. Acesso em 18/9/15





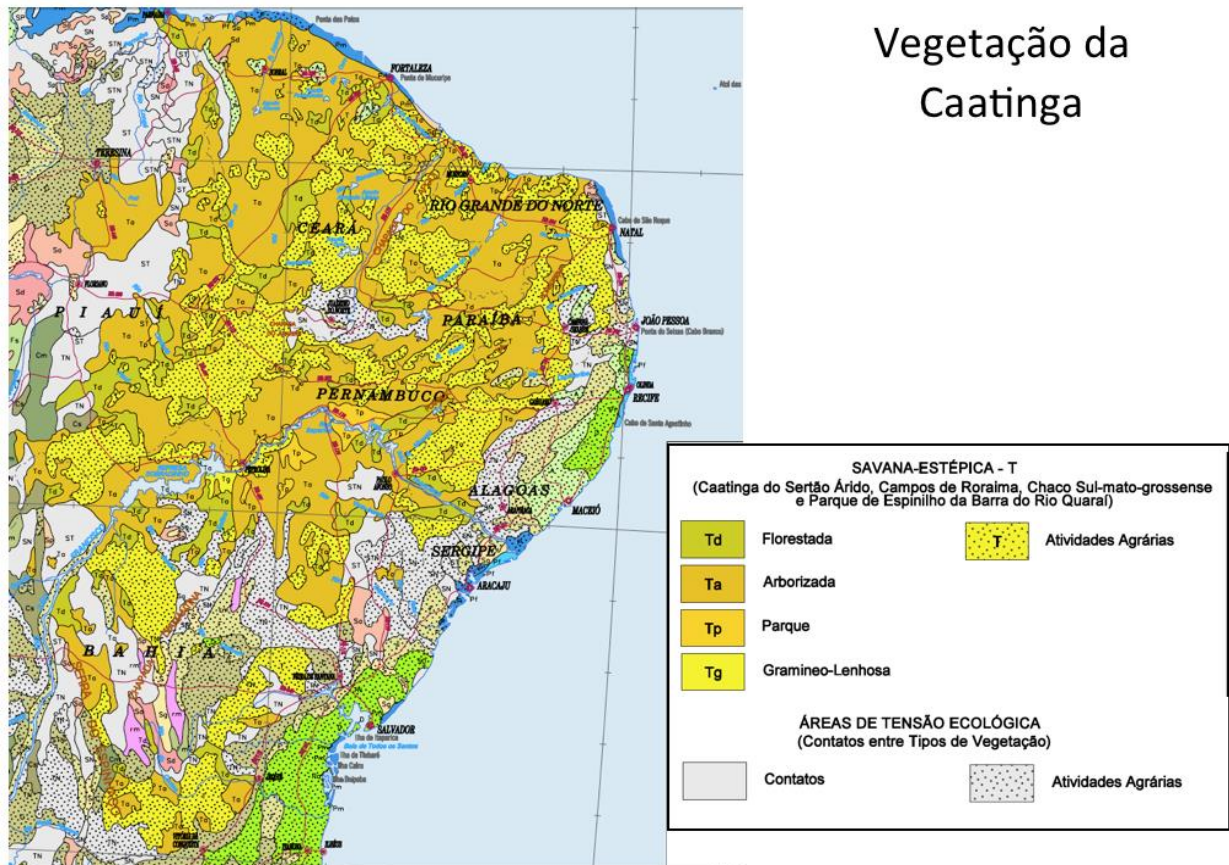
Source: IBGE. Mapas de Biomas e Vegetação, 2004.²³

Figure 9. Caatinga Biome inside the Brazilian Continental Biomes brasileiros

²³ IBGE. Op. cit.



Vegetação da Caatinga



Fonte: IBGE. Mapas de Biomas e Vegetação, 2004²⁴.

Figure 10. Caatinga Vegetation

4.1.3. BIOME'S AREA DIMENSION: comparing to other countries - as Brazil has continental dimensions, it is important to make a comparison of the Caatinga biome with an area of some countries to give an exact idea of the challenges both to preserve the Caatinga as to develop programs and projects within the Biosphere Reserve of the Caatinga .

Germany - the country has an area of 357 168 km². By comparing this territory with the area of the Caatinga Biome, fit 2.6 times that country within the Caatinga .

France - the country has a territory of 640 679 km². By comparing this territory with the area of the Caatinga Biome , fit 1.3 times that country within the Caatinga

CAATINGA BIOSPHERE RESERVE AREA DIMENSION: comparing to other countries - Now consider the RBCA inserted in the Caatinga biome , it covers an area of 198,990 km². It covers about 23.6 % of the Caatinga .

GERMANY - when comparing your area (357,168 km²) with an area of Caatinga Biosphere Reserve (198,990 km²), this represents almost 56 % of the area of Germany .

FRANCE - when comparing your area (640,679 km²) with an area of Caatinga Biosphere Reserve (198,990 km²), this corresponds to 31 % of the area of France.

²⁴ IBGE. Op. cit



CAATINGA'S BIODIVERSITY - Although it is a semi-arid region, the Caatinga is extremely heterogeneous, being recognized 12 types of adaptation to the semiarid habitats, highlighting the temporary ponds or wetland, the mountain refuges and permanent rivers like the San Francisco.²⁵

On the other hand, the Caatinga has been described in the literature as a poor region, with a few species and low degree of endemic. However, new studies have increased the list of species of different groups of the region, especially woody plants, reptiles, birds and mammals. This demonstrates the importance of the region as endemic area for those groups²⁶.

In relation to biodiversity, as the paper "Representation of the National Protected Areas Caatinga system"²⁷, the latest Brazilian official information indicates that the Caatinga biome is home to 178 species of mammals, 591 of birds, 177 of reptiles, 79 species of amphibians, 241 fish and 221 bees²⁸. 419 were also identified plant species. Of these twenty-five are unique in the Northeast, nine of them endemic to the Caatinga and the other four are endangered species. As the Caatinga is the least known ecosystem and studied in Brazil, there is still much to discover its wealth.

The plant list has 9,408 species of angiosperms and gymnosperms (phanerogams or higher plants), taken from lists that include territory larger than the Caatinga biome, ie, including all Brazilian northeast and semiarid region²⁹.

Table 2: Number of families, genera, species to groups of mammals, birds, reptiles, amphibians, fish and bees in Caatinga, including the number of cited endemic species and species with threatened status in Brazil (Endangered or Extinct as IN 03/03 or 05/04, MMA) in the State of Minas Gerais (MG), the recommendation of the IUCN (2007) and Biodiversitas (2002) (MMA & Biodiversitas, 2008).

GROUPS	Number of Families	Number of Genera	Number of Species	Number of Endemic Species	Number of Threatened Species - Brazil	Number of Threatened Species - MG State	Number of Threatened Species - World	Number of Threatened Species - Biodiversitas
Mammals	31	105	178	3	17	14	12	20
Birds	74	355	590	22	51	13	30	51
Reptiles	24	85	171	38	2	4	2	2
Anphibies	10	28	74	2	1	1	1	1
Fishes	30	113	241	136	11	11	11	11
Bees	5	86	221	0	1	1	1	1

Source: MMA. Representatividade do Sistema Nacional de Unidades de Conservação na Caatinga, 2010.

4.1.4. PROTECTED AREAS IN THE CAATINGA BIOSPHERE RESERVE

²⁵ MMA, 2003. In http://www.mma.gov.br/estruturas/chm/_arquivos/biodiversidade31.pdf

²⁶ MMA, op. cit

²⁷ MMA/PNUD. Representatividade do Sistema Nacional de Unidades de Conservação na Caatinga. PNUD/Projeto BRA/00/021. Shirley N. Hauff, setembro, 2010. Brasília, DF.

²⁸ MMA. Sítio: <http://www.mma.gov.br/biomas/caatinga>. Acesso: 17/9/2015

²⁹ MMA/PNUD. Op. cit.



The total area of protected areas of the Caatinga in the National Register of Protected Areas (CNUC) is over 62,697,000 km², distributed in 157 protected areas (federal, state and private). This means that the percentage biome protected through the UCS is 7.6%³⁰, representing 4.1% of the total area of the National System of Protected Areas (SNUC).

The percentage of protected areas protection by administrative sphere is relatively balanced between the federal level (4.2%) and state (3.4%), and almost absent representing the municipal level.

The SNUC comprises 12 categories divided into 2 groups according to specific objectives of management and permitted uses. It is observed that most of the biome (6.4%) is covered by protected areas of *Sustainable Use* group, which reconciles nature conservation with the sustainable use of a portion of its natural resources, practically represented by the category Environmental Protection Area, with 6.3%.

Protected Areas belonging to the *Integral Protection* group represent 1.2% of the biome, which applies a different strategy to preserve nature, admitting only the indirect use (such as visitation, scientific research, environmental education, etc.) of your resources natural. In this case the category that stands out is the National Parks, State or Municipal, with 0.9%.

Since the establishment of SNUC, there was a significant increase in area between 2005 and 2006, which has remained ever since.

FEDERAL PROTECTED AREAS

Regarding protected areas inserted in the Caatinga Biosphere Reserve, has thirteen full protection and sustainable use nine . le they are twenty-two federal protected areas in CABR , not counting the private reserves , which will be seen ahead. However , not all of them were created and implemented until 2001, the year of designation CABR . Some occurred thereafter (**Figure 11**) .

CATEGORY	TYPE	CAATINGA BIOME Number of UC's	Names of UC's	CABR Number of UC's	Names of UC's in CABR
INTEGRAL PROTECTION	Ecological Station	4	ESEC de Aiuaba; ESEC do Castanhão; ESEC do Seridó; ESEC Raso da Catarina	4	ESEC de Aiuaba; ESEC do Castanhão; ESEC do Seridó; ESEC Raso da Catarina
	Biological Reserve	1	REBIO de Serra Negra	1	REBIO de Serra Negra
	National Park	7	PARNA da Chapada da Diamantina; PARNA da Furna Feia; PARNA da Serra da Capivara; PARNA da Serra das Confusões; PARNA de Sete Cidades; PARNA de Ubajara; PARNA do Catimbau	7	PARNA da Chapada da Diamantina; PARNA da Furna Feia; PARNA da Serra da Capivara; PARNA da Serra das Confusões; PARNA de Sete Cidades; PARNA de Ubajara; PARNA do Catimbau
	Natural Monument	1	MONA do Rio São Francisco	1	MONA do Rio São Francisco

³⁰ MMA - Cadastro Nacional de Unidades de Conservação. <http://www.mma.gov.br/areas-protegidas/cadastro-nacional-de-ucs>.



SUSTAINABLE USE	Environmental Protection Area	3	APA Chapada do Araripe; APA Serra da Ibiapaba; APA Serra da Meruoca	3	APA Chapada do Araripe; APA Serra da Ibiapaba; APA Serra da Meruoca
	Area of Relevant Ecological Interest	2	ARIE Cocorobó; ARIE Vale dos Dinossauros	1	ARIE Cocorobó
	National Forest	6	FLONA Araripe-Apodi; FLONA Contendas do Sincorá; FLONA de Açú; FLONA de Negreiros; FLONA de Palmeiras; FLONA de Sobral	5	FLONA Araripe-Apodi; FLONA de Açú; FLONA de Negreiros; FLONA de Palmares; FLONA de Sobral
	TOTAL	24		22	

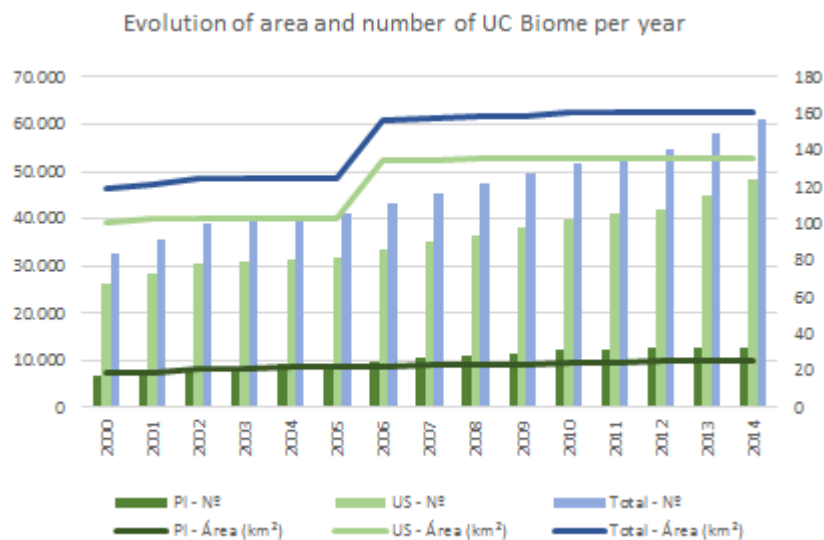
OBS: Not included the Reservas Particulares de Patrimônio Natural (RPPN).

Figure 11. Federal Conservation Units in the Caatinga Biome and inside the CABR

PROTECTED AREAS IN THE CAATINGA BIOSPHERE RESERVE – 2002 A 2014

The creation of the Caatinga Biosphere Reserve has contributed to enhance the conservation of biodiversity of the Caatinga biome. The job of creating federal protected areas, with some partnerships with the states, after 2009, has spurred the creation of state protected areas.

Based on information available on the CNUC, the Graph below shows the progress in the creation of protected areas and expansion of the total protected territory between 2000 and 2014.



In total, it has:

- Parks (PARNA) - 9;
- Monumentos Naturais (MONA) – 3;
- Áreas de Proteção Ambiental (APA) - 3;
- Áreas de Relevante Interesse Ecológico (ARIE) -2;
- Florestas Nacionais (FLONA) - 5;
- Reservas Particulares do Patrimônio Natural (RPPN) – 26.



Foram criadas vinte e oito unidades de conservação na Reserva da Biosfera da Caatinga no período entre 2002-2014 (**Figura 12**).

Group	Category of the Conservation Unit	Federal	State	Municipal
Integral Protection	Ecological Reserve	-	-	-
	Biological Reserve	-	-	-
	Park	3	5	1
	Natural Monument	1	2	-
Sustainable Use	Environmental Protection Area	1	2	-
	Area of Relevant Ecological Interest	-	2	-
	National Forest	5	-	-
	Private Reserve of Natural Heritage	26	-	-

Figure 12. Protected Areas in the CABR (2002-2014)

It should be noted that in 2009, the São Francisco River Natural Monument was created, with 27,000 hectares, encompassing the states of Alagoas, Bahia and Sergipe. In 2010, the National Park Confusions, Piauí, was expanded by 300,000 hectares, to read 823,435.7 hectares. In 2012, created the Furna Feia National Park, in the municipalities of Baraúna and Natal, in the state of Rio Grande do Norte, with 8,494 ha³¹.

4.1.5. PRIORITY AREAS FOR CONSERVATION – One of the biggest challenges when it comes to biodiversity conservation decision-makers is to set national priorities, regional and local policies to be translated into concrete actions, with the efficient use of financial resources³². In this context, the Ministry of the Environment between 1998 and 2000, held the first "Evaluation and Identification of Areas and Priority Actions for the Conservation of Brazilian Biomes". This resulted in the definition of 900 areas, which were imposed by specific legislation in 2004. Subsequently, changes were made in the priority areas for all Brazilian biomes. As a result, the mapping was generated throughout Brazil

CAATINGA PRIORITY AREAS. Eighty -two were identified priority areas for biodiversity conservation of the Caatinga . Of these twenty- seven were classified as areas of extreme biological importance , twelve as areas of very high importance , eighteen as areas of high importance and twenty five areas poorly understood , but likely importance . Apart from these, a corridor connecting priority areas in Minas Gerais and Bahia has also been proposed . The high number of poorly known areas emphasizes the need for a development program for biological inventory of Caatinga³³.

The priority areas vary greatly in size from 235 km² to 24,077 km². In total, the priority areas covered about 436,000 km² , ie 59.4 % of the Caatinga biome. The biological importance of extreme areas comprise 42% of the priority areas, or 24.7 % of the Caatinga .

³¹ MMA. Sítio <http://www.mma.gov.br/biomas/caatinga>. Acesso em 16/9.15

³² MMA. Sítio: <http://www.mma.gov.br/estruturas/chm/arquivos/biodiversidade31.pdf>. Acesso 17/09/15.

³³ MMA Sítio: <http://www.mma.gov.br/biodiversidade/biodiversidade-brasileira/areas-prioritarias/item/510>



The main action recommended for the majority (54.8 %) of the priority areas is the integral protection. This action was recommended for 81 % of the areas of extreme importance, 75% of very high importance areas and 72% of highly important areas. In contrast, the main action recommended for most (96%) of insufficiently known areas is scientific research. For most areas, the recommended action should be taken urgently (43.9%), short-term (30.5%) or medium term (25.6%).

PRIORITY AREAS FOR CONSERVATION IN THE CAATINGA BIOSPHERE RESERVE - the establishment of Priority Areas for Conservation, to create protected areas in the Caatinga four subregions have been identified, based on the degree of threat from the use of natural and socioeconomic resources: a) the São Francisco River margins; b) Areas of groundwater aquifers; c) Areas with mining activity; d) areas subject to desertification. Within the latter sub-region is inserted part of the Biosphere Reserve of the Caatinga.

From the results presented in the study "Representation ecosystem Caatinga in Priority Areas and Protected Areas" it was possible to separate the municipalities that are part of the RBCA. Therefore, it has to be the 51 priority areas of Caatinga³⁴, are within the Biosphere Reserve of the Caatinga. This represents 72.5% of the priority areas. I.e. confirms the studies that led to the creation and proposed expansion of core zones, damping and transition of RBCA (**Figures 13 to 16**).

Priority Areas for conservation selected for the creation of conservation units in the Caatinga and CABR		
State	Number of MMA Priority Areas in the Caatinga	Number of Priority Areas
Bahia (BA)	5	5
Ceará (CE)	17	11
Paraíba (PB)	7	3
Pernambuco (PE)	9	9
Piauí (PI)	10	8
Rio Grande do Norte	2	1
Sergipe (SE)	1	-
TOTAL	51	37

Source: MMA, 2010

Figure 13 . Priority Areas for Conservation– Caatinga and CABR

SUMMARY CAATINGA

The Caatinga Biosphere Reserve is 100 % within the Caatinga biome. With respect to priority areas for conservation in Brazil within the CABR, the areas identified as extremely high take up 63.05%, followed by areas with very high priority (12.97 %), the high (12.62%) and insufficient knowledge (11.36%). Regarding the use, according to IBGE data, 70.23 % of the Biosphere Reserve is grassland, there also including natural and planted pastures. Next are forest areas, with 14.18%, artificial areas (10.55%) and agricultural areas with 5.03% .

³⁴ Representatividade dos ecossistemas da Caatinga nas Áreas Prioritárias e Unidades de Conservação



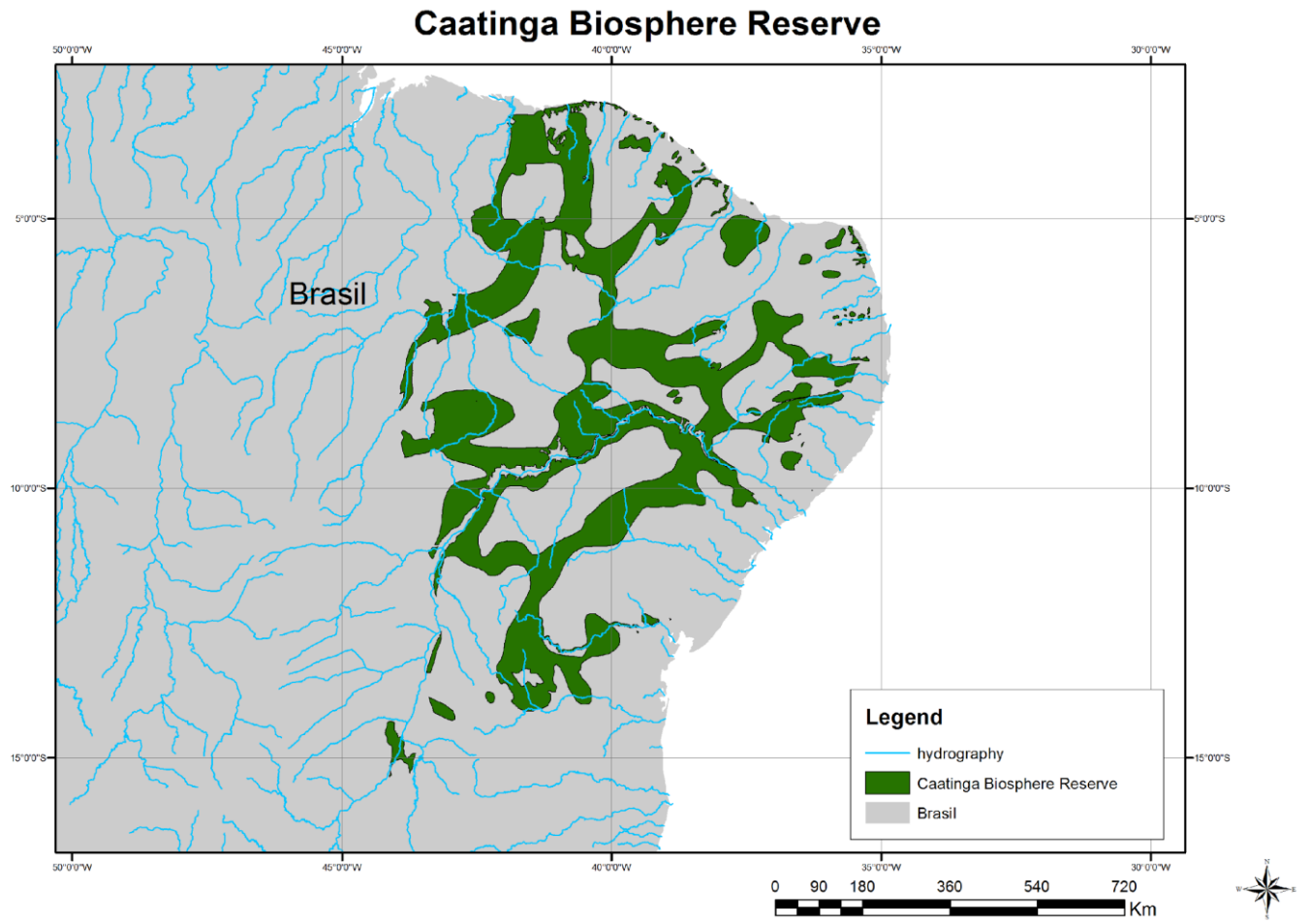


Figure 14. Biosphere Reserve



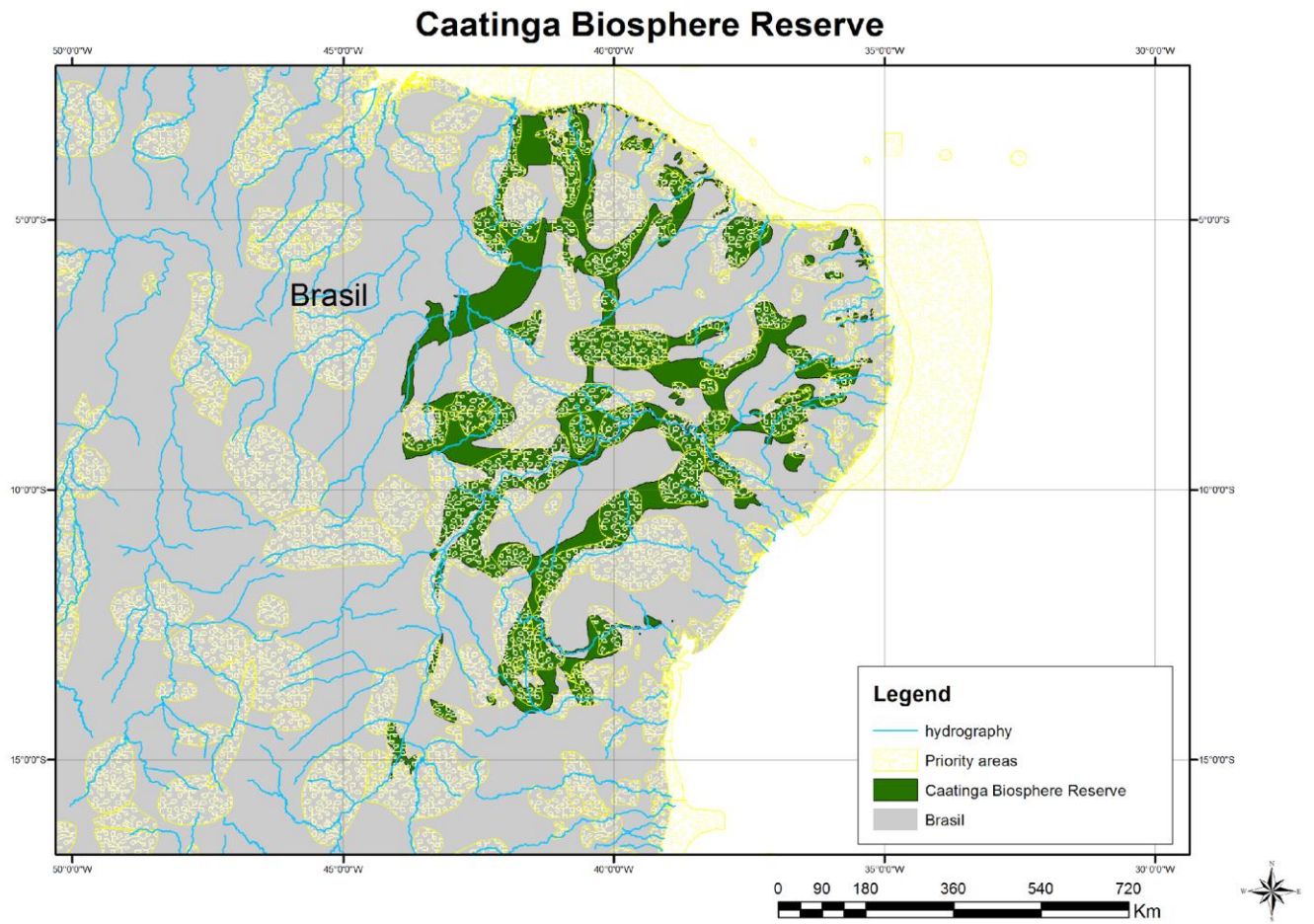


Figura 15. Biosphere Reserve and Priority Areas



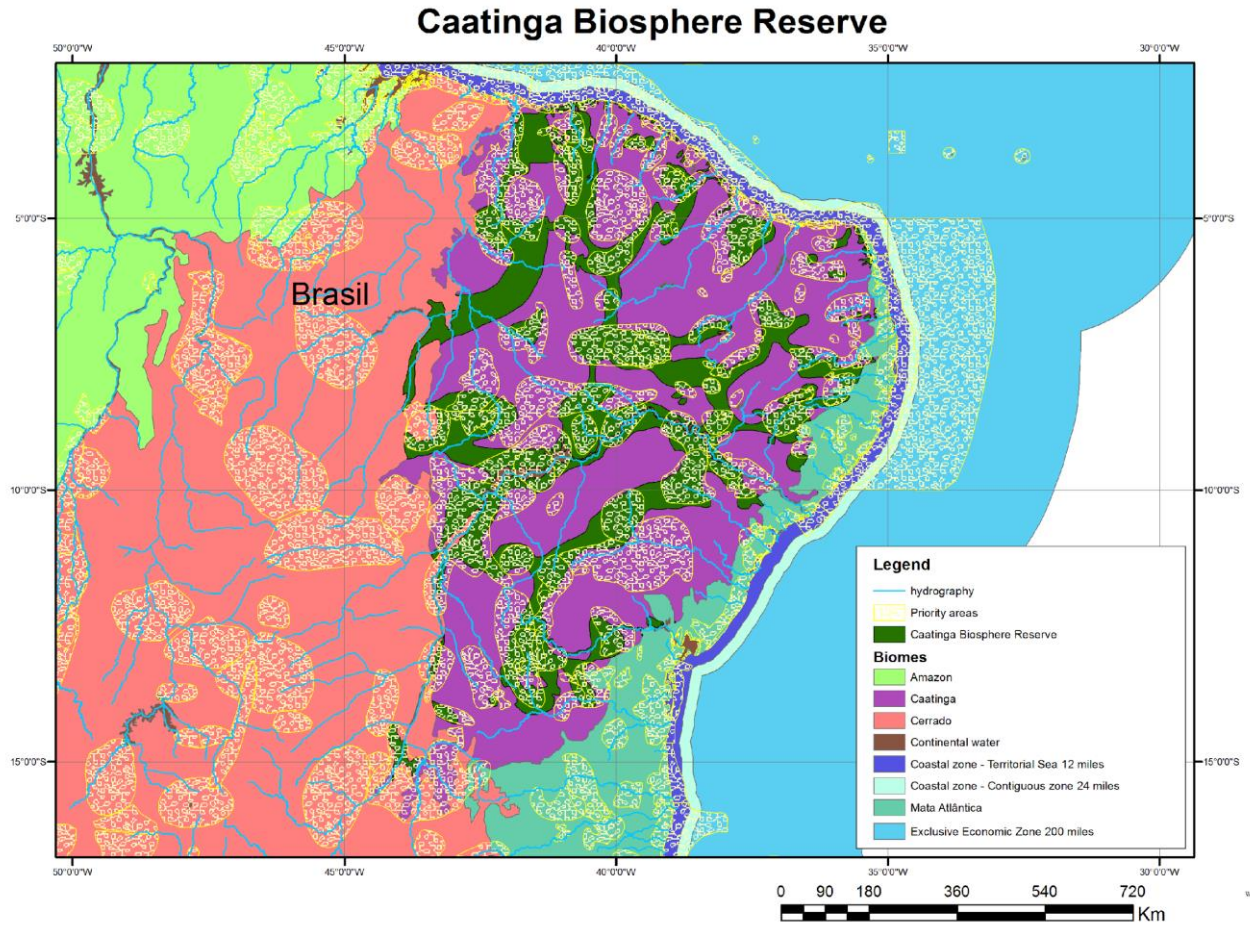


Figura 16. Biosphere Reserve and Biomes



4.1.6. FAUNA SPECIES THREATENED BY EXTINCTION IN THE CAATINGA – Brazil is responsible for managing the most important asset of biodiversity in the world. There are over 120,000 species of invertebrates and about 8,930 species of vertebrates (711 mammals, 1,900 birds, 732 reptiles, 973 amphibians, 3,133 fish and 1,376 continental marine fish). Between 2010 and 2014 were evaluated 12,256 *taxa* of fauna, including all vertebrates described for the country. They were 732 mammals, 1,980 birds, 732 reptiles, 973 amphibians and 4,507 fish and 3,131 freshwater (including 17 rays) and marine 1,376, totaling 8,924 vertebrates. There were also studied 3,332 invertebrates, including crustaceans, molluscs, insects, sponges, millipedes, among others. To assess the 12,256 *taxa*, ICMBio held over these five years 73 workshops for evaluation and 4 to validate the results. It was also signed a term of reciprocity between ICMBio and the International Union for Conservation of Nature (IUCN). of which 1,173 appear in the list of endangered.

The results indicate 1,173 threatened *taxa* in Brazil, which are listed in two Administrative Rules issued by the Ministry of Environment (MMA)³⁵:

- MMA Administrative Rule N. 444, of December 17, 2014 (terrestrial species and aquatic mammals): 698 *taxa*.
- MMA Administrative Rule N. 445, of December 17, 2014 (fish and aquatic invertebrates): 475 *taxa*.

On the 1173 *taxa* officially recognized as threatened are 110 mammals, 234 birds, 80 reptiles, 41 amphibians, 353 fish bone (310 freshwater and 43 marine), 55 cartilaginous fish (54 marine and one freshwater), 1 hagfish and 299 invertebrates. They are a total of 448 species Vulnerable (VU), 406 Endangered (EN), 318 Critically Endangered (CR) and one Extinct in the Wild (EW).

Seventeen-causing types of decline of animal species threatened with extinction in Brazil. The majority of species (88.4%) are threatened by habitat destruction and deforestation (73.9%), all of which are more intense in the Cerrado, the Atlantic Forest and Caatinga. However, this is not restricted to these biomes. Hunting and persecution appear below, affecting 53.6% and 23.2% of species, respectively³⁶.

That's over half the species is threatened by an illegal activity in the country, except in the state of Rio Grande do Sul, where it is permitted and controlled by the federal agency Brazilian Institute of Environment and Renewable Natural Resources - IBAMA

The Caatinga is one of the most affected by human activities biomes. According to the Ministry of Environment, more than 80 % of its area has been altered by human action, second only to the Atlantic Forest biome. This degradation occurs due to deforestation, logging, fires, extraction of native forest, monoculture of sugarcane, and especially, the replacement of native plant species in pastures. In addition, the region, according to IBGE, had in 2010 about 27 million inhabitants, and mostly facing socio-economic and environmental problems. The low level of income,

³⁵ ICMBio <http://www.icmbio.gov.br/portal/biodiversidade/fauna-brasileira/60-fauna-brasileira/2741-lista-de-especies-ameacadas-saiba-mais.html>

³⁶ ICMBio. Sítio: <http://www.icmbio.gov.br/portal/biodiversidade/fauna-brasileira/lista-de-especies/livro-vermelho>



education, lack of basic sanitation in several municipalities and the high mortality rate are factors that have, in many cases associates. These, combined with increasing desertification, which is aggravated by climate change, brings a more intense threat landscape of extinction biodiversity of Caatinga .

The Ministry of Environment is conducting a process, in partnership with several institutions, to characterize the spatial distribution of threatened species, seeking to identify the territories where they are located such species.

Once the characterization of the spatial distribution process of the endangered species listed in the current official list is still in process, we describe here the results obtained from the last list, as follows, published in 2008. The Ministry of the Environment created within the National Biodiversity Commission - CONABIO, a Standing Technical Chamber of Endangered Species and Species Threatened overexploited or overexploitation. It is a consultative forum, with the participation of representatives of governmental and non -governmental. In 2008, it launched the "Red Book of Brazilian Fauna Threatened with Extinction"³⁷.

According to the Red Book (2008) categories of threat appear as follows for the fauna of the Caatinga

(Figure 17 to 22).

Fauna	Categorias de Ameaça				
	Extinct species	Extinct species in the environment	Species in critical danger of extinction	Species in danger of extinction	Species vulnerable to extinction
Birds	-	2	3	12	23
Mammals and Reptiles	-	-	2	1	7
Invertebrates and Insects	-	-	3	3	4

Source: MMA/ Biodiversitas, 2008.

Figure 17 : Extinction Threat categories in the Caatinga

³⁷ ICMBio. Sítio: <http://www.icmbio.gov.br/portal/biodiversidade/fauna-brasileira.html>



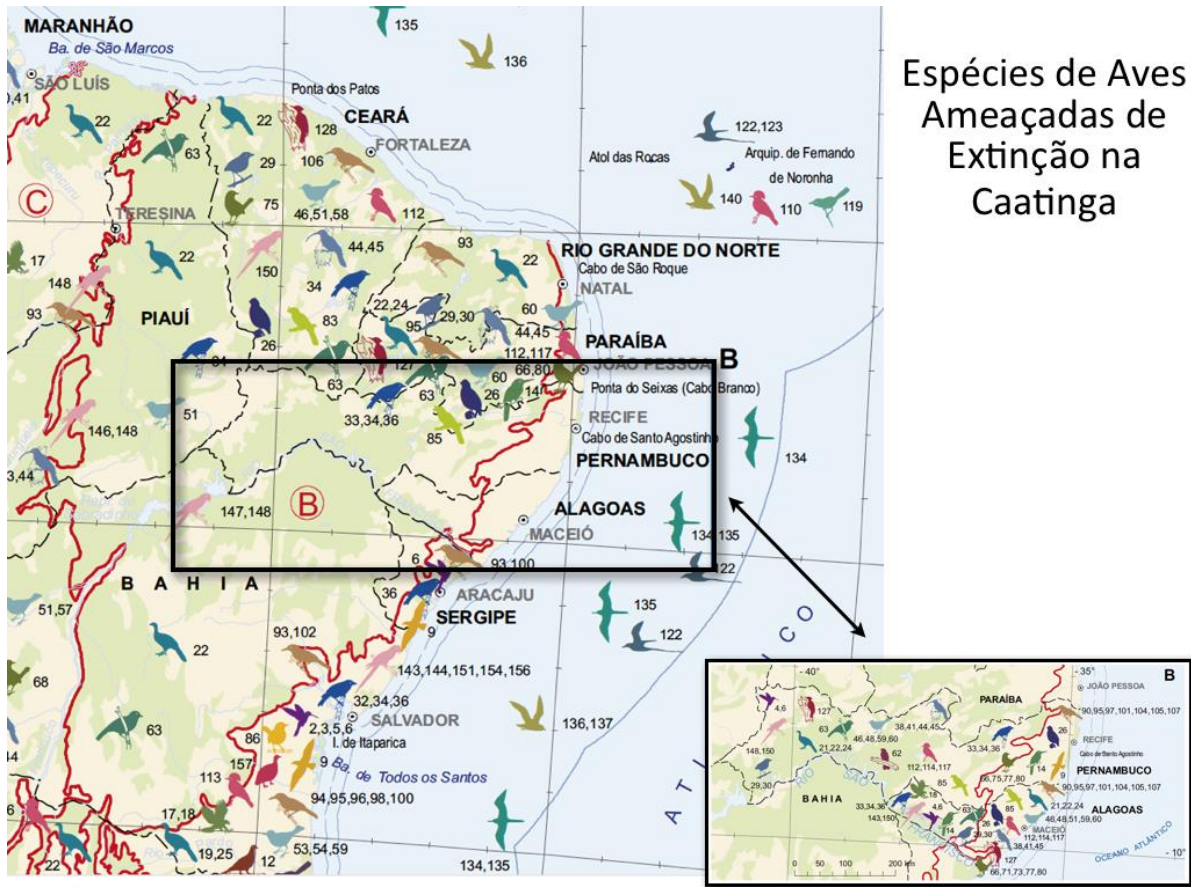


Figure 18. Bird Species threatened by extinction in Caatinga



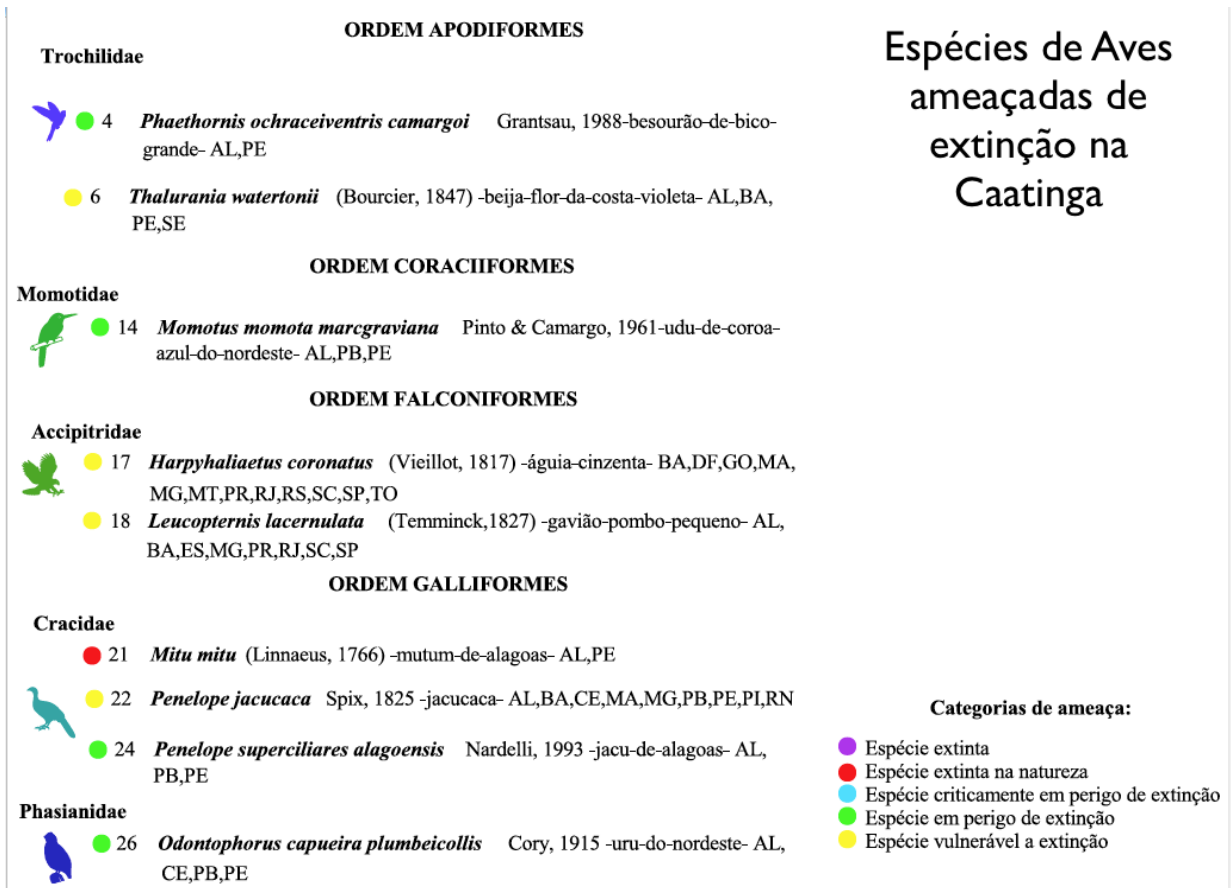


Figure 19. Bird Species threatened by extinction in Caatinga

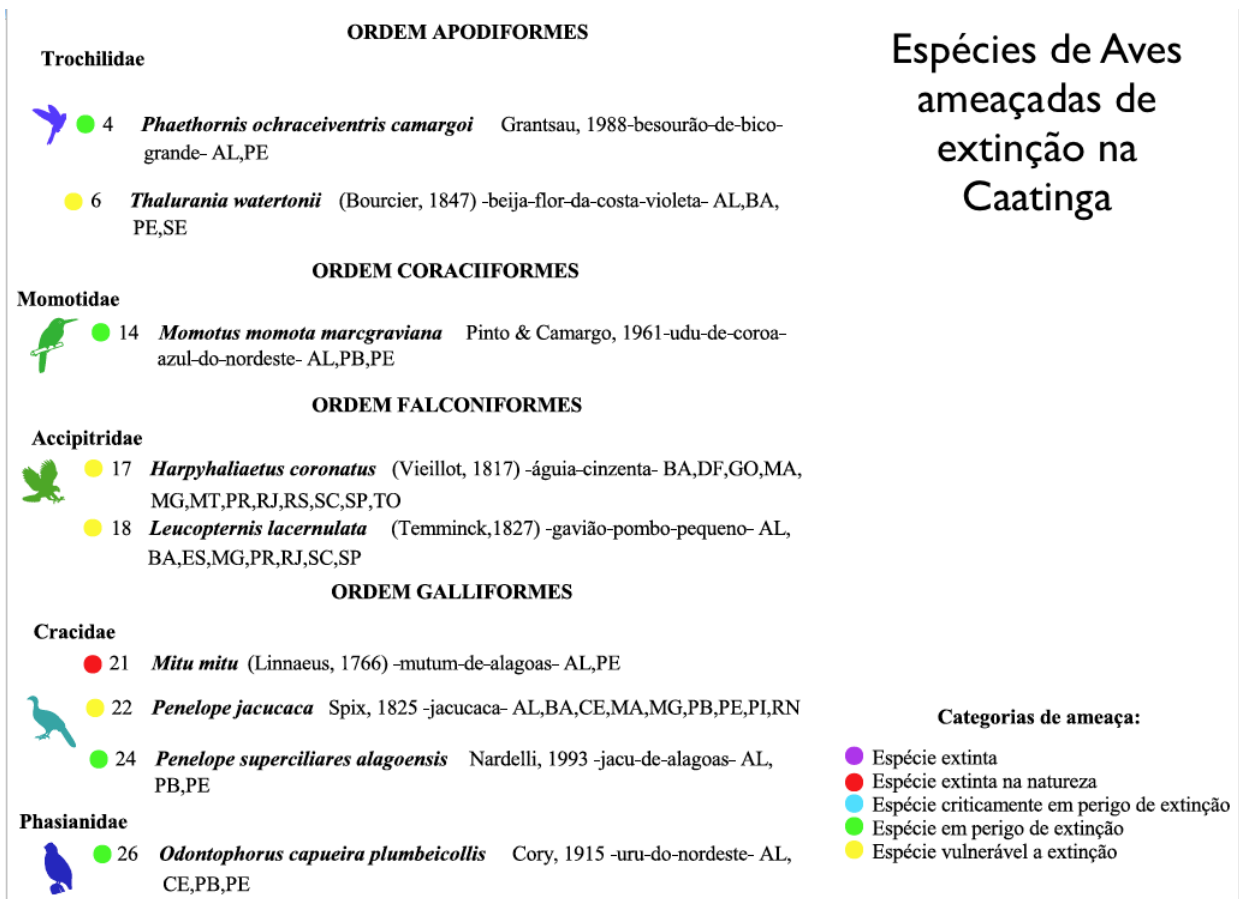


Figure 20. Bird Species threatened by extinction in Caatinga

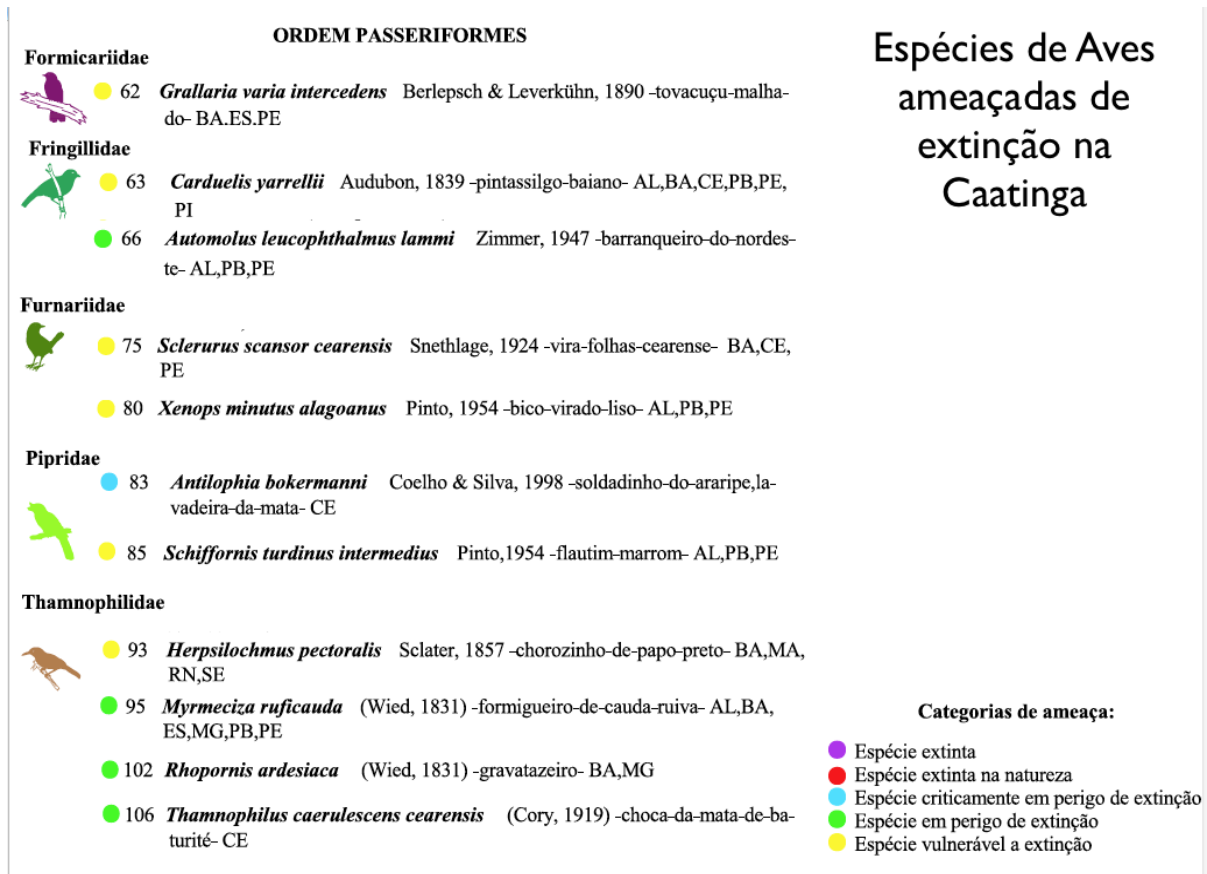



Figure 21. Bird Species threatened by extinction in Caatinga - B


ORDEM PASSERIFORMES

Tyrannidae

-  ● 108 *Alectrurus tricolor* (Vieillot, 1816) -galito- DF,GO,MG,MS,MT,PR,SP
- 112 *Hemitriccus mirandae* (Snethlage, 1925) -maria-do-nordeste- AL,CE,PB,PE
- 113 *Phylloscartes beckeri* Gonzaga & Pacheco, 1995 -borboletinha-baiano- BA
- 114 *Phylloscartes ceciliae* Teixeira, 1987 -cara-pintada- AL,PE
- 117 *Platyrinchus mystaceus niveigularis* Pinto, 1954 -patinho-do-nordeste- AL, PB,PE


ORDEM PICIFORMES

Picidae

-  ● 127 *Picumnus exilis pernambucensis* Zimmer, 1947 -pica-pau-anão-dourado- AL,PB, PE
- 128 *Picumnus limae* Snethlage, 1924 -pica-pau-anão-da-caatinga- CE


ORDEM PSITTACIFORMES

Psittacidae

- 143 *Amazona rhodocorytha* (Salvadori, 1890) -chauá- AL,BA,ES,MG,RJ,SP
-  ● 146 *Anodorhynchus hyacinthinus* (Latham, 1790) -arara-azul-grande- AP,BA,GO,MA, MG,MS,MT,PA,PI,SP,TO
- 148 *Cyanopsitta spixii* (Wagler, 1832) -ararinha-azul- BA,MA,PE,PI,TO
- 150 *Pyrrhura anaca* (Gmelin, 1788) -cara-suja- AL,CE,PE

ORDEM TINAMIFORMES

Tinamidae

-  ● 157 *Crypturellus noctivagus noctivagus* (Wied, 1820) -jaó- BA,ES,MG,PR,RJ,RS, SC,SP

Espécies de Aves ameaçadas de extinção na Caatinga

Categorias de ameaça:

- Espécie extinta
- Espécie extinta na natureza
- Espécie criticamente em perigo de extinção
- Espécie em perigo de extinção
- Espécie vulnerável a extinção

Figure 22. Bird Species threatened by extinction in Caatinga

Espécies de Mamíferos e Répteis ameaçados de extinção na Caatinga

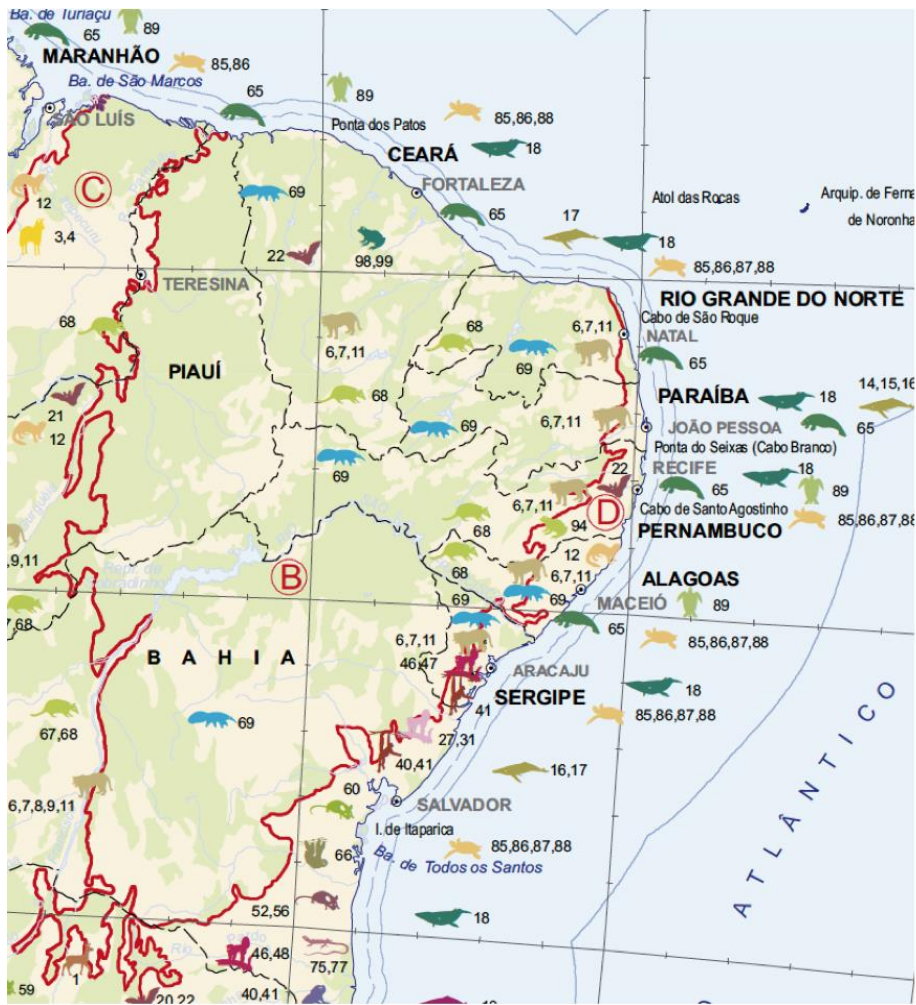


Figure 23. Mammals and Reptiles Species threatened by extinction in Caatinga - A



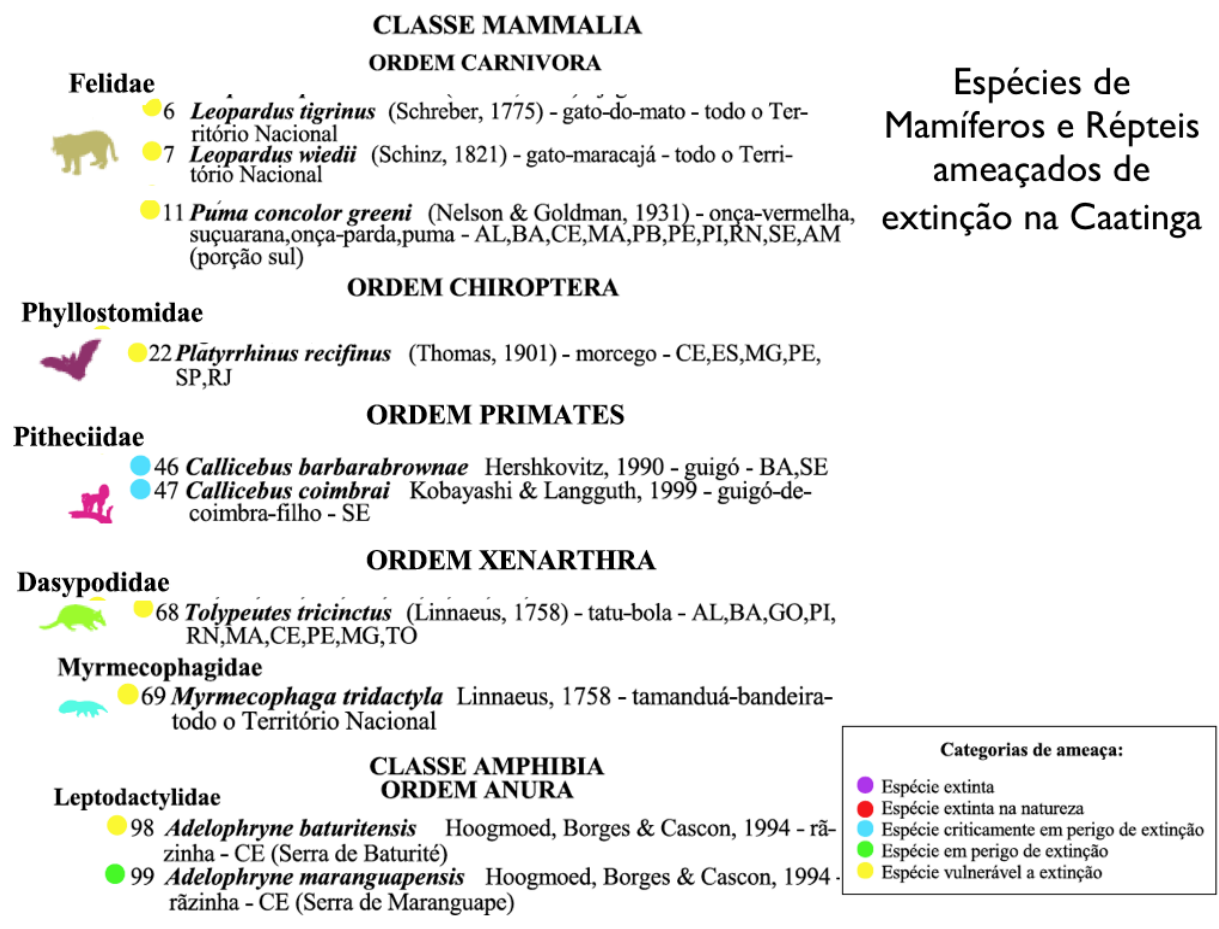


Figure 24. Mammals and Reptiles Species threatened by extinction in Caatinga - B

Espécies de Invertebrados e Insetos ameaçados de extinção na Caatinga



Figure 25. Invertebrate and Insects Species threatened by extinction in Caatinga



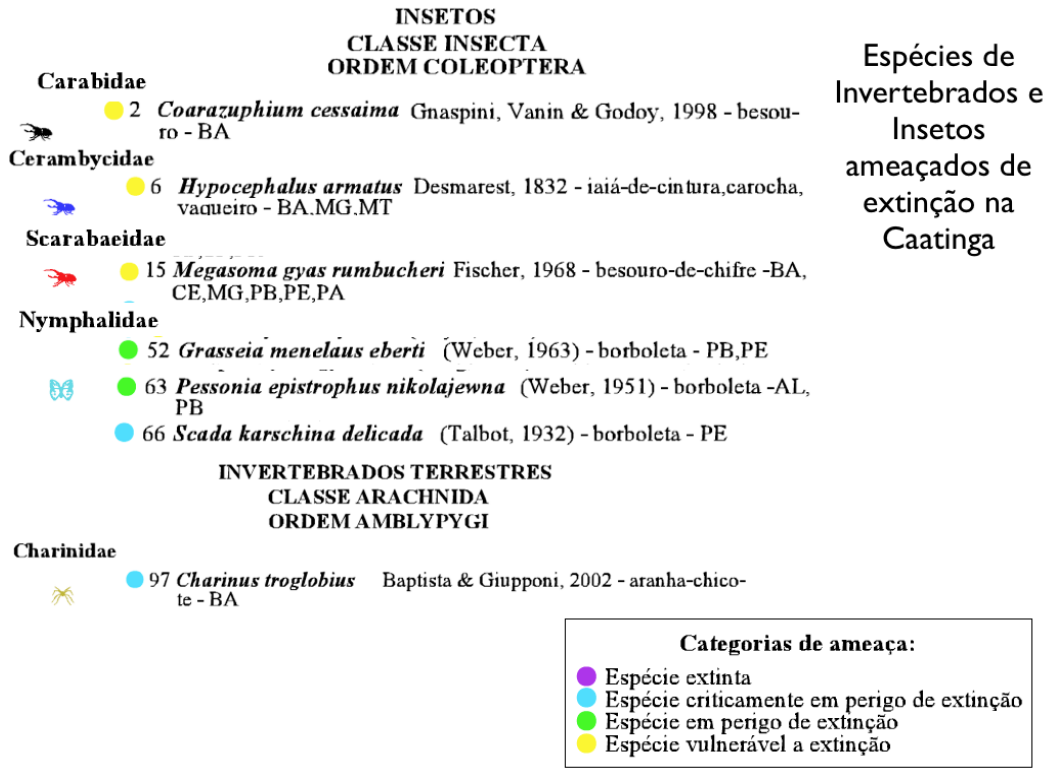


Figure 26. Invertebrate and Insects Species threatened by extinction in Caatinga - A



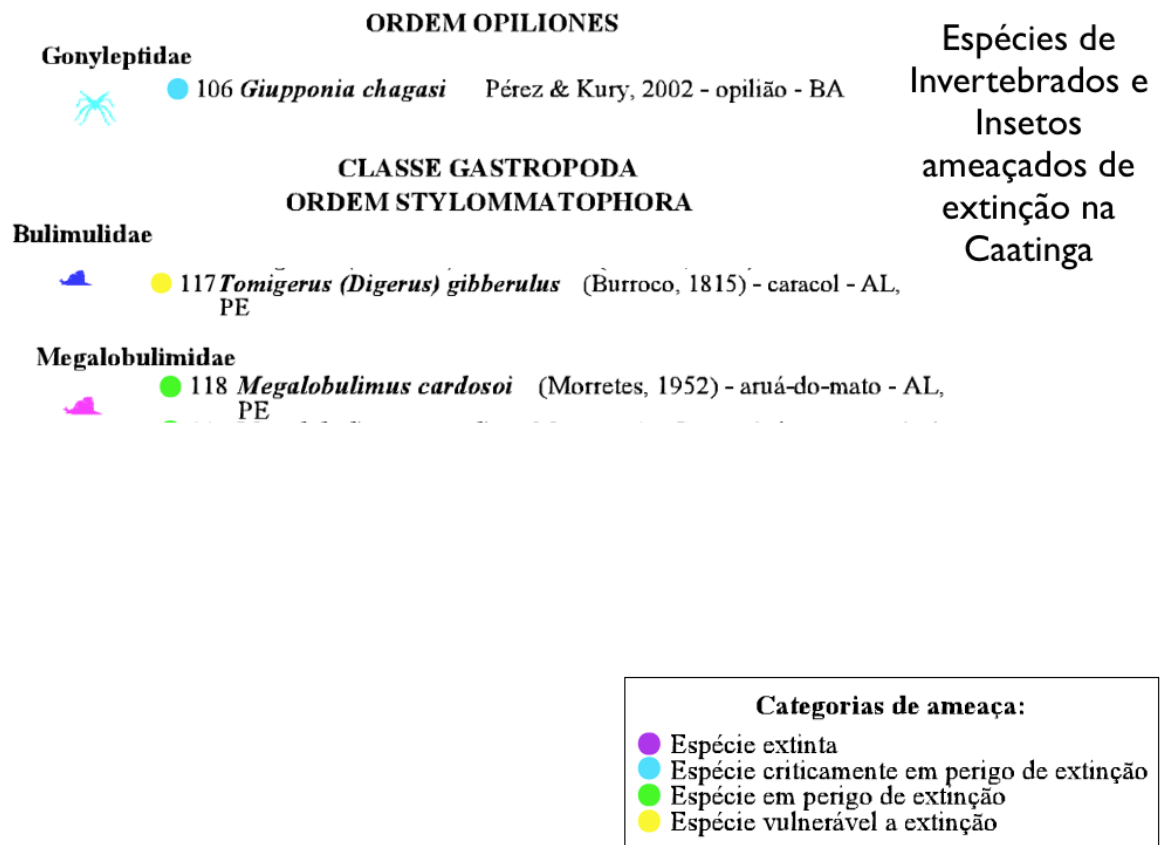


Figure 27. Invertebrate and Insects Species threatened by extinction in Caatinga - B

4.2 Describe the main conservation programmes that have been conducted in the biosphere reserve over the past ten years as well as current on-going ones.

There are several federal, state and local programs developed over the past ten years in the Biosphere Reserve of the Caatinga. However, it is important to separate those that have been developed by the RBCA program and those developed in the Caatinga biome, but within municipalities that make up the CABR. In this case, there was no direct participation of the National Book Council of the Caatinga Biosphere and / or its state committees

4.2.1. FEDERAL PROGRAMS INSIDE THE CAATINGA BIOSPHERE RESERVE

4.2.1.1. Climate Change in Brazil - the National Policy on Climate Change was established in 2009. It formalizes the voluntary commitment of Brazil to the UN Framework Convention on Climate Change to reduce greenhouse gas emissions between 36.1 % and 38.9 % of projected emissions by 2020. The instruments for its implementation are, among others:



National Plan on Climate Change³⁸, the National Fund on Climate Change³⁹ and Communication of Brazil to the Framework Convention of the United Nations on Climate Change.

Fighting desertification and mitigating the effects of drought - since 1997, Brazil is a signatory of the UN Convention to Combat Desertification - CCD . From its tasks in the CCD at the same time attended a commitment of the Brazilian government, upon ratification of this Convention , created the National Action Program to Combat Desertification and Mitigate the Effects of Drought - PAN Brazil^{40,41}

Climate Changes (mitigation and adaptation) and susceptible areas to desertification in the Caatinga Biome – according to Brazil 's⁴² Climate Report the semi-arid northeast is one of the Brazilian regions most affected by global climate change. Rain reductions appear in most global IPCC AR4 models, as well as a heating that may reach 3-4 degrees Celsius for the second half of this century. This can lead to reductions of up to 15-20 % in the flow of the River São Francisco⁴³. The area is lacking in water, economic and social resources may become more vulnerable in the process of global warming. It will rain less and droughts will be more intense. And some indicators suggest that global warming process will also mean a reduction in the level of water from underground reservoirs. The reduction of water in the northeastern aquifers can reach 70 % by 2050.

The PAN - Brazil action of the object space are the Areas Susceptible to Desertification - ASD. In Brazil, the ASD are concentrated predominantly in the Northeast region of the country, including the semi-arid and dry sub-humid areas.

³⁸ National Plan on Climate Change - aims to encourage the development and improvement of mitigation actions in Brazil, to collaborate with the global effort to reduce emissions of greenhouse gases, as well as objective the creation of internal conditions to deal with the impacts of global climate change (adaptation). Among the main actions is the Action Plan for the Prevention and Control of Deforestation in various biomes, including the Caatinga. There will also be the Deforestation Monitoring Program in the Caatinga Biome, satellite, as already occurs in the Amazon. There is also the National Plan for Climate Change Adaptation (PNA), aimed at promoting the reduction of national vulnerability to climate change and risk management associated with this phenomenon. In preparing the PNA were considered 11 sectors or themes, namely: agriculture, water resources, food security and nutrition, biodiversity, cities, risk management to disasters, industry and mining, infrastructure, people and vulnerable populations, health and coastal zones

³⁹ National Fund on Climate Change (Climate Fund) - was established in 2009 and regulated in 2010. It aims to fund projects, studies and projects aimed at mitigation (ie the reduction of impacts) of climate change and adaptation to its effects. The Climate Fund offers two modes resources: refundable and non-refundable

⁴⁰ PAN Brazil - is configured as a guiding instrument for the implementation of joint actions in control and in combating desertification, as well as the expansion of social agreements involving various segments of society. The main objective of the PAN Brazil is to establish guidelines and legal and institutional instruments to optimize the formulation and implementation of public policies and private investments in the Areas Susceptible to Desertification in the context of combating desertification, mitigating the effects of drought and promotion sustainable development. . The objectives of PAN-Brazil: a) Create institutional mechanisms for coordination, participation and action between the public sector, civil society and the private sector; b) Improve the knowledge of the processes of desertification and droughts in Brazil, to be updated systematically; c) Formulate guidelines for the design, formulation and review of policies and actions in support of sustainable development of the areas susceptible or affected by desertification; d) collaborate with the states and municipalities in the formulation and implementation of strategies to combat desertification; e) Create institutional ties and strengthen the role of the institutions responsible for combating desertification; f) To implement agreed actions that lead to sustainable development of affected areas and subject to desertification processes according to the principles and guidelines of UNCCD; g) establish participatory processes of planning and agreement between the different actors and; h) Create support tools to the development of productive activities compatible with the preservation, conservation and sustainable management of natural resources.

⁴¹ MMA/SRH. Programa de Ação Nacional de Combate à Desertificação e Mitigação dos Efeitos da Seca- PAN Brasil, 2005

⁴² PROBIO – GOF UK-INPE)

⁴³ INPE. Sítio: http://mudancasclimaticas.cptec.inpe.br/~rmclima/pdfs/apresentacoes/8_Apresentacao_MMA_Caatinga.pdf



Briefly, the ASD are: a) Nuclei of Desertification; b) Semi-arid and Dry Sub-humid Areas; c) Areas Surrounding the Semi-arid and Dry Sub-humid Areas; d) New Subject Areas desertification processes; e) Key Features of the Areas Susceptible to Desertification - ASD; f) of ASD Relations Caatinga , Drought Polygon and semiarid region of the FNE .

With regard to areas surrounding the semi-arid and Sub-humid areas within ASD, it is worth noting that the criteria to define which municipalities would be included, one was the surroundings that also are part of the Caatinga biome coverage area, according to studies carried out by national Council of the Reserve of the Caatinga Biosphere in 2003 and 2004.

PROJECTS FROM THE MUNICIPALITIES IN THE CAATINGA BIOSPHERE RESERVE – since 2012 , no allocation of funds for projects aimed at conservation and sustainable use of the Caatinga biome. Financial sources are: Climate Fund (MMA / BNDES) ; The American Debt Conversion Fund (MMA / FUNBIO) ; and Environmental Fund (MMA / CEF) , among others. Below are some projects that are within RBCA members of municipalities:

Multiple technologies and use of diffusion Integrated and Sustainable Natural Resource to Improve Water Security , Food , Energy and Best Coexistence with the Semi-Arid , Contributing Technologies for Adaptation and Mitigation of Climate Change .

Institutional partners : Agroecological Development Center Sabiá;

Earth Lives : Agroflorestais- Systems SAF in combating desertification and adapting to climate change in semi-arid - Objective : To contribute to the development of adaptation strategies to climate change and combating desertification with families of farmers in the semiarid region, from the Agroforestry - SAF's systems .

Institutional partners : Agroecological Development Center Sabiá;

Agrobiodiversity Sustainable Management Modules deployment to Combat Desertification in Semi-Arid Pernambuco -

Objective: Deploy 13 Sustainable Management of Agrobiodiversity modules to Combat Desertification in Pernambuco semiarid in the vicinity of the Caatinga Conservation units . Municipalities in the buffer zone of priority areas for the creation of protected areas in the State of Pernambuco.

Sergipe combating desertification in settlements and communities with mechanisms and social technologies .

Institutional Partner: Secretaria de Estado do Meio Ambiente e Recursos Hídricos do Sergipe.

Biodiversity Conservation and Sustainable Economic Use for Raw Material Production and Bioproducts in the Caatinga Potiguar Municipalities - Objective: Training, planning and organizing for the recovery of degraded areas and sustainable use of native species in the Caatinga for production and sale of inputs for the manufacture of raw materials and bioproducts.

4.2.1.2. Rural Environmental Registry (CAR) - It is a mandatory electronic public record of the environmental characteristics of rural properties in the country, was instituted by the new Forest Code (Law No. 12,651 / 2012) and should be done by all rural properties and possessions until May 2016.



The CAR is used for the control and conservation of the environment, monitoring of rural properties, environmental and economic planning and combating deforestation. The CAR streamlines the process of environmental regularization of rural property and obtaining benefits such as legal certainty for farmers, suspension of sanctions and fines, access to credit, access to regularization programs , technical support programs and financial incentives.

The Ministry of Environment and the Federal Savings Bank launched in early 2015 an edict to support civil society organizations involved in implementing the Rural Environmental Registry (CAR). The measure will go to the registration of small farms located in the Brazilian semi-arid region that includes the states of the Northeast and north of Minas Gerais. The focus is on family farms in the region of Caatinga, since that's where fewer records were made of CAR. Pernambuco, Paraíba, Ceará and Rio Grande do Norte have not reached 10% of the area to be registered. They will be priorities in this new action.

4.2.1.3. Land Reclamation – in order to promote the recovery of degraded areas, the Ministry of Environment, through the Department of Forests (DFLOR) and Watershed Revitalization Department Hydrographic (DRB) and Ministry of National Integration (MI), through the Company development of the Valley of the São Francisco and Parnaíba (CODEVASF), within the Basin Revitalization Program of São Francisco River (PRSF), created the Reference Centers for Recovery of Degraded Areas (CRADs). The CRADs are linked to the development of recovery models of degraded areas in demonstration areas, the definition and documentation of procedures to facilitate the replication recovery actions of degraded lands and the promotion of training courses for the training of human resources (collection seeds and seedlings, planting , silvicultural treatments).

There are currently seven CRADs, all located in the Hydrographic São Francisco River Basin: the recovery of degraded areas for Reference Centre (CRAD) of the Federal University of São Francisco Valley (UNIVASF) won two awards at the Dryland Champions Program in 2015, promoted by the Convention United Nations to Combat Desertification (United Nations Convention to Combat Desertification - UNCCD). One of the awards is the recovery and preservation of the Caatinga and the other by the project "Management of Goats, Sheep and Emas in the recovery of degraded areas".

To make it possible to recover and conserve priority areas defined by CRAD / Caatinga building where practical and theoretical models of the most appropriate forms of recovery and preservation could be materialized. Thus, part of the structure of these research center nurseries models, with an installed capacity of 100 thousand seedlings. The activities of CRAD / Caatinga are not limited to scientific research and disclosures, some of their activities take the extension character, to be mobilizing and sensitizing communities involved in the project.

4.2.2. FEDERAL AND STATE PROGRAMS INSIDE THE CABR



4.2.2.1 Research Network check for potential species of Caatinga : partnership with the State Committee of the Caatinga Biosphere Reserve in Pernambuco

Since 2013, during the 4th Workshop Potential Biotechnology Caatinga, the National Institute for the Semi-Arid (INSA), Research Unit of the Ministry of Science, Technology and Innovation (MCTI), made official the creation of the Center for Bioprospecting and Conservation of Caatinga (NBioCAat). The Network brings together professionals from across the country, from different institutions and research areas. They are chemical, physical, pharmaceutical, biomedical, biologists and engineers together in order to select species, isolate and chemically characterize the compounds of plants of Caatinga. Demand for new products in the biomaterials market is growing dramatically every year, and as the semiarid plants contain aromatic properties, antimicrobial, antitumor, mitogenic, anti-parasitic and poison they can revolutionize many areas of industry⁴⁴.

Institutional Partners: The search network works in partnership with the North East Strategic Technologies Center (Cetene / MCTI) , Half Secretaries of Environment of the State of semiarid, Embrapa, Northeastern Plants Association (APNE), State Committee of Reserves Caatinga Biosphere in Pernambuco (CERBCAA -PE), National Institute of Science Technology for Pharmaceutical Innovation (INCT_if), Federal University of Pernambuco (UFPE), Rural Federal University of Pernambuco (UFRPE), Federal University of Campina Grande (UFCG), Federal University of Paraíba (UFPB) , University of São Francisco Valley (UNIVASF) , Federal University of Rio Grande do Sul (UFRGS), Federal Rural University of the Semi-Arid (UFERSA) , Federal University of Rio Grande do Norte (UFRN) and Federal University of Ceará (UFC).

4.2.3. PROGRAM OF THE NATIONAL COUNCIL OF THE CAATINGA BIOSPHERE RESERVE

4.2.3.1. Scenarios project for the biome Caatinga – the first product of the National Council of the Biosphere Reserve of the Caatinga (CNRBCA) was the Project Scenarios for the Caatinga Biome. The first part of this project established: a) an assessment of the Caatinga biome; b) scenarios of the future and desirable for the biome⁴⁵; c) Agenda for the Sustainable Development of Caatinga . The second product CNRBCA was the Georeferenced Database and Query System in interactive language.

One of the main results of the Project Scenarios for the Caatinga biome was the rescue of regional planning short and medium term. As an extension, the work should support the Ecological Economic Zoning instrument (EEZ) of the Northeast.

Institutional Partners: Ministry of Environment, Department of Science and Technology and Environment of Pernambuco (SECTMA); Institute for Space Research - INPE; IBGE; Embrapa; National Mineral Production Commission (NMA), Institute for Applied Research (IPEA), Company for the Valley Development of San Francisco (CODEVAF).

⁴⁴ INSA. Sítio: Articulação no Semiárido Brasileiro. Leia mais em: http://www.insa.gov.br/?page_id=85#.VgQ9Bf28xMQ

⁴⁵ O Cenário estabelece uma macro visão ecológica e econômica da Caatinga, integrando visões estratégicas setoriais para promover o desenvolvimento sustentável. As linhas temáticas prioritárias são: uso sustentável dos ativos ambientais estratégicos; valorização sociocultural; infraestrutura e integração regional; promoção do desenvolvimento sustentável. A partir das linhas temáticas: construção dos cenários tendencial e desejável. Proposição de uma agenda de ações estratégicas para alcançar cenário desejável



4.2.3.2. Training program for environmental managers and multipliers of Caatinga - Another initiative was to enable environmental managers to improve and stimulate the procedures aimed at integrating conservation with development actions. The goal was to train people in 20% of municipalities in the Caatinga. To this end, various actions have been planned whose objective was the dissemination and application of the concept of environmental management at the local level. Initially, were sensitized and mobilized, environmental secretaries possession managers or equivalent to municipalities located in the Caatinga. The work involved the states of Sergipe, Ceará, Bahia, Pernambuco, Piauí and Alagoas. The municipalization of information on the Caatinga was in charge of state environmental agencies in each state and the Committees of the Biosphere Reserve of the Caatinga . The second stage was run sixteen courses, benefiting 453 representatives of 151 municipalities of the nine northeastern states and Minas Gerais

In each state, the project was executed by the state environmental agency, in collaboration with the State Committee of the Biosphere Reserve of the Caatinga, under the coordination of the National Biosphere Reserve Caatinga Council. Previously, there was survey in collaboration with the National Association of Municipal Bodies Environment (ANAMMA) to identify the municipalities that had medium Secretaries of Environment or similar bodies and also have the equipment necessary for the installation and operation of a database summarized.

During all phases of the training, people's participation was encouraged, using an approach that promotes dialogue from the discussion of the reality of local communities, and the pursuit of commitment of participants in the transformation of this reality.

The training project always began with the debate of the Caatinga problems through talks on environmental policies and agendas, that is, covering up the guidelines for action plans in the region. It also addressed the importance of training to use the database and the need for collaboration with the inclusion of information about the biome.

It was up to the organizers to explain how it was essential to the sustainable development of the Caatinga, and it was necessary to identify ways to combat desertification. The policies adopted by the federal government and the state governments have also integrated the agenda of discussions. Other topics discussed were the control of environmental and territorial administrations and problems of various biomes. At the end of each training program, it was stimulated an exchange of experiences with the presentation of possible solutions and submitting the database of Caatinga, with instructions on its use and application.

Institutional Partners: Project Fund for Global Environment Facility (GEF) for the Caatinga.

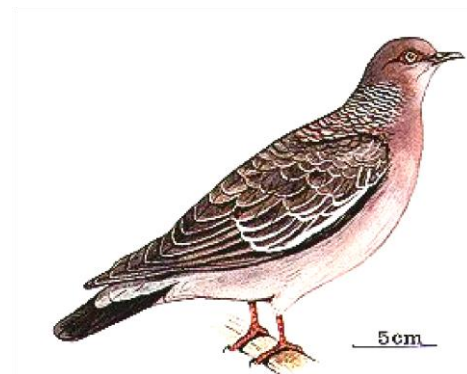
4.2.3.3. White Forest Project - the White Forest Project is promoted by state departments of Environment (SEMA), Department of Development and Regional Integration (Sedir) by CAR, and Luís Eduardo Magalhães Foundation (FLEM), together with the Council of Policy and Environment Management environment (CONPAM) Ceará . Your goal is to contribute to the preservation, conservation and sustainable management of the biodiversity of the Caatinga biome in Bahia and Ceará states, while improving the quality of life of its inhabitants, by introducing sustainable development practices.⁴⁶

⁴⁶ SEIA. Sítio: <http://www.seia.ba.gov.br/planos-e-programas/projeto-mata-branca>. Acesso em 23/9/15



4.2.3.4. Appreciation of the Caatinga Biome Project – coordinated by the Committee of the Biosphere Reserve of the Caatinga of Pernambuco, the Project aims to encourage work on environmental education, disseminate the natural resources of the Caatinga, encourage and support the creation of protected areas in the Caatinga, especially RPPNs. At the stage where we were attended seventeen counties located in the development area of Pajeú Valley, the goal was to elect representatives from each municipality for the establishment of the first Subcommittee CERBCAAPE within the state.

4.2.3.5. White Wing Award - The White Wing Award, created by the National Biosphere Reserve Caatinga Council is an acknowledgment to the actions of individuals or entities, public or private, that stand out for their conservation, protection and promotion of the Caatinga biome. Divided into two categories, institutions and personalities, the Prize is awarded in commemoration of the National Day of Caatinga , April 28 - environmentalist anniversary date Pernambuco Vasconcelos Sobrinho, one of the most important scholars of the biome . Nominations for the award can be made by anyone. The nominees are chosen by a committee established by the Board and consist of four members.



4.2.3.6. Friends of the Caatinga Biosphere Reserve Institute – established in 2003, it is a civil non-profit association, with environmental, scientific, educational and socio-cultural purposes with headquarters in the city of Recife. Its scope of operations extends throughout the region comprised by Caatinga Biosphere Reserve. Its objectives are to: a) support the implementation and strengthening of the Caatinga Biosphere Reserve in all their fields, in exclusive compliance with the guidelines, priorities and strategies defined by the National Council of the Caatinga Biosphere Reserve; b) Capturing and managing resources devoted to the implementation of the Biosphere Reserve of the Caatinga, conservation, recovery and sustainable development in its area of operation; c) support and participate in the conduct of research, studies and training of human resources devoted to development and regional sustainability within the Biosphere Reserve of the Caatinga; d) Collaborate with educational institutions, research and national and international development in fulfilling their mission; e) To cooperate with the private sector and the public sector in the development of the region; f) To encourage the incubation of new entrepreneurial initiatives in the biome; g) To promote and support the appreciation and protection of historical and cultural heritage as well as the enhancement of existing traditional populations in the area of Caatinga; h) To encourage the development of implementation of public policies and environmental education programs; i) To prepare and manage projects aimed at conservation, restoration and sustainable management of the Caatinga.

In summary, the Friends Institute of Caatinga is to support the implementation and strengthening of the Biosphere Reserve of the Caatinga, capturing and managing resources devoted to the conservation, recovery and sustainable development in its area of operation, in all the states of



the Northeast and North of Minas Gerais General. As well as disseminating information and knowledge about biodiversity conservation and sustainable development in its area of operation.

Actions taken by the National Council of the Biosphere Reserve - SUMMARY

Book launch: Quanto vale a Caatinga? (How much does the Caatinga cost?)
Research "What does Pernambuco think about the environment, development and quality of life";
Support to the Mending Project of Riparian Forests of San Francisco;
Creation of the Institute Friends of the Caatinga Biosphere Reserve;
Construction of the Database for the Caatinga Biome;
Participation in drafting the Terms of Reference for the EEZ Northeast;
Training - 70 technicians from 10 States and Regional Development Agencies in the SPRING and TERRAVIEW software;
Installing the Database Caatinga (47 Gb), in OEMA's PI, CE, AL, SE, RN, BA (Salvador and Caatinga Base), PE, ANA, Adene, Codevasf, UNIVASF and Chesf;
Installation State Committees in Ceará, Pernambuco and Bahia. Personnel negotiations and capacity building for installation State Committees in the States of Piauí, Sergipe, Alagoas, Paraíba, Minas Gerais and Rio Grande do Norte;
Manual planning for use of Terraview;
Caatinga Info Virtual Network design
Project "Scenarios for the Caatinga Biome" (1st stage of SEZ - database), with the construction of the Bank of geographic data in partnership with the Ministry of Environment and ZEE Brazil Consortium has obtained national and international recognition;
Representation in the XXV Annual Meeting of the Association for Politics and Life Sciences held in Washington from 31 August to 4 September 2006, where for the first time, was presented a panel on the Caatinga Biome;
Promotion of the First International Biosphere Reserves Seminar Arid and Semi-Arid Regions in Petrolina, Recife, Pernambuco in November 2006.
Participation in the meeting of Ibero-American Biosphere Reserves in Fortaleza-Ceara.
III^o participation in the World Congress of Biosphere Reserves - Madrid - Spain

4.3. How the conservation activities are connected or integrated with sustainable development issues (eg management for conservation on private land used for other purposes)?

Initially, the creation of State Committees was essential to begin the integration of conservation activities to the theme sustainable development. Then creating outposts of the Caatinga Biosphere Reserve increased the capillarity of the activities of CABR on private land. Another contribution was the training of environmental managers with the objective of dissemination and application of environmental management concepts at the local level.



It should be noted that the related conservation activities or integrated sustainable development issues are not parity between the states that make up the CABR. There committees with greater presence within the CABR program, such as the state of Pernambuco. This contributed effectively in the preparation of this report, producing a report for the last ten years of activities within the RBCA, as explained below.

4.4. How do you evaluate the effectiveness of actions or strategies applied?

As the National Council of the Caatinga Biosphere Reserve is disabled, there is no effective evaluation of actions and strategies applied over these past ten years. Furthermore, this report was not produced and approved by members of the State Committees and the National Council of the Caatinga Biosphere Reserve. However, we should notice that some members of the State Committees (Bahia, Alagoas and Pernambuco) as soon as they became aware that the MMA was working the CABR Report, agreed to provide their assistance in preparing this report.

4.5. What are the main factors that influenced (positively or negatively) the successes of conservation efforts throughout the biosphere reserve? Taking into account the experiences and lessons learned in the last ten years, what new strategies or approaches will be most effective for conservation and sustainable development?

At first the autonomy of state committees was crucial to the success of the CABR. Once it allowed different levels of work between the states within the CABR program. For this, it helped to have singular condition of the states related to political, financial incentives, partnerships between institutions and the individual initiatives of groups within states.

The State Committees also act as instances of support and coordination between government agencies (federal, state and municipal), non-governmental organizations (environmental and social), the scientific community (universities, researchers), locals (especially traditional communities) and conservationist entrepreneurs. Within a decentralized and participatory management system, each state will have its State Committee.

The other positive factor was the possibility of creating outposts of CABR in the states.

It should also highlight the commitment of the Pernambuco State Committee in the creation of conservation units in the state, outposts and appreciation of Caatinga. The State Committee of Bahia, in turn, has engaged in itinerant meetings, usually four regular per year, in addition to extra meetings. Plenary meetings come to count on an average of 150 people per meeting. Details, the material attached. They also develop actions for the Caatinga Biome, with lectures, environmental education workshops in communities, conferences, joint activities with boards, among others.

4.6 Other comments / observations from a biosphere reserve perspective.



The experience of the State Committee of the Caatinga Biosphere Reserve - Bahia in their actions, makes it clear that the main objective of the program for them is to fix those living in rural areas and generate a decent life. According to them:

"The image of the Caatinga propagated for decades, as a wasteland, a dry forest, lifeless, with only thorns; of the poor people, no water, no electricity, far from large urban centers; a suffered life. The CERBCAAT-BA comes gradually, through its meetings and actions developed in the Bahia semi-arid, erasing this sad picture, Stories and Stories slanderous, proving that the Caatinga is exactly the opposite of what is propagated in local, national and even worldwide. Today, we can see in the far reaches of the state of Bahia, where you can observe the Country with a smile and happiness for having running water, electricity and education. The love and affection to their homeland, the Caatingueiro, still needs more government incentives to continue root in his ground, producing income and wealth, through the Family Farming, preventing Caatingueiro in search of a "better life", increase the Rural Exodus numbers toward large cities, where they will face difficulties of all kinds." ⁴⁷

5. DEVELOPMENT FUNCTION:

5.1. Briefly describe the trends in the last decade in each of the main sectors of the economic base of the biosphere reserve

The Caatinga Biosphere Reserve is within the semi-arid region and the local population has its economic base more geared to agricultural activities. Thus, both the agricultural sector and forestry activities are the predominant trend in the last decade. Mainly by the following associated reasons: prevent desertification, fight poverty and prevent the rural exodus

5.2. Describe the tourism industry in the biosphere reserve. Tourism has increased or decreased since the naming of the reserve or the last periodical review? What new projects or initiatives have been taken? What types of tourist activities? What effect these activities have on the economy, ecology and society of the biosphere reserve? Is there any study to examine whether the designation of the area as a biosphere reserve has influenced the number of tourists?

There are tourism activities in some municipalities that comprise the area of the Caatinga Biosphere Reserve. However, there is no known specific studies that verify the economic return for the sector due to the designation of the area as a UNESCO Biosphere Reserve. And this applies to all areas (core, buffering and transition).

Moreover, within the thematic groups defined by National Caatinga Biosphere Reserve Council there is no specific thematic group for the tourism area. The thematic groups are protected areas,

⁴⁷ Comitê Estadual da Reserva da Biosfera da Caatinga – Bahia.



biodiversity; environmental education; sustainable development; desertification and coping with drought; and legislation.

As put by the State Committee of CABR of Bahia: the scope of the Bahia semi-arid region there is tourism, but in a disorganized way. The CERBCAAT -BA indicates some points of emphasis for the development of tourism in the Caatinga, example:

- The Caatinga biome in Bahia features 16 units of conservation for biodiversity protection, scientific research, with a potential for organized ecotourism: 3 State Parks; 1 State Natural Monument; 2 State Areas of Relevant Ecological Interest; 7 State Environmental Protection Areas, and 1 Federal Area of Relevant Ecological Interest; 1 Federal Ecological Station and 1 National Forest. There are also dozens of Federal Private Reserves of Natural Heritage (RPPN).
- City of Itatim: has several sites of rock paintings; mountains of great scenic beauty with the existence of several "Tafonis", and Caatinga areas still preserved and a long stretch bordered by the Rio Paraguaçu. Also the city has great attraction for extreme sports such as mountain biking, hang gliding, rappelling and trekking practices.
- Municipality of Miguel Calmon: has the Sete Passagens (Seven Passages) State Park, one State Conservation Unit of Integral Protection, where flora and fauna live harmoniously. The park features dozens of waterfalls, lookouts, canyons, mountains and caves, enabling the various practices related to Ecotourism.
- City of Jeremoabo: still owns mansions of old farms , coming from the height of Coronelismo time, such as the Farm Caritá, birthplace of the Jeremoabo Baron (Cicero Martins). There are also several reports and sites related to the Northeast Cangaço phenomenon, which can be exploited by the Historic and Cultural Tourism.
- Municipality of Boa Nova: In this county there is the Wildlife Refuge, a Federal Integral Protection Conservation Unit, of great scenic beauty and habitat of a considerable amount of birds, but also has an endemic species of bird called Gravatazeiro (*rhopornis ardesiacus*). It shows wide variation in vegetation cover, having along a stretch of 18 km three vegetation types, passing the Caatinga, by the Mata de Cipó to the Mata Atlântica.
- City of Guanambi: In the lands of this municipality is located the State Park Serra dos Montes Altos. It has a large concentration of Rock Paintings, has Tafonis as well as flora and fauna with diversity.
- City of Morro do Chapéu: municipality of Chapada Diamantina with privileged tourist potential due to large existing scenic beauty, being cut by the Serra do Sincorá. It has three state conservation units, as follows: The Morro do Chapéu State Park, the Natural Monument of Cachoeira do Ferro Doido and the Environmental Protection Area Gruta dos Brejões / Vereda Romão Gramacho. Featuring a variety of rock art Sites, orchids, waterfalls, canyons and abundant wildlife.
- City of Feira de Santana: second largest city in Bahia, has in its semiarid region several mountain ranges called "inselbergs", good for Ecotourism activities such as: Serra da Agulha, Serra do Pote and Serra do Cuscuzeiro. This municipality is set in three river basins, namely: the River Basin Paraguaçu; River Basin Pojuca and River Basin Subaé. It features a large complex of ponds and hundreds of springs, which also gave rise to the city. This municipality has also great potential for business tourism. The Rio Paraguaçu, is the largest river in Bahia,



with a length of 614km, linking three regions of the state, Chapada - Caatinga and Reconcavo. Its watershed is 5,672 square kilometers, encompassing 86 municipalities, with 22 municipalities bathed in its waters. Most of the watershed lies in the Bahia semiarid region. It is responsible for supplying over 6 million inhabitants.

- Municipality of Rafael Jambeiro: city bathed by the Rio Paraguaçu, which still has some sections covered by riparian vegetation. Has a perennial spring called Olhos d'água, which runs to Rio Paraguaçu, located in Argoim, the oldest district of the state of Bahia, with more than 400 years. This city can be explored by the Historic and Cultural Tourism.

5.3. Where applicable, describe other key industries and uses such as agriculture, fishing and forestry. They have increased or decreased since the nomination or the last periodical review? What new projects or initiatives were hired? What effect they had on the economy and ecology of the biosphere reserve, and its biodiversity? There are studies that examine whether the designation as a biosphere reserve has influenced the frequency of your activities? If so, provide the bibliographic information of these studies and/or a paper copy in an attachment.

Yes, in the sectors of agriculture, forestry, food products, associations, and crafts. See item projects and programs 4.

In the agriculture sector in Bahia semi-arid highlights the Juazeiro region, with great polo irrigated agriculture due to the waters of the Rio São Francisco. There is the fruit cultivation with production and processing grapes for wine production

There are no known specific studies that verify the economic return of the sectors described above since the nomination CBR.

5.4. How do the economic activities in the biosphere reserve benefit the local communities?

Employment generation brings more than economic benefits for communities. There are social, cultural and political. The community will appreciate and conserve the Caatinga biome. At the same time, the community understands what needs to be empowered to demand their rights for fair and equitable sharing of benefits of biodiversity, as envisaged in the Convention on Biological Diversity (CBD).

STATE OF BAHIA - we highlight an activity that, at first, is generating and moving the local economy of the State of Bahia, which is mining. In recent decades, it accelerated in scale, it is settling in Caatinga biome in Bahia. With large-scale exploration in several municipalities in the semiarid region, the activity is causing irreversible environmental damage, destroying native vegetation, such as the Umbuzeiro and Licurizeiro, even if both are protected by law.

There is no denying of the economic return from that activity, but you need to assess the environmental costs. To this end, it should improve the licensing system so that such damage can



be mitigated and compensated, including mining acquiring Caatinga areas for preservation and conservation. Thus, it will not jeopardize the survival of future generations. Follows some municipalities where mining activity occurs: Pintadas, Santaluz, Itatim, Caetité, Boquira, Teofilândia, Northeastern, Jacobina, Ruy Barbosa, among others, as attached photos .

Another activity that grows intensely in the Bahian semi-arid region is the installation of wind park, also causing impacts to the area in the Caatinga, in addition to the commitment of the natural landscape. It needs better studies on the areas where they settle these towers, although it is known that are excellent sources of clean energy. As in the case of mining, must be well-designed projects, including the inclusion of environmental education programs, which can help minimize the impacts of those activities, and to contribute to the preservation of Caatinga. Some municipalities where that activity occurs: Morro do Chapéu, Guanambi, Umburanas. Brotas de Macaúbas, Caetité, among others

6. THE LOGISTIC FUNCTION:

6.1 Describe the main institutions conducting research or monitoring in the biosphere reserve, and their programs. Comment on organizational changes (if any) in these institutions over the past ten years as they relate to their work in the biosphere reserve.

In Bahia's semiarid, various entities perform research in the Caatinga Biome, as follows: UEFS - State University of Feira de Santana; SBME - State University of Bahia Southwest; IRPAA - Regional Institute of Small Agricultural; UFRB - University of Bahia Reconcavo; UFBA - Federal University of Bahia, among others.

6.5. How do you assess the effectiveness of actions or strategies applied?

6.5.1 Describe the main mechanisms / internal and external communication systems of the Biosphere Reserve.

The main communication mechanisms in CERBCAAT -BA are: telephone communication; by email; the traveling Meetings, website; disclosure in radios, televisions and newspapers; participation in other forums and events.

6.5.2 Is there a webpage of the biosphere reserve? If so, provide the link.

Yes. CERBCAAT-BA is linked to INEMA - Environment Institute of Bahia. You can access the page: www.inema.ba.gov.br

6.5.4 Does the biosphere reserve belong to a social network (Facebook, Twitter, etc)? Provide the contact.

Yes. The Bahia State Committee has a Facebook page: [segredosdacaatinga](https://www.facebook.com/segredosdacaatinga). Blog: [caduvaqueiro](http://caduvaqueiro.com.br) . Facebook [poetasertanejo](https://www.facebook.com/poetasertanejo)



6.6. Describe how the biosphere reserve currently contributes to the World Network of Biosphere Reserves and/or could do so in the future.

As stated, the National Council of the Biosphere Reserve is disabled. However, by 2009, there were significant investments that will be mentioned below:

- XXV Annual Meeting of the Association for Politics and the Life Sciences, when the entity presented work on the biome of the Brazilian Caatinga, specifying its characteristics, problems related to the preservation of biodiversity and threats that affect the area. The presentation sparked great debates, mainly because the majority of those present was unaware that the semi-arid region of Brazil is the most populous and home to the greatest biodiversity in the world.⁴⁸
- The CNRBCA participated in the First International Seminar on Biosphere Reserves and Semi-arid Arid Regions, held in November 2006, Petrolina (PE). For the first time, managers met to discuss common problems and propose measures for sustainability and preservation of the biodiversity of these areas. Participating countries were, in addition to Brazil, Chile, Argentina, Morocco, Mexico, Paraguay and Peru. At the time, it was proposed to establish an International Biosphere Reserves Network of Semi-arid Regions.
- At national level, the CNRBCA attended the Semi-Arid Fair held in Feira de Santana, Bahia. In 2005, the Council was responsible for presenting the opening ceremony.
- By 2009, the National Council of the Caatinga Biosphere Reserve participated in the major discussion boards on the semiarid region, such as: International Seminar on Quality Economics in São Paulo; National Seminar on Renewable Energy and Appropriate Technology Development of the Semi-Arid in Alagoas; as well as collaboration in the Working Group of the Caatinga, the Technical Chamber of the National Biodiversity Council (CONABIO).
- Other actions by the Board were in the preparation of contracts, agreements and development projects in partnership with the Fund for the Global Environment Facility (GEF), with the Ministry of Environment, the United Nations Development Program (UNDP), the United Nations (Group of 77 / Perez Guerrero Fund), Hydroelectric Company of São Francisco (Chesf) and Banco do Nordeste.
- For the State Committee of RBCA of Bahia, from this Report they start to contribute with the Reserve and then hope to participate with other contributions.

It should also be highlighted the work of the State Committees, which have numerous contributions (see attached documents). They make the major research work and are mobilizing the community (see Annex). The strength of the State Committees is independent of the National Council of the CABR. The Council is inactive for the last six years, but the State Committees (mainly Bahia, Pernambuco and Alagoas) remain active.

In the case of Ceará Committee, there was no return of MMA contact attempts during the preparation of this report. Thus, it was not possible to verify their contribution to the Network.

6.7 What are the main factors that influenced (positively or negatively) the success of activities that contribute to logistical support function? Taking into account the experiences and lessons learned in the last ten years, which new strategies or approaches will be favored to be more effective?

⁴⁸ Conselho Nacional da Reserva da Biosfera da Caatinga- Brasil 2003/2007. 46p.



Due to the large size of the area of the Caatinga Biosphere Reserve, it is key to have partnerships to be able to work with the projects and activities of the State Committees of the CABR. Among the main factors that influenced positively to the success of CABR activities are:

MANAGEMENT COMMITTEES CREATION - initially the creation of State Committees, made between November 2005 and April 2006, was fundamental in integrating conservation activities to sustainable development issues. The committees allowed streamline the deployment of the Caatinga Biosphere Reserve in the Northeast region and in the north of Minas Gerais.

OUTPOSTS - Outposts (Postos Avançados - PA) are centers, physical locations or institutions wholly or partially contained within the perimeter of CABR, which take place regularly at least two of their duties: the protection of biodiversity; sustainable development; scientific knowledge, serving as a tool for the implementation and dissemination of the concepts and principles of the CABR

PA are characterized by: being a center or institution, a place or an area, totally or partially contained within the perimeter of CABR; be public or private institution to develop its activities for at least two years; develop regularly, at least two of the three basic functions of Biosphere Reserves: protection of biodiversity, sustainable development, and scientific knowledge; be a deployment tool of the Biosphere Reserve, which are experienced and practiced the principles of RB's; have physical headquarters where they will be provided information and documentation on the Caatinga Biosphere Reserve.

The procedure to be adopted to declare an Outpost must meet the following steps: a proposal should be presented to the State Committee of the corresponding CABR, or, in his absence, to the Board representatives of that State in CNRBCA; the proposal must demonstrate that the objectives and principles of the institution are compatible with the CABR, and include the rationale for recognition as Outpost; should provide information on the creation date, location, location maps, management system, activities in development, population and other benefit that may be required by bidders; to present the proposal one should use the standard form defined by the National Council of the Caatinga Biosphere Reserve, accompanied by the required documentation; the proposal must be assessed and approved by the respective State Committee of CABR, and forwarded to CNRBCA necessarily accompanied by an opinion of the Committee; the CNRBCA examine the proposal at the next annual meeting following the date of its receipt, and may approve it, suggest modifications, or reject it. If the proposal is approved by CNRBCA, it will be given to the institution one **Outpost of Biosphere Reserve** diploma, valid for a period of four years; CNRBCA shall furnish to the Outpost, following its recognition, UNESCO diploma, standards, documents, publications, direct videos and direct mailing lists of members of CABR Management System; considering the availability, the Outpost will receive technical, institutional and financial support from CNRBCA.

Regarding the monitoring of PAs, we have: there will be, over the four years, a monitoring by the National Caatinga Biosphere Reserve Board to verify compliance with the commitments made by the Outpost; the Outpost should prepare annual reports describing the activities and making its self-assessment. The presentation of these reports is a necessary condition both to keep the



outpost condition, and for their renewal; each report will be considered by the State Committee of CBR, and sent, together with an opinion, to the Executive Secretary of CNRBCA; the CNRBCA considers such reports and opinions, and may ratify the condition of Outpost for another two years, suggesting substantial changes, or even cancel the diploma; the Council whenever deemed necessary may request advice from external consultants on the issue; the institution will no longer be Outpost by resignation; for not fulfilling the activities planned for over a year; by grave violation of the principles and regulations of CBR, in the opinion of the EC-CABR sent to CNRBCA; it will be up to the institution that has its Outpost diploma canceled to appeal with the CNRBCA (Figure 28).



Figure 28. Outposts of CBR in the state of Pernambuco





Figure 29. Pernambuco State Committee of the Caatinga Biosphere Reserve.





Figure 30. RBCA – Bahia- BA



Figure 31. RBCA petroglyphs - Bahia- BA



Figure 32. Community leaders – Bahia



Figure 33. RBCA – Bahia



Figure 34. Community leaders - RBCA – Bahia

7. GOVERNANCE, MANAGEMENT AND COORDINATION OF THE BIOSPHERE RESERVE:

7.1 What are the technical and logistical resources for the coordination of biosphere reserve?

Technical and logistical resources for the coordination of Caatinga Biosphere Reserve were linked to the Department of Environment of the State of Pernambuco. Then coordination began to gather at the Joaquim Nabuco Foundation (Ministry of Education). For the last six years there was no systematic meeting of the Council.

Bahia CABR State Committee - The CERBCAAT -BA 's headquarter is located in the city of Feira de Santana, in the Regional INEMA Portal do Sertão Unit, unit linked to INEMA - State Institute for the Environment and Water Resources which is linked to SEMA - Department of the Environment. The CERBCAAT -BA is linked directly to the CODIS - Social Interaction Coordination which is linked to INEMA .

7.2 What is the general framework for the governance of the biosphere reserve? Identify key components and their contributions to the biosphere reserve.

The RBCA is focused on three legal frameworks, namely:

Brazil joined the Man and Biosphere Program (Man and Biosphere - MAB) of UNESCO in 1974, creating this year the Brazilian Committee of Man and Biosphere Program - COBRAMAB through Decree 74685 of 10/14/1974. At the time, the Commission was coordinated by the Ministry of Foreign Affairs. On 09/21/1999, new Federal Decree redefined the composition, structure and coordination COBRAMAB, which now bound by Ministry of Environment. Currently, it remains the coordination of COBRAMAB, linked to the Ministry of Environment (MMA)⁴⁹. However, COBRAMAB has been disabled for some years.

Then, in the general framework of governance are the six Biosphere Reserves in Brazil (Atlantic Forest, Cerrado, Pantanal, Central Amazon, the Espinhaço and Caatinga). The São Paulo Green Belt is part of the Atlantic Forest Biosphere Reserve, but operates independently.

Among the legal framework, the CABR is guided by the National Protected Areas System (SNUC). This is a set of protected areas (UC) federal, state and municipal. It consists of 12 categories of UC, whose specific objectives differ on how to protect and permitted uses: those who need more care, for its fragility and special features, and those that can be used sustainably and conserved at the same time⁵⁰.

7.6 Updates the management and coordination structure:

⁴⁹ Sítio: http://www.rbma.org.br/mab/unesco_02_cobramab.asp. Acesso 24/9/15

⁵⁰ MMA. Sítio: <http://www.mma.gov.br/areas-protegidas/sistema-nacional-de-ucs-snuc>. Acesso 24/9/15



7.6.2. Update the information on the manager(s)/Coordinator(s) of the biosphere reserve, including the designation procedures.

The management system of the Caatinga Biosphere Reserve (**Figure 35**).



Figure 35. The Caatinga Biosphere Reserve Management System.

NATIONAL COUNCIL OF CAATINGA BIOSPHERE RESERVE - The Council has equal representation, with fifteen Government members and fifteen non-governmental. Of the fifteen Government members, three represent the Federal Government; ten represent the environmental agencies of each of the Governments of the States covered by the reserve; one represents municipalities and another one, the productive sector of the region.

Fifteen non-governmental members represent the three groups of states, composed by:

- A) Maranhão, Piauí and Ceará;
- B) Rio Grande do Norte, Paraíba, Pernambuco and Alagoas;
- C) Sergipe, Bahia and Minas Gerais.



Each group has a representative of the scientific community, an environmentalist, a resident, a representative of the productive sector and a representative of culture, all inserted into the catchment area of the Caatinga Biosphere Reserve.

Briefly, the National Council of the Caatinga Biosphere Reserve has the following duties: propose and establish permanent mechanisms of involvement of the various actors involved directly and indirectly; decide on methodology, focus primarily to gather information and construction of development scenarios; participate in the joint institutions for the collection and identification information at the regional level.



Below, the old composition of the CNRBCA (Figures 36 and 37) .

President:	Alexandrina Saldanha Sobreira de Moura Fundação Joaquim Nabuco-FUNDAJ-PE
Regional Vice-President (MA, PI, CE):	Maria Tereza Bezerra de Farias Conselho de Políticas e Gestão do Meio Ambiente-CE
Regional Vice-President (RN, PB, PE, AL):	Fábio Ricardo Silva Góis Instituto de Desenvolvimento Econômico e Meio Ambiente – IDEMA-RN
Regional Vice-President (SE, BA, MG):	Paulo Anderson Quirino Garcia Instituto de Permacultura da Bahia
BUREAU OF DIRECTORS:	
Coordinator:	Presidente: Alexandrina Saldanha Sobreira de Moura
Regional Vice-President (MA, PI, CE):	Maria Tereza Bezerra de Farias
Regional Vice-President (RN, PB, PE, AL):	Fábio Ricardo Silva Góis
Regional Vice-President (SE, BA, MG):	Paulo Anderson Quirino Garcia
Environmental Institute Representative –IMA-AL	Alberto Tenório Cavalcanti
State Institute of Forests Representative - IEF/MG	João Paulo Sarmento
Productive Sector SE/BA/MG/ Irrigators from São Francisco Valley	José Gualberto de Freitas Almeida
Productive Sector PI, MA e CE.	João Bosco Priamo Carbogim
Invited due to his knowledge	Afranio Farias de Menezes

Figure 36. Caatinga Biosphere Reserve National Council Composition – 2007-2011



Situação dos Comitês – 2007-2011

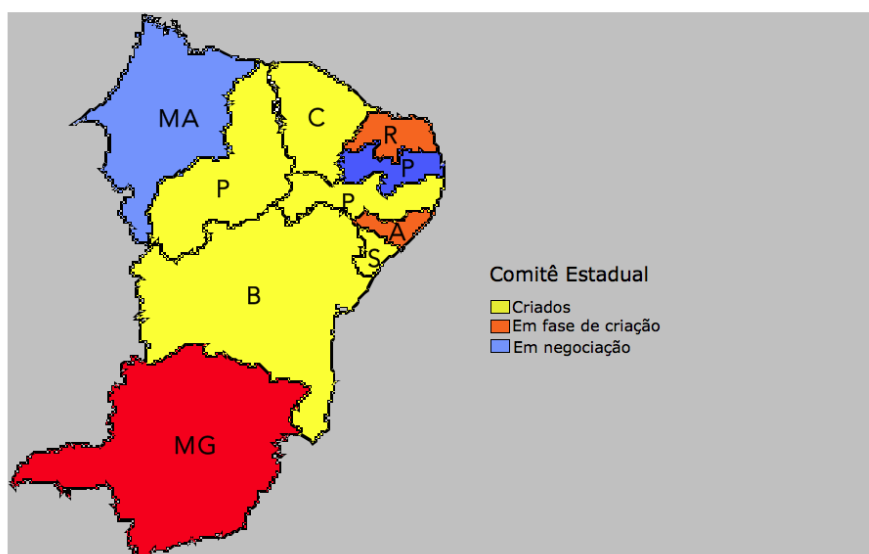


Figure 37 . Composition of the Caatinga Biosphere Reserve State Committees – 2007-2011

After 2011, there was no election for another composition for CNRBCAAT. Regarding the state committees, currently we have as follows:

BAHIA STATE COMMITTEE

Coordinator: Carlos Romero Carvalho e-mail: sos.paraguacu@hotmail

Sub coordinator: Maria Emília Blanc do Amaral

Executive Secretary: Márcio Alves Pimentel e-mail:marcio.pimentel1@inema.ba.gov.br

ALAGOAS STATE COMMITTEE

✓ INSTITUTO DE MEIO AMBIENTE IMA-AL – Alberto Tenório Cavalcante/Afranio Farias de Menezes

✓ INSTITUTO DE TERRAS DE ALAGOAS - ITERAL – José Quirino/ José Pereira da Silva Neto

✓ IBAMA – Paulo Auto/ Maurício Cerqueira de Araújo

✓ INCRA – Neider Silveira Jatobá

✓ UNIVERSIDADE FEDERAL DE ALAGOAS - UFAL – Eliza Maria F. de Souza/ Liriane Monte Freitas

✓ ASSOCIAÇÃO DE MUNICÍPIOS DE ALAGOAS - AMA – João Alves Salgueiro

✓ REPRESENTATIVE OF RESIDENTS – Cleide Souza Ferraz

✓ MOVIMENTO MINHA TERRA - MMT – Técnico do APL - Jorge Isidro

✓ RPPN São Luiz – Luiz Alves Ribeiro

✓ REPRESENTATIVE OF ENTREPRENEURS – MINERADORA VALE VERDE – Gustavo Carvalho

The Committee was formed in June 2007 , at a meeting at the headquarters of IMA / AL.

CEARÁ STATE COMMITTEE

The State of Ceará was a pioneer, creating the 1st State Committee of CABR, by State Decree No. 27,434, in 28de April 2004, the date commemorating the National Day of Caatinga and Ordinance No. 98 / A / 2004 appointing the State Committee Council of the CABR.



PERNAMBUCO STATE COMMITTEE

Time Period 2013-2015 :

Coordinator – Wilame Jansen

Vice-Coordinator – Ana Virgínia Melo

Executive Secretary – Marcelo Luiz Cavalcanti Teixeira

SERGIPE STATE COMMITTEE

On 11/12/2013 - there was a meeting to update the State Decree No. 24,039 / 2006, which provides for the creation and constitution of the State Committee of the Caatinga Biosphere Reserve in Sergipe.

7.6.3. Are there any changes with regard to the coordination structure of the biosphere reserve? (If so, describe in detail the functioning, composition and the relative proportion of each group in this structure, its role and competence). This is an autonomous coordination structure or under the authority of local or central government, or to the biosphere reserve's manager ?

No. The management structure remains the same as the item above.

9. SUPPORTING DOCUMENTS

10. ADDRESSES

10.1. Contact address of the biosphere reserve:

a) BAHIA STATE COMMITTEE

President : Carlos Romero Carvalho

Vice: Maria Emilia Blanc do Amaral

Executive Secretary: Márcio Alves Pimentel

Coordination: Marivaldo Oliveira Dias - CODIS

City and zip code: Feira de Santana

Country: Brazil

Telephone: (+5575)3223-3739/(+5575)99107-7138

Email: sos.paraguacu@hotmail.com/marcio.pimentel1@inema.ba.gov.br/coord.interacaosocial@inema.ba.gov.br

Website: Facebook: [segredosdacaatinga](https://www.facebook.com/segedosdacaatinga)

b) PERNAMBUCO STATE COMMITTEE

President :

Coordinator: Wilame Jansen

Vice-Coordinator: Ana Virgínia Melo



Executive Secretary: Marcelo Luiz Cavalcanti Teixeira
City and zip code: Recife
Country: Brazil
Telephone:
E-mail:
Website:

c) ALAGOAS STATE COMMITTEE

City and zip code: Maceió CEP: 57017-515

Country: Brazil

Telephone:

E-mail:albertotenorioc@yahoo.com.br, afraniofm@gmail.com

- ✓ **INSTITUTO DE MEIO AMBIENTE IMA-AL** – Alberto Tenório Cavalcante/Afranio Farias de Menezes
- ✓ **INSTITUTO DE TERRAS DE ALAGOAS - ITERAL** – José Quirino/ José Pereira da Silva Neto
- ✓ **IBAMA** – Paulo Auto/ Maurício Cerqueira de Araújo
- ✓ **INCRA** – Neider Silveira Jatobá
- ✓ **UNIVERSIDADE FEDERAL DE ALAGOAS - UFAL** – Eliza Maria F. de Souza/ Liriane Monte Freitas
- ✓ **ASSOCIAÇÃO DE MUNICÍPIOS DE ALAGOAS - AMA** – João Alves Salgueiro
- ✓ **REPRESENTATIVE OF RESIDENTS** – Cleide Souza Ferraz
- ✓ **MOVIMENTO MINHA TERRA - MMT** – Técnico do APL - Jorge Isidro
- ✓ **RPPN São Luiz** – Luiz Alves Ribeiro
- ✓ **REPRESENTATIVE OF ENTREPRENEURS – MINERADORA VALE VERDE** – Gustavo Carvalho

The Committee was formed in June 2007 , at a meeting at the headquarters of IMA / AL.

