



## DIVERSITY AND ABUNDANCE VARIATIONS OF ANURANS AT A PERMANENT POND IN SURUACA'S VALLEY, LINHARES, ESPÍRITO SANTO, SOUTHEASTERN BRAZIL

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### INTRODUCTION

The distribution of anurans depends upon a series of ecological variables, such as microclimatic conditions, altitudinal variations, type of habitats, period of rainy season, human influences, and the availability of special kinds of vegetation necessary for the specific reproductive strategies of each species. Due to the necessity of an aquatic place for tadpole survival of the most species, the anuran tend to occur in restricted periods of the year, what is conditioned mainly to the rainy periods and increase of temperatures (Cardoso & Martins 1987). Herein, we present data on the anuran community inhabiting a permanent pond in a human modified area during the rainy period at Suruaca's Valley, county of Pontal do Ipiranga, Municipality of Linhares, Espírito Santo state, southeastern Brazil. We assessed the dominant species, the degree of structural monthly patterns, the diversity index, and the degree of similarities among dominant species.

### MATERIALS AND METHODS

Study Site - Fieldwork was conducted in the lowlands of Pontal do Ipiranga (Suruaca's Lagoon Farm, 19°07' S, 39°46' W), municipality of Linhares, Espírito Santo State, southeastern Brazil. The vegetation of the analyzed pond was dominated by dense and high plants. The pond covered an area estimated in 750 m<sup>2</sup> and most parts were shallow, but reached up to 3 m depth at the middle during the dry season (winter). The lack of rain for a long period during the winter, certainly affected the water volume in the pond during the study time.

### RESULTS AND DISCUSSION

During the surveys, 26 anuran species belonging to seven families were identified at the pond. The family Hylidae was clearly dominating with sixteen species. *Scinax argyreornatus* was numerically the dominant species, representing 12.3% of all anurans

sampled. *Hypsiboas semilineatus* and *S. alter* represented 11.5% being the two anurans secondarily important in the community. The anuran fauna inhabiting the lagoon was dominated by generalists characterized by a wide distribution within the Atlantic Rainforest and the Cerrado-Caatinga Biom and inhabiting open as well as forested areas. The total number of species varied from 15 to 22 between the months, increased from November 2001 until January 2002 but showed a tendency to decrease in the last month. The number of counted individuals varied from 35 to 224, and followed the same pattern as the number of species. The Shannon-Weaver diversity index showed a similar pattern, with differences in November 2001 associated to the number of individuals obtained for different species. During the vocalizations' peak season (January, February) the roads near the study site were over flooded evidencing strong rain falls. The cluster analysis based on the percentage of individuals per month showed two main groups. One group was composed by the most abundant hylid frogs, such as *D. minutus*, *D. branneri*, *H. albopunctatus*, *H. faber*, *S. alter*, *S. fuscovarius*, *H. semilineatus* and *S. argyreornatus*. All of them occurred in high number throughout the study and most of them showed a peak in January. The second group was formed by the other species that generally occurred in lower abundance more evenly distributed from December through March. The numbers of species that occur in a specific habitat depend upon the number of microhabitats available and the success of colonization by the species. Furthermore, the numbers of species, which are known to inhabit a specific area, depend on the sampling effort. As a general pattern, it appears that Atlantic Rainforest communities inhabiting undisturbed areas are commonly more diverse than communities inhabiting human modified Atlantic Forest habitats or areas within the much drier Cerrado-Caatinga Biom. Next to the diversity of taxa it is important to pay attention toward abundance patterns. It is possible to divide the total number of species into

taxa which occur in large numbers and those which are only represented by few individuals. The last group can often be characterized as transitional species which normally do not breed in the studied habitat. Due to their low abundance they have only a low effect on competition within assemblages. The community analyzed here was dominated by *D. minutus*, *D. branneri*, *H. albopunctatus*, *H. faber*, *S. alter*, *S. fuscovarius*, *H. semilineatus* and *S. argyreornatus*, the remaining species are suggested to be species with a reproductive period which was not covered during the survey time or to be transitional species.

## CONCLUSION

The anuran community studied in here was mainly composed of species widely distributed throughout the Atlantic Rainforest and Cerrado-Caatinga Biom (*C. crucifer*, *H. albopunctatus*, *D. branneri*, *D. minutus*, *D. elegans*, *H. faber*, *H. semilineatus*, *L. ocellatus*, *P. bolbodactyla*, *S. fuscovarius*). All these species are generalists inhabiting a great variety of habitats. *Dendropsophus bipunctatus*, *S. alter*, and *S. argyreornatus* are species whose distribution is restricted to the Atlantic Rainforest Biom and which can be considered as more specialized. Comparing this community with other assemblages inhabiting undisturbed areas within the Atlantic Rainforest, such as described by Heyer et al. (1990), Prado & POMBAL (2005), it is evident that the number and abundance of typical Atlantic Forest species is reduced here and compared with locations within the Cerrado-Caatinga Biom the community share more species. Grandinetti & Jacobi (2005) analyzed an anthropogenic disturbed area in Rio Acima (MG) and found a total number of 14 species. The analyzed area shared 6 species – all generalists - with our assemblage. Although the anuran diversity in the Suruaca's Lagoon was higher than in Rio Acima, it appears that this human modified habitat is mainly colonized by generalistic species, which can become invasive in deforested and agricultural used landscapes. The communities studied by Teixeira et al. (2007) are also more similar to the community analyzed here than to the communities described by Heyer et al. (1990).

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