

Development of interpretative trails in Brazilian protected areas

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Introduction

According to Tilden (1977), environmental interpretation instigates a new look at nature. So, this process should also inspire the critical construction of new concepts marked by environmental education. Interpretative trails are more than simple pathways to nature attractions and so they should be developed by following this precepts and encompass different objectives and subjects (Atalay, 2015). The Brazilian Ministry of Environment establishes guidelines for the interpretative trails in conservation units, a kind of protected area in Brazil, considering the visitors' impacts management. Therefore, environmental education in interpretative trails assumes different managerial dimensions based on the recognition of the social meaning of protected areas (Pimentel et al, 2017).

This paper aims to discuss the cases of interpretative trails' development experienced in different protected areas, pointing out similarities and particularities of the process from defining the environmental interpretation points to interpretative trails evaluation.

Methodology

The interpretative trails were developed by defining interesting environmental interpretation points for the visitor, but also allowing discussion of different concepts and themes related to environmental education in the protected areas.

The Morro das Andorinhas belongs to the Serra da Tiririca State Park (PESET-RJ). In the locality there is an old fishing trail that was used for the development of two interpretative trails (TMA1 and TMA2 - 833m) to the viewpoints. A folder assists the conductor and visitors in the environmental interpretation points (TMA2). The trails were tested with elementary and middle school students, by observation of their behavior, their collection of photographs and their answers to questions during the activities and later from the production of texts and drawings. In the same Park, the Enseada do Bananal Trail (TEB-660m) belongs to the Itacoatiara headquarters (Pimentel et al 2016).

The Coastal and Marine Interpretive Trail of Itaipu (TCMI - 2280m) is adjacent to the PESET. The course also includes the Itaipu Marine Extractive Reserve (other conservation unity category), as well as the Fishermen's Colony (Z-8). It was performed a survey with students of a technical course of touristic guiders to define the points for environmental interpretation.

The Itaipu Coastal Trail (TCI - 1500m) presents a similar layout to the TCMI, adequate to the activities of the Socio-environmental Program (PESA) of the Itaipu Archeological Museum (MAI). A guide folder and a game were produced in which elementary students are asked to relate local images to the observed ecosystems.

The Environmental Protection Area (a conservation unity category) of Engenho Pequeno and Morro do Castro (APAEP) includes a forest fragment in the poor Municipality of São Gonçalo (RJ). The Mirante Trail (TMAPAEP - 2000m) is the most visited and extends from the administrative headquarters to the viewpoint of 927m high. To evaluate its effectiveness, a slide show of the environmental interpretation points was produced for the realization of a classroom dynamics, subsequent to the activity on the trail. The Abraão-Abraãozinho Trail (TAA - Ilha Grande – RJ. 2600m) is located in the Tamoios Environmental Protection Area. The route goes from the Visitors Center of the Coral Sol Project (PCS) to the coast of Abraãozinho cove (there are two coral-sol exotic invasive species, belonging to genera *Tubastraea*). The attractiveness survey to define the environmental interpretation points was performed by the PCS environmental education team. The TAA was tested with university students, tourists, residents and educators. Volunteers were encouraged to critical observations. With the educators, diagnostic questionnaires of environmental perception and evaluation of the activity were applied.

Results and Discussion

The discussions proposed in the interpretative trails encompassed themes such as environmental history, biodiversity and conservation, parks' institutionalization, landscape' transformation and other socio-environmental issues (Pimentel et al, 2017). Historical curiosities such as the English naturalist Charles Darwin observations about the Serra da Tiririca were used in the TCMI, which is the first terrestrial and underwater trail established in Niteroi Municipality. The TCI presents a pedagogical proposal directed to the concepts of biome and ecosystem. The TAA contributes to the discussion and formation of multiplier agents on bio-invasion.

The TAA and TCMI were developed for tourists. The activities with a pedagogical profile are incorporated into school planning, either through actions proposed for a discipline (TMA1, TEB, and TMAPAEP) or as an interdisciplinary activity in the non-formal teaching space (TMA2, TCI). The shared experience with the students was adequate to the specific demands of the age, school curriculum, and management's objectives of the PESET and MAI Institutions.

When the interpretative trails are analyzed for the number of environmental interpretation points and time, it can be noticed an average of seven stops. All the trails are guided and evaluated with the participation of their target audience and the use of different dynamics as questionnaires; question and answer games; pre and post-tests of learning about specific topics, as well as overall observation of the guided tours. Trails and stopping points should be constantly re-evaluated.

The environmental education based on interpretative trails can be allied to recreation in parks and other protected areas and stimulate the understanding of local socio-environmental characteristics. This can also be the way to mitigate the environmental impacts caused by public use on trails. The protected area fulfills its preservationist objective and supplies the different forms of public use's management needs, besides qualifying the visit.

For the trails structuring in partnership with the school, it was essential the dialogical experience with the visiting students. The teaching objectives emanated from the school curriculum and were enriched by the conceptual basis of the critical and interdisciplinary environmental education.

The printed guides produced should not limit the possibilities of observation on the trail. In this context, it also expands the importance of the trail conductor to foment these discussions. Therefore, interpretative trails structured as an environmental education tool values the work of the teacher, as well as stimulates the recognition of the importance of environmental and cultural heritage conservation.

Final considerations

The interpretative trails primarily aimed at raising awareness of nature, but the discussions should not be limited to biological or ecological features. The interpretative trails based on environmental interpretation were quickly rationalized by protected area managers as an important management tool. The philosophical foundations of environmental interpretation are important for environmental education. However, what is generally observed is the limited focus on issues related to negative impacts' management of the visitation. The establishment of an environmental education process requires planning and several stages of execution with constant re-evaluations, which makes it difficult to effectively implementation in protected areas, which usually have budgetary and personnel limitations. Thus, the establishment of partnerships is of fundamental importance for protected areas to fulfill this fundamental objective.

References

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