# EVOLUTION OF THE SOUTHEASTERN BRAZILIAN REPTILE FAUNA FROM CRETACEOUS: PALEONTOLOGY, PHYLOGENY AND BIOGEOGRAPHY

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This main objective of this project is to study the Brazilian southeastern reptile fauna from the upper Cretaceous to present time, allowing the characterization of expansion and retraction pulses that took place in the past 70 million years, and responsible for the present configuration of the reptile biodiversity. The improvement of knowledge about these processes will help in the recognition of parameters leading to the loss of biodiversity (in different temporal scales) in southeastern Brazil and ultimately contributing to the establishment of conservation strategies and sustainable use of natural resources.

In order to develop our study, it is necessary to improve and organize our knowledge of the reptile diversity through geological time. This survey will allow cross-checking of data of extant and past faunas in a vertical axis (chronostratigraphic axis). The project possesses five major lines of scientific activities: i) a survey of the reptile diversity in the state of Sao Paulo from the upper Cretaceous to Recent through the elaboration of a database including specimens in natural history collections; ii) Inventories of living and fossil reptiles in the biomes and fossil basins of southeastern Brazil; iii) Elaboration of phylogenetic studies of key extant and extinct tax; iv) Combine data on the distribution of fossil and living tax with phylogenies and identified timeframes; v) Strengthen collections and study groups of vertebrate paleontology in the state of Sao Paulo.

*A draw of an alive* Najash rionegrina, *a snake with feet in the superior cretaceo in Argentina, described in* Nature, *2006, by the grant coordinator and a colaborator from Argentina*

The Cretaceous and Tertiary will be surveyed in the following basins: 1) Bauru basin (Upper Cretaceous); 2) Itaboraí basin (Paleocene) and Taubaté basin (Eocene - Oligocene). The extant reptile fauna will be sampled in localities within the two major biomes of the southeast: the Atlantic Forest and the Cerrado. Other regions of Brazil will be surveyed in order to provide a comparative background for the reptile diversity pattern found in the Brazilian southeast.

## SUMMARY OF RESULTS TO DATE AND PERSPECTIVES

The team conducted 50 field expeditions which resulted in significant collections of fossil and recent Amphibians and Reptiles in more than 20 localities in Southeastern Brazil. Several new taxes were collected and are presently under study.

Results from research and field work can be summarized as follow:

1) elaboration of commented lists of snakes from the Atlantic Forest and reptiles from the State of Sao Paulo;

2) normalization of the scientific collections of recent and fossil Amphibians and Reptiles of the Zoology Museum of the Sao Paulo University;

3) discovery of a new Lower Cretaceous fossil locality in the Sanfransciscan basin, with remains of Dinosaurs and other tetra pods (the first record of fossil dinosaurs in this basin);

4) elaboration of a molecular phylogeny of Neotropical Xenodontine snakes;

5) conduction of a total evidenced analysis of the higher-level affinities of snakes;

6) description of several fossil crocodiles and a snake from the Upper Cretaceous of Brazil, and several amphibians and Reptiles from the Atlantic forest, Cerrado and Amazonian biomes.

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