RICHE AND COMPOSITION SPECIES IN THE LAGUNAR SYSTEM OF THE ORINOCO RIVER. VENEZUELA.

Gordon, E., Quevedo, A.M., Suárez-Villasmil, L.

Instituto de Zoología y Ecología Tropical, Facultad de Ciencias, Universidad Central de Venezuela,

Caracas 1041-A, Venezuela. Email: elizabeth.gordon@ciens.ucv.ve, lourdes.suarez@ciens.ucv.ve

Abstract

We did a quantitative and qualitative description of the aquatic plants species in 11 lagoons placed at the Orinoco River flooding during the 2010's dry season. We found 19 species: 10 monocotyledons species (5 families), 5 dicotyledons species (4 families) and four fern species Pteridophyta (3 families). In monocotyledons, the higher richness family was Cyperaceae; in dicotyledons the higher richness family was Onagraceae, while on ferns species the higher richness family was Salviniaceae. Regarding with the live form, the emergent and floating free plants was the most important groups, with equal species number (8); followed by floating established plants (2 species) and submerged plants (1 species). In five lagoons we didn't found any aquatic plants species, and in the remaining ones the whole richness was between 3 and 13 species (average 7.5 species/lagoon). The similarity on species composition was between 0 and 90%. The species with higher frequency and cover were Eichhornia crassipes and Paspalum repens. The existence of lagoon with or without aquatic plants communities, may respond to differences in geology, geomorphology and the dynamic of the Orinoco River. That variability determinates a broad variability in the water characteristics and the plant colonization substrate, likewise, the plants may change their environment. The variability in water and soil conditions determinates the high vegetation heterogeneity in these lagoons.

Introduction:

The fluvial system frequently flooded of the Orinoco River, presents numerous temporary and permanent lagoons with forms and physical and chemical water characteristics different, which are influenced by the annual increasing of the river and when the river separates after the inundation period (Sanchez and Vásquez 1986), translated in very heterogeneous and productive aquatic plants communities that carry out an important function in the ecosystem biochemistry (Sanchez and Vásquez 1986, Mitsch and Gosselink 2007).

Rodriguez and Betancourt (1999) studied the physicochemical characteristics of a flooding lagoon in the middle section of the Orinoco River; nevertheless the aquatic vegetation has been poorly investigated, but it emphasizes the Sanchez and Vasquez (1986) work who analyzed the seasonal dynamics in the composition of present species in the lagoons in the low section of the Orinoco River. Owing to the development plans in the country of a direct or indirect way imply the use of the aquatic resources of the Orinoco; demand the aquatic vegetation characterization in the lagoons ecosystems in an area on the Orinoco River.

Objectives:

Describe the vegetation across the plants composition on the basis life forms (habitat) and determination of the plants species riches in the flooding system of the Orinoco River.

Material and Methods:

The sampling was realized between 19 and 25 January 2010, understood a qualitative and quantitative detailed description of the aquatic vegetation and flooding systems located in the Orinoco River, inside the polygonal study. The lagoons located by the use of a recent satellite image SPOT 5 and the orientation of a GPS.

A compilation was realized and taxonomic identified samples of collected plants. With the identified species there was elaborated the list of present species, life form or growth, family, genus, endemic species in condition of risk (on the verge of extinction or vulnerable) and ecological interest species.

Results:

The total riches was 19 species distributed in 10 monocotyledons with five families, five dicotyledons with four families and four ferns species present (Pteridofitas) in three families. In monocotyledons, Cyperaceae was the family with higher riches. In dicotyledons, Onagraceae was the family with more species, whereas in the ferns Salviniaceae was the higher riches. Agreements with the life form, emergent and floating free plants were the most important with equal number of species (8 species) followed of floating established plants (2 species) and submerged plants (1 species).

On the basis of the species frequency, the most important as distribution and coverage in the lagoons were Eichhornia crassipes (Bora, Hyacinth or Water iris), followed by Paspalum repens (Flying Stopper) and Cyperus sp. A common element was Utricularia af. foliosa, carnivorous species that is considered to be warning of acid waters (low pH) and poor nutrients, principally nitrogen. In these lagoons, almost the plants water they gather in floating marshes, with local different names (floating islands, dammed) and length and depth varied depending on the topography of the lagoon and the species compose it, they are considered an example of the process of succession of the land to the water.

Discussion:

Even though the sampling realized during short time, the total riches (19 species) found in this work turned out to be relatively top to it found by Sanchez and Vasquez (1986) for different lagoons in the low section of the Orinoco River. The species frequency more importantly coincides with the brought for Sanchez and Vasquez (1986), and Diaz and Rose-bushes (2006) for aquatic plants communities present in lagoons environments in flooded of the Orinoco River.

These "floating islands" beside containing herbaceous vegetation, some of them support trees and during flooding provide refuge to animal wild in wetlands, since they are never covered by water (Ibáñez 2009), by they can be considered refuges of biodiversity priority at the moment to employ conservation strategies in this region.

Conclusions:

In the stud area, the presence of lagoons groups with or without aquatic plants communities was attributed to differences in the geology, geomorphology and dynamics of the Orinoco River itself, which determines physical and chemical water characteristics different and the potentially plants substrata settling, establishment and spread.

The relationship between composition of species of plants with studies on vegetation dynamics realized more than 20 years ago (Sanchez and Vasquez 1986), even with the most recent studies (Díaz and Rose-bushes 2006) disclosed that the total riches and the most important species have not changed substantially. This suggests that the aquatic plant composition might be an indicator of the biological integrity or "health" of these ecosystems.

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