TROPICAL COMMUNITIES

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Summary

Tropical community concerns the set of biodiversity occurring along the tropics. Different kinds of habitats are found in tropical region besides rainforests like savannas, mounting systems, and deserts. This habitat variability, coupled with high luminosity and precipitation in relatively stable climatic domains, creates the range of resources necessary to support high local and regional diversity. The main features of tropical community are high species richness, low interspecific abundance evenness, high degree of biological interactions, and the presence of high numbers of rare and endemic

species. Spatial and temporal factors, for example, spatial heterogeneity and secondary succession, are supposed to explain in part this characteristics, but we cannot establish causes-effects relationships. On the other side, it is very clear that tropical areas are today the top of list region of the planet concerning ecological threats. The potential for deforestation is huge, because population is seeking new fronts to the growing expansion of goods societies are supposed to need. Consequently, the terrestrial and marine ecosystems of tropics are in great danger just because humans do not seem to yet understand the interconnection of biological interactions and its impact on every living thing of Earth.

1. Introduction

A biological community refers to a set of populations of different species gathered together in a certain area. For some ecology scientists, such a group of populations may be defined by its taxonomic relationships. In this case, one could talk about assemblage instead of community. Therefore, we can think about our "garden community" as the whole set of species that occur in it: herbs, bushes, trees, insects, spiders, fungi, bacteria, the dog... And in our garden community we would have an assemblage of spiders, for example. There are other ways we could use to define a set of different species. If we are interested in a particular set of species that exploit in a similar way some kind of environmental resource, we could use the term guild. Considering our garden, we could identify, for example, all nectar drinking species that transfer pollen of certain plants, including, in this case, some insects, birds and bats species. In brief, ecologists can define these sets of species that live in a certain time and space based on three criteria: 1) space/habitat (example: all species living in a rocky sea shores or a lake), 2) taxon (example: all birds of an area or region), or 3) resource (example: all nectar drinking creatures that spread the pollen of plants).

Hence, the term 'tropical communities' concerns the set of species populations, as defined by the criteria above, that is located in the tropics. The tropics comprise the part of the planet that is limited by the Tropics of Cancer and Capricorn. Climatically, it corresponds to the isotherm of 18^{o}C in the coldest month at the sea level. During the seasons, areas that are located in higher altitudes could to present lower temperatures. However, as a rule, the temperature in the tropics does not vary so markedly as in the temperate zones of the planet.

Tropical zones generally present less temperature variation than the temperate ones. On the other hand, precipitation (and consequently evapotranspiration) becomes a key environmental factor in the tropics. This factor will determine the main kinds of vegetal communities. For example, in some areas of India the precipitation of 3,000 mm.year^{-1} is concentrated along three months during the year (the monsoon rains). This feature of tropical regions is in great part responsible for the high diversity of species that is found in tropical communities. Surely, the climate is responsible for the presence of rain forests in the tropics, because the development of dense vegetation is only possible with availability of water and light. Therefore, the favorable and constant atmospheric conditions present in tropics help to sustain higher primary productivity (vegetation mass), which is able to support much more organisms that feed on the living parts of plants (herbivores), as well as on the dead ones (fungi, bacteria). Consequently, more

organisms that feed on herbivores will also be benefited, and more species will be present in the food web.

The tropical communities do not inhabit only the rain forests. A gradient of different conditions can be seen from the zero latitude (equator) to the north and south 23.5^{o} latitudes, and conditions may also change from the coast to the interior continental regions. Therefore, this range of different conditions gives rise to different tropical communities associated with different vegetation formations. We can find, besides the rain forests, savannas, other kinds of forests (for example: *Araucaria* forest in southern Brazil), grasslands, and even deserts. In marine ecosystems, as well as terrestrial systems , photosynthesis is the driving force behind maintenance of life, and it is generally true that coastal waters within the tropics tend, in parallel with terrestrial environments, to be richer in number of species than those at higher latitudes.

2. Tropical Ecoregions

The attempts to describe and classify habitats try to combine elements including the kinds of plants alone and the set of all species living in a place. One problem with this approach is that the more precisely a certain community is defined, the more site-specific it becomes, that is we only could talk about the community of a tiny piece of a region, which limits its use in a geographical sense. If we would attempt to do a list of all communities of all pieces of land, it would be enormous.

A more recent related approach attempts to delimit ecoregions, which is defined as large units of land containing distinct assemblages of natural communities and species, with boundaries similar to the original extent prior to anthropogenic change. This system is inside biogeographical realms, which in turn is inside biome systems. We present below a brief list of main tropical ecoregions.

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Biographical Sketches

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Ronei Baldissera: presently is member of Population and Community Ecology Lab post-graduate student staff in Federal University of Rio Grande do Sul state (UFRGS), Brazil. Doctoral project deals with the effects of Atlantic Forest fragmentation on web-spider distribution and occurrence by accessing possible landscape and within fragments factors that could influence the assemblage structure and function. Additionally, Ronei is taking part on a multitaxa approach project that aim to investigate the edge effects

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