

11. Seashore ecosystem restoration



Type: multi-stakeholder

Region: southeast

State: Rio de Janeiro

Biome: Atlantic Rainforest
(restinga — dry sandy ecosystem)

City of Cabo Frio

Population: 216 030 (estimated in 2017 ¹¹³)

Area: 410 418 km²

Elevation: 4 m

Coordinates: 22.886944 S / 42.026111 W

MHDl: 0.735 (2010) ¹¹⁴

Context

Cabo Frio is a tourist destination with many second homes near the beaches. Urbanisation has spread along the seashore with single family homes in several real estate developments.

Challenges

The Brazilian shoreline is already being affected by beach erosion, storm surges and strong winds, altering the coastal geography. The seaside ecosystems provide protection against those threats, reducing the vulnerability that

climate change and associated events are bringing.

The region is a low plain area that was previously covered by restinga ecosystem and alluvial areas between the estuary of the rivers Una (south) and São João (north). There are protected areas in both rivers. There is an important aquifer named Tamoios

113. <https://cabofrio.rj.gov.br/dados-gerais/>

114. <https://cidades.ibge.gov.br/brasil/rj/cabo-frio/panorama>

that supplies water to the region, which depends on soil perviousness, and there is risk of salinisation due to seawater intrusion.

In the northern areas where the ecosystems have been eradicated and urbanisation has spread up to the beach, the effects of the rise in sea levels and storm surges are eroding the shore. In the southern

areas, coastal vegetation has been better preserved between the urbanisation and the beach, and this has led to lower levels of erosion.

Objectives

The restoration and management of the restinga ecosystem, in front of the real estate developments Florestinha, Orla 500, Vivamar e Terramar in the Tamoio district, aims to enhance and maintain the sand dunes that prevent sand and waves from

advancing over the road and into urbanised areas. The vegetation within the developments covers a total area of 120 000 m².

Actions

The project has undertaken the following activities.

- Connecting with residents and organising educational activities, also using digital and social media.
- Conducting field research identifying vegetation species — native and exotic — with undergraduate students from the Fluminense Federal University (UFF).
- Installing information panels to educate and restrain public access to ecosystem remnant areas. Many signs have been made and put in place by residents.
- Fencing vegetated areas and closing secondary pathways within the green patches.
- Transferring rubbish bins from the beach to the local street.
- Contact and meetings with public institutions to establish partnerships for the project: the municipality, the navy and INEA.
- Promoting periodic vegetation pruning.
- Fostering rubbish collection in appropriate areas.
- Opening proper pathways to access the beach.
- Protecting birds' nests.
- Setting up projects to raise funds in development agencies.
- Advertising the project through posters, digital and social media.

Stakeholder involvement

The project was an academic initiative of the Department of Geography of the UFF. It was implemented with the effective participation of the local communities, with the efforts and support of public sectors, as the city of Cabo Frio, INEA, the Brazilian navy and the Public Ministry.

Implementation

The extension project of the undergraduate course took place from 2016 to 2018. The activities are continuing with residents' engagement and voluntary supervision by the UFF researchers.

The strategy was to involve the public institutions and the City Environmental Secretary,

as mentioned above. Also, residents from all four communities were engaged through awareness-raising and were educated to value the ecosystem services provided by the restinga. This enabled them to continue the ecosystem conservation. There was no funding or material participation from governmental institutions; the resources came from the local community. This is a multi-stakeholder project led by academia and supported by people interested in their own well-being.



Figure 63. Aerial view of the restored restinga, with partial view of the housing developments Orla 500, Vivamar e Terramar.

Outcomes

- The vegetation has protected the coastline and urban developments from marine and wind erosion, and sand movement that used to cover the road and the urbanised areas.
- Edible and pharmaceutical plant species have been identified.
- Public debates have been carried out on the role of the vegetation in the protection of urbanised areas (ecosystem services).
- The rubbish that was left on the beach was collected. Rubbish bins were relocated to the street next to the protected vegetation.

A technical report with further analysis of the impacts is being prepared by UFF students.

Success factors

The project was selected in 2017 as an example of an NBS for coastal areas, by the Boticário Foundation and Getúlio Vargas Foundation (a recognised Brazilian academic institution).

The main achievements were:

- Spontaneous participation of the communities in the project and the awareness raised about environmental issues and quality of life.
- Although without funding, this initiative raised debate about urbanisation and vulnerability in coastal areas.

Limiting factors and risks

- Lack of actual municipal commitment to fence the restored area, provide proper signage, and lack of participation of public servants in the hands-on activities.
- The financial resources to implement the activities were only from the communities' mobilisation, with no participation by the municipality.
- Absence of technical support from the public institutions in the establishment of plans and actions to restore the degraded areas, and proper management.
- Lack of political will to orient and support proper legislation and control to regulate the circulation and activities on the beach, mainly during holidays and high-season periods.
- The participation and engagement of only some of the residents, due to the cultural understanding of the aesthetic value of the restinga — many people are used to the controlled and homogenised gardens, with mostly exotic ornamental species, so they see the native ecosystem as 'messy' and of little value.
- Lack of environmental awareness of many residents and beach-goers that kept throwing away rubbish in the area.
- Pedestrians walking on planted areas and opening new pathways.
- Circulation of horses, vehicles, and motorcycles on the beaches and over the vegetation, impacting plants and birds' nests and increasing the risk of erosion.
- The menace of fires is high because there are no controls or designated areas for barbecues.

Lessons learnt

- If there is interest of any agent, public or private, there are positive results.
- Municipal engagement in the process is difficult, even if there are no high financial costs involved.
- National programmes and projects are good in conceptualisation, but when applied at state or municipal scales they don't always convert into positive results. The example of the national plan of coastal management is failing because the states and cities don't have financial resources to apply the plan.

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Selected references

http://www.p22on.com.br/wp-content/uploads/2017/12/P22ON_DEZEMBRO-2017-FINAL.pdf