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Thematic Review

Contributing to the advancement of the state-of-the-art in biodiversity research: the role of FAPESP in the last 60 years

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Abstract: Since its creation in 1960, the São Paulo State Research Foundation (FAPESP) has been supporting biodiversity research; however, in the early years, this large umbrella was still divided into botany, ecology, and zoology. This support became more effective by the establishment of the Research Program on Characterization, Conservation, and Sustainable Use of the Biodiversity of São Paulo State, better known as the BIOTA/FAPESP Program, in 1999. The program adopted the definition of biodiversity of the Convention on Biological Diversity and focused on 4 priorities: a) advancing scientific knowledge about Brazilian biodiversity; b) training high-level personnel (master's degrees, PhDs and postdocs) to carry out biodiversity research; c) transferring the advancement of knowledge to improve public policies on biodiversity conservation and restoration; and d) transferring private sector knowledge to economically explore the potential of Brazilian biodiversity by using it sustainably. This paper summarizes the major achievements of the BIOTA/FAPESP Program, now entering its third decade of existence.
Keywords*: Convention of Biological Diversity; Biodiversity Conservation; Human Resources Training in Biodiversity; Biodiversity Information Systems; Bioprospection; Research Policy.*

Contribuindo para o avanço do estado da arte da pesquisa em biodiversidade: o papel da FAPESP nos últimos 60 anos

Resumo: Desde sua criação em 1960, a Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP) vem apoiando a pesquisa em biodiversidade, embora nos primeiros anos este grande guarda-chuva tenha sido dividido em botânica, ecologia e zoologia. Este apoio tornou-se mais efetivo com a criação em 1999 do *Programa de Pesquisa em Caracterização, Conservação e Uso Sustentável da Biodiversidade do Estado de São Paulo*, mais conhecido como Programa BIOTA/FAPESP. O Programa adotou a definição de biodiversidade da Convenção sobre Diversidade Biológica, e focalizou em 4 prioridades: a) o avanço do conhecimento científico sobre a biodiversidade brasileira, b) o treinamento pessoal de alto nível (mestrado, doutorado e pós-doutorado) para a realização de pesquisas em biodiversidade, c) a transferência do avanço do conhecimento para melhorar as políticas públicas de conservação e restauração da biodiversidade, d) a transferência para o setor privado do conhecimento para explorar economicamente o potencial da biodiversidade brasileira, utilizando-o de forma sustentável. Este documento resume as principais realizações do Programa BIOTA/FAPESP, atualmente denominado *Programa de Pesquisa em Caracterização, Conservação, Restauração e Uso Sustentável da Biodiversidade,* agora entrando em sua terceira década de existência.
Palavras-chave: *Convenção sobre a Diversidade Biológica; Conservação da Biodiversidade; Formação de Recursos Humanos em Biodiversidade; Sistemas de Informação sobre Biodiversidade; Bioprospecção; Política Científica.*

Background

Among the group of scientists who conceived the São Paulo State Research Foundation (FAPESP) in 1960/62, life science researchers had prominent participation. Here, we highlight the renowned Brazilian zoologist Paulo Emílio Vanzolini and the internationally recognized geneticists Crodowaldo Pavan and Warwick Estevam Kerr, who occupied strategic positions during the early years of FAPESP history. Therefore, life science has received special attention since the first research grants were awarded (Joly et al. 2022).

Established by law in 1960, FAPESP started to operate in 1962 with two modalities of financial support: 1) Initiatives and 2) Special Programs. The former is currently called Regular Grants (*Auxílios à Pesquisa,* in Portuguese), and the latter is currently called Thematic Grants (*Projetos Temáticos*, in Portuguese). At that time, all major lines of research were established by the Foundation itself according to researchers' recommendations and experiences from Research Agencies abroad. With the first projects submitted seeking support, FAPESP immediately established that all proposals should be anonymously peer-reviewed. After this first step,these projects and reviews were analyzed by a Panel of Experts (Comitês de Área), then by the Scientific Directory, and finally submitted to the Technical Administrative Council (Motoyama, 1999).

Not surprisingly, two of the four first Special Programs were focused on aspects of biodiversity, namely: 1) The Center for Comparative Histology for Brazilian Wild Mammals, proposed by the Department of Histology and Embryology of The School of Medicine of São Paulo (USP), with the participation of the Departments of Histology of the Faculty of Veterinary Medicine, Odontology, Philosophy, Sciences and Letters; and 2) studies about the *Stevia rebaudiana* Bert. 1905 (Asteraceae) plant, including the Institute of Botany, the Agronomical l Institute of Campinas, Ribeirão Preto Faculty of Medicine, Ribeirão Preto School of Pharmaceutical Sciences, São Paulo Faculty of Medicine and Luiz de Queiroz Superior School of Agriculture, (Joly et al. 2022).

In the late 1960s, FAPESP projects led to the development of field studies and expeditions to better understand the Brazilian flora and fauna and to improve the landscape's scientific cartographic interpretation. Additionally, this initiative provided a set of aerial photos and triggered the establishment of the Brazilian Institute of Geography and Statistics (IBGE) Map Locality Index (Joly et al. 2022).

The Permanent Expedition to the Amazon Project, developed in partnership with the National Institute for Amazonian Research (INPA), the Emilio Goeldi Museum of Pará (MPEG), and Harvard University until 1987, resulted, for example, in a significant increase in the collection of specimens in all these institutions, especially in the Museum of Zoology at USP (Motoyama, 1999).

In 1967, to facilitate the exploration of the extremely important aquatic environments of the Amazon, FAPESP funded the construction of two boats in Oriximiná, Pará: the Lindolpho Guimarães, 11.5 m long, and the Garbe, 18 m long, were both used by researchers from São Paulo, Rio de Janeiro, Belém, Manaus, and the United States in scientific expeditions to unexplored regions of the Amazon. After the projects finished, the boats were donated to the National Institute of Amazonian Research (INPA) (Motoyama, 1999).

The Ecological Coastal Centers Project structured the Coastal Centers Network, which was composed of the Southern Center in Cananéia, the São Sebastião Center (currently CEBIMAR), and the Northern Center in Ubatuba. More than fifty years later, these centers are still associated with the University of São Paulo.

Nevertheless, in the 1960s, FAPESP supported the creation of the Laboratory of Chemistry of Natural Products (IQ-USP) under the supervision of Otto Richard Gottlieb and Paschoal Senise. Since the beginning, the laboratory has maintained an intense collaboration with INPA, Emílio Goeldi Museum (MPEG), and the Federal Universities of Ceará, Paraíba, Minas Gerais, and Rio de Janeiro Rural University. The laboratory also had the support of the National Council for Scientific and Technological Development (CNPq) and the Brazilian Innovation Agency (FINEP) through the Program of Support to Scientific and Technological Development (Joly et al. 2022).

In 1978, FAPESP approved the Special Project "Typology of Water Reservoirs of São Paulo State", coordinated by José Galizia Tundisi, and the project studied 52 water reservoirs of São Paulo state, using a limnological approach to characterize them. This project, considered a pioneering effort in modern Brazilian limnology, increased the understanding of dam functioning mechanisms, improving the methodology to compare reservoirs.

During 1994 and 1995, for the first time, a network of botanists gathered to draw up the Thematic Project Phanerogamic Flora of São Paulo State (started in 1995), initially under the coordination of Prof. Hermógenes de Freitas Leitão Filho. In an unprecedented way, this project brought together all the phanerogam botanists in the State of São Paulo. This was possible due to the standardization of parameters, both when evaluating herbaria collections and when evaluating complementary collections made by expeditions planned to cover areas lesser studied in the state of São Paulo. It was based on a prior study that identified the collection effort already carried out in each region of the state. Unfortunately, the project did not use GPS for sampling because of the lack of precision and the cost of the models available. This condition hampered the inclusion of data in systems such as the Global Biodiversity Information Facility (GBIF). The main outcome of the project is a series of books on the Phanerogamic Flora of São Paulo State. Eight volumes have been published thus far. These include approximately 50% of the 195 families, 1,776 genera, and 7,305 native species known in São Paulo state. All volumes are available at https://www.infraestruturameioambiente.sp.gov.br/institutodebotanica/ffesp_online/) (Joly et al. 2022).

The BIOTA/FAPESP Program

Scientists started to use the concept of biological diversity, proposed in the early 1980s by Thomas Lovejoy (see https://environment.yale.edu/news/article/thomas-lovejoy-on-biodiversity-habitat-fragmentation-and-50-years-in-the-amazon). However, the short form, biodiversity, has been used since the American National Forum on Biodiversity in 1986 (Wilson, 1988). Biodiversity refers to the great variety of life on earth in all its forms, e.g., from genes to ecosystems, from bacteria to elephants and to humans, and from oceans to the arctic tundra, and all the processes supporting it. This definition, used by the Convention of Biological Diversity/CBD (1992), was adopted by the BIOTA Program since its start.

Biodiversity science is a multidisciplinary field that uses tools and theories from different areas, such as molecular biology, taxonomy, systematics, genetics, traditional ecological knowledge, political

sciences, earth sciences, ecoinformatics, economy, and ecology. It seeks to create a broad framework to better understand the causes and maintenance of biodiversity to elaborate the prediction of its response to human activities (Seddon et al. 2016).

Biodiversity is widely recognized as a priority area of research in developed and developing countries, particularly in Brazil, which harbors 15 to 20% of the world's species. In terms of biological diversity, the State of São Paulo has among the highest in the country due to its geographical position, the transition between tropical and subtropical regions, and the heterogeneity of its relief. However, throughout the process of economic development, much of this wealth has been destroyed. When the Portuguese reached the coast of what is currently known as Brazil, in April 1500, the two main biomes of the state were the Atlantic Forest *sensu lato* (Joly et al. 1999) and the Cerrado savannas (Cavalcanti & Joly, 2002). The former covered 83% of the São Paulo State territory (Victor, 1975), and the latter covered 14% (Kronka et al. 1998). Today, approximately 28% and 2% of these biomes are left, respectively, mostly occurring in small and degraded fragments (Tavares et al. 2019).

The CBD, approved in Rio de Janeiro in June 1992, during the United Nations Conference on Environment and Development/UNCED, or ECO-92, highlighted, along with other priorities, the need to deepen knowledge about biodiversity[1].

In this sense, the Secretariat of the Environment of the State of São Paulo, created the State Program for Biodiversity Conservation – PROBIO/SP in 1995, using the information already available in the literature to establish the priority areas for conservation of the Cerrado of São Paulo and the List of Threatened Species of São Paulo state (Joly et al. 2022).

In parallel, the São Paulo research community, already developing research in biodiversity under the leadership of the Coordination of Biological Sciences of FAPESP, initiated a discussion on the need for the area to seek greater integration between the various lines of research. In early 1996, this discussion concluded that it was vital to establish a coordinated research initiative to promote the advancement of knowledge, education, and training of highly qualified professionals, as well as the transfer of knowledge to public institutions, to improve the mechanisms and policies for the conservation, restoration, and sustainable use of biodiversity (Joly et al. 2022).

In 1999, FAPESP revolutionized the study of Brazilian biodiversity, creating the Research Program on Characterization, Conservation, and Sustainable Use of the Biodiversity of São Paulo State, better known as the BIOTA/FAPESP Program. This program sought to understand, map, and analyze the biodiversity in São Paulo State, including its fauna, flora, and microorganisms. Additionally, it evaluated possibilities for sustainable use of plants, animals, and microorganisms containing molecules with economic potential and helped to formulate conservation policies (Joly & Speglich 2003; 2005, Speglich & Joly 2003).

The highly innovative program was the first biodiversity research program in Brazil to use an internet-based system to organize data and research. It also standardized the inclusion of GPS-based information about the sampling site and adopted the Darwin Core as a data standard (Canhos et al. 2022).

The SinBiota (https://sinbiota.biota.org.br), which is the Biota Environmental Information System, is an online platform that integrates a species occurrence database and overlaps it with a geographical information system. It is fed online and has free public access. Searches combine species occurrences plotted in an atlas of various maps (such as biomes, hydrological zones, protected areas, and urban areas) at a spatial resolution of 1:50,000, which is why the program was also known as the Virtual Institute of Biodiversity. To date, 135.953 specimens have been collected (95.905 in terrestrial environments, 22.569 in marine environments, and 17.479 in freshwater environments), with 19883 occurrences, and 180 taxonomic groups have been studied by 206 projects (Joly et al. 2022).

When SinBiota was launched at the end of the 1990s, it faced resistance from part of the research community to include their data online and make it open access. This reluctance stemmed from the transition of an individual to a collaborative internet-based way of sharing science. Therefore, in addition to being the first biodiversity internet-based program, it helped to push the scientific community toward an open science model experience (Soberón & Peterson 2004).

In 2001, the Biota Program launched a scientific journal that was "online only": the Biota Neotropica (https://www.biotaneotropica.org.br and https://www.scielo.br/j/bn/). This journal publishes the results of research projects, associated or not with the program, relevant to the characterization, conservation, restoration, and sustainable use of biodiversity in the Neotropical region. One innovation of the journal was to accept species inventories. This was a demand by most biodiversity taxonomists, who usually work on baselines to other scientific approaches. Publishing the inventories authored by the taxonomists was one more initiative of the program policy aiming to recognize the crucial effort of these experts to advance biodiversity science.

In June 2003, the Biota Program launched the Biota Network of Bioprospecting and Bioassays, called BIO*prospec*TA (www.bioprospecta.org.br) (Joly & Bolzani, 2017). The objective was to expand the success of the thematic project, developed under the Program, on bioprospecting of Atlantic Forest and Cerrado plants for the entire biota of the State of São Paulo. With BIO*prospec*TA, the Biota Program expanded its focus, in terms of both the organisms studied and the bioassays used, integrating all research groups in the state of São Paulo that act directly or indirectly, with the prospecting of bioactive natural products from microorganisms, macroscopic fungi, algae, plants, invertebrates (including marine) and vertebrates. The results of BIO*prospec*TA have been summarized in Silva et al. (2022) and Costa-Lotufo et al. (2022).

In 2006 and 2007, researchers from the Biota Program focused on actions to enable the use of the program's database to support environmental public policies. In this sense, approximately 160 researchers from the Biota Program, in partnership with the State Secretariat of the Environment (Fundação Florestal, Forestry Institute and Institute of Botany) and with the NGO Conservation International, organized a series of workshops to prioritize conservation areas and actions in the state, using the recently published forest inventory of native vegetation in the State of São Paulo (Kronka et al. 2005). This joint effort resulted in the production of three synthesis maps, eight

[1] The BIOTA Programme uses the CBD definition of biodiversity, i.e., biodiversity includes diversity within species, between species and of ecosystems, as well as the variability among living organisms from all sources including inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are included.

other thematic maps, and the book Guidelines for the conservation and restoration of biodiversity in the state of São Paulo (Rodrigues et al. 2008), which details the work developed. The maps became the basis of all environmental planning in the state, and their use by other State Secretariats and the Environmental Compensation Chamber was compulsory.

The results and the impacts of the first ten years of the Biota Fapesp Program were analyzed by Castro (2011) and Colugnati et al. (2014). Concerning the characterization, conservation, and sustainable use of biodiversity, the Biota Program presented results that indicate the correct direction of the program in its first 10 years of existence, with a significant volume of scientific papers and innovation in public policy. However, Castro noted that there was a need to enhance technological innovation, mostly circumscribed in the bioprospection branch. However, it is worth highlighting that this constraint did not lay on the production of knowledge but mostly on the overall Brazilian innovation system, especially regarding access to genetic resources and benefit sharing. Bureaucracy and risk aversion are some of the barriers to leveraging innovation in the sector in Brazil.

Program Consolidation and Maturation (2010–2020)

Due to its excellent performance throughout its first 10 years (Joly et al. 2010), in 2009, FAPESP renewed funding for the BIOTA/FAPESP Program until the end of the United Nations Decade on Biodiversity (2011–2020).

The renewal aimed to extend and further improve returns on a coordinated investment in research, combining biodiversity research, personnel training (Fig. 1), bioprospecting, and impact on public policy. In this renewal, the Program's Goals and Strategies Plan was updated, expanding its scope to the entire Brazilian territory and changing its name to Research Program in Characterization, Conservation, Restoration and Sustainable Use of Biodiversity, thereby demonstrating the need to include restoration as a strategy to preserve Brazilian biodiversity (Joly et al. 2022).

One of the first efforts in this second phase was the development of a new, more robust environmental information system, as evidenced by the SinBiota 2.1 (https://sinbiota.biota.org.br/) and the new Biota Atlas (https://sinbiota.biota.org.br/atlas/).

Biota Neotropica, the journal launched in 2001, became an internationally recognized seminal reference in data on biodiversity in the Neotropical region. The strict editorial policy used since its launch resulted in the indexing of the journal by the Thomson Reuters Web of Knowledge, Directory of Open Access Journals and Scientific Electronic Library Online (SciELO) & Global Biodiversity Heritage Library/BHL.

In this second phase, the objectives that were permanent in the biodiversity research program in a megadiverse country remained a priority. Therefore, the program reinforced its scientific interest in biodiversity inventories, characterization, conservation mechanisms, sustainable use, processes that generate and maintain biodiversity, and processes may result in its deleterious reduction. Inventories, for example, incorporated , new tools , such as the phylogeographic approach and improved techniques and methodologies, such as DNA barcoding and metagenomics.

Changes in FAPESP allowed the BIOTA Program to make calls for proposals in specific areas highlighted as lacunae of the first phase of the program. Among these calls, one was focused on marine biodiversity (and the results of this call can be found in Marques et al. 2022), the second was focused on microorganisms (results in Oliveira et al. 2022) and the third was focused on education (results in Bezerra et al. 2022).

One of the decisions of the 2009 meeting, based on the results of the book Guidelines for the conservation and restoration of biodiversity in the state of São Paulo, was the incorporation of "restoration" in the official name of the program, which became known as the Research

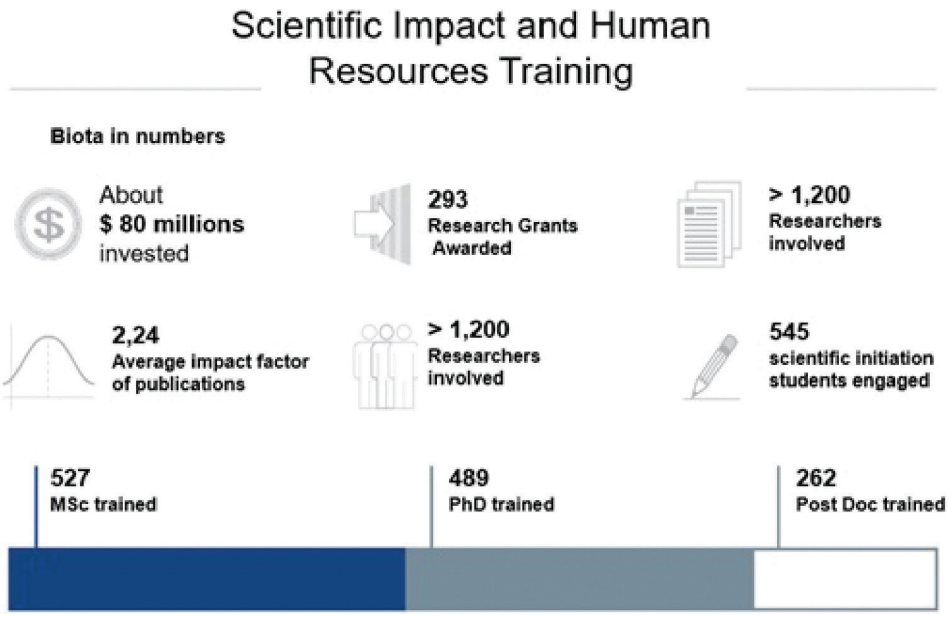

Figure 1. Numerically summarizes the results of the BIOTA/FAPESP Program throughout its first 20 years of existence. Notably, in terms of contributions to the improvement of public policies, more than 20 legal instruments specifically indicate that they were formulated "[…] based on results from BIOTA Program" (see details at https://www.biota.org.br/resultados/)(Modified from Joly et al. 2022).

Program on Characterization, Conservation, Restoration and Sustainable use of Biodiversity. Moreover, with the decision to expand the scope of the Program for the natural limits of the Atlantic Forest and Cerrado biomes, and subsequently for all Brazilian biomes, the geographical restriction *of the State of São Paulo* was removed from the name of the program.

The research on restoration of the program focused mainly on the establishment of connections between fragments of native vegetation, aiming to improve its conservation capacity, especially of the mastofauna, which was used as a "surrogate" for ecological restoration. It also focused on the restoration capacity of ecosystem services of forests with the determination of the attributes of new forests, e.g., their structure, diversity, dynamics and functioning, the capacity for large-scale intervention, going from thousands to millions of restored hectares, and the understanding of the synergies and trade-offs between the various landscape functions.

At the moment, the Steering Committee of the Program has just finalized the Strategic BIOTA/FAPESP Program Plan for the 2020-2030 period. This coincides with the United Nations Decade of Restoration, the Decade of Ocean Science and The Kunming-Montréal Global Biodiversity Framework (Joly, 2022).

Another decision by FAPESP with significant importance for biodiversity research was the establishment of International Cooperation and Exchange Agreements. Since the first scientific exchange agreement, signed by the British Council in 1985, FAPESP has ratified hundreds of partnerships with funding agencies and institutions on all continents. These agreements have allowed for the internationalization of biodiversity research and have given the quality of research carried out in Brazil greater visibility on the international stage. Undoubtedly, this has contributed to Brazilian researchers gaining importance in organizations such as the Convention on Biological Diversity/CBD and the Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services/IPBES. Another example is the creation of the Brazilian Biodiversity and Ecosystem Services Platform/BPBES.

Initially, support for scientific exchanges with foreign countries assumed three main forms: PhD and PD scholarships, presentation of research at scientific meetings, and visiting professors. However, it quickly moved to the phase of multinational teams and joint project financing. Every year, the BIOTA Program has joint calls with the National Science Foundation/US, National Environmental Resources Council/UK, and the Netherlands Organization for Scientific Research/ Netherlands.

Currently, within the Biota Program, the crucial question is how to promote the research and necessary knowledge so that biodiversity can effectively be part of this transformation for sustainability. Biodiversity must be conserved due to its intrinsic value, but it is also necessary to understand how natural functions and processes contribute to socioenvironmental sustainability and the well-being of humanity. Thus, the contribution of the Biota Program in the development of biodiversity science is coupled with credibility, relevance, and legitimacy to leverage the effectiveness of interfaces between science and environmental policy. The transition to sustainability will depend on a strong integration of knowledge from environmental and social areas and a structuring interaction with governmental, nongovernmental, and private initiative sectors, key actors in the governance, management, and use of biodiversity at different scales and contexts.

Within this perspective, the Steering Committee of the Biota Program met throughout 2021, based on the consultations with the researcher's community held throughout 2020, elaborating a strategic action plan for 2030 called "Biota 2030" (Metzger et al. 2022). The expectation is that this plan will allow us to innovate and transform the program so it can address current challenges, strengthening the integration of knowledge with society in the stimulus of transdisciplinary approaches, but without disregarding the promotion of basic and fundamental research for understanding the components, processes, and functions of biodiversity. As a result of this process planning, five thematic axes were defined that will guide the actions of the Biota Program until 2030 (Fig. 2).

i) Biota Collections, which aim to ensure adequate conditions for the maintenance of collections and collections of biological resources, as well as wide access to this information.
ii) Biota Discovery, which is focused on researching the processes that generate and maintain biodiversity.
iii) Biota Synthesis, which seeks to innovate by proposing a new generation model of knowledge from databases of existing data and the "science of synthesis" approach.
iv) Biota transformation, which seeks to broaden the understanding of the role of biodiversity in innovative sustainable transitions in socioenvironmental systems.
v) Biota Entrepreneurship, which aims to promote and encourage technological development and innovation from bioproducts and ecosystem services.

These five thematic axes function in an integrated and synergistic way, as in the case of collections and discovery or synthesis and transformation, as detailed below. Furthermore, they interact with cross-cutting themes, such as the restoration of ecosystems and ocean science, which were proposed by the United Nations as focal themes of this decade (2021–2030), the sustainability of Brazilian biomes (especially in the context of the Amazon Initiative), climate change and the transition to a low-carbon economy (Fig. 2). These cross-cutting themes will be the focus of actions in all five thematic axes.

The Biota Program considers it essential to expand integration and work synergistically with the other programs of FAPESP, particularly with Climate Change, Bioenergy, and *e*Science. The Biota Program should also continue to support public policies, disseminate science and support basic education, and expand its activities to foster entrepreneurship, development, and innovation, intensifying dialog and interaction with a strategic set of programs in FAPESP, such as Public Policies, Public Education and Innovation (PIPE/PIPE-TC/PITE).

For each thematic axis, the main objectives were defined, such as the challenges to be overcome, the actions to be promoted to achieve the objectives, and the goals and action indicators. This document highlights the action indicators, which allow the evaluation of initiatives upon which the coordination of the Biota program has governance, such as the launching of calls, the organization of work meetings, and the fostering of covenants, cooperation, and institutional partnerships, be they national or international. Through these actions, we hope to achieve the final objectives of the Biota Program and FAPESP, such as increasing the number and relevance of publications, the number of trained researchers, scientific dissemination, the use of scientific knowledge in policies, and new initiatives for innovation/entrepreneurship.

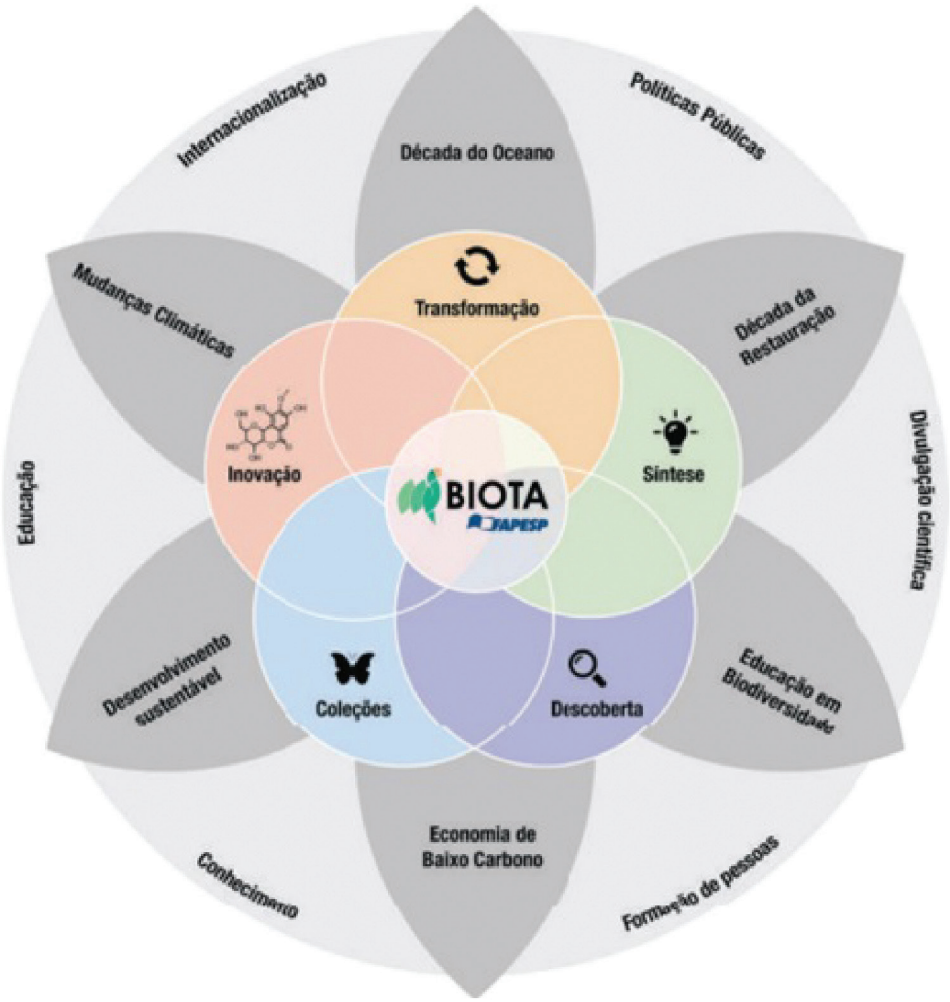

Figure 2. Main thematic axes to be developed by the Biota Program by 2030 (Metzger et al. 2022).

The BIOTA program has proven beneficial to researchers, FAPESP, and the biodiversity science community all over the world, for the following reasons: 1. BIOTA allows for big, often multidisciplinary, science projects, with substantial budgets that are not possible for individual researchers. 2. BIOTA is a good environment for students, provides important community mentoring to young faculty members, and facilitates experience with interdisciplinary research. 3. BIOTA supports basic research such as taxonomy and biodiversity surveys. These subjects are not usually funded in other places. 4. The BIOTA community of researchers is a vibrant network where new ideas are born and new alliances are formed. In addition, the BIOTA network facilitates access to state-of-the-art equipment. 5. Results of BIOTA Projects are being used to improve and/or create the Brazilian Legal Framework on biodiversity conservation and sustainable use. 6. BIOTA is attracting people from other fields, e.g. medicine, to start integrated studies, e.g. of disease or resource management. 7. BIOTA reviews are helpful networking and feedback forums. 8. BIOTA gives Brazilian scientists the credibility to be invited to important international collaborations. Its international calls are hugely beneficial for collaboration and student exchange. 9. BIOTA has built up 20 years of data that is not available anywhere else and is an invaluable source for new projects. It also facilitates long-term ecological research, and finally, 10. BIOTA became a strong brand. Membership in BIOTA brings immediate credibility and raises the profile of biodiversity research in general and individual researchers and projects. Researchers are proud to be part of Biota.

A long-term funding horizon is a very important component of the stability and visibility of the BIOTA/FAPESP program, that should become a permanent FAPESP Program. Based on what has been achieved up to now, there is every reason to believe that it is an excellent investment for FAPESP and, beyond, for Brazilian and International science. BIOTA has been built into a strong internationally recognized Brazilian brand, and International BIOTA projects have created a unique opportunity for conducting frontier research.

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Conflicts of Interest

The authors declare no conflicts of interest related to the publication of this manuscript.

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