POSTDOCTORAL FELLOWSHIP RELATED TO BIOTA SYNTHESIS (NUCLEUS OF ANALYSIS AND SYNTHESIS OF NATURE-BASED SOLUTIONS)

FELLOWSHIP #3 - SUPPORTING DECISIONS FOR FOREST LANDSCAPE RESTORATION AND FOREST-BASED ECONOMY

1. Job Description:

Fields of knowledge: Ecosystem Restoration, Ecosystem Services
FAPESP process: 2020/06694-8
Project title: BIOTA SYNTHESIS – Nucleus of Analysis and Synthesis of Nature-Based Solutions
Principal investigator: Jean Paul Metzger
Postdoctoral project title: Supporting decisions for forest landscape restoration and forest-based economy
Supervisor for this position: Pedro H. S. Brancalion
Unit/Institution: Institute for Advanced Studies, University of São Paulo, São Paulo.
Working area: Ecosystem restoration applied to policies
Number of scholarships: 1
Duration: The position is offered for 24 months, starting on May/2022.
Grant: BRL 7,373.10 (monthly) plus a research contingency fund equivalent to 10% of value of the scholarship (to purchase items directly related to research activity)
Deadline for submissions: March 14th, 2022, at 10 am, Brasilia Time (BRT), UTC -3
Publishing date: April, 2022
Selection process: The selection process will happen in two phases: *curriculum vitae* evaluation and interview. Only the 3-5 candidates presenting the best evaluated CVs will be interviewed.
Local: IEA-USP: Institute of Advanced Studies of the University of São Paulo, Rua Praça do Relógio, 109, ground floor, Cidade Universitária, Zip Code 05508-050, São Paulo, SP.
Link for submission: https://forms.gle/yVECcrK4eyq3Y5h16
E-mail for contact: biotasintese@usp.br

2. General Postdoctoral fellowships 'profile:

The Biota-Synthesis initiative seeks eight highly qualified postdoctoral fellows to be part of a "Nucleus of Analysis and Synthesis of Nature-based Solutions". This Nucleus will be funded by the São Paulo Research Foundation, FAPESP, for a 5-year period (2022-2026) and brings together researchers from 5 Universities, 7 Research Institutes of the State of São Paulo and 4 Non-Governmental Organizations, as well as technicians and decision makers from the State Secretariats of Infrastructure and Environment, Public Health, and Agriculture. The Nucleus will be based at the Institute for Advanced Studies of the University of São Paulo, city of São Paulo (SP), Brazil.

The goal of the Nucleus is to support the state of São Paulo in the development of socio-environmental public policies related to agricultural sustainability, ecological restoration, zoonosis control, and disease prevention in urban areas, considering essentially nature-based solutions.

The Nucleus will work following a "synthesis science" approach, with heterogeneous and collaborative working groups, which will meet periodically in an immersive way for brainstorming discussions. These meetings will be intercalated with the analysis and modeling of existing databases, where the active participation of postdoctoral fellows is expected. See here for further details.

The desired profile for these postgraduates is of professionals with great ability to work collaboratively in teams, with high capacity for listening and dialogue with researchers and social actors with different backgrounds and professional experiences, in addition to the modeling and analysis capabilities that will be detailed for each profile. The post-doctoral position is open to Brazilian and foreign researchers who have a PhD degree, however fluency in Portuguese is desired to facilitate the discussion and dialogue with the different actors involved in the project. Each postdoctoral fellow will have a specific research project and supervisor, but it is expected that this group of fellows will work together, in close collaboration with the coordination team of the Biota-Synthesis Nucleus.

FAPESP postdoctoral fellowships are competitive (R$ 7,373.10, approximately US$ 1,340.00) and granted for 24 months, with the possibility of extension for two additional years. The fellowship includes a research contingency fund, equivalent to 10% of its annual value which should be spent on items directly related to the research activity.

3. Application procedure:

Applications must be submitted until March 14, 2022, 10 am, Brasilia Time (BRT), UTC -3, through the following link: https://forms.gle/yVECcrK4eyq3Y5h16. If you have any further questions, please contact us at biotasintese@usp.br. A same applicant can apply for more than one scholarship at the same time.

- Curriculum Vitae following FAPESP format, including Lattes (for Brazilian candidates), ORCID and Publon links, as well as citation indicators (e.g. number of publications and citations, H index); please indicate experience in teamwork and with the development of public policy, if applicable;
- Research statement specifying why the candidate is suitable for the fellowship position;
- Three reference persons who can be consulted if the candidate is selected for an interview.

If you don't receive any subscription confirmation by March 20th, please contact us again.

For each of the 8 fellowships, 3-5 candidates will be selected for an interview (to be done virtually). The initial selection will consider the adequacy of the candidate to the fellowship profile, as well as the candidate's professional experience and publication records.

The interviews are expected to take place at the end of March/beginning of April, and the fellowship will begin in May, after validation of the selective process by FAPESP, according to the Institution's norms. All postdoctoral fellows will be formally linked to the postdoctoral program of the University of São Paulo.

4. Summary of Fellowship #3 project (Ecosystem restoration):

São Paulo concentrates one the largest deficits of native vegetation according to the Forest Code, with estimated 700,000 hectares for Areas of Permanent Preservation and 865,000 hectares of Legal Reserves. On the other hand, the state has the largest continuous areas of Atlantic Forest and some of the largest areas of eucalypt, pine tree, and rubber tree plantations, and appropriate conditions for the expansion of other commercial tree species. It is then necessary to connect these two extremes through forest landscape restoration, which is a powerful approach to integrate restoration, conservation, and forestry in degraded and deforested landscapes (Chazdon et al. 2017). This approach can help farmers to comply with legislation and consequently to obtain market advantages associated to certification, sectoral agreements with environmental demands, and better access to rural financial services, as well to improve the provision of critical ecosystem services for agricultural production and human wellbeing, such as crop pollination, soil protection, water purification, and climate change mitigation, and to conserve the rich and highly threatened biodiversity of the state (Joly et al. 2010). Reforestation with commercial species may also constitute a novel economic activity in the state, contributing to produce timber and non-timber forest products from native species and highly valuable exotic species, being an attractive land use for the vast marginal areas for mechanized agriculture that have been abandoned or maintained with extensive cattle ranching after the rapid expansion of sugarcane in the state. The establishment of forests of multiple use, which enable income generation to farmers while supplying essential ecosystem services to society, is certainly a promising strategy. To promote a forest-based economy that allies the necessary transition towards a sustainable development that contemplates legal compliance with the Native Vegetation Protection Law, we will synthesize the existing knowledge and compile the available information associated with the demands, opportunities, monitoring, and lessons learned of forest landscape restoration and commercial forestry, in order to create – through a co-production process that integrates different groups of stakeholders – a public and interactive decision support system. It will be essential to integrate to this system the existing databases on the flora of the state of São Paulo, in order to allow end users to select the most suitable species for each type of project, without the risk of introducing exotic invasive species. Such integration would be a welcomed contribution to support decisions during the elaboration and monitoring of CETESB, FEHIDRO and MPSP projects, as well to support the SARE

system. Our overarching goal is to create an applied and dynamic tool able to generate engagement and catalyze the wide implementation of restoration initiatives, supported by the existing literature about this theme. Such tool shall perform a central role to support the preparation, implementation, and monitoring of Projects of Recovery of Disturbed and Degraded Areas (PRADA), as means to subsidize the Environmental Compliance Program (PRA) in the State of São Paulo.

The post-doc researcher will lead the following activities:

- ✔ Literature review on the multifunctionality of different types of land use, with an emphasis on different forest types (e.g. secondary forests, restoration plantations, agroforestry, commercial monocultures, mixed plantations) and on functions associated with water, soil, carbon and biodiversity; *Impact:* It will provide the knowledge basis for planning reforestation types to more effectively achieve different restoration outcomes;
- ✔ Compile the available information (databases, maps, systems) on the factors raised in the literature review, which should address at least the demands and opportunities for, and monitoring of forest restoration projects:
- ✔ Harmonize the structure of the spatial databases presented above (e.g. time and space scale, scope) and results on the multifunctionality of different land uses and forest types in order to enable the development of an analysis system that allows combining these bases for obtaining impact products for decision making; *Impact:* it will generate a harmonized database and allow the integration of different spatial information inputs
- ✔ Improvement and integration of the geospatial databases about the flora of São Paulo state to public environmental management systems; *Impact:* it will improve the choice of plant species to be used in forest landscape restoration and commercial forestry projects, in order to promoting the use of local native species and restricting the use of invasive alien species.
- ✔ Integrate climate change scenarios into the analysis system developed in goal 5, in order to assess how climate change will impact restoration, forest production and the provision of different ecosystem services; *Impact:* it will generate a harmonized database and workflow that allow for the simulation of the impacts of different climate change scenarios on forest landscape restoration

5. Requirements for the position:

- PhD in Forestry, Plant Biology, Ecology, Geography, Environmental Sciences or related fields (PhD certificate will be required for the acceptance of the grant), obtained no longer than 7 years before the grant acceptance date;

- Experience in restoration projects
- Literature review skills;
- Database management skills;
- Good knowledge of Portuguese and English;