

**INSTITUTE OF APPLIED RESEARCH IN SUSTAINABLE ECONOMIC
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VALUING AND GIVING VALUE TO BIODIVERSITY

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The word biodiversity, although known, became part of everyday life with its release in the ecological context, in 1986, the United States of America, by bringing together the various forms of life on Earth and their interactions under a unified concept.

The biologist Thomas Lewinsohn, of the Instituto de Biologia da Universidade Estadual de Campinas (Unicamp) estimates that there are at least 1.75 million known species and a quantity of approximately six hundred millions of organisms yet to be discovered, despite disagreements about this number. How much does this search? Five hundred million to one billion dollars per year over a period of nearly fifty years. That's a lot of money? Yes, but the world military expenditure paid in 2011 was on the order of 1.7 trillion dollars, that is, matches just five days the value budgeted for research mentioned above.

Today more than 50% of the Earth's surface is degraded by human activity, according to the biologist Jean Paul Metzger of the Instituto de Biociências da Universidade de São Paulo (USP). According to the researcher, that means we're quickly invading natural areas, either through the extension of our agricultural frontiers or urban occupations. This not only leads to the disappearance of habitats, as well as the fragmentation of ecosystems, that is, the spatial and functional subdivision of these areas. This process is one of the leading causes of biological diversity loss in Brazil and in the world. The more fragmented is a landscape, the greater the rate of extinction of species that live there. On the other hand, the smaller this fragmentation, the lower

the isolation between habitats fragments enabling the increase or maintenance of rates of colonization and by again of species in this region.

In front of these challenges is that ecological principles before left side wins becoming more strength, this century 21, being present in political discussions of economic planning and being directed to a sustainable strategic development plan.

The best example is the establishment by the United Nations (UN), in 2012, of the Intergovernmental Platform on Biodiversity and Ecosystem Services, (IPBES). She will be responsible for the difficult task of making scientific knowledge produced about biodiversity in the world is gathered and systematized in order to subsidize political and economic decisions at the international level, along the same lines of the Intergovernmental Panel on Climate Change (IPCC).

It is true that the perception of political players and society about the importance of environmental conservation turned slowly, from the 19 century, this is because the economic production processes always exceeded the discussion of environmental conservation.

The changes began to gain body with the studies that sought to enhance the systemic functions under the premise that the economic activity and human well-being would be dependent on the natural services it has generated, as the production of oxygen, food and drinking water.

However, the two groups – environmental and economic – disagreed about concepts such as the environmental functions and natural services, among others, being unable to understand them as principles that bind the interests of both parties. This conflict was easing as they began to understand the ecosystem goods and services as support systems not only to life but also to the economy. On the other hand, as different authors were working separately over the years, widening the set of definitions attributed to these services. Now they are conditions and processes, are systemic functions in other situations are products of ecological functions.

In practice these concepts can be understood. The landscapes are home to structures and processes linked to functions (such as fish stocks) that provide services (stocks of fish), which should be worked out within a social and cultural context, from its benefits.

The same occurs with the mangroves that beyond the use of scenic beauty and have a storage capacity of carbon slightly smaller than other tropical forests, no more despicable. The total value is significant not only because their area is much smaller – just over one million hectares – than that of Amazon, approximately 500 times larger. But, if in addition to the leaves and stems to consider-if the roots and sediments, the mangrove earns per unit area, is pointing to a study coordinated by Mário Soares, Oceanographer of the Universidade do Estado do Rio de Janeiro (Uerj), the Núcleo de Estudos em Manguezais (Nema), researching the mangrove de Guaratiba, 70 miles west of Rio de Janeiro.

Important aspect of this research is that the methodology and techniques employed in Rio de Janeiro can be used to figure out what's going on in other regions. With adaptations, since the structure of the forests and the ability to store carbon increases towards the equator, the Group of researchers fluminense has already begun to apply these models to mangroves along the Brazilian coast – Florianópolis, Santa Catarina, São Caetano de Odivelas in Pará.

The valorization of biodiversity will give value it, starting with services coming to the structures and processes which determine the functions. Studies published in mid-1990 estimated the value of ecosystem services in the world at \$ 33 trillion, of which \$ 20.9 trillion are goods and associated services to the marine and coastal environments.

The relationship between biodiversity and systemic functions – the contribution we receive from nature to our quality of life and productive activities – and complex is partly unknown. Estimates indicate that there is anything in throne of 25 thousand species of edible plants on the planet have not yet identified, nor fully understand the functions that each species plays in various ecosystems. Thus, the production of knowledge about such issues must be continuous, in order to be used in support of policies of conservation and restoration of biodiversity.

In this sense it is laudable to successful initiative of the program Biota-FAPESP Education – a cycle of conferences initiated in March 2013, has demonstrated the importance of ecosystem services associated with biodiversity. Last year the Brazilian biomes were discussed, namely: Pampa, Pantanal, Cerrado, Caatinga, Mata Atlântica, Amazônia, Marine Enviroments and Biodiveresity in Urban and Rural Man-made Enviroments. This year the focus is on the following themes: Biodiversity and Pollination, Biodiversity and Protection of Water Resources; Biodiversity and Climate Change; Biodiversity and Nutrient Cycling.

That other Brazilian States, such as São Paulo, follow this beautiful and good program!