



STATE SECRETARIAT FOR INFRASTRUCTURE AND ENVIRONMENT

ANNEX XI – ONGOING STUDIES



STATE SECRETARIAT FOR INFRASTRUCTURE AND ENVIRONMENT

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1. STUDIES CONCERNING FLORA

List of projects managed by IBT researchers executed within the area of the Botanic Garden

1. Project Title: IBt 01.158: Diversity of Agaricomycetes (Agaricales, Hymenochaetales and Polyporales) in areas of the South Mata Atlantica forest and the Brazilian Southeast region, based on morphological and molecular evidence

Person Responsible: Dr. Adriana de Mello Gugliotta, Brazilian Mycology Research Center

Activities: collections executed in several areas, including the PEFi and the Botanic Garden

Goal: To identify types and species of Agaricales, Hymenochaetales and Polyporales based on collections and reviews of herbaria, from the areas of the South Mata Atlantica forest and the Brazilian Southeast region, according to morphological and molecular data; to obtain pure cultures to collaborate with the *ex situ* conservation of the fungi studied and support future studies in the fields of taxonomy, phylogeny, physiology, among others, evaluate the potential for cultivation of native edible species, enhance the genetic resources of the Cultures Collection of the CCIBt and the Fungi Herbarium (SP) at the Botanic Institute; to publish the diversity results in indexed journals and/or at conferences, as well as the description of new species and new records of the geographic distribution of said species throughout the Brazilian Mata Atlântica forest, and enhance the knowledge of Brazilian fungi by publishing a list of the taxons.

Duration: 07/2016 to 06/2020

The researcher intends to conclude this project and register a new project, also focusing on the collection of Basidiomycete Fungi from the area of the Garden.

2. Project Title: IBt 01.156: Nitrogen and low temperatures in bromeliads.

Person Responsible: Dr. Vivian Tamaki, Ornamental Plants Research Center

Activities: collection and observation of bromeliads

Goal: To study the physiological processes that happen in ornamental plants, particularly bromeliads, in the event of nutritional and thermal changes (low temperature), for plants cultivated *in vitro* and in trays containing substrates. Samples studied shall be taken from the PEFI, the live collections at the IBt and other reserves at the IBt.

Duration: From June/2016 to June/2020 – ongoing.

3. Project Title: Pollination and floral resources of the *Calophyllum brasiliense* Cambess. (Calophyllaceae J.Agardh) and *Garcinia gardneriana* (Planch. & Triana) Zappi (Clusiaceae Lindl.) for Indigenous Bees at the State Park Ipiranga Springs, São Paulo, Brazil

Persons Responsible: Dr. Cynthia Luz and Dr. Adriana de Oliveira Fidalgo, Palynology Research Center

Activities: The institutional meliponary from which the beehive samples shall be collected is located in an area next to the Seeds Unit, which houses the Phytotron. Observations of the pollinators and floral visitors and collection of resinous and floristic materials of the *Calophyllum brasiliense* from a population located in the parking area, on the other side of the street. In addition, a number of *Garcinia gardneriana* plants located in the PEFI and in the Garden will be monitored.

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Goal: This project proposes to examine certain aspects of the floral ecology of the *Calophyllum brasiliense* Cambess. (Calophyllaceae J.Agardh) and *Garcinia gardneriana* (Planch. & Triana) Zappi (Clusiaceae Lindl.), and to characterize, from a palynological viewpoint, the honey, the pollen stored in the nests ("samburá") and the geoproducts produced by the bee colonies located near to populations of these plant species, inside the State Park Ipiranga Springs - PEFI, in the municipality of São Paulo, to assist in the process of certification of the botanic and phytogeographical origin of those products. The species to be studied were chosen due to their economic importance, peculiar characteristics concerning the production of floral resin (*Garcinia*) and pollination aspects that are not well documented in the literature.

Duration: 2019-2023.

4. Project Title: Assessment of the responses of phytoplankton and epipelton submitted to different eutrophic ecosystem restoration techniques (within the scope of the project IBt 2.43. Challenges to the conservation of biodiversity brought by climate change: pollution and use and occupation of the land PDIP-FAPESP).

Person Responsible: Carla Ferragut, Ecology Research Center

Activities: Installation of polyethylene mesocosms and weekly monitoring on Garças Lake in the Botanic Garden.

Goals: This project proposes an experimental evaluation of the responses of phytoplankton and epipelton when submitted to different techniques to promote the restoration of shallow reservoirs and lakes. The main questions raised are: i) Which treatment will have a negative effect on the concentration of P in the water and on the phytoplankton biomass? ii) Which treatment favors the formation of a photosynthetically active epipelton? iii) Which treatment will cause the greatest change to the taxonomic structure of the phytoplankton? In addition, to determine if the combination of two methods can increase the efficiency of the mitigation of phosphorus in the water and in the phytoplankton biomass. The project will subsidize the processes of recovery of eutrophicated reservoirs and lakes in the future.

Duration: until 31/05/2022

5. Project Title: Assessment of the potential for extraction of nutrients from the water by the periphyton, in artificial substrate, applied to oligotrophic reservoirs and lakes (within the scope of the project IBt 2.43. Challenges to the conservation of biodiversity brought by climate change: pollution and use and occupation of the land PDIP-FAPESP).

Person Responsible: Carla Ferragut, Ecology Research Center

Activities: collections at the Botanic Garden, Garças Lake

Goals: The project proposes to evaluate the role played by the periphyton in the deactivation of phosphorus from the environment and its contribution to maintain the oligotrophic process and control of the flowering stage of phytoplankton. It is a groundbreaking approach as it integrates the relationship between the periphyton (in artificial substrate, epipelton) and the phytoplankton in the process of extraction of nutrients from the water and maintenance of the oligotrophic process in tropical eutrophicated environments. The project will contribute information about the use of the periphyton in the restoration processes of tropical shallow reservoirs.

Duration: 31/04/2021

6. Project Title: Responses of the metaphyton to different types of restoration treatments in a eutrophicated reservoir (within the scope of the project IBt 2.43. Challenges to the conservation of biodiversity brought by climate change: pollution and use and occupation of the land PDIP-FAPESP).

Person Responsible: Carla Ferragut, Ecology Research Center

Activity: collection at the Botanic Garden: Garças Lake

Goal: The project proposes an experimental evaluation of responses of the metaphyton developed in treatments employing different types of techniques to restore reservoirs and lakes in a eutrophicated reservoir. After a restoration process, there is generally intense development of metaphyton on the rims of reservoirs and lakes, which hampers the maintenance of the oligotrophic process. Thus, a better understanding of metaphyton dynamics is key to the success of recovery processes.

Duration: 01/09/2020 to 01/08/2021

7. Project Title: IBt 02.43 Challenges to the preservation of biodiversity brought by climate change, pollution and use and occupation of the land. Module 3 – Recovery of Aquatic Ecosystems

Persons Responsible for the Project: Luis Mauro Barbosa and Carla Ferragut, Ecology Research Center

Activity: collections at the Botanic Garden: Garças and Ninfeias Lakes

Goals: To prepare predictive conceptual and mathematical models based on observational studies (Database: 20 years) and experimental studies, *in situ* and *ex situ*, to assist monitoring programs and restoration processes to be applied to shallow reservoirs and lakes. Specifically, the goal is to identify the Light:Nutrient ratio that best represents the balance between the biomass and the taxonomic structure of the algae and cyanobacteria communities, ensuring the development of a photosynthetically active epipelton that helps to control the flowering stage of the phytoplankton following a restoration process (oligotrophic process). Based on experimental studies *ex situ* (Phytotrons), to conceive future scenarios to illustrate the possible phytoplankton-epipelton interactions applied to the control of the flowering stages of algae and cyanobacteria in tropical reservoirs and lakes, in elevated temperatures.

Duration: 31/05/2021

8. Project Title: Structural Analysis of Communities (within the scope of the project IBt 2.43. Challenges to the conservation of biodiversity brought by climate change: pollution and use and occupation of the land PDIP-FAPESP).

Person Responsible: Dr. Eduardo Pereira Cabral Gomes, Ecology Research Center

Activities: Assessments and collections in permanent installations at the PEFi (conservation area) and the Botanic Garden

Goal: Installations introduced in 2005 at the PEFi and in 2009 (area at the Botanic Garden) to monitor the demographics (mortality, recruiting), growth and cycles of nutrients.

Duration: 01/06/2018 to 31/05/2021

The project started under number 01.09, and was concluded at the administration's request, and continues to be executed as the PDIDP FAPESP Project. The intention is to re-register the project since the goal is to perform

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monitoring for at least 25 years. The monthly nutrient cycling monitoring series is already the longest uninterrupted series ever registered in Brazil outside the Amazon (152 months, 12 years and 8 months).

9. Project Title: Biotic and biochemical factors associated with the deterioration of seeds of *Caesalpinia echinata* Lam. (brazilwood) (within the scope of the project IBt 2.43. Challenges to the conservation of biodiversity brought by climate change: pollution and use and occupation of the land PDIP-FAPESP).

Persons Responsible: Marcia Regina Oliveira Santos and Claudio José Barbedo, Seeds Research Center

Activities: collecting seeds from trees in the Botanic Garden and other areas of the PEFI

Goals: To identify factors associated with the short lifespan of Brazilwood seeds under natural conditions in view of expanding the ability to store those seeds in germplasm repositories

Duration: until 31/03/2023

10. Project Title: Physiological similarity between seeds of orthodox legumes (*Erythrina speciosa* Andrews) and recalcitrant legumes (*Inga vera* Willd.) during the course of their development (within the scope of the project IBt 2.43. Challenges to the conservation of biodiversity brought by climate change: pollution and use and occupation of the land PDIP-FAPESP).

Persons Responsible: Maiara Iadwizak Ribeiro and Claudio José Barbedo, Seeds Research Center

Activities: collecting seeds from the Botanic Garden and other areas of the PEFI

Goals: To identify differences between orthodox and recalcitrant seeds focusing on the immature stages of the former, in view of enhancing the knowledge about the short lifespan of recalcitrant seeds, for future efforts to expand their storage capacity in germplasm repositories.

Duration: until 31/03/2024

11. Project Title: Successive germinations with seeds of *Eugenia* spp. (Myrtaceae) and their relations with the cotyledon mass (within the scope of the project IBt 2.43. Challenges to the conservation of biodiversity brought by climate change: pollution and use and occupation of the land PDIP-FAPESP).

Persons Responsible: Camila Rivero Alonso and Claudio José Barbedo, Seeds Research Center

Activities: collecting fruits and seeds from trees in the Botanic Garden and other areas of the PEFI

Goals: to determine the association between the backup tissues and their use in the germination of seeds of the *Eugenia* species when part of the tissue is removed and/or used.

Duration: until 31/03/2023

12. Project Title: The dynamics of the deterioration of recalcitrant seeds of *Eugenia* spp. (Myrtaceae) subject to environmental variations (within the scope of the project IBt 2.43. Challenges to the conservation of biodiversity brought by climate change: pollution and use and occupation of the land PDIP-FAPESP).

Persons Responsible: Aline Testoni Cécel and Claudio José Barbedo, Seeds Research Center

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Activities: collecting fruits and seeds from trees in the Botanic Garden and other areas of the PEFI

Goals: to determine the association between water content, temperatures, respiratory rates and deterioration rates of *Eugenia* seed species.

Duration: until 31/03/2021

13. Project Title: The potential of oxygen-reactive species to induce rooting in fractured seeds of Eugenia (Myrtaceae) (within the scope of the project IBt 2.43. Challenges to the conservation of biodiversity brought by climate change: pollution and use and occupation of the land PDIP-FAPESP).

Persons Responsible: Isabela Pedroni Amorim and Claudio José Barbedo, Seeds Research Center

Activities: collecting fruits and seeds from trees in the Botanic Garden and other areas of the PEFI

Goals: to determine the association between the presence or absence of oxygen-reactive species and the ability to regenerate roots and plantlets in seeds of the *Eugenia* species.

Duration: until 31/03/2023

14. Project Title: Antifungal action of the pulp of the fruits of Eugenia sp. (Myrtaceae) on the mycota associated with its seeds (within the scope of the project IBt 2.43. Challenges to the conservation of biodiversity brought by climate change: pollution and use and occupation of the land PDIP-FAPESP).

Persons Responsible: Santiago Noronha Alves da Silva and Claudio José Barbedo, Seeds Research Center

Activities: collecting fruits and seeds from trees in the Botanic Garden and other areas of the PEFI

Goals: to determine the potential of the *Eugenia* fruits to inhibit the growth of fungi associated with its seeds.

Duration: until 31/03/2025

15. Project Title: Current situation of the levels of trace metals in the air-trees-leaf litter-soil interface in the remaining Atlantic Forest, in the Brazilian Southeast region

Person Responsible: Marisa Domingos, Ecology Research Center

Activities: Collecting samples of leaves of pioneer and non-pioneer species, leaf litter and soil samples, from the permanent portions of the forest at the PEFI (conservation area) and in other conservation units in the States of São Paulo and Minas Gerais.

Goals: 1) To characterize current levels of trace metals that are potentially toxic to the biota in the air-trees-leaf litter-soil interface in the remaining Atlantic Forest, located near natural and anthropic sources of such chemical elements, in the Brazilian Southeast; 2) To identify possible origins (natural and/or anthropic) and discuss the extent of the bioavailability of metals in the soil for tree species with different functions (defined according to the succession stage), in the remaining forest elements studied, by way of the qualification/quantification of the contamination level of the soil and estimates of the enrichment factor; discuss the possible abiotic conditions stemming from the variance of the foliar concentrations of potentially toxic trace metals in the different native tree species samples in the remaining Atlantic Forest, employing multivariate statistical techniques.

Duration: June/2017 to July/2020 – ongoing

16. Project Title: Association between the tolerance level of native species from the Atlantic Forest and the contamination by heavy metals in the Greenbelt Biosphere Reserve of São Paulo-SP (within the scope of module 4 of the project IBt 02.43. Challenges to the conservation of biodiversity brought by climate change: pollution and use and occupation of the land PDIP-FAPESP).

Persons Responsible: Marisa Domingos, Ricardo K. Nakazato - Ecology Research Center

Activities: Collecting samples of leaves of pioneer and non-pioneer species, leaf litter and soil samples, from the permanent portions of the forest at the PEFI (conservation area) and in other conservation units in the States of São Paulo and Minas Gerais.

Goals: This project has, by applying the APTI index (which indicates the tolerance level of plants exposed to air pollution), to the analyses of metals in the soil and on the leaves of the native tree species, evaluating the tolerance levels and the metal accumulation capacity of the species sampled at the RBCV-SP. Other physiological and biochemical variables will be tested to enhance the sensibility and specificity of this index as an indicator of the tolerance to air pollution.

Duration: June/2018-May/2021

17. Project Title: Characterization of the metabolic profile of native species of the Mata Atlântica area exposed to environmental stressors (within the scope of module 4 of the project IBt 02.43. Challenges to the conservation of biodiversity brought by climate change: pollution and use and occupation of the land PDIP-FAPESP).

Persons Responsible: Marisa Domingos, Marcela Regina Gonçalves da Silva Engela - Ecology Research Center

Activities: Collecting samples of leaves of pioneer and non-pioneer species from the permanent portions of the forest at the PEFI (conservation area) and in other conservation units in the States of São Paulo and Minas Gerais.

Goals: This project aims to contribute to the expansion of the knowledge of variances of phenolic compounds, carbohydrates, amino acids e polyols in the foliar composition of the tree species remaining in the Atlantic Forest, in the States of São Paulo and Minas Gerais, belonging to different functional groups (of pioneer trees/ early secondary and late secondary lianas), in response to environmental stressors inducing oxidative stress and, so, to infer their capacity to tolerate it. Additionally, we plan to establish curves of the dose x response type reflecting the changes in the contents and the composition of the primary and secondary metabolism compounds and the environmental stressors relevant to the study area (solar radiation, nitrogen-based compounds and ozone).

Duration: June/2018-May/2021

18. Project Title: Tolerance level of native tree species of the Mata Atlântica area to excess concentration of Zn and Ni in the soil (within the scope of module 4 of the project IBt 02.43. Challenges to the conservation of biodiversity brought by climate change: pollution and use and occupation of the land PDIP-FAPESP).

Persons Responsible: Marisa Domingos, Mirian Cilene Spasiani Rinaldi, Solange Eulália Brandão - Ecology Research Center

Activities: This study has been executed under experimental conditions, in two stages. The first proposed to determine the bio-availability of Zn and Ni in the surface soil of the PEFI forest (conservation area) for plants of a pioneer and a non-pioneer species, establishing treatments without and without the addition of a synthetic chelating agent (+EDTA). The second stage has been executed with treatments established based on the results of the first stage, using plants of three pioneer tree species and three non-pioneer tree species, to test the hypothesis that the pioneer tree species in this section of the forest have a greater potential to absorb metals from the soil and a greater tolerance to oxidative stress than non-pioneer species.

Goals: We will attempt to determine if there will be an increment in the bio-availability of Ni and/or Zn in the soil within the urban section of the Mata Atlântica area of the PEFI after the addition thereof; to assess the accumulation capacity of young plants of pioneer and non-pioneer species cultivated on the soil enriched with Ni and Zn; to determine the tolerance level of the tree species cultivated on the soil enriched with Ni and Zn by analyzing the changes in the growth rates and biomass production and in the profile of antioxidant defenses and oxidative damage; to assess if the antioxidants are potentially capable of preventing or limited cellular damage. This study was split into two stages.

Duration: June/2018-May/2021

19. Project Title: Strategies for the use of excess nitrogen in the soil by native species of the Atlantic Forest under the influence of high temperatures (within the scope of module 4 of the project IBt 02.43. Challenges to the conservation of biodiversity brought by climate change: pollution and use and occupation of the land PDIP-FAPESP).

Persons Responsible: Marisa Domingos, Mirian Cilene Spasiani Rinaldi, Catarina Niévola, Regina Rodrigues Calixto - Ecology Research Center

Activities: This study has been executed under experimental conditions with a species of liana, a pioneer tree species and a non-pioneer tree species, cultivated in surface soil collected from the PEFI forest and exposed to two levels of metal contamination of the soil, and to two different temperature systems in growth chambers. Three independent experiments will be performed (one for each species) inside a growth chamber, which will be subdivided into two independent environments, named chamber 1 and chamber 2. In chamber 1, the plants will be kept in a thermoperiod of 26°C day/19°C night, while in chamber 2, they will be kept in a thermoperiod of 30°C day/23°C night. No other meteorological variables will differ from one chamber to the other. Each experiment will begin with 96 plants per chamber, 48 of which will be cultivated in soil from an urban forest, without the addition of N, while the other 48 plants will be cultivated in the same soil, with the addition of N, whereas 4 replicas will be created, with an entirely randomized design, by treatment, consisting of 12 plants each. 3 seedlings per replica will be taken off the treatment on the days 7, 14, 21 and 28 of the experiment. Their roots and leaves will be reunited so as to procure 4 mixed samples from both sources, per treatment, every 7 days. The mixed samples of roots and leaves will be analyzed in terms of the nitrate reductase, glutamine synthetase and glutamate dehydrogenase activity levels, and the concentrations of *a* and *b* chlorophylls, free amino acids and N-NH₄ and N-NO₃. The soil used to grow the 3 seedlings per treatment replica, to be removed on the days 7, 14, 21 and 28 of the experiment will also be reunited to make up 4 mixed samples per treatment, per week, to analyze the concentrations of NH₄⁺ and NO₃⁻. The data will be submitted to a three-factor variance analysis (Factor 1: temperature; factor 2: soil treatment; factor 3: time). Associations will be made between the variables measured in the plants and in the soil.

Goals: 1) to determine if there was an increase in the bio-availability of NH₄⁺ and NO₃⁻ in the soil and in the concentrations of soluble N in the roots and leaves of young liana plants, of a pioneer tree species and in a non-pioneer tree species, when cultivated in vases containing surface soil taken from the urban section of the Atlantic Forest of the PEFI, after the addition of nitrogen; 2) to determine if the activity level of nitrate reductase, glutamine synthetase and glutamate dehydrogenase, the concentrations of amino acids and chlorophylls in the roots and/or leaves differs among the species; 3) to determine if the proportions between NH₄⁺ and NO₃⁻ in

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the soil and if the strategies for the use of those soluble forms of N by the three species are changed by the air temperature.

Duration: June/2018-May/2021

20. Project Title: Tolerance levels of native species of the Atlantic Forest to excess metals and temperature elevations (within the scope of module 4 of the project IBt 02.43. Challenges to the conservation of biodiversity brought by climate change: pollution and use and occupation of the land PDIP-FAPESP).

Persons Responsible: Marisa Domingos, Mirian Cilene Spasiani Rinaldi, Geane Martins Barbosa - Ecology Research Center

Activities: This study has been executed under experimental conditions with a species of liana, a pioneer tree species and a non-pioneer tree species, cultivated in surface soil collected from the PEFI forest and exposed to two levels of metal contamination of the soil, and to two different temperature systems in growth chambers. Three independent experiments will be performed (one for each species) inside a growth chamber, which will be subdivided into two independent environments, named chamber 1 and chamber 2. In chamber 1, the plants will be kept in a thermoperiod of 26°C day/19°C night, while in chamber 2, they will be kept in a thermoperiod of 30°C day/23°C night. No other meteorological variables will differ from one chamber to the other. Each experiment will begin with 96 plants per chamber, 48 of which will be cultivated in soil from an urban forest, without the addition of N, while the other 48 plants will be cultivated in the same soil, with the addition of metals (Cu+Zn+Ni), whereas 4 replicas will be created, with an entirely randomized design, by treatment, consisting of 12 plants each. 3 seedlings per replica will be taken off the treatment on the days 7, 14, 21 and 28 of the experiment. Their roots and leaves will be reunited so as to procure 4 mixed samples from both sources, per treatment, every 7 days. The mixed samples of roots and leaves will be analyzed in terms of their antioxidant defenses and indicators of cellular damage. The concentrations of Cu, Zn and Ni will be determined in the various plant organs. The soil used in the experiment will also be reunited every seven days, to obtain four mixed samples, per treatment. Those samples will be dried in a kiln and sieved, to determine the bio-available concentrations of Ni, Cu and Zn.

Goals: This study proposed to evaluate the temporal profile of the antioxidant defenses and the indicators of cellular damage to roots and leaves of a species of liana, a pioneer tree species and a non-pioneer tree species, when submitted to elevated temperatures and the excess concentrations of the metals Cu, Zn and Ni in the soil, and to determine the interactions between the efficiency of the antioxidant defenses and the accumulation of metals on the leaves, stems and roots of the species of those different functional groups.

Duration: June/2018-May/2021

21. Project Title: Functional ecophysiology and emission of volatile organic compounds of remaining tree species in the Mata Atlântica area subjected to anthropic disturbances.

Persons Responsible: Marcos Pereira Marinho Aida/ Cleide Nascimento Campos

Collaboration: Dr. Silvia Ribeiro de Souza and Dr. Eduardo Pereira Cabral Gomes, NP Ecologia IBt

Activity of collecting tree species in the PEFI: branches and leaves at the treetop level; physiological and morphological data from the leaves and branches.

Project Goals: This research project aims to correlate the functional features and the resulting strategies for the use of resources within the scope of the foliar economy spectrum, such as the patterns of emission of volatile foliar organic compounds in tree species of different successional groups in the remaining Mata Atlântica areas, submitted to varying levels of air pollution.



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Duration: 2016 - August 2020

Study Area: Secondary forest of the PEFI

22. Project Title: Taxonomy and anatomy of the Asteraceae in the State of São Paulo, Brazil (part II).

Person Responsible: Rosangela Simão Bianchini

Activities: collecting fruits and seeds from trees in the Botanic Garden and other areas of the PEFI

Goals: to update the list of Asteraceae in the PEFI

Duration: until 31/07/2023.

2. STUDIES CONCERNING FAUNA

List of projects conducted by researchers of the FPZSP or within the scope of the postgraduate Program in Fauna Conservation

Researchers	Institution	Title	Project Completion
Aimee Cruz Cisneiro	PPGCfau	Diet and scattering seeds for <i>Lycalopex vetulus</i> (Lund, 1842) in Brazilian savannah areas in the municipality of Chapada dos Guimarães/MT.	Jul/20 not concluded
Alexandra Sanches	PPGCfau	Diet and scattering seeds for <i>Lycalopex vetulus</i> (Lund, 1842) in Brazilian savannah areas in the municipality of Chapada dos Guimarães/MT.	ago/20 – not concluded
Amanda de Moraes	FPZSP	Demographic, comparative study on the management of Asian elephants (<i>Elephas maximus</i> , Linnaeus 1758) kept in captivity in Brazil.	regular
Andréa Cristina Peripato	PPGCFau/UFSCAR/São Carlos	Cross-generational influence of environmental enrichment in the phenotypical and epigenetic aspects in the female mice of the lineage LG/J.	May/21
Andrea Simonato	FPZSP	The role of the Zoological Park Foundation of São Paulo in the reintroduction of endangered species: the case of the <i>Aburria jacutinga</i> .	regular
Beatriz Cabrera Santana	PPGCfau	Assessment of foraging behavior as a tool for the conservation of the black lion tamarin monkey (<i>Leontopithecus chrysopygus</i>).	May/20 - not concluded
Beatriz Robbi	PPGCFAU - UFSCar/FPZSP	The role of the Zoological Park Foundation of São Paulo in the reintroduction of endangered species: the case of the <i>Aburria jacutinga</i> .	Jul/20 – not closed
Bruno Aranda	FPZSP	The Video Documentary as an instrument to advertise and add value to the State Park Ipiranga Springs.	regular
Caio Motta	FPZSP	Researching viral infections in wild and household canine species in anthropized rural areas: assessment of eco-epidemiological aspects under the paradigm of Conservation Medicine.	regular
Carolina de Macedo Pinto	FPZSP	Urban forests and ecosystemic services: Strategies for climate adaptation in the megacity of São Paulo.	regular
Carolina Nery	FPZSP	Retrospective study of the main radiographic changes in the neotropical cats of the Zoological Park Foundation of São Paulo during the period between January 2016 and December 2017.	Aug/20 - not concluded

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Cauê Monticelli	FPZSP	Conservation of the rare frog <i>Aparasphenodon pomba</i> : maintenance <i>ex situ</i> as a tool to perpetuate the species.	regular
Cláudia Ontivero	FPZSP	Implementation of wellbeing protocol for elderly animals and Euthanasia guidelines at the Zoological Park Foundation of São Paulo.	regular
Cybele Lisboa	FPZSP	Conservation of the rare frog <i>Aparasphenodon pomba</i> : maintenance <i>ex situ</i> as a tool to perpetuate the species.	regular
Edgar de Lima Machado	PPGCfau	Cross-generational influence of environmental enrichment in the phenotypical and epigenetic aspects in the female mice of the lineage LG/J.	May/21
Emily Perez Guimarães da Mata	PPGCfau	Study of the behavior and the effects of the animal-visitor interaction on the felines at the São Paulo Zoo.	Oct/20
Fabricio Rassy	FPZSP	Assessment of the use of inhalational anesthetic with the golden lion tamarin monkey (<i>Leontopithecus chrysomelas</i>).	regular
Fernanda Junqueira	FPZSP	Assessment of the behavior of the Lear's macaw, <i>Anodorhynchus leari</i> , kept in captivity: response to the application of pre-release training program and detailed description of natural rearing of hatchlings.	regular
Fernando Henrique S. Frezza	PPGCfau	Review and characterization of the bird fauna described in the EIA-RIMAs of the State of São Paulo.	Nov/20 - not concluded
Gabriela Aparecida Pereira	PPGCfau	Use of Audiovisual Materials Produced by Zoos as an Educational Tool on the Conservation of Fauna in Formal Education	Feb/21
Giuliana Rondineli Carmassi	PPGCFau/UFSCar/Lagoa do Sino	Ichthyofauna of the Private Natural Heritage Reserve of Rio dos Pilões, Santa Isabel – SP.	Jul/20 – not concluded
Irys Gonzalez	FPZSP	Oral and rectal microbiota of wild carnivores and household canines located in the Brazilian savannah region and in captivity.	01/10/2020 (thesis) and regular
João Batista da Cruz	PPG-Cfau	Ambulation capacity of the <i>Scinax alcatraz</i> (Frog: Hylidae): subsidy for <i>ex situ</i> conservation.	regular
Júlia Mortati Monarcha	PPGCfau	The structures of bat communities in sections of the Brazilian Savannah and the Seasonal Semideciduous Forest in the region of Pirassununga/SP.	Apr/21
Katia Rancura	FPZSP	Biodiversity conservation in the zoos' educational efforts.	regular

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Luan Henrique	FPZSP	Installation of artificial bridges to allow the brown howler monkeys (<i>Alouatta guariba clamitans</i>) to move around the facilities of the Zoological Park Foundation of São Paulo.	regular
Luiz Eduardo Moschini	PPGCFau/UFSCar/São Carlos	Study on territory used by the black-fronted piping guans (<i>Aburria jacutinga</i>) reintroduced into the Serra da Mantiqueira mountain range.	Feb/22
Luiza Carvalho Prado	PPGCfau	Population Density and Preferred Habitat of Endangered Bird Species in Sections of the Mata Atlântica area in the Endemism Center, in Pernambuco, State of Alagoas, Brazil.	Feb/21
Mara Marques	FPZSP	Genetic and Genomic Studies on the black lion tamarin monkey, <i>Leontopithecus chrysopygus</i> .	regular
Marcelo Takashi Misato	FPZSP	Management and conservation actions for native and Africanized bees at the São Paulo Zoo to ensure the security of visitors and employees: alternatives to chemical control with sanitizers.	regular
Marcelo Nivert Schlindwein	PPGCFau/UFSCar-Sorocaba	Assessment of foraging behavior as a tool for the conservation of the black lion tamarin monkey (<i>Leontopithecus chrysopygus</i>).	Nov/20 - not concluded
Margareth Lumy Sekiama	PPGCFau/UFSCar/Araras	Study of the behavior and the effects of the animal-visitor interaction on the felines at the São Paulo Zoo.	Oct/20 – not concluded
Mariana Herminio Bressan Martins	PPGCfau	The role of environmental enrichment in the behavioral preparation of the Vinaceous-breasted amazon (<i>Amazona vinacea</i>) for reintroduction into the Araucárias National Park, Santa Catarina.	Mar/20 – not concluded
Marina Moraes Schweizer	PPGCfau	Demographic, comparative study on the management of Asian elephants (<i>Elephas maximus</i> , Linnaeus 1758) kept in captivity in Brazil.	Nov/20 – not concluded
Mercival Roberto Francisco	PPGCFAU - UFSCar/FPZSP	Analysis of population viability as a tool for the conservation of the species <i>Pterodroma arminjoniana</i> – Trindade petrel - and <i>Thalassarche chlororhynchos</i> – Atlantic yellow-nosed albatross - (Birds - Procellariiformes).	Feb/21
Paloma Arakaki	FPZSP	Collection, in vitro Sperm Capacitation and Cryopreservation of the Semen of the golden lion tamarin monkey (<i>Leontopithecus chrysomelas</i>).	Regular
Pamela Zaganin Modena	PPGCfau	Assessment of the existence of escapes from line breeding in populations of black lion tamarin monkeys (<i>Leontopithecus chrysopygus</i>), in the wild and in captivity.	Feb/21
Patrícia Freitas	PPGCFAU - UFSCar/FPZSP	Genetic and Genomic Studies on the black lion tamarin monkey, <i>Leontopithecus chrysopygus</i> .	Feb/21

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Patricia Locosque Ramos	FPZSP	Bacterial diversity in the oral and rectal cavities of the black lion tamarin monkey, <i>Leontopithecus chrysopygus</i> (Mikan, 1823)	regular
Paula Salgado	FPZSP	Cytological examinations of the vaginal epithelium of lion tamarin monkeys (<i>Leontopithecus</i> sp) at the Zoological Park Foundation of São Paulo.	Oct/20
Renato Augusto Martins	PPGCfau	Influence of Habitat Disconnection on Chytridiomycosis and on Cutaneous Microbiota of Anuran Amphibians	Nov/20
Ricardo Carneiro Borra	PPGCFau/UFSCar/São Carlos	<i>Carcinogenesis in wild species, correlated with the general aspects of antitumor immunological response.</i>	Aug/20
Ricardo José Garcia Pereira	FMVZ/USP e PPGCFau	Morphological characterization of the embryonic development of birds of the Anseriformes, Galliformes and Psittaciformes orders.	Feb/21
Roberta Mariah Teodosio	PPG-Cfau	Chemical communication in semi-aquatic testudinata: specific recognition and possible impacts of an invasive species.	Aug/20
Rosana Louro Ferreira Silva	PPGCFau - UFSCar/FPZSP	Environmental education for <i>in situ</i> fauna conservation, in the proximities of the State Park Ipiranga Springs (PEFI – SP).	Feb/21
Thatiana Andrade	FPZSP	Assessment of the behavior of the Lear's macaw, <i>Anodorhynchus leari</i> , kept in captivity: response to the application of pre-release training program and detailed description of natural rearing of hatchlings.	Nov/20
Tiago Petri	FPZSP	Updating and implementation of the Integrated Management system of the Rural Production Division – Zoological Park Foundation of São Paulo.	regular
Vinicius Cardoso Claudio	PPGCFau e UFRJ	The bats at Carlos Botelho State Park: Taxonomy and Environmental Health.	Nov/20
Vinícius de Avelar São Pedro	PPGCFau/UFSCar/Lagoa do Sino	Chemical communication in semi-aquatic testudinata: specific recognition and possible impacts of an invasive species.	Nov/20
Vlamiir José Rocha	PPGCfau/UFSCar/ Araras	Spatial and population ecology of a group of capybara (<i>Hydrochoerus hydrochaeris</i> , Linnaeus 1766) located in a rural site, endemic for Brazilian spotted fever in the State of São Paulo, Southeast region, Brazil.	Apr/21
Rafaela Takeshita	Kent State University	Monitoring of senescence and stress levels in neotropical primates	Jun/24
Cybele Lisboa/Beatriz Cezila	FPZSP-PAP-II	Effects of urban noises on the sound communications among the frogs in the PEFI	Aug/21

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Fernanda Vaz/ Lucas Lima	FPZSP-PAP-II	The role of the black-fronted piping guan as a zoochory seed disperser: a study on the juçara palm tree and the imperial palm tree	Aug/21
Tiago Petri/Tiago Gozzi	FPZSP-PAP-II	Implementation of the environmental recovery plan for the DPR of the FPZSP – Araçoiaba da Serra-SP	Aug/21
Paula Salgado/Paula Machado	FPZSP-PAP-II	Establishment of hematological and biochemical reference values for the Lear's macaw	Aug/21
Izabel Moreno/Fernanda Cuppertino	FPZSP-PAP-II	Diets for invertebrate prey, to nourish amphibians in <i>ex situ</i> conditions	Aug/21
Irys Gonzalez/Raquel Lozano	FPZSP-PAP-II	Establishment of molecular test for differential diagnosis of pathogenic bacteria	Aug/21
Andrea Simonato/Julia Dias	FPZSP-PAP-II	Informing the followers on FPZSP's social media on issues concerning animal wellbeing and the importance of disseminating this issue online	Aug/21
Carolina Nery/Iago Junqueira	FPZSP-PAP-II	Assessment of electrocardiographic parameters in the black swans of the FPZSP	Aug/21
Bruno Aranda/Joice Cerqueira	FPZSP-PAP-II	Socio-environmental characterization of the proximities of the PEFI	Aug/21
Bruno Aranda/Sthephanie dos Santos	FPZSP-PAP-II	Live streaming or conventional videos: comparative analysis of the communication potential of different tools on the FPZSP's social media	Aug/21
Andrea Simonato/Mariana Carvalho	FPZSP-PAP-II	Animal wellbeing, ranked based on the environmental and behavioral elements affecting <i>Atelinae</i> primates in permanent exhibition at the FPZSP	Aug/21
Marcelo Misato/Raphael de Lima	FPZSP-PAP-II	Phytoremediation using the floating islands technology for the lake in the African plain at the FPZSP.	Aug/21
Amanda Moraes/Luan Morais/Ana Maria Macagnan	FPZSP-PAP-II	Influence of food management on the wellbeing of the felines of the <i>Panthera</i> and <i>Puma</i> orders held in captivity at the FPZSP.	Aug/21