Bothrops atrox in captivity: change isotopic composition in tissues collected from different environments of the eastern Amazon

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Introduction

Due to its aggressiveness Bothrops atrox is considered one of the most feared snakes in South America and in the eastern Amazon; being responsible for the largest number of snakebites in the region. However, there are few information about the ecology and natural history of this species, a sympatric snake of the Amazon region, where it is widely distributed. They are generalists that are easily found in the rainy months in areas near water bodies and in seasonally flooded. In the dry season, where prey is less available, these animals are difficult to find.

Objectives

Our main objective was to investigate the feeding ecology of B. atrox in different landscapes of the Amazon region: upland forest, savanna, and pasture. Our investigation was conducted through the lens of carbon and nitrogen isotopic composition of scale samples, faeces and preys samples.

Methods

Selection of the Sampled areas

The forest area was located in the FLONA-Tapajós, near the city of Santarém, and the forest was classified as terra-firme forest. The Amazon savanna (mixture of C3 and C4 plants) was located near the city of Alter-do-Chão. The two pastures were mainly composed by grasses of the genus Brachiaria, a C4 forage African grass genus introduced in Brazil.

Methods of collection:

1. Interception traps and fall (“pit-fall traps with drift fence”).
2. Active visual search time limited.
3. Casual encounter.

Isotopic analysis and statistics

The analyzes were performed by mass spectrometry, where the analytical error was 0.3 ‰ to carbon and 0.4 ‰ for nitrogen. The classical δ notation was used in this study. A one-way ANOVA was used to test for differences between landscapes.

Results and Discussion

Comparison of the average δ13C values of scales and faeces with the average δ13C values of the putative preys (Figs. 6 and 7), it is clear that in every landscape the energy source for B. atrox is composed by a mixture of C3 and C4 plants. Although the average δ13C value of preys of the forest is lower than in values of specimens of the pasture and savanna, this difference was not statistically significant. This lack of difference between specimens of forest, and savanna and pasture is somewhat surprising because it was expected that specimens of the forest would have a higher proportion of C4 carbon in relation to specimens of the savanna and pasture. The δ13C values of scales and faeces were similar, on the other hand, the δ15N of faeces were significantly lower than the δ15N of scales.

Conclusion

This is an ongoing project, more specimens and prey items were sampled, but were not analyzed yet. However, so far the most striking finding was the lack of difference between the δ13C values of specimens of the forest, and specimens of the savanna and pasture. An interesting task for the future is to investigate from where specimens of the forest of their preys are acquiring C4 carbon, that is typical from the savanna and pasture areas.