**Accomplishments**

**Extension Associate Reappointment – Larissa Sayuri Moreira Sugai**

The work with supporting the development of capacities in conservation bioacoustics in my first appointment was deeply gratifying. I see myself as a more skilled and adaptable professional able to better understand and support a diverse and highly heterogeneous target audience. Additionally, I am profoundly happy to share the center with the inspiring and competent colleagues. Having the combination of a satisfactory workplace and professional goals is certainly challenging nowadays, and I recognize how lucky I am with this job.

In this document, I list characteristics of the extension, teaching, and research programs I have been involved with during this period of appointment. Having the opportunities to work with people from different walks of life, culture, and philosophies, and at the same time aligned in having a stronger conservation impact, has been a real privilege for my professional and personal development. I am particularly happy that we were able to expand one of our capacity building programs and an important research aspect of the center to Brazil.

Given unpredictable and misfortune circumstances at the Lab of O, I was invited to serve the center as interim assistant director in September 2024. This was a no-brainer decision: I would do it blindly for the team and the shared values. Although this change required me to step down from some of the teaching duties, my colleagues handled the responsibilities with great professionalism. During this temporary role at the center, I continue to mentor students, regional conservation teams within the scope of the mentorship program, and conservation practitioners from different countries in Central and South America.

**Extension and Teaching**

1. **Equipment, Training and Mentorship Program**

The equipment, training and mentorship program is one of the capacity building programs promoted by the Yang Center for Conservation Bioacoustics with the goal to support a global community highly motivated and invested in implementing acoustic technologies into their research and conservation programs. We have focused on regions where staff at the Yang Center have already established a key set of local partners and collaborators. The first year was dedicated to South East Asia (Indonesia and Malaysia). While the program continued in SEA in the second year, we expanded a branch of the program to the Pantanal region.

The program supports a number of teams (researchers, conservation practitioners, etc.) that receive equipment, training and mentorship on the entire cycle of implementing passive acoustic monitoring in their programs. The equipment is produced in-house (SwiftOnes), which enables us to develop the technology needed and make it accessible to regions that face challenges to implement such devices. The mentorship and training are provided by RTE faculty at the center, which develop learning content from scratch and implement mentoring philosophies and adjust to different regional contexts. The learning content covers aspects related to survey design, field practicalities, data management, data visualization, acoustic analyses, and ecological inference.

Below I provide a synthesis of feedback provided by participants and other aspects particular to each of the programs.

1. ***2022-2023 Indonesia & Malaysia cohort***

* The program has two components: training and mentorship, both being delivered in remote mode. Training happened once a month for 1.5 to 3 hours and was split by multiple instructors, and mentorship sessions were held at minimum twice a month for 1 hour each. We also had an email group and whatsapp where additional communication took place for troubleshooting and networking.
* With approximately 12 hours of time zone difference, training sessions were scheduled after assessing the availability of the participants. Most training occurred during the evening in Ithaca time.
* Training sessions were tailored to a few subjects and included hands-on activities that were conducted in break-out rooms, where participants worked in groups and were more comfortable speaking their native language.
* The teaching material was prepared at the minimum detail level. Lectures were scripted and rehearsed beforehand to improve chances of transmitting the correct concepts about complex topics. Multiple schemes, panels, images, animations, and videos were crafted from scratch.

*Summary of evaluation*

17 participants from Indonesia and Malaysia responded the post-survey

Participants reported improvements in their professional network, in the ability to conduct research and publish, and in seeking and receiving guidance on PAM-related issues (Passive Acoustic Monitoring). Areas of improvement were to independently contribute to a PAM project, increase the conservation impact of their projects, and improve teaching and mentorship skills.

*Changes made or planned as a result of the evaluations*

* Pre and post questions in the training sessions were removed because they mainly generated anxiety and a sense of frustration at the beginning and end, especially if the topic was complex and learning was unsuccessful.
* Slides translated to Indonesian facilitate the understanding of concepts.
* An automatic subtitle translator was added to the sessions, so English was translated to Indonesian in real time.
* Flipped sessions (learning content made available before the lecture) started to take place.

1. ***2024-2025 Pantanal cohort***

* The Pantanal program was inaugurated with a 1-week in-person in the Pantanal of Brazil in March 2024, where I taught most of the content in their native language, Portuguese. Additionally, Kate Reed, Ben Thomas, Ben Gottesman and Laurel Symes were present, mainly teaching another cohort of participants from WCS Central America, in parallel. A total of 40 people were present in the training, and overall the experience was very positive.
* With the Pantanal cohort, monthly training sessions and mentorship sessions are being conducted so far, with the expected end date in April 2025. I have been able to support teams in their ongoing projects. Unfortunately, many were affected with the wildfires in the region and were not able to deploy the recorders.
* Learning content was adjusted to Portuguese, with new examples and activities adjusted to examples that are more relatable to Brazilians (animal sounds from the region, for instance).

**Summary of evaluation**

To be finalized in April 2025.

**Changes made or planned**

* Although teaching the course in Portuguese speeds up the learning assimilation, participants of the program miss the interaction with other staff from the center and opportunities to create an international network.
* There are advantages to providing training and mentorship to researchers and practitioners who are somehow connected to the same biome and conservation purpose. But there are also challenges due to historical factors, which include conflicts between different organizations. We are still debating adjustments in the scope of the selected cohort for the next training round in Brazil.

1. **Workshops and short courses**

* 2023. Workshop. Introduction to Passive Acoustic Monitoring. 2023 Waterbird Society Annual Meeting. Fort Lauderdale, US.
* 2024. Short-course. Introduction to BirdNET GUI. International Ecoacoustics conference in Madrid, Spain.
* 2024 Introduction to Raven and BirdNET (*Virtual*)– 4th African Bioacoustics Community Conference, Cape Town, South Africa.
* 2024. Short-course. Introduction to Conservation Bioacoustics at the Federal University of Mato Grosso do Sul, Campo Grande, Brazil.

1. **Cornell offers**
2. ***Fall NTRES 3150/6150***

* The 2023 course was organized by Laurel Symes, Ben Gottesman and myself, and included additional instructors from the Yang Center. Following feedback from the previous year, we i) expanded hands-on activity time with 3-h lab sessions, ii) created more tutorials and activities, and iii) added new lectures to expand the scope of what is addressed within conservation bioacoustics, such as a historical perspective of the field and a practice dedicated to conservation application.
* The 2024 course was organized by Ben Gottesman and myself. Following feedback from the previous year, we:
  + Reduced the amount of content and removed the more advanced topics but still left some related to Machine Learning. From our feedback from students, the complexity level of the analyses component of the course is still considered high, and we will incorporate this feedback when reviewing the syllabus for the next offer.
  + Another feedback we received was the need for a better flow between lectures, especially because the course was taught by different instructors. Originally, the 2024 was designed to be led mainly by three instructors who would make cohesive content and assignments. But extraordinary events at the Lab of Ornithology affected the integral participation of two instructors. In future courses, we will ensure the course has at least two main instructors full time, with planned and dedicated time to consolidate materials and lectures.

1. ***Winter NTRES 3152/6152***

* I joined the 2025 course as one of the three instructors. The course was attended by 15 Cornell students and was held on the island of Hawai’i. I was actively involved in the segment of the course dedicated to students’ research project. During the course, I frequently met with students to help consolidate project ideas and plan to conduct field surveys and preliminary analyses. I directly supervised a project about the Hawaiian hoary Bat and another project on Coqui frogs.
* I reviewed the project preliminary plans, preliminary and final reports, which were aspects not included in previous years. Additionally, I’m engaged in searching for venues to compile students’ reports in the format of a special issue or proceedings – currently debating with the Cornell Undergraduate Research Journal.

1. **Supervising students**

During my term as extension associate at the Yang Center, I committed to support undergrad and grad research with the following tasks:

* Co-director of PhD thesis of 3 students, two from Brazil and the other from Paraguay;
* Supervisor of international internship of 6 Brazilian PhD students for the period of 6 months at the center;
* Co-director of MSc thesis of 4 Brazilian students;
* Supervisor of international internship of 1 Brazilian undergrad student for the period of 4 months at the center (self-funded);
* Co-supervisor two undergrad students, one from Cornell and another from NYU;
* Mentor and supervisor of 1 Cornell undergrad student;
* Member of PhD Committee of 2 Brazilian students.

**Research**

***DiverSounds project***

* Entering the fourth year of DiverSounds (DiverSons in Portuguese), a project co-led by Dr. Liliana Piatti (UFMS) and me with the goal to monitor frogs in the south of Pantanal. Dr. Laurel Symes has joined the team and in 2022, we received a small grant by the Mato Grosso do Sul state research agency to support the project.
* As part of the fall course, Cornell students worked with a subset of our dataset and created a custom classifier and applied it to one site, revealing phenological patterns of one species.
* A PhD student in Brazil (Daiene) is working with the dataset in her thesis, with the goal to understand meta-community dynamics in the region.
* Four undergrad students in UFMS have done projects and annotations on birds and frogs and presented their work in a seminar for undergrad research at UFMS.

***GEO-Microsoft Planetary Computer Programme. Machine listening to monitor climate change impacts on neotropical amphibians.***

* This project was concluded in 2023, and one product out of the project was published at the end of 2023 (below). I worked closely with all authors to coordinate and standardize annotations.

JS Cañas, MP Toro-Gómez, **LSM Sugai,** HDB Restrepo, J Rudas, BP Bautista, LF Toledo, S Dena, AHR Domingos, FL Souza, S Neckel-Oliveira, A Rosa, V Carvalho-Rocha, JV Bernardy, JLMM Sugai, CE Santos, RP Bastos, D Llusia, JS Ulloa. A dataset for benchmarking Neotropical anuran calls identification in passive acoustic monitoring. *Scientific Data* 10, 771.

***Pantanal Biome-wide Biodiversity Monitoring***

* Together with local partners deeply involved in biodiversity studies and the interface of public policy making in the Pantanal, a research program funded by the Brazilian government was granted to employ conservation technologies for the monitoring and assessment of the Pantanal Biodiversity.
* The Yang Center joined as collaborators and will perform a massive large-scale deployment of listening stations across the entire biome with the goal to assess biodiversity and ecological integrity at the biome scale. The effort will be a benchmark in the transfer of technologies and knowledge for a hyperdiverse biome critically endangered, and should pave the way for intense, large-scale monitoring in different regions in the planet.