Yanet Tavarez -- The City College of New York

The Thread of Invasive Species Introductions for Hawaiian Native Ecosystems

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Abstract:

When you imagine Hawaii, you probably think of hibiscus flowers, its lush forests and diverse wildlife-however, this paradise is facing a growing threat due to the human introduction of invasive plant species. Many invasive species have been brought to the islands intentionally through plant trade, due to their resilience, rapid growth, and decorative appeal. Once transported to Hawaii, these species escape cultivation, outcompete native plants, and disrupt entire ecosystems. Preventing these invasions is a top priority for conservation.

In response, practitioners in Hawaii created a list of 43 invasive plants that are actively being managed across the Hawaiian islands, including nine species that have been successfully eradicated. To prevent future introductions, we asked: which of these plants could be introduced to Hawaii through horticultural trade? Where would they be introduced from? And how can their introductions be prevented?

This research leverages internet data on plant trade to identify regions and nurseries that supply invasive species to Hawaii, with the goal to minimize harm. Of the 43 species, 31 are actively distributed through trade and could pose introduction risk. Nurseries selling these species are primarily located in California, Florida, New York, the U.K., and Germany. Although invasive species are pervasive in trade, several nurseries restrict shipments to Hawaii or flag species as potentially invasive. This suggests trade regulations can help reduce introductions.

By highlighting the risk of invasive species introductions, this study provides insights for practitioners and local communities to protect Hawaii's delicate ecosystems.

Alexandra Acevedo -- Natural Areas Conservancy

Evaluating NYC Forested Wetlands' Understory Floristic Quality

Alexandra Acevedo
Natural Areas Conservancy, New York, NY, USA

Abstract:
Freshwater wetland extent in NYC has decreased by 99 percent since colonization. These habitats are threatened by land use changes, stormwater runoff inputs, flooding, and introduction of competitive species which will worsen with changing climate and precipitation patterns. Understory vegetation can be used as an indicator of ecosystem condition due to its sensitivity to disturbance and hydrological changes. Therefore, it may provide a valuable look into the future, and clue into where management and restoration may need to be done. This is especially pertinent for palustrine forested wetlands (FWs) – the focus of this study. FWs are a type of freshwater wetland dominated by trees that have suffered from fragmentation – separation from their water sources. When these systems experience disturbance, it's common to see overstory species composition compare more to an intact wetland than that of the understory's. Over the summer of 2025 with the Natural Areas Conservancy, I participated in a citywide forest assessment where data was collected at 317 plots, 59 of which were forested wetlands, within NYC Park's natural areas. I will use understory composition data to derive a wetland-specific floristic quality index to assess FW condition. Preliminary results have shown that native species frequency outweighs non-native species in a majority of plots. Further analyses will dig deeper by using wetland indicator statuses in order to summarize relative forested wetland intactness and disturbance of sampled forested wetlands. This summary will provide a ranked list of sites from least to most disturbed, which may be helpful for prioritizing forested wetland restoration needs.

Bishwabandhu Acharya -- Yale University

From Fields to Forests: Tracking Pine-Oak Succession in Nepal's Abandoned Cropland

Bishwabandhu Acharya, Mark S Ashton
Yale University, New Haven, CT, USA

Abstract:

The abandonment of agricultural land has emerged as a major driver of land-use change in Nepal's mid-hill regions, resulting in development of secondary forests dominated by Pine (*Pinus roxburghii*) and Oak (*Quercus spp.*). These regenerating forests play a vital role in carbon sequestration, biodiversity conservation, and ecosystem resilience. Despite the ecological importance of this transition, little is known about how forest structure, composition, and biomass accumulation evolve across successional stages on previously cultivated lands. Existing studies largely focus on land-use change trends through remote sensing rather than fine-scale ecological assessments. I aim to bridge these gaps by assessing the impact of agricultural abandonment on Pine-Oak Forest regeneration by integrating multi-temporal Landsat imagery with detailed field-based ecological assessment. I will classify land parcels into a successional age group using supervised classification of Landsat imagery, and chronosequence approach to assess the changes in forest structure, species composition, and biomass over time. I will measure height and diameter at breast height for trees, saplings, and seedlings in nested concentric circular plots of radius 10m, 2.82m and 1.78m respectively. I will use species-specific allometric equations to estimate the above-ground biomass. ANOVA, Generalized Linear Models (GLMs), and Non-Metric Multidimensional Scaling (NMDS), will be used to evaluate patterns across successional stages. The findings will help to understand forest recovery processes, inform carbon sequestration potential, and climate adaptation strategies in Nepal's mid-hill landscapes.

Zinnia Adhikary -- St. John's University

Neglected No More: RNA-based Mitogenomic Case Studies of Neglected Neotropical Fauna

Zinnia Adhikary[1], Genrietta Yagudayeva[1], Emily Mincher[1], Erika Yick[2], Leo Lee[2], Kenny Chen[2], Samin Ragib[2], Zannat Totini[2], Aongkita Biswas[2], Juan C Santos[1]
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Abstract:

Neglected biodiversity is the undervaluation and underuse of flora, fauna, and fungi that could significantly contribute to ecology, medicine, biotechnology, and more. They are

often overlooked due to limited data and awareness, resulting in conservation gaps and unrealized applications. Our project presents a species-wide approach through three case studies: high-altitude, carnivorous Neotropical planaria,slime-producing velvet worms, and a liver-parasitized *Smilisca phaeota* frog from the pet trade. Though differing in origin—planaria and velvet worms were collected from the Ecuadorian Andes, and *S. phaeota* was acquired commercially, all were investigated using the same methodological framework. We extracted RNA using TRIzol, conducted Next Generation Sequencing and analyzed transcriptomes with our custom pipeline, Pincho, and finally reconstructed the mitogenomes and extracted COX1 genes for phylogenetic analysis. Results revealed: the planaria belonged to a previously uncharacterized *Amaga* species that preys on the invasive slug *Deroceras reticulatum*, the velvet worm was a high-altitude Epiperipatus species expressing 4 of 16 key slime genes, and S. phaeota and its liver parasites are currently undergoing sequencing and analysis, offering a rare look into a novel host-parasite system. Our RNA-based mitogenomic approach is a replicable strategy for uncovering species identity, evolutionary relationships, and gene content. It empowers the study of overlooked organisms and their hidden ecological, biomedical, and biotechnological potential.

Jasmine Ali -- Pitzer College

Reconstructing Oyster Biomass Using Museum Collections as a Baseline for Restoration

Jasmine Ali, Jessica Goodheart, Yael Leshno Afriat
American Museum of Natural History, New York, NY, USA

Abstract:

Oyster fisheries are a key 'Blue Food', an aquatic food source valued for its low carbon emissions and high nutritional value. Global oyster production has expanded under the United Nations' "Blue Transformation" initiative, including in the U.S. However, data on oyster biomass prior to 1950 remain scarce, limiting efforts to assess historical baselines and set restoration targets. Shell specimens in natural history collections offer an underutilized resource for reconstructing these baselines. Because many shells within collections are missing a valve or are aggregated due to the reef-forming nature of oysters, estimating individual shell weight in order to calculate biomass is often difficult. We analyzed 83 Eastern Oyster (*Crassostrea virginica*) specimens from the

American Museum of Natural History to evaluate relationships among shell metrics and improve biomass estimation methods. CT-derived shell volume was the best metric to predict total weight from incomplete or aggregated specimens, explaining 91% of variation in shell weight, while left valve length served as a practical alternative. A mixed-effects model revealed that locality significantly influenced shell metrics. These results demonstrate that single-shell measurements can approximate whole-shell properties, enabling biomass estimation from fragmented specimens. This work lays the groundwork for calibrating industry-standard biomass equations to accommodate historical and regionally variable data for restoration planning.

Gabriella Amato -- Yale Peabody Museum

A Dietary Analysis of Predatory Hammerhead Flatworms in their Invasive Range

Gabriella Amato
Yale Peabody Museum, New Haven, CT, USA

Abstract:

In this study we took an indirect approach to examining the diet of invasive flatworms, *Bipalium adventitium*. Originally from southeast Asia, *B. adventitium* is a predatory hammerhead flatworm that was first discovered in California. Establishment of hammerhead flatworm populations could have a severe impact on soil processes mediated by endemic earthworms, like soil formation and nutrient cycling. However, there could also be beneficial effects from their spread if they prey on other invasive species, like earthworms. The goal of this research project is to understand whether or not *Bipalium adventitium* is predating invasive jumping worms in no-choice lab trials and in the field in upstate New York. Invasive jumping worm species include the megascolecidae *Amynthas agrestis*, *Amynthas tokioensis*, and *Metaphire hilgendorfi*. We used COI DNA barcodes and a multiplex PCR approach with jumping worm-specific primers to accurately identify DNA from the gut of flatworms to a species level. In all our field samples there was no evidence of jumping worm consumption; however, we did amplify and sequence CO1 of *Lumbricus rubellus* from field-collected worms. The field-collected flatworms offered jumping worms in the lab to prey upon them fully and we identified jumping worm species from the CO1 sequences amplified from mid, tail, and head fragments of these lab-fed flatworms. The continued study of *B. adventitium*

gut contents is needed, as well as providing a more detailed idea of prey diversity and preferences in the invasion range of hammerhead flatworms.

Lucia Anderson -- Pennsylvania State University

Exploring the genomic basis of local adaptation in *Juglans nigra* (Black walnut).

Lucia A Anderson, Sammy Muraguri, Laura Leites, Jill Hamilton
Pennsylvania State University, University Park, PA, USA

Abstract:

With increasing abiotic and biotic threats to Eastern North American forests there is a need to develop effective restoration strategies to ensure the maintenance of forest ecosystem function. Climate Smart Forestry, as one approach, emphasizes climate adaptation as a mechanism to inform seed sourcing and seed transfer decisions associated with assisted population migration (APM). APM relies on an understanding of local adaptation to recommend intentional movement of seed sources to mitigate the fitness consequences of rapid climate change. This includes quantifying the contemporary relationship between standing genetic and environmental variation to predict response to projected environmental change. Quantifying neutral and adaptive genetic variation for forest tree populations provides an important first step to informing seed sourcing and climate-informed seed transfer for reforestation initiatives. *Juglans nigra* (black walnut) has been proposed for climate-informed restoration initiatives due to its ability to grow relatively fast, sequester carbon, and provide habitat and food for wildlife. Sampling from a common garden experiment established in State College, PA for a range-wide collection of black walnut provenances, we evaluated population genetic structure of black walnut populations and associated genetic variation with environmental variation and phenotypic variation for traits important to adaptation measured in the common garden experiment. Ultimately, we intend to use genotype environment and genotype-phenotype associations to make climate-informed seed-transfer recommendations, which will facilitate forest tree conservation and restoration in the future.

Thomas Ardia -- JP McCaskey High School

Human Impacts on Wildlife in a Fragmented Urbanized Landscape

Thomas JR Ardia[1], Daniel R Ardia[2]
[1]JP McCaskey High School,Lancaster, PA, USA; [2]Franklin & Marshall College, Lancaster, PA, USA

Abstract:

In an ever urbanizing world how are the small havens of the wild affected by the establishments that surround them? This study explores how the urbanization and human use of forest patches affect populations of white-tailed deer and red fox. Since 2015, trail cameras have been deployed in forest patches in the fragmented urbanized landscapes of Lancaster and York Counties, PA, USA. Images are then processed by a machine learning algorithm that sorts the photos by whether they contain people or animals. The animal photos are then identified to species by a human observer.Using this long term data set, I will present information on how land use, degree of urbanization, and the density of human trail use affects the abundance and movement of foxes and deer within and across sites. I will discuss the relationship of how increased human recreation can impact the density and behaviors of the species within these preserves. My results are of interest for conservation and land and recreation management of wildlife in remnant forest patches in an urbanized landscape.

Elias Barber -- Catawba College

Scavenger Skincare: Black Vulture Facial Microbiomes in Wild and Human Environments

Elias Barber, Erin Witalison, Jacy Noble
Catawba College, Salisbury, NC, USA

Abstract:

As scavengers, vultures are hosts for pathogens, fungi, and bacteria on their faces and in their digestive systems. Recent studies examining New World vultures have identified a possibility immune in protection while consuming carrion by providing antibacterial and antiparasitic qualities. While the broader analysis of vulture facial microbiomes is still in the beginning stages, these studies have looked only at wild birds. By looking at

the differences between black vultures (*Coragyps atratus*), both wild and captive, our study examines what role the bird's environment plays in the development of these microbiomes. To do this, we are analyzing facial and beak microbiological samples collected from wild and captive black vultures to identify potential differences between these two sample populations. At its current stage, this project is still collecting and processing samples to use 16S ribosomal RNA sequencing for identification of the bacterial species found in the facial and beak samples. Gaining a better understanding of these microbiome differences could possibly predict health implications of vultures released into the wild and their ability to safely consume carrion after prolonged human care. Vultures are not only threatened by the toxicity of anthropogenic substances, but also by their effects on immune suppression. As a result, understanding these immune differences in various environments may be especially important for conservation efforts and rehabilitation if facial microbiomes do indeed play a key role in vulture immune systems.

Zoe Barr -- Yale School of the Environment

Long-Term Changes in the Composition of a Primary Atlantic Forest Community

Zoe Barr
Yale University, New Haven, CT, USA

Abstract:

Long-term observational studies in forests throughout the tropics have described directional changes in primary forest community composition over recent decades. Similarly, changes in the composition of Atlantic Forest communities are expected in response to landscape fragmentation and climate change. However, while many theoretical studies have assessed how Atlantic Forest communities might change in response to ongoing disturbances, no known long-term empirical evidence exists to verify these findings. Taking place in the coastal wet tropical forests of southern Bahia—considered a biodiversity "hot point within a hotspot"—my study presents a unique opportunity to understand how a hyper-diverse primary forest community in the Atlantic Forest is responding to long-term disturbance. Analyzing inventory datasets collected over more than thirty years, this study aims to assess changes in community turnover rates, species composition, phylogenetic diversity, and functional diversity in a tropical moist forest woody plant community in efforts to inform how primary forest

communities are changing across time and to help identify what species are most at risk of extinction under future conditions.

Annalise Biesterfeld -- Horton Research Group

Big and Small Nature: An Ethnographic Case Study of Lawns in Evanston, Illinois

Annalise C Biesterfeld
Horton Research Group, Brooklyn, NY, USA

Abstract:

Suburban lawns are a cultural wealth and status symbol that have persisted since the emergence of suburbs, despite socio-cultural changes in the landscape. This ethnographic case study examines the relationship between suburbanites in Evanston, Illinois and their lawns. It aims to identify Evanston residents' sentiments about their lawns and how they have been impacted by the cultural history of suburbanization and traditional lawn culture. The analysis of lawns in the post-industrial suburb of Evanston reveals political, class and sustainability influences in how suburbanites engage with accessible nature. This research represents nine months of archival research and ethnographic fieldwork including participant observation and semi-structured, long-form interviews with twelve interlocutors. This work examines the history of the American lawn and the suburbanization of Chicago, before examining Evanston's lawn culture through four case studies on Evanston residents' relationship to their lawns. In the politically progressive context of Evanston, traditional lawn culture is no longer the most prominent way to engage with nature. Instead, native planting, creative design and sustainability define the suburb's aesthetic language. By engaging with their lawns intentionally, artfully and sustainably, Evanston sets new community standards for engagement with and love for nature. Despite the reality of individualism in lawn preferences, the community voice is strongly in favor of a new era of nature relationships. Lawns represent the integration of nature into post-industrial society, and Evanston's unique engagement with them represents a future of human/nature partnership.

Sophia Borjon -- Bradley University

Effects of Urbanization on Katydid Vocalization Events

Sophia Borjon, Emily Hernandez, Kaiden DeAlmeida, Anant Deshwal
Bradley University, Peoria, IL, USA

Abstract:
Acoustic communication is crucial in regulating population dynamics for katydids. Male katydids produce conspicuous vocalizations to attract mates, utilizing tremulations or vibrational signals generated by abdominal shaking. However, urbanization-induced noise pollution, such as traffic, construction, or excessive anthropogenic noise, significantly alters calling frequency and other acoustic cues crucial for mating, which reduces reproductive success. We hypothesize that the location of a park and its level of urbanization will impact the frequency and number of vocalization events. We anticipate that katydids in urban parks will have different vocalization characteristics and less frequent vocalizations than those in natural areas. To test our hypothesis, we installed a proportional number of Autonomous Recording Units (ARUs) on a transect line in urban and natural areas in Peoria, Illinois. The number of ARUs distributed in each park is relative to the park's size. We used RavenPro, a sound analyzing program, to annotate the katydid calls. We will run a linear regression model to test our hypothesis and determine relationships between variables.

Darwin Breton -- Saint Peter's University

Eleven Years of FeederWatch in a NJ Metropolis: Avian Diversity on an Urban Campus

Darwin Breton, Catherine Saldana, Suleimy Gomez Colon, Alexandra Ramirez, Genesis Serpas, Katherine Wydner
Saint Peter's University, Jersey City, NJ, USA

Abstract:
Urban birds face numerous challenges to survival, including human disturbance and degraded habitat. Various species breed in cities, overwinter in them, or pass through during migration. For eleven years, we have conducted a survey of wintering birds using the urban Saint Peter's University campus (Jersey City, NJ) as our study site. We have engaged teams of undergraduates in our research, using the Project FeederWatch (PFW) protocol established by the Cornell Lab of Ornithology. From November to April, birds attracted to resources (including feeders) within a delimited study area are counted and reported to a database managed by Cornell. Our data collection began in 2014, a native plant garden was established and feeders expanded in the study area in

2018, and food offerings at feeders were further diversified in 2023. In addition to understanding trends in urban birds over time, our goals include attracting native species and increasing avian diversity through maintaining a supportive space for them. Only five urban-tolerant species have been present every season, with House Sparrows (*Passer domesticus*) dominating, but overall we have documented an upward trend in native species since our project began.

In this report, we present our major findings, including success in attracting native species and some surprising species that have appeared in our counts. Over eleven years, a total of 38 species have been recorded at our site, including 19 in the 2024-25 season.

Adrian Casanova -- Columbia University

Investigating the Human Dimensions of Ecotourism in Madre de Dios, Peru

Adrian Casanova, Viorel Popescu
Columbia University, New York, NY, USA

Abstract:

Amid accelerating deforestation and infrastructure expansion in the Peruvian Amazon, ecotourism is widely promoted as a sustainable development strategy—but its viability depends on the insights and experiences of those working within these shifting landscapes. This study examines the human dimensions of ecotourism in Madre de Dios by analyzing the knowledge, perceptions, and lived experiences of 80 local stakeholders—tour guides and lodge owners—whose livelihoods depend on access to natural tourism destinations. Using semi-structured interviews, the research explores how stakeholders identify and use ecotourism assets, perceive environmental and socio-economic threats, and evaluate barriers to sustainable tourism. Preliminary findings reveal concerns about illegal mining, land tenure insecurity, and the transformative effects of the Interoceanic Highway. Thematic analysis highlights both ecological vulnerability and the presence of underutilized natural assets excluded from formal ecotourism networks. Stakeholder narratives expose critical gaps in governance, infrastructure, and long-term planning, underscoring the need for capacity-building, investment, and integrated land-use approaches. By centering local perspectives, this study offers grounded, actionable insights into the limitations and potential of

ecotourism, informing policy and planning efforts aimed at building resilient, community-based conservation strategies across the Amazon Basin.

Layna Chen -- Yale University

The Social Construction of Peat

Layna Chen
Yale University, New Haven, CT, USA

Abstract:
Peat, a material that has resisted stable classification throughout history, has been described as everything from a low-rank fuel to unproductive swampland to a valuable carbon reserve. These shifting definitions parallel changing systems of value. Understanding how peat is a product of economic, social, and political construction has significant implications for climate discourse and conservation sciences. Despite covering only 3% of the Earth's land area, peat stores around 30% of the world's soil carbon stock. This fact, highlighted by scientific studies of the 1997-98 Indonesian MegaRice Project peat fires, reveals how the fragility of peat allows it to act as an agent of its own transformation. This paper constructs a literary history of peat by integrating interdisciplinary methods drawn from anthropology, archival research, and the history of science. By analyzing episodes that reveal the relationship between peat's value and visibility, I argue that peat's persistent tension between toxic haze and unproductive land forces a "collaborative production of truth" (Tsing 2024). Peat cannot be understood by outsiders except through another form of mediation. As imaging technologies continue to make peat visible for exclusive audiences, peat is often misrepresented, with yearly haze cycles in Southeast Asia serving as reminders of humanity's limited understanding of this medium. Understanding how to work with peat, a medium of little value to our economic system but immense value to the Earth's atmosphere, can help us interrogate the limits of our environmental management systems to create new forms of collaboration in the face of climate change.

Ciera Cleary -- Toronto Metropolitan University

Field-Based Investigation of Chloride Pollution in Soil Water

Ciera Cleary
Toronto Metropolitan University, Toronto, ON, Canada

Abstract:
Salt is a cheap and effective way to keep winter roads clear of snow and ice, however there is a growing body of research that shows that while making roads safer, road salt application can also be harmful to the environment. As snow melts, salts are carried by water into local streams, creeks, lakes, and soils, and can even end up in groundwater aquifers that are used for drinking water. In particular, soil forms a reservoir for legacy chloride that is likely transported to streams over periods of months to years, yet there are few studies that directly measure soil water and groundwater chloride concentrations. To understand the spatio-temporal patterns of chloride in soil water resulting from wintertime road salt application, weekly or biweekly observations of soil water chloride concentrations have been made at six locations at each of three depths in the urban watershed of Toronto's Black Creek from May 2024 to the present. The results reveal variability in soil water chloride concentrations of up to five orders of magnitude, with concentrations in some areas of tens of thousands of mg/L, which is considered saline or brackish-saline based on the classification system used. A key but not unexpected result is a massive spike in chloride concentrations coinciding with the snowmelt season in some locations. Salinization of this magnitude would be expected to have adverse impacts on the local ecology, such as aquatic organisms, especially during critical life stages in the spring and summer.

Alyssa Cruz -- Florida State University & Tall Timbers Research Station

Optimizing Prescribed Burn Timing to Control Invasive Hard Seeded Legumes

Alyssa C Cruz[1,2], J Morgan Varner[2], Thomas Miller[1], Jayna E Hankin[1,2], Erin Wachter[2]
[1]Florida State University, Tallahassee, FL, USA; [2]Tall Timbers Research Station, Tallahassee, FL, USA

Abstract:
This thesis examines the interaction between seed maturity and fire exposure in controlling the invasive legume *Crotalaria spectabilis* (showy rattlebox). Weekly seed pod collections, controlled burn treatments, and germination trials were conducted from October to March at Tall Timbers Research Station and Florida State University. Results indicate that seed pods develop hard seed coats and reach full physiological maturity

by mid-December, coinciding with mass seed dispersal into the soil. Controlled burns applied prior to this point effectively kill seeds contained within pods of all maturities, minimizing soil seed bank accumulation. In contrast, burning after seed dispersal risks breaking seed dormancy of dispersed seeds and promoting future invasions. These findings provide critical information for optimizing prescribed fire timing to more effectively manage *C. spectabilis*, and possibly even other hard seeded invasive legumes.

Zia Crytser -- Virginia Tech

Frugivory Drivers in Guam's Såli (*Aplonis opaca*, Micronesian Starling)

Zia Crytser, Martin Kastner, Haldre Rogers
Virginia Tech, Blacksburg, VA, USA

Abstract:

Omnivorous birds adjust their diets based on resource availability, nutritional needs, competition, and predation risk—factors that shape ecosystem roles like seed dispersal and insectivory. On Guam, the invasive brown treesnake (*Boiga irregularis*) has extirpated nearly all forest birds, leaving såli (*Aplonis opaca*, Micronesian starling) as the island's sole native omnivore. Without avian competitors, we hypothesize that resource availability, nutritional demands, and predator avoidance drive såli's dietary patterns. This study examines how frugivory of såli shifts with plant phenology, reproductive status, and predation risk. Seeds were analyzed from 257 nests (2017–2022) using fecal and nest box samples, paired with plant phenology data (2013–2018). We also assessed reproductive success and used nest box distance from forests as a proxy for predation risk. Såli consumed fruits from 38 plant species (57.5% native, 42.5% introduced). Dominant native plants included *Premna obtusifolia* and *Melanolepis multiglandulosa*; introduced fruits included *Vitex parviflora* and *Passiflora suberosa*. Fruit use was seasonal, and nests near forests had higher native seed proportions. Clutch sizes ranged from 1–4 eggs, with 71.3% nest success. Nesting attempts with increasing distance from forests, though clutch size and success showed no significant relationship to proximity. As one of Guam's last forest birds, såli's survival is key to seed dispersal. Reducing non-native species in their habitat would improve their ecological contributions. Our findings also highlight nest boxes as valuable tools for dietary analysis and long-term monitoring of cavity-nesting birds.

Leila Curtis -- Northeastern University

Re-identifying Chimaera Museum Specimens and Analyzing Diagnostic Characters

Lei Curtis
Northeastern University, Boston, MA, USA

Abstract:
Improving taxonomic resolution is essential to reduce misidentification and aid in efficient conservation efforts, such as global-level extinction risk assessments done by the IUCN. Chimaeras experience frequent misidentification because they are morphologically conservative and reliable diagnostic characters are poorly described. Little is known about Chimaera biology as they are typically a by-catch species and historically understudied due to their deep-sea endemism, resulting in many species lacking IUCN Red List evaluations or listed as data deficient. The National Museum of Natural History (NMNH) holds over 400 Chimaera specimens, many of which are unidentified or under outdated classifications. This study aims to resolve Chimaera specimen identification in the NMNH while concurrently developing a species-level identification key and drafting a morphological character matrix. I will identify museum specimens using external characters established by species descriptions and field guides. Simultaneously, I will identify and analyze new character states of Chimaera external morphology, allowing me to corroborate well-defined characters used in identification, identify additional morphological differences across species, and investigate characters for species or genus differentiation. I will then develop a draft morphological character matrix based on these analyses, made available on the open-source database MorphoBank. The identification key and character matrix resulting from this study will help scientists with effective classification during field observations, such as those done in situ using remotely operated vehicles (ROVs) and caught during fisheries surveys.

Tharanga Dasanayake -- Kalutara

Color Pattern Variation in *Peltopelor trigonocephalus*

D M T Dhananjani[1], A W G V C Dushmantha[2], V C R De Mel[1], E G D P Jayasekara[1], W A D Mahaulpatha[1]

[1]University of Sri Jayewardenepura, Colombo, Sri Lanka; [2]Small Cat Advocacy and Research, Kandy, Sri Lanka

Abstract:
The coloration observed in snakes is often linked to adaptive responses to environmental factors. This study investigated the color patterns of *P. trigonocephalus*. Data on color pattern variations were collected from freshly killed specimens (roadkill) and live specimens. Color variations in *P. trigonocephalus* were examined by documenting three characteristics: dorsal ground color, dorsal pattern color, and dorsal pattern shape. To analyze the relationship between viper color pattern variation and environmental factors, three separate generalized linear models were employed. In each model, one of the three color pattern variables served as the dependent variable, while elevation, temperature, and precipitation were used as independent variables. Dorsal ground colors, including forest green, medium turquoise, and yellowish-green, showed a significant relationship with temperature, elevation, and precipitation, with an AIC value of 280.3. The dorsal pattern shape model, which had an AIC value of 80.5, revealed no significant relationship between the "variegated with black crossbars" pattern and the environmental factors (precipitation, temperature, and elevation). For dorsal pattern color, black, black and turquoise, and black and yellowish-green showed a significant relationship with temperature only, with an AIC value of 172.2. These results indicate that environmental factors, particularly temperature, influence the coloration of *P. trigonocephalus*. Color variation serves adaptive functions, likely related to thermoregulation and habitat suitability, reinforcing the idea that coloration is an ecological adaptation to environmental gradients.

Thomas Dodson -- University of Southern Mississippi

Ethnobotanical Educational Experiences and Their Effect on Plant Awareness Disparity

Thomas Dodson[1,2]
[1]University of Southern Mississippi, Hattiesburg, MS, USA; [2]Mississippi University for Women, Columbis, MS, USA

Abstract:
A serious cause for human-induced habitat loss and the loss of biodiversity may be that of Plant Awareness Disparity in which people have lost their awareness of the unique role plants play in the ecosystem and to human lives. Botany as a subject has been

taught separately from the rest of biology for hundreds of years, but in more recent history, this emphasis on botanical knowledge has waned when compared with the increase in other forms of scientific knowledge. Because university students are not entering college with much botanical knowledge nor taking courses that address plant topics, there is a low understanding of human influence on the environment, especially climate change. A change needs to be made in science education at all levels to increase awareness of all forms of life and combat the bias in science education that tends to focus on animal and molecular biology. Addressing the plant and human relationship in everyday human lives through extracurricular specific weekly botanical education outside the classroom with guided interactions and research on specific plants can bring a greater awareness of the plant/human relationship even for those who are not majoring in biology. Using a framework of posthumanism and critical plant studies, this qualitative study explores the intersection of ethnobotanical experiences in an edible native plant trail and the educational experiences that accompany the inquisitiveness of wondering how plants have been used historically, culturally, biologically, and beyond. The results show that participants increased awareness of biodiversity, ethnobotanical uses, and climate impacts.

Gus Dupin -- Cornell University

Development of Orangutan Long Call Detector for Passive Acoustic Monitoring

Gus Dupin[1], Erik Estrada[2], Mariaty[3], Wendy M Erb[1]
[1]Cornell University, Ithaca, NY, USA; [2]Yayasan Borneo Nature Indonesia, Palangka Raya, Kalimantan Tengah, Indonesia; [3]Universitas Muhammadiyah Palangkaraya, Palangka Raya, Indonesia

Abstract:
Passive acoustic monitoring (PAM) is a powerful tool that can be utilized to study animals' distribution, health, behavior, environment, and more in a non-invasive manner. Since the start of the century, orangutans, a key umbrella and flagship species in Borneo, have experienced a population decline of 150,000 individuals. Their long interbirth intervals and large habitat needs make them an extremely at-risk species. Flanged males, who have the largest ranges of any orangutans, produce distinctive calls that travel long distances, making them ideal for passive acoustic monitoring. Machine learning can automate detections of their calls and enable more extensive and efficient monitoring of these critically endangered primates. This study aims to identify methods

that improve the performance of orangutan long call detectors. Focal and passive recordings of orangutan long calls were collected at two locations in Borneo. A total of 2.5 hours of focal recordings and 112 hours of passive recordings were manually annotated to create training, validation, and testing datasets for the development of a custom classifier. Using BirdNET Analyzer, we created multiple detectors to investigate the influence of 1) the ratio of PAM to focal recordings, 2) the ratio of target to background noise classes, and 3) audio augmentation techniques. Several metrics, including precision, recall, and F-score, were calculated to compare the performance of the resulting detectors. Pitchshifting the audio resulted in a significant improvement of the model. The results from these experiments will provide insight for others seeking to create similar detectors. Additionally, an orangutan long call detector will enable the rapid analysis of large datasets, improving the efficiency, accessibility, and capabilities of orangutan bioacoustic research projects and conservation efforts.

Josh Ebbin -- Brooklyn College

Positive and Negative Legacies of Industrial-Era Mining in Harriman State Park, NY

Joshua S Ebbin, Peter M Groffman
CUNY Brooklyn College, Brooklyn, NY, USA

Abstract:
The abandoned mines of Harriman State Park, New York, have created unique pools of water that have the potential to serve as habitats and breeding sites for vernal pool amphibians. This study evaluated whether these mines created negative (water pollution) or positive (amphibian habitat) legacies by analyzing water quality, habitat suitability, and amphibian presence. Water samples from four mine pools were tested for pH, nutrient levels, and potential metal contaminants. At the same time, habitat and population surveys were used to assess amphibian species diversity and site conditions. Results indicated that most pools had high water quality, with no signs of acid mine drainage, heavy metal contamination, or excessive nutrient levels. Amphibian surveys identified several species, including some obligate vernal pool breeders. Species assemblages varied with site characteristics. While these mine pools provide essential fish-free breeding habitats, their hydroperiods and surrounding conditions differ from those of naturally forming vernal pools, which may limit the use of certain species. Results show that these sites have the potential to serve as ecological refuges in the face of climate change-driven habitat loss. However, further study is necessary to

refine these findings, specifically through more extensive data collection. These results underscore the complexity of land-use legacies, the necessity of understanding their long-term impacts, and the need for informed conservation strategies in these anthropogenically altered landscapes.

Additional data collection is underway to further develop these results and their ramifications on the surrounding ecosystem.

Rachel Edgar -- The University of Exeter

Wildlife Occupancy Within a Heterogenous Agroforest Landscape in Cantanhez NP

Rachel Edgar, Kimberly Hockings, Elena Bersacola
The University of Exeter, Penryn Campus, Cornwall, UK

Abstract:
Anthropogenic land-use change is a key driver of biodiversity loss globally, particularly in tropical ecosystems. In West Africa, traditional agroforests, offer a unique balance between human livelihood and biodiversity conservation. Cantanhez National Park (CNP) in Guinea-Bissau exemplifies this mosaic landscape, comprising coastal forests, mangroves, savannahs, and agroforests. However, the impacts of this heterogeneous land use on wildlife occupancy remain poorly understood.

This study investigates how habitat type influences species occupancy across CNP, with a focus on medium- to large-bodied mammals (>1kg). Using 49 camera traps deployed during the 2020–2021 dry season, I generated species detection histories to assess patterns of wildlife presence across varied habitat types and levels of human activity. A Bayesian multi-species occupancy model will be applied to account for imperfect detection and to identify key environmental and anthropogenic predictors of species occupancy.

This research fills a critical knowledge gap as the first multi-species occupancy study within CNP, providing insight into how different species, particularly those facing hunting pressure or involved in human-wildlife conflict, navigate the park's fragmented landscape. Findings will inform the national park's conservation management plan by identifying priority habitats and species, highlighting the biodiversity value of agroforests. Ultimately, this work supports strategies for fostering coexistence between local communities and wildlife in human-dominated landscapes, ensuring that conservation efforts are both ecologically effective and socially inclusive.

Kendall Eldredge -- Rutgers University

Quercus rubra growth response to commercial mycorrhizae in mature and Oldfield soil

Kendall Eldredge
Rutgers, The State University of New Jersey, New Brunswick, NJ, USA

Abstract:
Oaks (*Quercus sp.*) have been a dominant tree species in eastern North American forests for centuries and their uncertain future in our forests is a concern for land managers. Commercially available mycorrhizal products have become increasingly available for agricultural purposes, but their use for forest restoration efforts is understudied. For this study, I asked the following question, does a commercial mycorrhizal inoculum enhance oak germination and seedling growth? My hypothesis is that adding commercial inoculum will enhance seedling growth in Oldfield soil conditions to be similar to that in mature forest soil. To test this hypothesis, I planted acorns in soil collected from both an Oldfield Forest and a mature forest, with mycorrhizal inoculation treatments in both soil types. To test the difference in germination and growth of acorns among treatments, sprout dates were collected at the first sign of embryonic shoot emergence from the soil. My preliminary results were calculated 83 days after planting and the study is anticipated to continue until acorns stop sprouting. At 83 days, 80% of acorns planted in mature soil had sprouted with an average of 67 days to sprout whereas 70% of the acorns grown in post-agricultural soil had sprouted with an average of 73 days to sprout. Soil origin had a significant effect on days to sprout (F= 11.77; p<0.0001) but neither commercial inoculum (p>0.05) nor the interaction between soil and inoculum yielded significant differences (p>0.05). These preliminary results indicate that there is no significant benefit to adding commercial inoculum for early germination and growth.

Gwen Ellis -- University of Vermont

Natural History Collections Reveal Anuran Population Genetic Response to Disease

Gwen Ellis[1], Lauren V Ash[2], Nicholas J Gotelli[1]
[1]University of Vermont, Burlington, VT, USA; [2]University of South Florida, Tampa, FL, USA

Abstract:

Amphibian populations are experiencing global population declines partially because of the emerging pathogens Ranavirus Frog Virus 3 (FV3) and chytrid fungus *Batrachochytrium dendrobatidis* (*Bd*). Understanding how populations cope with these pathogens is essential for their conservation. Research supports a genetic component to differing responses to disease across amphibian species and populations. However, most work has only looked at a few genes, missing other potentially important loci. Additionally, genetic diversity needs to be comprehensively assessed since pathogen-associated declines can decrease this diversity and make populations more susceptible to other stressors. My study addresses these issues using a collection of natural history collection samples and contemporary DNA samples from Vermont populations and sequencing across a representative portion of the entire green frog (*Lithobates clamitans*) genome. The natural history specimens were collected prior to estimated pathogen introduction and offer an excellent opportunity to look at changes in genetic composition and diversity through time. We expect that populations coping well with FV3 and *Bd* will have a greater proportion of beneficial genetic variants than pre-introduction populations and declining post-introduction populations. This study also evaluates the genetic diversity and connectivity of populations across Vermont to help prioritize populations for successful conservation efforts.

Liam Engel -- Fordham University

Native Trees Host Greater Biodiversity Than Non-Native Congeners Across Multiple Taxa

Liam Engel[1,2], Adanna Smith[2], Emily M Herstoff[3], Michael Tessler[2,4]
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Abstract:

Non-native plants are known to host less biodiversity than native species, but comparative studies of closely-related native and non-native plants in real-world environments are lacking. Last summer, we examined six commonly-planted tree genera (maples, oaks, lindens, cherries, spruces, and pines) at Brooklyn's Green-Wood Cemetery. First, we tested the hypothesis that native tree species would have more generalist arthropods (measured as herbivory) and specialist arthropods (measured

using galls) on leaves than non-natives in the same genus. We found equal or greater herbivory and galls on the native species of each deciduous genera. Second, to test if these findings held across other taxa, we used the same trees at Green-Wood Cemetery to compare the diversity and abundance of moss and fungi on closely-related native and non-native species. We hypothesized that, like our first experiment, we would see greater abundance and diversity of moss and fungal species on the native species of each genera pairing. We analyzed tree leaves and needles for fungal endophytes, and examined the bark at DBH for moss and fungal growth. Our results demonstrate that a variety of native tree taxa host more biodiversity in real-world conditions. We recommend that native trees should be preferentially chosen by urban planners and property owners to conserve urban biodiversity.

Isabela Filgueira Campos -- Yale University

Navigating the Matrix: Tapir-Mediated Seed Dispersal in Fragmented Amazonian Forests

Isabela Filgueira[1], Ludmila Rattis[2,3], Nyeema C Harris[1], Patrícia Medici[4], Paulo Brando[1,2]
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Abstract:
Tropical deforestation and land-use changes have long disrupted key ecological processes essential for maintaining forest resistance and resilience. In the Brazilian Amazon, agricultural expansion—primarily through crop cultivation and livestock grazing—has created a patchwork landscape where tropical forests and croplands coexist. Even in areas where deforestation has decreased, changes in land use can still significantly alter wildlife and disrupt key ecological functions such as seed dispersal and natural regeneration. Lowland tapirs (*Tapirus terrestris*) are important long-distance seed dispersers, particularly for large-seeded plant species, playing a vital role in maintaining habitat connectivity and contributing to forest regeneration. By integrating ecological approaches, GPS tracking, and remote sensing, we assess how large-scale agricultural intensification—driven by soybean, corn, and cotton production—has affected tapir movement and their role in seed dispersal. We observed that tapirs spend more time within corn and soy fields compared to cotton fields, especially during the

peak growing seasons of these crops. During these periods, their use of forested areas decreases, resulting in reduced consumption and dispersal of native seeds. In contrast, during the cotton season—when croplands offer fewer food resources—tapirs shift their activity back toward natural habitats, spending more time in forested areas. Our results highlight how the dynamic landscapes created by agricultural intensification influence tapir movement and seed dispersal. This study can guide conservation strategies that promote forest resilience in human-modified landscapes.

Maria Gallegos Koyner -- Yale University

Tropical Tree Seedling Performance in the Dry vs Wet Season

Maria Gallegos-Koyner[1], Liza Comita[1,2]
[1]Yale University, New Haven, CT, USA; [2]Smithsonian Tropical Research Institute, Panama, Panama

Abstract:
Tropical forests contribute approximately 34% of global terrestrial gross primary production and are home to more than 50% of global biodiversity (Beer et al., 2010; Wilson, 1998). However, these ecosystems are expected to experience more frequent extreme climatic events, including droughts, in the coming century due to climate change (Cai et al., 2014). The seedling stage plays a crucial role in shaping future tree composition, acting as a bottleneck in forest regeneration (Comita & Engelbrecht, 2009). In this study, we examined how seasonality—both in moderate years and drought years—affects seedling performance across a rainfall gradient in the Panama Canal Watershed. Over four years, we collected data at the end of both the dry and wet seasons, measuring seedling mortality and growth across eight 1-ha plots, each containing 400 seedling subplots, spanning a precipitation gradient from approximately 1,800 mm/year to 3,000 mm/year. Additionally, we gathered data on leaf functional traits of species present in the seedling stage within each plot. Our goal is to determine whether seedling performance shifts between seasons within a year, across multiple years, and among different forest sites by comparing drier sites with wetter sites. We also aim to determine how these patterns vary among tree species and whether differences among species are related to leaf functional traits. These findings will contribute to a better understanding of how tropical forest dynamics and composition may change under future climate conditions.

Vedant Gattani -- University of Toronto

Pecking on Plastic: Microplastic Contamination in Terrestrial Birds

Vedant Gattani, Chelsea Rochman
University of Toronto, Toronto, ON, Canada

Abstract:
Originating from the breakdown of larger plastics and industrial activities, microplastics are now pervasive across global environments, including terrestrial ecosystems. While much research has focused on their effects on marine wildlife, little is known about their ingestion by terrestrial taxon, particularly birds. This study investigates microplastic ingestion in terrestrial birds, focusing on two main objectives: 1) assessing how microplastic concentrations vary across different feeding guilds, and 2) examining whether there are patterns relevant to the types, sizes, and morphologies of plastics among feeding guilds. A total of 112 bird carcasses, representing 34 species across six feeding guilds, were analyzed. The gastrointestinal tracts were dissected, chemically digested, and filtered to extract microplastics, which were then manually quantified. The results reveal patterns of microplastic ingestion among feeding guilds, shedding light on the prevalence and variability of microplastic contamination in terrestrial avian populations. These findings contribute to our understanding of the ecological impact of microplastic pollution on birds, with important implications for conservation strategies aimed at protecting avian biodiversity. The study underscores the broader environmental consequences of microplastics, emphasizing the need for targeted interventions to mitigate pollution and safeguard ecosystems.

Tom Gause -- Leverege

Automating Object Counting in Conservation Imagery via Few-Shot Machine Learning

Thomas Gause
Leverege, New York, NY, USA

Abstract:
Manually counting organisms or objects in field imagery is a fundamental yet tedious and resource-intensive task across diverse conservation applications, from wildlife

surveys to habitat monitoring. This limitation often forces researchers to rely on small sample regions, impacting the accuracy of population estimates. To address this, our work investigates the development of a machine learning (ML) tool utilizing few-shot counting models to automate counting tasks from minimal user-provided examples. Specifically, we explore detect-and-verify paradigms such as DAVE, which are pretrained on generalized counting datasets like FSC147 and require only sparse annotations (e.g., tens of examples in a single image) to achieve high accuracy on large unseen target datasets. Preliminary evaluation on the Aerial Seabirds West Africa dataset (24,393 instances) show promising results, achieving 91.5% estimated accuracy and a mean absolute error of 1.365 objects per tile from a single user-annotated tile with a dozen birds. Future work involves refining the methodology using additional diverse evaluation datasets (e.g., satellite, microscopy, hyperspectral), and addressing the challenge of serving large, computationally demanding models in an accessible format for the conservation community. With this application, we aim to enhance the scale and efficiency of quantitative image analysis for conservation practitioners.

Madhu Gayathri -- Kean University

A MycoPins-Based Approach to Understanding Saproxylic Fungal Diversity

Madhumitha Sadhasivan Gayathri
Kean University, Union, NJ, USA

Abstract:
Fungi play a crucial role in boreal forests as primary decomposers of organic matter, releasing nutrients to the environment and contributing to overall plant and microbial growth. Succession in this process is impacted by many factors.
Boreal forests contain diverse tree species, primarily angiosperms (broadleaf) and gymnosperms (conifers), which produce hardwood and softwood, respectively. Though both contain cellulose and lignin, they differ in other chemistry that determines characteristics such as hardness and resistance to microbial invasion. Our research examines saproxylic fungi in a boreal forest, where the ecosystem is undisturbed by anthropogenic factors, characterize their succession, and assess the effects of forest management strategies.
The Mycopins method involves placing wooden pins (hardwood and softwood) in the soil at four different sampling sites in a boreal forest in Finland: a swamp, a broadleaf forest, and a protected forest with and without access to reindeer, to monitor fungal

colonization. Mycopins were collected biweekly (winter permitting) and analyzed using the metabarcoding method. DNA was extracted from each sample, amplified using PCR, purified, and sequenced using next-generation sequencing.

The research emphasizes the critical ecological function of fungi in boreal forests, providing data on the formation of saproxylic fungal guilds and informs conservation practices, and sustainable management strategies. The MycoPins method represents a promising avenue for future ecological studies and enables a deeper understanding of the complex interactions that shape forest ecosystems.

Camila Guerrero-Pineda -- Postdoctral fellow

A Decision Support Tool to Identify Refugia for Natural Resource Management

Camila Guerrero-Pineda[1], Sarah McCullough Hennessy[2], Nicole Molinari[3], Megan Jennings[1]
[1]San Diego State University, San Diego, CA, USA; [2]Cleveland National Forest Alpine Ranger Station, Alpine, CA, USA; [3]USDA Forest Service Los Padres National Forest Supervisor's Office, Solvang, CA, USA

Abstract:
Climate change is a serious threat for its generalized impacts on ecosystems and human communities. In particular, climate change might cause significant shifts in local ecological conditions and increase disturbances, such as increase frequency in drought and wildfires, thus negatively affecting local ecosystems and the biodiversity within. Because the effects of climate change are outside the reach of natural resource managers, they need to adapt their conservation strategies to these increased disturbances so resources are not wasted. One potential climate-change adaptation pathway is to focus on areas that are expected to experience less severe or frequent disturbances than the surrounding area, also known as refugia. We developed a framework to identify sites of high refugial capacity to facilitate prioritization of conservation strategies at the local level. Pairing a fuzzy logic model with climate forecast data, topographic features and anthropogenic modifications to the land, we show how this framework organizes the major sources of disturbance facing the local ecosystem to identify sites that are projected to experience less severe and frequent disturbances. To illustrate the framework, we calculated the refugia capacity of the montane forest in the Southern California ecoregion, and analyzed the individual and interactive impacts of the three major sources of disturbance, that is, extreme weather

events, wildfire and human disturbances. Our framework can be used by natural resource managers seeking to protect ecosystems that will be buffered from future threats that are difficult or impossible to manage.

Sourav Gupta -- Assam University (Diphu Campus)

Status of Non-Volant Small Mammals in Kohora River Basin, Northeast India

Sourav Gupta[1,2], Ramie H Begum[1], M Firoz Ahmed[2], Jayanta Kr Roy[2], Jayanta Kr Sarma[2]
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Abstract:
Small mammals, especially non-volant small mammals (NVSM), play vital roles in ecosystems as primary consumers, prey, and predators, influencing food webs and ecological processes. Understanding their species composition, distribution, and population dynamics is key to maintaining ecosystem health. The Kohora River Basin (KRB) in Karbi Anglong district, spanning 31 square kilometers, is an important area for such studies. Bordering Kaziranga National Park to the north and linked to significant corridors like Haldibari and Panbari, the KRB holds considerable cultural and biodiversity value. This study aims to catalogue and assess the status of NVSM in the KRB. A combination of questionnaire surveys and active search methods (Baskaran et al. 2011) was used, with species identification based on field guides and literature. Focus group discussions (FGD) with experienced Jhum practitioners (Jhumia) helped gather insights into local wildlife. The Jhumia reported three types of squirrels and mice, three species of moles, and one type of shrew. These claims were cross-verified through field observations and secondary literature. The survey covered six 2-kilometer trails, totaling 12 kilometers. Twelve NVSM species were identified, with 75% belonging to Rodentia, 17% to Eulipotyphla, and 8% to Scandentia. A notable discovery was a new locality record for *Vandeleuria oleracea*, the Asiatic Long-tailed Climbing Mouse, previously unreported in the region (Gupta et al., 2023). This study enhances our understanding of the biodiversity in the Kohora River Basin and underscores its importance for conservation efforts, supporting the ecological balance of the area.

Brigite Harbers -- Columbia University

Mapping Elk to Reduce Brucellosis Spillover and Conserve Migration Corridors

Brigitte Harbers
Columbia University, New York, NY, USA

Abstract:
Brucellosis is a bacterial disease endemic in elk and causes abortions in infected livestock, endangering cattle well-being and costing producers an estimated $140,000 per herd. In the Greater Yellowstone Area (GYA), elk are increasingly expanding their migrations onto private cattle ranches, leading to more interactions between elk and cattle and amplifying the threat of brucellosis spillover. In response, ranchers are considering disease-prevention measures, such as large-scale fencing. However, widespread fencing disrupts elk herd migration corridors, potentially undermining conservation initiatives in the GYA.

This project responds to this concern by integrating high-resolution drone imagery, advanced spatial mapping tools, and rancher observations to evaluate spatial and temporal hotspots of overlap between elk and cattle on private cattle ranches in Paradise Valley, Montana. Delivering timely data on elk distribution and density can provide targeted strategies, such as adjusting grazing rotations, to mitigate disease risk without disrupting elk migration. Preserving these open routes underpins broader conservation efforts, as the elk migration promotes biodiversity, seed dispersal, and habitat integrity across working landscapes. Through this research, I will facilitate collaboration among ranchers, wildlife agencies, and local communities, ensuring elk can continue to roam freely while supporting the economic viability of cattle operations in Paradise Valley. Ultimately, this project empowers stakeholders with flexible solutions to reduce brucellosis spillover while safeguarding the region's ecological resilience and the livelihoods of those who depend on it.

Priyanka Hari Haran -- University of Florida

When is it Cost-Effective to Use Bioacoustics to Monitor Wildlife in the Tropics?

Priyanka Hariharan, Emilio Bruna
University of Florida, Gainesvile, FL, USA

Abstract:
Passive acoustic monitoring (PAM) techniques are increasingly used in tropical regions

to monitor biodiversity in place of human observers and touted to be low-cost ways to survey vast areas of land and monitor multiple taxa simultaneously. While many studies have compared the biological benefits of the two methods, few have quantified the economic cost of adopting PAM, especially in the species-rich Global South where equipment acquisition and capacity building expenses can be prohibitively high compared to the Global North. Here, we aim to identify the economic and non-economic barriers that prevent scientists and conservation practitioners in the Global South from adopting PAM, and to estimate the range of labor, equipment acquisition, data analysis, and temporal cost conditions in which it becomes cost-effective for researchers to use PAM in place of human observers, compared to the Global North. We collected data via directed online surveys of scientists and conservation practitioners from seven countries, and conducted a cost-benefit analysis of when it becomes useful to replace standard ecological survey methods with PAM. Preliminary results show that the high cost of interpreting data collected and the expertise needed to identify species in tropical regions are important factors preventing PAM uptake in the Global South, especially for short-term projects. This work will have wide-ranging implications in how we monitor biodiversity by explicitly identifying the hidden costs that prevent the uptake of this novel technology in the Global South and provide insights into how the bioacoustics community can address these concerns.

RIJAMANALINA Harizo Georginnot -- University of Antananarivo

Describing Two Consecutive Years of Reproduction in Wild Black-and-White Ruffed Lemur

Harizo Georginnot RIJAMANALINA[1], Jean Freddy RANAIVOARISOA[1], Randall E Junge[2], Andrea L Baden[3,4,5]
[1]University of Antananarivo, Antananarivo, Madagascar; [2]Columbus Zoo and Aquarium, Powell, OH, USA; [3]Hunter College of the City University of New York, New York, NY, USA; [4]Graduate Center of the City University of New York, New York, NY, USA; [5]New York Consortium in Evolutionary Primatology, New York, NY, USA

Abstract:
The black-and-white ruffed lemur (*Varecia variegata*) is known for its unusual reproductive traits, unpredictable inter- and intra-annual variation in breeding and infant rearing among them. When breeding does occur, birth synchronization and communally crèching offspring appear to maximize infant survivability and optimize maternal

foraging activity, offering promise for understanding ruffed lemur population dynamics, particularly in their reproductive behavior. Here, we describe two consecutive years of reproduction (2023 & 2024) in black-and-white ruffed lemurs at Mangevo field site of Ranomafana National Park. We studied 14 females and their litters for a total of 6 months observation to investigate how behavior and reproduction varied in successive years. We measured both maternal and communal infant care, as well as female activity budgets and infant survival, to evaluate the relationships among infant care, foraging opportunities, and female reproductive success. Results indicate that females possess the capacity to reproduce annually; however, 2023 appears to represent a typical breeding season, whereas 2024 seems to have occurred under opportunistic conditions. Additionally, we relate infant survival to resource availability and feeding time, suggesting that environmental variation may also play a role. Ongoing work is investigating how reproductive hormones in this species fluctuate with resource availability, nutrient intake, and energy balance to characterize reproduction.

Neha Harle -- New York University

Visitor Engagement with Climate Change Content at the Natural History Museum

Neha Harle
New York University, New York, NY, USA

Abstract:
Natural history museums attract visitors with differing levels of knowledge about climate change. Climate change is a controversial and complex topic, and it's essential for museums to provide the public with clear and understandable climate change content. In order to do this, museums must attempt to understand what kind of climate change content resonates with their visitors. This study investigates visitor engagement with the Climate Wall exhibit at the American Museum of Natural History, focusing on: emotional responses, memorability, shifts in climate change perceptions, and confidence in discussing the topic. We collected survey and interview data, and analysis focuses on whether specific features of the Climate Wall, such as stories of local community-driven climate action, have a significant impact on visitor engagement. The findings of this study could inform future museum exhibit design in natural history and science museums and improve climate communication in a variety of settings in order to mobilize the public to support conservation initiatives.

Skye Hellenkamp -- Yale School of the Environment

Can We Manage Forest Edge Temperatures of Amazonia's Agricultural Frontier?

Skye Hellenkamp, Paulo Brando
Yale University, New Haven, CT, USA

Abstract:
Tropical forests are under threat of deforestation globally, primarily due to agricultural expansion. As forests are fragmented, forest edges are exposed to warmer and drier microclimates that decrease biodiversity, reduce carbon storage, and increase flammability. In the Brazilian Amazon, forests are often replaced by pasture or intensified agricultural systems. During the dry season in the southeastern Amazon, forest edges experience amplified heat and water stress due to their proximity to hot and dry agricultural fields. My research investigates whether the use of cover crops during this season can mitigate edge effects, and to what extent into the forest this mitigation may be possible. Using remotely sensed land surface temperature (LST) from satellite imagery, I analyze specific land use configurations where two different land uses border the same forest edge. This approach isolates the influence of these land management practices on forest edge temperatures by minimizing spatial and temporal variability when comparing the effects on the same forest plot. Identifying specific agricultural management strategies that have the potential to mitigate forest edge temperatures allows us to determine which practices best prioritize forest health and reduce forest degradation. These findings can inform agricultural management practices that promote forest resilience under changing climate conditions.

Eva Hernandez-Janer -- Rutgers University

Impacts of Peatland Fires on Orangutan Isotope Ecology in Borneo

Eva Hernandes-Janer[1], Tatang Mitra Setia[2], Brooke E Crowley[3], Erin R Vogel[1]
[1]Rutgers, The State University of New Jersey, New Brunswick, NJ, USA; [2]Universitas Nasional Jakarta, Jakarta, Indonesia; [3]University of Cincinnati, Cincinnati, OH, USA

Abstract:
Over the past few decades, Bornean peatland fires, caused by anthropogenic activities

and natural droughts, have decimated millions of hectares of forest, impacting local vegetation and wildlife ecology. Previous research indicates that smoke from these fires influences wild orangutan social behavior and activity budgets. Yet we know little about how these fires affect this critically endangered species' nutritional and energetic status. We used stable nitrogen ($\delta15N$) isotopes in noninvasively collected urine to explore how persistent smoke from fires influences the ecology of critically endangered Bornean orangutans in a peatland habitat at the Tuanan Orangutan Research Station. We measured $\delta15N$ values in urine collected from 44 orangutans before, during, and after two fire seasons and associated smoke periods (months with >15 days of detected smoke) in 2014 and 2015. We used Generalized Additive Mixed Models (GAMMs) to examine the effects of smoke. Preliminary analyses indicate $\delta15N$ levels were significantly higher during and after smoke exposure compared to before the fires (Estimated Marginal Means: pre-smoke=1.26±0.043%, smoke=1.42±0.050%, post-smoke=1.50 ±0.053%). Sex-age category differences were also observed, with adult females with dependents having higher $\delta^{15}N$ than those without (1.63±0.08%, 1.45 ± 0.10%). Unflanged males showed the lowest mean $\delta15N$ (1.13±0.12%), and immature orangutans had mid-to-high $\delta15N$ values, with independent immatures higher on average than dependents (1.50±0.08%, 1.35±0.17%). These findings suggest that fire smoke impacts orangutan dietary ecology and energetic status, likely due to changes in food availability and dietary behaviors.

Juan Francisco Herrera-Cueva -- Tiputini Biodiversity Station - University San Francisco de Quito

Amazonian Oil Flaring Impacts Insectivorous Birds and Their Food Resources

Juan Francisco Herrera-Cueva[1,2], Glenn F. Seeholzer[3], Valeria Ochoa-Herrera[4], Robin Verble[5], Bette Loiselle[6], Theodore P Sumnicht[5], Natalia Carpintero-Salvador[2], Gabriela Morales-Proaño[2], Jamie Nicole Mora Bolaños[2], Gonzalo Rivas-Torres[1,6]
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Abstract:
Oil extraction in the Western Amazon threatens the greatest diversity of fauna in the world. The use of gas flares by oil companies has the greatest potential to affect vast areas due to noise, heat, light, and emissions that heavily affect populations of

migratory birds and macroinvertebrates worldwide via light pollution that attracts and kills millions of organisms yearly. We studied the impact of gas flaring and oil platform presence in the insectivorous bird and macroinvertebrate community of adjacent forests and compared it with distant forests to detect differences in community composition. We also measured soil and water physical-chemical properties to detect correlations between pollution and biodiversity. Our results showed that gas flares and oil platforms, contrary to what is expected in other ecosystems, reduce the diversity and incidence of insectivorous birds and their food sources in the surroundings but are not associated with an increase in water or soil pollution. These data warrant concerns that gas flares are depleting insectivorous birds and macroinvertebrates in their proximity, and future research is essential to detect potential causes of this diversity lost.

Hannah Hess -- Columbia University

Coexistence and Interactions in a Carpathian Mammal Community

Hannah Hess, Viorel Popescu,
Columbia University, New York, NY, USA

Abstract:
Understanding interspecific interactions in the wild is key to developing sustainable wildlife management strategies, particularly in the context of lethal management or translocations. Romania's Carpathian Mountains offer an ideal setting for examining complex interactions due to their intact mammalian community—including apex predators, mesocarnivores, and abundant prey—in a landscape significantly shaped by humans. My research innovatively expands foundational studies on mammal community dynamics in Romania through a comprehensive analysis of interactions between 13 species. Using camera trap data covering all four seasons, I integrate previously understudied carnivore species, such as brown bears and badgers, alongside important prey species and anthropogenic factors such as human activity and livestock presence. Using a structural equation modeling (SEM) framework, I quantitatively assess how the environment, human influences, predation, and resource availability affect carnivore occurrence and co-occurrence patterns, addressing key questions about top-down and bottom-processes structuring mammal communities. Preliminary findings reveal significant seasonal variability in interaction strengths, with a stronger impact of humans on pairwise species relationships in colder months. Our nuanced socioecological approach generates valuable insights that can directly inform targeted

policies in Romania to mitigate human-wildlife conflicts and conserve biodiversity, such as setting hunting quotas. Moreover, the analytical frameworks developed here serve as robust models for carnivore conservation globally, enhancing ecological outcomes in similar human-dominated landscapes.

Eliana Hiam -- Barnard College

Beetle Family Distribution Unaffected by Habitat Edge in Van Cortlandt Park, NYC

Eliana Hiam[1], Matt Palmer[2], Bekka Brodie[2]
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Abstract:
One of the most significant consequences of urbanization on biodiversity loss is habitat loss through fragmentation and the subsequent formation of edge habitat. Urban parks, such as those in New York City, offer a unique opportunity to investigate insect communities in fragmented habitats and the potential of parks to support biodiversity in urban landscapes. New York, a dense city with significant parkland, and the vast diversity and mobility of beetles make this environment a model study system. This study investigates the relationship between beetle family richness and edge types in Van Cortlandt Park, Bronx, NY. Panel Intercept Traps were set up in three edge categories, forest interior (n=3), soft edge (small unpaved trails) (n=5), and hard edge (larger paved trails) (n=4), in Van Cortlandt Park, NY. These traps collected beetles from June 12th to September 18th in 2024 and these collections were identified to the family level. General linear mixed models were constructed to determine which random effects are best predictors of beetle total abundance and family diversity. Preliminary results show a total of 3,222 beetles from 29 identified families, with the soft edge category hosting both the highest number of families (n=27) and greatest overall number of beetles (n=1225), though this is affected by higher sampling effort in soft edges. The results obtained from this study can inform urban forest management and beetle conservation strategies, such as limiting the removal of deadwood from managed parks, and contributing to efforts in mitigating biodiversity loss in urban habitats.

Reese Hotten-Somers -- Boston University

Comparative Gut Viromes of the Critically Endangered Woolly Monkeys

Reese E Hotten-Somers[1], Sofia M Weaver[1], Melissa A Zarate[1], Evelyn L Pain[1,2,3], Sam E Shanee[4,5], Fanny M Cornejo[2,3], Anthony Di Fiore[6,7], Christopher A Schmitt[1]
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Abstract:
Virome metagenomic analysis can not only serve as a tool to understand the viruses that inhabit the host but can also provide critical insight into individual health and wellness and aid in their conservation. The virome refers to the collection of viruses found in an ecosystem or organism, in a world in which virus particles are said to outnumber human individuals 10^13 to 1 . Research on the virome has already proved useful in identifying potentially harmful pathogens residing in zoonotic reservoirs like bats and primates. Both listed on IUCN's Red List as endangered or critically endangered, Lowland woolly monkeys (*Lagothrix lagothricha tschudii*) and yellow-tailed woolly monkeys (*Lagothrix flavicauda*) are two species of closely-related platyrrhine (Neotropical) primates endemic to Perú, with the latter inhabiting the colder climate of high elevation Andean Perú and the former living in lowland tropical rainforests. Although the virome has been studied in humans, research into primate viromes, specifically platyrrhines, is severely limited, with the woolly monkey virome having never been studied. With these monkeys' rapidly diminishing habitable forests and populations it is critical that any diseases harmful to them be characterized in order to prevent further harm. Metagenomic viromic sequences of the gut virome derived from fecal samples of both lowland, and yellow-tailed woolly monkeys were in order to understand their health, identify potentially infectious pathogens, and potential species differences rooted in their differing ecologies. This work has generate information useful for conservation efforts for both species of woolly monkeys

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Bhavya Iyer -- University of Georgia

Understanding Landowner Motivations for Engaging in Bobwhite Conservation in Kansas

Bhavya Iyer[1], Elizabeth Pienaar[1], James Martin[1], Jeff Prendergast[2], Jeffrey Hepinstall-Cymerman[1]
[1]University of Georgia, Athens, GA, USA [2]Kansas Department of Wildlife, Parks, and Tourism, Hays, KA, USA

Abstract:
Conservationists and policymakers increasingly recognize the need to involve people in conservation at the grassroots level. For many species in the United States, such as the iconic northern bobwhite (*Colinus virginianus*), effective conservation requires agencies and landowners to work together to manage habitat across the species range.
The population of the northern bobwhite, a ground-dwelling, non-migratory species, has declined drastically across the eastern United States. Only a fraction of its habitat is covered by protected areas. Over 95% of land in Kansas, a bobwhite range state, is privately owned, making landowner involvement necessary to ensure positive conservation outcomes.
Understanding what motivates landowners to participate in stewardship programs is a necessary first step in the conservation of bobwhite and bobwhite habitat. Research shows that aligning program goals and methods with landowner values and motivations enhances participation in such conservation projects. Through semi-structured qualitative interviews of landowners in Kansas (to be conducted in summer 2025), I will identify landowner motivations for, and barriers to, engaging in bobwhite conservation programs. I assess landowner decision making through the lens of relational values, with particular reference to landowners' identity and relationship to nature, stewardship and conservation.

Julia Joos -- Julia Joos

Investigating Predation in Wood Turtles With Game Cameras and Realistic Turtle Models

Julia Joos, Cara L McElroy, Bryan Windmiller, Emilie R Wilder, James F Welch, John Berkholtz, Matthew D Kamm
Zoo New England, Acton, MA, USA

Abstract:
Wood turtles (*Glyptemys insculpta*) in Massachusetts exhibit higher mortality rates than other aquatic turtle species in the area due to increased predation rates. Wood turtles are considered endangered by the IUCN, a Species of Special Concern under the Massachusetts Endangered Species Act, and under evaluation for listing under the federal Endangered Species Act. Wood turtle populations in Massachusetts have been monitored and supplemented through headstarting efforts for several years by Zoo New England. One goal of headstarting is to produce 'predator-proof' juvenile turtles which can be safely released into the wild. However, increased mortalities have disproportionately affected headstarted wood turtles in some of our field sites. To gain a better understanding of predation pressures affecting wood turtles and how to mitigate them, we assessed predator occurrence, abundance, and behavior with motion-triggered wildlife cameras placed in wood turtle habitat. We recorded ten second videoclips with 36 cameras between May and November 2024 in three different field sites. Each camera was paired with one of four treatments consisting of a visual and/or olfactory cue: 1) a realistic wood turtle model, 2) a scent tube infused with wood turtle scent, 3) a wood turtle model with a scent tube, 4) control treatment (no visual or olfactory cue). We implemented these treatments to investigate the behavior of potential wood turtle predators and if and how they would interact with visual and/or scent cues. Further, we compared data on predator abundance with location data from our monitored wood turtle populations at each site.

Heather Kalaf -- New York University

Queen Conch Conservation Through Signage

Heather Kalaf
New York University, New York, NY, USA

Abstract:
My project aims to enhance public awareness and protective measures for the Queen Conch, leveraging research in design, policy, and humanistic approaches. The main goal is to develop effective educational strategies that can be implemented in public spaces. Through an internship with the National Geographic Society and The Nature Conservancy, I was invited to design my own research project, where I have created and maintained relationships with organizations that have agreed to be a part of the project, including the Florida Fish and Wildlife Conservation Commission and leading

professors at Florida Atlantic University's Harbor Branch Oceanographic Institute. By placing signs with different variations in fonts, placements, layouts, media, and languages in nature centers and public beaches in South Florida, I will track which signs are most effective in engaging the public and conveying conservation messages. The outcome of this project includes research-backed educational signs installed at strategic coastal locations supported by iNaturalist data. With a lack of representation in aquariums, media, and informational signage, the Queen Conch is a threatened species. Yet it holds significant ecological, cultural, and economic importance in many communities. This is an experimental project, as it explores the intersection of design, policy, and humanistic approaches. With the Queen Conch as a case study, this project serves as a foundational model for any marine species or conservational message.

Joanna Kika -- Pomeranian Medical University in Szczecin

Less is More: Matcha's Nutrient Density Means Less Waste, Less Resources, More Value

Joanna Kika, Karolina Jakubczyk, Dominika Maciejewska-Markiewicz, Katarzyna Janda-Milczarek,
Pomeranian Medical University in Szczecin, Szczecin, Zachodniopomorskie, Poland

Abstract:
Today, the impact of human civilization on the environment is very high, so there is a need to fully utilize the produced resources and optimize their quality. An important factor in food production should be to provide a substantial amount of nutritional value in a relatively small amount of food. This will target nutrition and preserve human health, but also minimize the destructive impact on the environment and natural biodiversity. The aim of this study was to analyze the nutritional composition of matcha green tea as a superfood product that has the potential to provide many nutritional benefits at a relatively low dose. Dietary fiber, total protein and fat were determined using methods described by AOAC, lipid profile was analyzed using the GC. Gaining popularity, matcha tea is a unique beverage that, due to its unique cultivation method, can have a distinct composition and thus exhibit special health-promoting effects. During production, bamboo shade mats are used to protect the plant from the sun, giving it distinctive levels of phytochemicals and valued organoleptic properties. An additional advantage of this product, is the full use of the leaves, which are ground whole. The powder produced is consumed in its entirety by the consumer, thus reducing

wastes and maximizing the full potential of the product. The results suggest that adding matcha tea powder to the daily diet may be valuable in optimizing the nutritional potential of food products and the use of manufactured resources, which may ultimately promote the reduction of negative environmental and biodiversity impacts.

Oliver Krieger -- Queens College at the City University of New York

Lions, Insects and Bears, Oh My! Ornamental Wildlife Trade in New York City

Oliver KRIEGER[1], Khadeja ASIF[1], Brendan BROZEN[1], Alyse JOFRE[1], Vincent NIJMAN[2], Chris R SHEPHERD[3,4], Joanna COLEMAN[1,4]
[1]Queens College at the City University of New York, Flushing, NY, USA; [2]Oxford Brookes University, Oxford, UK; [3]Monitor Conservation Research Society, Big Lake Ranch, BC, Canada; [4]International Union for Conservation of Nature, Bat Specialist Group, Bat Trade Working Group, Gland, Switzerland

Abstract:
In the ornamental wildlife trade, diverse wild animals and plants are sold, legally or not, as decorative items. This trade in physical (as opposed to online) markets has been assessed in many places, but not the United States (USA), even though the USA is the world's biggest consumer nation for traded wildlife. We conducted a comprehensive snapshot survey of specimens for sale in one store in New York City. We photographed a large proportion of specimens, identified each as precisely as possible, counted units and noted visible price and provenance info, with more data gleaned from talking with staff. We determined each taxon's IUCN Red List status and the potential legality of its trade based on whether it was included on the Convention on International Trade in Endangered Species of Wild Fauna & Flora (CITES) and/or US Endangered Species Act. Our results reveal a trade involving thousands of specimens and hundreds of species—in six animal phyla, but especially arthropods—that were native to every continent but Antarctica and included threatened and CITES-listed taxa. Prices ranged from a few dollars (single feather) to tens of thousands (lion skin). Displayed information on provenance (source localities), much like prominent statements about sustainable and/or ethical sourcing, may be unreliable. To our knowledge, ours is the first survey of this kind anywhere in the USA, but the store we surveyed is far from the USA's only one. We recommend more stores be surveyed to gather data for extrapolative models that

can be used to estimate the regional or nationwide scale of the ornamental wildlife trade in physical shops and its conservation implications.

Joshua Kulak -- Franklin & Marshall College

Cabinets and Conservation: Biological Collections Display in the 21st Century

Joshua Kulak, Elizabeth De Santo
Franklin & Marshall College, Lancaster, PA, USA

Abstract:
Living and non-living biological collections represent invaluable sources of scientific data, evolutionary history, and ecological reference, but increasingly also strive to include education in their mission. With pervasive threats against biological collections, including such high profile closures as the Duke Herbarium, and accelerating biodiversity loss as a result of anthropogenic change, interrogating these educational efforts and their efficacy has never been more important. In particular, a balance between emphasizing the severity of the biodiversity crisis with inspiring action to mitigate it is needed, particularly as relates to engaging citizen scientists and demonstrating the value of collections to the general public. Through a comparative analysis of practices across institutions (including but not limited to the American Museum of Natural History, the Bronx Zoo, the National Aquarium, the National Museum of Natural History, and the London Natural History Museum), this ongoing project therefore seeks to examine the complex history and recent trends in natural history educational displays, alongside continued questions of access and stakeholder engagement.

Rachel Lane -- Tarleton State University

Are We the Big Bad Wolf? Wolf Reintroduction and Distrust in Conservation Science

Rachel Lane, Cristi Horton, Hemanta Kafley
Tarleton State University, Stephenville, TX, USA

Abstract:
Amid sweeping environmental rollbacks and a growing disregard for scientific expertise

in the United States, the tension surrounding wolf reintroduction in Colorado reflects a deeper crisis facing conservation science: the erosion of public trust. To address this crisis, I developed a systems-based framework designed to diagnose harm in human–animal relationships. Grounded in systems theory and Aristotelian rhetoric—ethos, pathos, and logos—the framework identifies the psychological, economic, and structural forces that shape patterns of harm in these relationships. I applied this framework to a qualitative analysis of the relationships between reintroduced gray wolves (*Canis lupus*) and ranching communities in Colorado, using article abstracts and media interviews to identify harm across individual, community, structural, and global scales. Through thematic analysis in NVivo, I examined how scientific and ranching communities described human–wolf relationships and which types of harm—psychological, economic, physical, or ecological—were identified as most significant. Emerging patterns suggest that while scientific communities often point to livestock predation as the primary driver of harm, ranching communities more frequently cite poor communication and distrust in politicians and scientists as their central concerns. Preliminary findings suggest that repairing relationships with human communities and rethinking how we communicate science is just as vital to species recovery as managing the species itself.

Amelia Lesniak -- University of Toronto

Promoting Forest Conservation Through Biomass and Carbon Monitoring Over Time

Amelia Lesniak, Danijela Puric-Mladenovic
University of Toronto, Toronto, ON, Canada

Abstract:
As climate change effects continue to increase and threaten ecosystems across the globe, the need for natural climate solutions is more crucial now than ever. Conserving forest ecosystems is an effective method of mitigating climate change impacts for current and future generations. Forest inventory, monitoring, and predictive modeling are essential for forest conservation in the modern age. This study proposes the monitoring of forest aboveground biomass in the Lake Simcoe watershed in Ontario, Canada over the 2017-2024 period to calculate forest carbon storage changes. Forests act as vital carbon sinks when they absorb and store atmospheric carbon, lessening the amount of greenhouse gas in the atmosphere which primarily drives climate change patterns. Collected data used in this study comes from 187 forest plots inclusive of tree

heights, width and species diversity over time. The data will show changes in forest biomass and species richness and evenness and compared amongst forest stands of different age groups. Forest productivity is determined through overall biomass totals and diversity for these temperate forest plots, used to inform forest managers of where their conservation priorities should begin. These variables used in determining forest productivity will be used in statistical predictive modeling methods to determine which variables are strongest in predicting biomass changes over time. The outcome of this study will improve conservation efforts as funding and time are precious resources that should be allocated to their fullest potential. Conserving productive, healthy, diverse forests is vital in securing a sustainable and healthy future on our planet.

PEDRO IVO MONICO -- Rutgers, the State University of New Jersey

An Integrative Method to Estimating Species Diversity in the Caribbean Big-Brown Bats

Pedro Ivo Mônico[1], Camilo A Calderon-Acevedo[3], Omar D Leon-Alvarado[1], Justin M Bernstein[2], J Angelo Soto-Centeno[2]
[1]Rutgers, the State University of New Jersey, NJ, USA; [2]American Museum of Natural History, New York, NY, USA; [3]Smithsonian Tropical Research Institute, Balboa, Ancón, Panama

Abstract:
Compared to non-volant mammals, bats are an exemplary model for studying patterns of diversification and speciation because of their capacity for powered flight and ability to overcome oceanic straits to occupy insular land masses. The big brown bat – *Eptesicus fuscus* (sensu lato) – is a widely distributed species that spans mainland landmasses from North to South America and the insular Caribbean through the Bahamas and the Greater Antilles. In a recent study, we found that insular big brown bats showed significant differences across their genetics, morphology, and habitats where they exist compared to the mainland ones. We proposed recognition as a different species, *Eptesicus dutertreus*. Since the Caribbean region shows high habitat and topographic heterogeneity and landmasses with varying isolation levels, we tested the hypothesis that inter-island oceanic straits serve as phylogeographic barriers to *E. dutertreus* populations. We produced an original morphological dataset with 286 Caribbean individuals to examine the species limits phenotypically under machine learning analyses. We also explored whether environmental factors or geographical

isolation could be driving and maintaining this phenotypic diversity. We combined the original results of these analyses with open-access available genetic data to build on definitive tree topology and disentangle the Caribbean group relationships. Future studies involving complete genome analyses will be able to reconstruct the species' natural history and biogeographic steps, helping to understand what factors drove and shaped the contemporaneous diversity.

Christine Marizzi -- BioBus, Icahn School of Medicine at Mount Sinai

Tracking Avian Influenza Viruses in the Wild Birds of New York City

Angel Ariza[1,7], Aminata Diallo[2,7], Rouguiatou Diallo[3,7], Laila Harrison[4,7], Carlyle McIntosh[5,7], Lucia Villanueva[6,7], Christine Marizzi[7,9], Sadia Choudhury[7,8], Philip Meade[9], Abigail Maciejewski[9], Florian Krammer[9], Rita McMahon[10], Jordan Clark[9], Brian Monahan[9], Jeremy Yong[9], Randy Albrecht[9]

[1]Manhattan Center for Science and Mathematics, New York City, NY, USA; [2]The Dalton School, New York City, NY, USA; [3]Pharos Academy, New York City, NY, USA; [4]Central Park East High School, New York City, NY, USA; [5]Loyola High School, New York City, NY, USA; [6]Riverdale Kingsbridge Academy, New York City, NY, USA; [7]BioBus, New York City, NY, USA; [8]New York University, New York City, NY, USA; [9]Icahn School of Medicine at Mount Sinai, New York City, NY, USA; [10]Wild Bird Fund, New York City, NY, USA

Abstract:
The New York City Virus Hunters (NYCVH) is a pioneering community science initiative dedicated to monitoring viral threats in urban wildlife, with a special focus on avian influenza viruses. In response to the spread of highly pathogenic avian influenza (HPAI) virus H5N1 into North America via migratory birds between December 2021 and January 2022, NYCVH launched an extensive surveillance campaign across New York City's urban parks and green spaces. Since 2020, NYCVH has tested 3900+ samples, including oropharyngeal and cloacal samples provided by our partners at the Animal Care Center (ACC) and Wild Bird Fund (WBF), as well as environmental fecal samples collected by our junior scientists. Since February 2022, these samples are being analyzed at the Krammer Laboratory at the Icahn School of Medicine at Mount Sinai. 19 H5N1-positive samples have been identified, offering important data on the persistence of HPAI H5N1 in the local area. Our program also fosters public engagement in pandemic preparedness, highlighting the critical role of community science in tracking zoonotic threats and informing public health strategies.

Zachary Mayer -- Columbia Univeristy

Maintenance of Wild-Type Genetics in a Novel Freshwater Species

Zachary Mayer, Paula Rodriguez Villamayor, Pei-Yin Shih, Sam Szalkowski, Andrés Bendesky
Columbia University, New York, NY, USA

Abstract:
The betta fish (*Betta splendens*) is emerging as an excellent model organism for behavior and genetics studies. It is the unique domestication history of *Betta splendens* that makes it such an ideal model organism for behavioral and genetics research. The domestication of *Betta splendens* originated for staged fights; later, fighting strains were refined into more visually appealing ornamental fish to be kept as pets. This project aims to establish an in-vitro fertilization (IVF) protocol for betta fish which would allow cryopreservation of betta fish sperm; beyond improving research efficiency, IVF and cryopreservation protocols could be used to preserve wild betta fish lineages. Genetically distinct wild populations are critical for continued research and the maintenance of wild-type adaptive traits. These wild populations are threatened on two fronts: their habitat is being reduced for development and the introgression of domestic strains could 'swamp' local adaptations. It is thus critical that we develop tools to assist in the conservation of this unique freshwater species.

Molly McCargar -- Fordham University

Hybridization in a High Diversity *Eretmochelys imbricata* Rookery

Molly McCargar[1], Evon Hekkala[1,2]
[1]Fordham University, Bronx, NY, USA; [2]American Museum of Natural History, New York, NY, USA

Abstract:
Hawksbill sea turtles (*Eretmochelys imbricata*) are classified as critically endangered globally by the IUCN and are known as indiscriminate breeders with a high capacity for hybridization. Tortuguero, Costa Rica, hosts a small *E.imbricata* nesting population, with paradoxically high genetic diversity, which prior studies have shown exceeds other

Caribbean *E.imbricata* rookeries using both mitochondrial and nuclear molecular markers. This small population has seen sharp declines since monitoring began in the 1970s, increasing concerns about alee effects leading to hybridization with a much larger co-occurring green sea turtle (*Chelonia mydas*) rookery. There is morphological evidence of hybridization between *E.imbricata* and *C.mydas* documented in Tortuguero, but this has not yet been characterized molecularly. As such, the objective of this study is to assess molecular introgression between these two rookeries using non-invasive sampling methods. We opportunistically sampled eggshells from post-hatching excavations of *E.imbricata* and *C.mydas* nests from 2015 to 2019 across four different nesting beaches in northeastern Costa Rica. We use a 2bRAD sequencing approach, ideal for degraded materials as it uses fragments as small as 33bp, and the Bayesian clustering program STRUCTURE to quantify admixture between these co-occurring rookeries. Assessing and safeguarding genetic diversity of these two nesting populations may have far-reaching effects for conservation of both species in the region overall, due to their migratory life histories and potential for male mediated gene flow at foraging grounds of both species throughout the Caribbean and wider Atlantic.

Elijah McEuen -- University of South Florida

Mortality, Monitoring, & Management of Gopher Tortoises Along Florida's Roadsides

Elijah McEuen[1][1], George L Heinrich[2,3]
[1]University of South Florida, St Petersburg, FL, USA; [2]Heinrich Ecological Services, St Petersburg, FL, USA; [3]Florida Turtle Conservation Trust, St Petersburg, FL, USA

Abstract:
2Turtles are among the most threatened taxa on earth, primarily due to habitat loss and degradation including roadways. Roadways add the nominal threat of road mortality and possibly act as a population sink. The first of three objectives is to establish the prevalence of gopher tortoises (*Gopherus polyphemus*) along roadsides in central Florida, which will serve as a population baseline. The second objective is to determine if roadside tortoise populations incurring considerable road mortality. The third objective is to compare the habitat quality on roadside edges, the immediately adjacent habitats, and habitats with healthy tortoise populations by examining the canopy openness percentage. These objectives test the hypothesis that tortoises are marginalized to reside on roadside edges due to unsuitable adjacent habitats. The methods utilize vehicle and walking surveys for data collection on gopher tortoises,

their burrows, and related metrics, including canopy openness percentage. Data points include tortoise burrow mouth width for estimated tortoise body size, burrow distance from the road, and the activity classification of burrows. Road mortality data includes shell length, GPS point, and distance from the road. The canopy openness percentage is recorded using a camera with a fisheye lens that is analyzed using computer software. When the field data have been recorded and analyzed, management suggestions will be made to protect roadside tortoise populations. Finally, roadside tortoise population metrics, like a minimum population estimate, will be published to establish a baseline for future monitoring to determine if roadways act as population sinks.

Tyler McMahon -- Tarleton State University

Evaluating Multi-Trophic Interactions Following Plant Invasion in a Costal Grassland

Tyler McMahon, Adam Mitchell
Tarleton State University, Stephenville, TX, USA

Abstract:
North American grassland ecosystems have undergone significant fragmentation with multiple anthropogenic stressors such as biological invasions, climate change, and land conversion. Grasslands are particularly at risk for plant invasion due to their open landscape and encroachment from other ecosystems. With this ecological damage, the habitat for wildlife that once inhabited these areas is declining at an alarming rate. Understanding biodiversity trends in restored grasslands will elucidate the efficacy of restoration strategies and identify pitfalls for restoration success. My study aims to quantify the impact of plant invasions on a multi-trophic scale and evaluate short-term and long-term patterns of biological diversity associated with a maritime grassland off the Long Island Sound (Fishers Island, New York). I seek to 1. study vegetation, arthropod, and avian community structure in response to plant invasion and 2. assess changes in short-term and long-term alpha and beta diversity among grassland communities between contemporary and historical surveys. I replicated methods based on 2014-2016 surveys to sample vegetation, arthropods, and bird characteristics to compare species richness, relative abundance, Shannon-Wiener (H') diversity index, and beta diversity across years of study and to previous surveys in 2014-2016 to assess restoration success. I analyzed differences in functional diversity among arthropods via generalized linear mixed modeling and principal component analysis. I also collected

vegetation data in restored sites, such as plant richness, height, and density, to use as covariates. Our results are to be implemented into the NGO's management plan.

Soham Mehta -- Columbia University

Mapping the Risk of Livestock Predation and Rancher Attitudes in the Peruvian Amazon

Soham Mehta[1], Juriko Rupay Valdivieso[2], Jay Schoen[1], Fabiola La Rosa-Camino[2], Ruth DeFries[1]
[1]Columbia University, New York, NY, USA; [2]WWF-Perú, Lima, Perú

Abstract:
The movement of wide-ranging carnivores through fragmented and human-modified landscapes increasingly brings them into close proximity with humans and livestock, often leading to conflict and persecution. Given that the spatial risk of livestock predation-driven conflict is unevenly distributed, identifying areas of high predation risk—along with the associated environmental, anthropogenic, and livestock management characteristics—offers a valuable tool for mapping conflict risk with practical applications for natural resource managers. However, generalizing interventions across high-predation risk areas remains challenging due to the inherently complex and heterogeneous nature of the human-wildlife conflict. Therefore, an interdisciplinary approach that integrates both ecological and social dimensions of local conflict dynamics is essential for developing effective coexistence strategies through community-focused collaborations. This project centers on the southwestern Amazon, specifically Madre de Dios, Peru, where conflict with jaguars (*Panthera onca*) and pumas (*Puma concolor*) is common due to livestock predation. We modeled and mapped the spatial risk of livestock predation and identified the key variables associated with it. Additionally, we evaluated the attitudes and tolerance of farmers toward predators and conducted a spatial assessment of these attitudes. Our method provides important insights for local stakeholders to prioritize conflict mitigation strategies in areas of high predation risk combined with areas where negative attitudes toward predators are prevalent.

Evan Miller -- University of Texas at San Antonio

Climate Change Raises Concerns for the Threatened Mountain Dwarf Galago

Evan Miller
University of Texas at San Antonio, San Antonio, TX, USA

Abstract:
The mountain dwarf galago (*Paragalago orinus*) is a threatened nocturnal primate endemic to high-elevation montane forests of the Eastern Arc Mountains in Tanzania. Studies and conservation assessments for *P. orinus* have yet to examine the impact of future climate change as a potential future threat to its long-term survival. In this study, I use the maxent ecological niche modeling algorithm to assess i) the extent of suitable and optimal habitat loss in relation to future climate change under differing emissions scenarios, ii) elevational changes in relation to future climate change, and iii) the impact of global climate change on protected area coverage. Under lower emissions scenarios, suitable and optimal habitat are both projected to be lost by approximately 50-60% by the middle and the end of the century respectively. The rate of loss accelerates under higher emissions scenarios, with a 60-70% loss in suitable and optimal habitat predicted by the middle and end of the century. Average elevational ranges of suitable and optimal habitats are also expected to increase considerably to later timelines, with higher elevations of habitat especially predicted under higher emissions scenarios. Udzungwa National Park is predicted to retain a considerable extent of suitable habitat under future timelines and emissions scenarios. However, conservation plans and actions should prioritize the protection of montane forest habitat in the Uluguru Mountains, which contains no protected areas and yet is predicted to likely contain the only optimal habitat for *P. orinus* under higher emissions scenarios.

Ky Miller -- Yale University

Indigenous Ecoterritorial Struggles on the Tracks of the "Maya Train" Megaproject

Ky Miller
Yale University, New Haven, CT, USA

Abstract:
Neoextractive developments have catalyzed ancestral struggles for land by indigenous movements focused on the defense of the commons, biodiversity, and the environment.

In Mexico's Yucatán Peninsula, a $30 billion, 966-mile railway megaproject and territorial reorganization initiative, the "Maya Train," is one such development with profound environmental, cultural, and geopolitical implications. I examine how Yucatec Maya land defenders perceive and contest the social and environmental transformations provoked by the Maya Train megaproject, a federal sustainable development effort, in Yucatán and Quintana Roo, Mexico. Drawing on the results of 47 semi-structured interviews, this multi-sited political ecology infrastructure analysis finds that land defenders view the Maya Train as an imposed project that violates Indigenous peoples' autonomy, disrupts multispecies relations, and exacerbates social and ecological precarity on Indigenous and communal lands through diverse socioecological impacts. I frame Yucatec Maya land defenders' resistance to the megaproject as ontological and eco-political territorial struggles and examine how these struggles can contribute to attempts to chart more equitable, sustainable futures in the face of ongoing environmental injustice and climate change. This thesis supports a growing body of political ecology research to inform international sustainable development policy and support environmental and climate justice by incorporating Indigenous perspectives.

Brittany Morgera -- Ursinus College

Diversity and Habitat Use of Bats in Modified Suburban Landscapes

Matthew Leslie, Brittany Morgera
Ursinus College, Collegeville, PA, USA

Abstract:
Bats occupy critical ecological niches and perform important ecosystem services like controlling insect populations. However, humans have altered bat habitat substantially, resulting in the reduction of bat populations. The goals of this research were to assess bat diversity and habitat use across different levels of suburban habitat modification. To accomplish this, we deployed passive acoustic recorders at twelve locations with varying human impact in Montgomery County, Pennsylvania. In accordance with The North American Bat Monitoring Program's standards, acoustic analysis software was used to identify bat species. Manual identification methods from The Canadian Wildlife Health Cooperative were used to verify these results. These data confirmed the presence of insectivorous bats at every recording site. Bat diversity was largely similar across sites. Additionally, four common species were active at the majority of sites and

several rare species were active at few sites. Our analysis of bat activity corresponded to environmental characteristics and ongoing habitat alteration. These findings underscore the ability for some bats to persist across a suburban habitat mosaic, highlights the need to support habitat for rare species, and call for continued monitoring to inform adaptive management strategies and ensure long-term sustainability.

Thea Nagasuru -- Ursinus College

Digitizing a Historical Dolphin School UAS Photogrammetry Dataset With OCR

Matthew Leslie, Thea Nagasuru
Ursinus College, Collegeville, PA, USA

Abstract:
Remote uncrewed aerial systems (UAS) photogrammetry has become a useful tool for studying cetacean health, life history, disease, systematics, and social structure. Prior to UAS photogrammetry, these data were collected with crewed aircraft. Data from crewed studies of structure of spinner and spotted dolphin schools in the eastern tropical Pacific, consisting of tables recording the head and tail coordinates of each observed dolphin in the aerial photos. These measurements were used to investigate body length, inter-dolphin spacing, orientation, and social grouping patterns. To preserve and modernize access to this dataset, we created a digitization pipeline using optical character recognition (OCR) in R with the tesseract and tesseractgt packages. This script preprocesses scanned images by removing scanning artifacts and colored grid lines, separating headers from tables, and correcting skew using structural line detection. OCR was then preformed on both metadata headers and table cells for each page. Table OCR was done using a custom language model on a cell-by-cell basis, with automated cell detection via pixel density analysis along both axes. Header OCR was done separately for each page with the default English OCR language, and attached to its corresponding dataset. The outputs include digitized tables, metadata for each table, and OCR confidence metrics to support error checking and further analysis. This work recovers an influential dataset from a key period of intensive dolphin bycatch in the tuna purse-seine fishery. These data will enable additional studies and comparisons with modern UAS datasets for foundational and applied research.

Ariek Norford -- Stony Brook University

Examination of Taxonomic Bias in Camera Trap Placement in the Orinoco of Colombia

Ariek Barakat Norford[1], Juliana Vélez[2], Juan David Rodríguez [3], Laura María Diaz Puerto[4], Pablo R Stevenson[5]
[1]Stony Brook University, Stony Brook, NY, USA; [2]Stanford University, Stanford, CA, USA; [3]Reserva Natural Rey Zamuro y Matarredonda, Meta, Colombia; [4]Universitat Autònoma de Barcelona, Barcelona, Spain; [5]Universidad de los Andes, Bogotá, Colombia

Abstract:
Random, systematic camera trap surveys are prohibitively expensive for many conservation practitioners, who often place camera traps in select locations where there is likely to be a higher capture rate. This can introduce bias into the sampling of species. In this study, we tested how placing camera traps near water affected mammal species richness estimates, capture rate, and the species detected in a reserve in the Orinoco region of Colombia. We placed pairs of camera traps in locations used for camera trap monitoring in the reserve, with one facing a stream, flooded forest, or swampy palm forest, and a control 15 meters away with no water in the viewshed. For the water cameras, species accumulated slower than the control cameras and the estimated species richness was lower. Capture rate was the same for the water and control cameras. Only control cameras captured squirrels and tayra, while only the water cameras captured the otters. For the five most common species, capture rate was similar for water and control cameras, except for the collared peccary, for which the water cameras had a lower capture rate. In conclusion, placing camera traps by water may help capture aquatic mammals, but overall does not increase capture rate and misses capturing the full diversity of the site. This presentation will incorporate video from the conservation practitioners who helped design this study. Our goal is for practitioners working with similar taxonomic groups to use these results to inform their camera trapping methodology.

Eric Oswald -- Bradley University

Quantifying the Change of Deciduous Tree Flowering Phenology in Central Illinois

Eric Oswald
Bradley University, Peoria, Illinois

Abstract:
Phenology is intrinsically linked to modern anthropogenic disturbance such as climate change and urbanization. Although other studies have examined spring flowering using satellite imaging, much less have considered phenological changes on a species level. This study aims to quantify and display the changing flowering date of deciduous trees in central Illinois forests based on historical records from 1951-1967, and identify the land use and land cover types affecting flowering phenology. Flowering observations will take place along an urbanization gradient according to the route taken in the historical data sets. Using this urbanization gradient, we expect to separate the effects of land use on tree phenology from the effects of climate change. Although we expect changes in flowering phenology across all land use types, we expect the change to be particularly significant in highly urbanized areas as a result of the urban heat-island effect.

Tung Phung -- University of Arizona

Biodiversity Conservation Turns Multidimensional: Which Metrics Actually Matter?

Tung Phung, John Wiens
University of Arizona, Tucson, AZ, USA

Abstract:
Expanding global protected areas is imperative to halt biodiversity loss. While biodiversity is increasingly recognized as multidimensional, with species richness being the primary indicator, new metrics often identified distinct but conflicting conservation hotspots. Despite continuous proposals of new dimensions, we know little about how different data choices affect the cost and configuration of priority areas. Here we designed cost-effective global protected areas based on various metric and taxonomic scopes. We found that incorporating multiple biodiversity dimensions increased average opportunity costs by 22.4%. Some biodiversity-rich regions were excluded from optimal solutions, which underlines high land-use conflicts at odds with conservation potential. Planning based solely on species richness required 6.4% less land on average but placed emphasis on low-cost, diversity-poor areas. Squamates and amphibians experience the largest representation shortfall when they are not explicitly included in the planning design, highlighting the risks of conservation strategies limited in taxonomic scope. In conclusion, the multidimensional approach can greatly enhance

biodiversity representation in protected areas but requires higher conservation resources.

Beeju Poudyal -- Agriculture and Forestry University, Faculty of Forestry

Land Use Land Cover Change and its Implication to Mitigate Human-Elephant Conflict

Beeju Poudyal[1,2], Suraj Upadhaya[2,3]
[1]Agriculture and Forestry University, Hetauda, Nepal; [2]Himalayan Conservation and Research Institute, Dolpa, Nepal; [3]Kentucky State University, Frankfort, KY, USA

Abstract:
Land cover changes are the primary driving force in habitat modification and a major reason for wildlife habitat loss globally. Nepal experiences habitat fragmentation and changes in land cover contributing to increasing human-elephant conflict yet, the subsequent information regarding the consequences of land cover change in wildlife habitat and its implications in elephant conservation at the local level is largely absent. This study aimed to understand the land use land cover dynamics and their implications on the human-elephant conflict in two municipalities and one rural municipality of the Jhapa district of Nepal which has experienced increasing human-elephant conflict in recent years and had a suitable habitat for the elephants (traveling within the country and through Indian border). A land use land cover change analysis of the years 2000-2019 was conducted followed by key informant interviews, focus group discussion, and household survey (n=281). The results showed that Jhapa district faced a rapid increase in the build-up area. The local's perceptions aligned with the change yet the male respondents were more aware of the change than the female respondents. Local people think that land fragmentation has been a major factor in increasing interaction with the elephants. The study suggests a better understanding of the land use land cover change and its implications to the human-elephant conflict to the concerned authorities to plan effectively for the mitigation of human-elephant conflict.

Seosamh Radigan -- The City College of New York

Genetic Variation and Distribution of Northeastern Sugar Maples

Seosamh Radigan[1], Hanna Makowski[1,2,3], Ana Carnaval[1]
[1]City College of New York, New York, NY, USA; [2]Black Rock Forest Consortium, Cornwall, NY, USA; [3]Advanced Science Research Center, New York, NY, USA

Abstract:
Tree populations are traditionally thought to have little to no population structure, but recent studies show evidence of population structure. In species with a large distribution, population structure is expected to arise through natural selection, genetic drift, and geographical isolation from distant populations. This study explores the scale of genetic variation among *A. saccharum* (sugar maple) populations in the northeastern region of the United States.

A. saccharum is an important cultural, economic, and environmental tree species with a large distribution in northeastern United States and southeastern Canada. Previous genomic studies on the population structures of *A. saccharum* have focused on large regions of the species' current or past range. This study examines variance in chloroplast DNA in ten populations in the Appalachian and Northeastern regions of the United States.

We sampled 88 individuals across eight populations in New York's Hudson Valley and two distant populations. The chloroplast genomes were assembled using GetOrganelle, then aligned to a reference plastome, SNPs called and then filtered. Through variation in SNPs, we compared allelic richness, heterozygosity, inbreeding coefficient, mean pairwise FST, and assessed isolation by distance to determine variation in population structure occurs. This information paired with environmental analyses will help inform conservation measures in response to climate change. In the future, the chloroplast DNA will be compared to nuclear DNA and paired to a reference genome to determine overall genetic variance among the ten populations.

Riya Rampalli -- Columbia University

Genomic Insights into Hybridization in Dioecious *Amaranthus*

Riya Rampalli, David Timerman, Deren Eaton
Columbia University, New York, NY, USA

Abstract:
Recombination is one of many key drivers of genome evolution, shaping patterns of inheritance and facilitating adaptation. In dioecious species, where individuals are

strictly male or strictly female, recombination is often suppressed around sex-determining regions (SDRs), particularly on the Y-linked haplotype. For species that have evolved homomorphic sex chromosomes, such as those in the genus *Amaranthus*, the extent and evolutionary consequences of this suppression remain poorly understood. Two particularly weedy *Amaranthus* species, *A. palmeri* and *A. tuberculatus*, are of growing concern due to their rapid range expansion, prolific seed production, and widespread herbicide resistance. USDA assessments have classified both as high-risk, with reports of yield losses up to 94% in major crops like corn, soybean, and cotton. These impacts are intensified by their highly efficient dispersal skills, making them a major threat to agricultural sustainability. To investigate the genomic mechanisms contributing to the success of these species, we use high-coverage long-read PacBio Hifi sequencing of pooled pollen from *A. palmeri*, *A. tuberculatus*, and their F1 progeny to generate fine-scale recombination maps. By tracing crossover events and quantifying the transmission of allele frequencies in haploid gametes, we aim to identify regions of recombination suppression and transmission ratio distortion (TRD). Our results will inform future studies for crop breeding, weed management, and speciation research in *Amaranthus*.

Hajaniaina Rasoloarison -- University of Mahajanga, 401 Mahajanga, Madagascar

Unexpected Chameleon Diversity and Ecology in the Southwestern Region of Madagascar

Hajaniaina Rasoloarison, Bernard Randriamahatantsoa, Nirhy Rabibisoa
Université de Mahajanga, Mahajanga, Madagascar

Abstract:
Chameleons are highly sensitive to microhabitat variation and important indicators of environmental heterogeneity and ecosystem health. The main threats are habitat loss, bush fires, harvesting for the pet trade, and climate change. Despite ongoing conservation efforts, wild populations continue to decline. The southwestern ecoregion between the Mangoky and Fiherena rivers features diverse habitats, including dry forests, xerophytic thickets, and wooded savannahs. Using the distance sampling method, the diversity, distribution pattern and conservation status of species across the southwestern biogeographical region were assessed. Six chameleon species are recorded: *Furcifer major* (Least Concern), *F. labordi* (Vulnerable), *F. antimena* (Vulnerable), *F. oustaleti* (Least Concern), *F. belalandaensis* (Critically Endangered), and

F. verrucosus (Least Concern). *Furcifer verrucosus*, *F. major* and *F. oustaleti* are widely distributed across the region and inhabit a wide range of habitats, including disturbed areas. *Furcifer labordi* and *F. belalandaensis* have narrow ranges, limited to specific habitats in the region's north and south, respectively. *Furcifer antimena* exhibits a broad latitudinal range but shows a strong affinity for xerophytic thickets near the Fiherena River, where population densities are highest. Morphological variation in *Furcifer verrucosus* suggests taxonomic reassessment is needed. From an ecological perspective, field observations reveal vertical stratification in habitat use, highlighting the species' adaptability to diverse vegetation structures and varying degrees of disturbance.

Natalie Robinson -- Rutgers University

Validation of a Non-Invasive Method to Measure Female Orangutan Reproductive Hormones

Natalie Robinson[1,2], Erin Vogel[1,2]
[1]Rutgers, the State University of New Jersey, New Brunswick, NJ, USA; [2]Center for Human Evolutionary Studies, New Brunswick, NJ, USA

Abstract:
Wild Bornean orangutans (*Pongo pygmaeus wurmbii*) are critically endangered due to continued anthropogenic habitat destruction. Understanding their reproductive parameters is essential for assessing population resilience and informing conservation policy decisions. We validated two commercially available enzyme-linked immunosorbent assay (ELISA) kits to quantify Estrone-3-Glucuronide (E1G, an estrogen metabolite) and Pregnanediol-3-Glucuronide (PDG, a progesterone metabolite) using non-invasively collected urine samples from captive and wild orangutans. Recoveries were 96.5% and 102.1% for E1G and PDG, confirming the accuracy of the assays and minimal matrix effects. Parallelism tests (visual and statistical) confirmed that both assays were valid within the 20-80% binding range and revealed no significant differences in slope (E1G: $p=0.65$; PDG: $p=0.06$), confirming that the dilution curves followed the same trend as the standards. Intra-assay variation for E1G was 2.5% (high controls) and 3.0% (low controls), while PDG was 4.4% (high) and 11.4% (low). Non-invasive monitoring of ovarian function in wild orangutans is critical given their concealed ovulation and slow life histories, both influenced by their nutritional environment. By improving our understanding of orangutan ovulation patterns and

reproductive capacity, we can better assess the likelihood of rapid population decline. Future directions include a comparative study of E1G and PDG across two wild orangutan populations in Borneo and in-situ laboratory work to shorten analysis time, support in-country scientists and infrastructure, and train Indonesian university students in hormone analysis methodologies.

Leanna Rodriguez -- NYC Park Rangers

Impact of NYC Parks Internship on Youth Conservation Leadership Development

Leanna Rodriguez
Miami University, Miami, FL, USA

Abstract:
Empowering youth leaders in conservation requires formative experiences that build skills and confidence. To effectively address global and local ecological challenges, it is essential to focus on cultivating the next generation of leaders. This study aims to investigate the effectiveness of a leadership development program for high school students in New York City who are interested in addressing environmental issues. The key issue this study addresses is the gap in effective leadership, specifically in conservation science. The primary rationale for the project was to assess whether such a program could foster a measurable increase in leadership confidence. Participants were evaluated using a survey framed around specific leadership attributes to determine a change in their leadership confidence centered around conservation action and science. A summative and diagnostic survey was issued, and a one-tailed paired t-test was applied to analyze responses to the general survey and individual survey questions. This study explores the research question: Do students' confidence in their conservation leadership abilities increase after participating in a youth leadership development program? The results showed no statistically significant differences in the overall leadership confidence scores or for individual survey questions. These findings suggest that the program did not lead to measurable improvements in self-declared leadership skills. Though significant evidence was not produced, this investigation emphasizes the intricate nature of leadership in conservation. It highlights the importance of understanding leadership needs to address ecological challenges.

Tania Rojas -- University of Kentucky

Effects of Surface Coal Mining and Habitat Structure on Avian Abundance in Appalachia

Tania Rojas, Jake Ferguson
University of Kentucky, Lexington, KY, USA

Abstract:
Surface coal mining is a large-scale human disturbance that modifies landscape structure leading to habitat loss and, consequently, an ongoing decline of biodiversity in the Appalachian deciduous forests. Mining techniques include mountaintop removal in lower watershed ridges to extract coal (causing large-scale deforestation) and releasing leftover sedimentary material in the streams. This extensive removal of vegetation and soil makes it difficult to achieve full ecological restoration, despite many efforts to minimize the adverse environmental consequences. These consequences remain unclear, in part because the effects of changes in habitat structure and the scale at which they impact biodiversity are still under debate, mainly because of species' different responses to habitat structural complexity. To fill this gap, this study investigates how and to what extent surface mine operations affect forest structure (canopy openness and shrub cover) and breeding bird communities in Central Appalachia. We combined remote sensing techniques to characterize fragmentation and landscape/patch features and species occupancy modeling to examine how different avian species respond to similar habitat structural changes in post-mining sites over time. We expect forest specialist birds to decline and disturbance-dependent bird species benefit from the increase in habitat heterogeneity. Findings from this study aim to enhance our current understanding of how habitat fragmentation and changes in structural complexity impact biodiversity in post-mining landscapes. Results are also discussed in the context of global coal mining and restoration practices.

Nicholas Rose -- Marist University

Behavioral Orientation in Pinnipeds: Does Vigilance Influence Species Conservation?

Nicholas Rose[1,3], Victor Alvey[1,3], Kristy Housekeeper[2,3], Kristy Biolsi[1,3], Kevin Woo[2,3]
[1]Marist University, Poughkeepsie, NY, USA; [2]SUNY Empire State, Selden, NY, USA ;
[3]Center for the Study of Pinniped Ecology & Cognition, Brooklyn, NY, USA

Abstract:
Safety in social aggregations is important for many animals, especially at rest when they are in their most vulnerable state. In these arenas, individuals often trade off the ability to recover with the need to remain vigilant of their surroundings. Behavioral orientation to stimuli in the environment therefore may be a critical role for acquiring relevant information, such as about predators and other perils, particularly for species under conservation threat. Our previous work with wild harbor (*Phoca vitulina*) and gray seals (*Halichoerus grypus*) found that both urban and rural populations have the same behavioral trend in directional orientation. The pattern of directional orientation at rest was predominantly forward, thereby providing a comprehensive scan of their entire immediate environment. We decided to expand on this by studying directional orientation during rest with a sample of harbor and gray seals at the Long Island Aquarium (LIA) in Riverhead NY. This allowed us to compare orientation between samples of wild seals and those born and raised under human care. Notably, our field sites located in NYC and Long Island provide natural environments full of stimuli that are both threatening (relevant) and non-threatening (irrelevant), while the LIA provides a cultivated habitat with minimal to no threats. Our data informs conservation efforts as it allows us to better investigate whether individuals may impart important environmental information that may have an impact on the safety and survivorship of the group and if this vigilance behavior may change in vastly different environments.

Matthew Sato -- Tarleton State University

Battle of the Bees: Honeybee Site Competition with Ground-Nesting Bees in Texas

Matthew Sato, Adam B Mitchell
Tarleton State University, Stephenville, TX, USA

Abstract:
Western honeybees, *Apis mellifera*, are super-generalist foragers and pollinators, capable of monopolizing floral resources due to their large hive sizes. Combined with the fact that there are around 2.7 million managed hives in the United States today, honeybees exert an overwhelming presence on pollinator communities all over the continent. Under recent patterns of disturbance, floral resource abundance and diversity is being threatened and reduced, exacerbating the impact of honeybee presence. Current studies seeking to understand the relationship and competition between native

bees and honeybees in North America have shown that competition is often driven by resource availability, but focus on cavity nesting bees over ground nesters which comprise the majority of native bees (64-83%). Our primary objective is to assess the impact of honeybee clusters on the nesting success of ground nesting bees. We plan to implement a spatial occupancy analysis of nesting success using artificial trap nests—buckets filled with native soil substrate—placing them at increasing distances from a cluster of honeybee hives. This will allow us to elucidate the severity and range of honeybee impacts on native bee communities and allow us to provide management suggestions for honeybee presence around vulnerable ground nesting bee sites. By focusing on ground-nesting species, this study will address a critical gap in pollinator research and contribute to more inclusive conservation strategies that reflect the full diversity of native bee communities.

Jordan Schindler -- Bradley University

Effects of Climate Change on Macro-moth Size in Central Illinois

Jordan Schindler
Bradley University, Peoria, IL, USA

Abstract:
The planet has been warming at a steady rate since the industrial revolution. Climate change can lead to changes in morphology in invertebrates, including moths. The change in size of invertebrates can be caused by changes in oxygen levels, temperature, and habitat loss, all of which have been happening in recent history. Insects play an important role in ecosystems acting as pollinators and food sources for other organisms, so it is crucial for us to understand how climate change is impacting insect morphology.This study looks at the macro-moth sizes across a wide time period in order to determine how climate change is affecting the size of the moths. Moths from Peoria and Tazewell counties have been collected using universal blacklight moth traps since the summer of 2023 and are being compared to historical samples from the Field Museum and the Illinois Natural History Survey. A digital microscope is being used to measure the pinned samples while the other samples are being hand measured. R software will be used to run ANOVA and Tukey's HSD in order to compare the forewing, hindwing, total length, thorax width, body length, and wingspan of the samples across the different time periods. We expect to see a significant change in the size of the moths from the early 1900s to now.

Sydney Self -- University of Texas at San Antonio

Source-Sink Population Dynamics of *Colobus vellerosus* Living in Fragmented Landscapes

Sydney Self, Eva Wikberg
University of Texas at San Antonio, San Antonio, TX, USA

Abstract:
Source-sink dynamics, wherein sink populations typically inhabit lower-quality habitat and are maintained by immigration from source populations, affect population viability and are therefore important in conservation. We investigated how distance from a source population is associated with population dynamics in a black-and-white colobus population (*Colobus vellerosus*) in a fragmented landscape in central Ghana. We predicted isolation distance from the source population (Boabeng) to be negatively associated with population size, adult female: adult male ratio, and immature: adult female ratio (indicative of population growth). From June to July 2024 we conducted a population survey of individuals by age/sex class. Population size varied from 13 to 288 individuals and decreased with distance to Boabeng (Spearman rank correlations, N=6, r=0.90, p=0.02). Adult female: adult male sex ratio varied from 1.6 to 2.75 and increased with distance to Boabeng (N=6, r=1, p<0.01). Immature: adult female ratio varied from 0.43 to 2.09 and was not correlated with distance to Boabeng (N=6, r=-0.66, p=0.18). Although populations further away from the source were smaller and typically had a lower immature: adult female ratio, their high adult female: adult male ratios indicate a high potential for population growth. Thus, the far-away fragment populations appear to be viable, but it is still important to facilitate dispersal between these fragments. We will additionally discuss preliminary data on changes in population dynamics and dispersal patterns across a 14-year period marked by habitat reduction and population compression and implications for conservation management.

Isabel Serrano -- El Colegio de la Frontera Sur

Witnessing the Colonization by Coyotes Using Local Knowledge

Isabel Serrano-Mac-Gregor[1], Sophie Calmé[1,2], Birgit Schmook[1], Dolores Molina[3], Carly Sponarski[4]

[1]El Colegio de la Frontera Sur, Quintana Roo, Chetumal, México; [2]Université de Sherbrooke, Sherbrooke, Quebec, Canada; [3]El Colegio de la Frontera Sur, Campeche, Campeche, México; [4]Northern Forestry Centre, Edmonton, Alberta, Canada

Abstract:

The coyote's range has expanded toward southeastern Mexico, including the Calakmul region in Campeche, a biodiversity hotspot. A fine-scale understanding of the pathways and details of this colonization is needed. We aimed to (1) assess the coyote colonization process in Calakmul at different points in time, (2) examine the relationship between coyote presence and land cover characteristics, and (3) evaluate local ecological knowledge (LEK) about coyotes. Two large-scale community surveys were conducted. One documented direct experience with coyotes (seen, heard, experienced coyote predation of livestock, hunted coyotes) and had 272 participants from 30 communities and the Calakmul Biosphere Reserve. The other documented LEK and had 461 participants from 17 communities. In the first survey, participants reported 365 dated coyote-related experiences, which we grouped into four 10-year periods: 1984–1993 (n = 2), 1994–2003 (n = 11), 2004–2013 (n = 27), and 2014–2023 (n = 325). These data suggested a progressive colonization process that accelerated during the last decade. Coyote experiences significantly occurred in agricultural areas. In the second survey, 88% of participants reported having knowledge about coyotes, independently of the species' colonization status in their community. Notably, 38% of participants acquired their knowledge outside of Calakmul, primarily through migration, which highlights the translocal nature of their knowledge. Our findings suggest that agricultural and forestry activities, combined with migrant backgrounds, facilitate the acquisition and transfer of coyote-related knowledge. LEK is not static but rather evolves with processes such as human migration. These results suggest that the human-modified areas of the Calakmul landscape play a significant role in shaping human-coyote encounters in Calakmul. We recommend that the Calakmul Biosphere Reserve collaborate with local communities using participatory approaches to develop a community-based monitoring strategy.

Roman Sharnuud -- University of Tennessee, Knoxville

Linking Life History Traits With the Mammal Mortality Due to Floods - A Meta-Analysis

Roman Sharnuud, Monica Papeş
University of Tennessee, Knoxville, TN, USA

Abstract:

Floods are becoming more frequent and severe with climate change, posing growing threats to terrestrial biodiversity. Yet, we lack a broad understanding of how mammal species vulnerability to flood-related mortality varies—and why. In this study, I present a Bayesian meta-analysis to identify life-history predictors of flood susceptibility in mammals. I systematically reviewed literature documenting direct mammal mortality from floods, extracting effect sizes from studies across diverse ecosystems. Using log response ratios as effect sizes, I built a multilevel Bayesian phylogenetic model to test whether adult body mass, litter size, generation length, and dispersal distance predict species' responses to floods. The model accounts for phylogenetic relatedness and study-level variation, providing a robust framework for ecological synthesis.

To my knowledge, this is the first assessment of mammal flood vulnerability using a Bayesian phylogenetic meta-analytic framework, and it can be used to assess species responses to other climate-related disturbances. This research supports conservation prioritization by identifying traits that may signal heightened flood risk. The framework can inform trait-based risk assessments and help managers allocate resources more effectively in flood-prone protected areas under increasing climate change pressure.

Yucheol Shin -- Richard Gilder Graduate School, American Museum of Natural History

Testing the Accuracy of Niche Models for the Range Prediction of Non-Native mantises

Yucheol Shin[1], Lohitashwa Garikipati[1], Julio Rivera[2,3], Jessica L Ware[1]
[1]American Museum of Natural History, New York, NY, USA; [2]Université de Montréal, Institut de Recherche en Biologie Végétale, Montreal, Quebec, Canada; [3]Montreal Insectarium, Montreal, Quebec, Canada

Abstract:

Human activities are driving the spread of non-native species globally, causing ecological and economic damage. Therefore, the ability to predict potential ranges of non-native species is crucial to assess the invasion risk. Ecological niche models (ENMs) provide a useful tool for this purpose, but its accuracy depends on multiple factors, including the model calibration extent. Here, we tested whether ENMs can accurately predict the non-native ranges of Mantis religiosa, the European mantis. This species is found in Europe, Asia, and Africa and has been introduced to North America

in the 1800s. Since this species is highly predatory and broadly consumes prey across different taxonomic groups, the spread of this species across North America is a serious conservation concern that remains unassessed. We thus generated ENMs at different spatial scales and with different calibration data to test whether the current distribution within North America could be predicted accurately. While all fitted models showed high predictive performance, the output predictions differed considerably depending on the initial calibration range. For example, models fitted with both global and North American occurrence points successfully predicted the current North American range. However, the model fitted with European occurrence points failed to predict the North American range. Several factors can explain these results, including multiple introductions from different native source populations and rapid niche shifts upon introduction into North America. Our results prompt further investigations to better understand the introduction history of this species and its implications for conservation.

Montse Sousa-Sanchez -- Fordham University

The Effect of Temperature and Drought Stress on Tomato (*Solanum lycopersicum*) Pollen

Montse Sousa-Sanchez[1], Chelsea Butcher[2], JD Lewis[1]
[1]Fordham University, Bronx, New York, USA; [2]Northwood University, Midland, MI, USA

Abstract:
Climate change is projected to increase global temperatures and reduce water availability, threatening plant growth and reproduction. Reproductive stages are particularly sensitive to abiotic stressors such as heat and drought, which often exacerbate each other- heat accelerates water evaporation, intensifying drought, while drought impairs plants' ability to cope with heat. Tomatoes (*Solanum lycopersicum*) are highly sensitive to temperatures outside their optimal 25–30 °C day and 20 °C night range, leading to reduced growth. Drought also affects tomatoes by reducing photosynthetic performance. Despite these significant impacts, few studies have examined the combined effects of heat and drought on reproductive traits and even fewer have investigated their phenotypic plasticity. To address this, *S.lycopersicum* was grown under high (HT) and low (LT) temperature regimes, with groups further divided into drought (DS) and well-watered (WW) treatments, creating four combinations: HT+DS, HT+WW, LT+DS, and LT+WW. After four weeks, HT plants were shifted to LT to

investigate recovery and plasticity, while LT plants remained unchanged. After another four weeks, all plants were exposed to HT to assess potential adaptive responses. Drought was maintained throughout, and pollen viability, anther size, and mass were measured periodically to assess male fertility. HT reduced all fertility metrics, while drought only reduced anther dry mass. Plants initially exposed to HT recovered under LT conditions, but fertility declined across all groups re-exposed to HT, suggesting no adaptive response. These findings can shed light on potential impacts on plant reproduction under climate change.

Helen St. John -- James Madison University

Impact of Radio Telemetry Tags on Monarch Butterfly Flight, Behavior, and Survival

Helen St John, Leone M Brown
James Madison University, Harrisonburg, VA, USA

Abstract:
Monarch butterflies are facing a continued decline in population size, despite ongoing efforts to conserve habitat. Limited knowledge on movement ecology during migration and overwintering periods may hinder conservation, as questions remain about monarchs' specific migration routes and how they use overwintering habitat. With recent technological advances, radio telemetry tags are now available that are purportedly small enough for use on monarchs, but impacts of tags and attachment methods on movement, survival, and retention times have not been evaluated. We conducted a field study comparing movement and behavior in untagged and tagged breeding and migratory monarchs. Tagged monarchs received the 0.13-g Lotek NanoPin used in previous studies, or the newer 0.06-g Cellular Tracking Technologies' (CTT) BlūMorpho telemetry tags. We also conducted a greenhouse study to test the effects of four glue types on monarch lifespan and tag retention. Butterflies received one of four glue types, and a subset were tagged with CTT BlūMorpho tags. Our field results suggest that the smaller CTT BlūMorpho tags have minimal impacts on monarch movement relative to Lotek tags. In the greenhouse, DuoActive eyelash glue and Torbot bonding cement did not significantly affect lifespan, and fewer tags were lost with eyelash glue, suggesting that eyelash glue is a good balance between minimizing impacts on monarch lifespan and maximizing tag retention. While we expect monarch conservation to benefit from radio telemetry tracking, we urge tagging

coordinators to have clearly defined research questions, use the smallest tag they can, and to carefully consider unanticipated tagging impacts.

Matthew Stanton -- Queens College CUNY

Skunk Cabbage in an Urbanizing World: Floral Phenology and Pollinator Assemblages

Matthew STANTON[1], Gretchen BEGLEY[1], Brendan BROZEN[1], Oliver KRIEGER[1], Elizabeth L CLARE[2], John J DENNEHY[1], Joanna L COLEMAN[1]
[1]Queens College at the City University of New York, Flushing, NY, USA; [2]York University, Toronto, ON, Canada

Abstract:
Urban development changes landscapes dramatically, presenting native species with huge challenges. One is the urban heat island (UHI): Most cities are warmer, with drier soils than outlying areas. For eastern skunk cabbages (*Symplocarpus foetidus*), which grow in muck and bloom in winter, this may be a problem. Further, cities often have prolonged growing seasons (e.g., plants flower earlier), and many have reduced diversity of pollinators. We are conducting the first urban-ecology study of eastern skunk cabbages. Working at 14 sites on the urban gradient in New York City (NYC), we ask whether and how urbanization affects:
1. Phenology. Community scientists monitor focal plants at each site throughout the flowering season, thus also generating what we believe is the first ever dataset on spatial variation in skunk-cabbage phenology.
2. Pollinator assemblages. By collecting environmental DNA (eDNA) from inflorescences and then using DNA barcoding, we identify all arthropods that touched the florets (and so are likely pollinators). We then assess within- and between-site diversity and the effect of the urban gradient on both parameters. To our knowledge, this is the first study to use molecular tools to identify skunk-cabbage pollinators and to achieve species-level precision.
Ultimately, we can assess whether shifting phenology and pollinator assemblages are linked not only to urbanization, but also to each other. Further, UHIs may be microcosms of global warming. Therefore, understanding how NYC's UHI affects this species may help predict how it will fare in the face of climate change at the southern limit of its distribution, where it is already endangered.

Kyriana Tarr -- NYC Bird Alliance

Managing Human-Wildlife Conflict in Rooftop Nesting Gulls

Kyriana Tarr, Christine Cieslak, Dustin Partridge, Myles Davis
NYC Bird Alliance, New York, NY, USA

Abstract:
Human-wildlife interactions are increasing as urban development encroaches on natural spaces, leading to emerging challenges, such as gulls nesting on rooftops worldwide. Rooftop-nesting gulls, including those on green roofs, benefit from reduced predation and access to urban food sources. However, nesting gulls can create safety concerns for people who need to access rooftops for regular maintenance. The Javits Center in Manhattan, NY, features a 6.75-acre green roof that hosts New York's largest rooftop-nesting Herring Gull colony. While gull responses to human disturbances have been studied in land-based colonies, little is known about gull behavior on rooftops. To guide human activity and promote safe human-wildlife interactions, we investigated how varying levels of human disturbance on an urban green roof influence Herring Gull habituation and aggression, and how this compares to a natural, land-based colony. We measured flight initiation distance (FID)– the distance at which a bird takes flight when approached– and aggression at two rooftop sites with high and low levels of human activity. Results showed little difference in FID or aggression between the two rooftop sections, but FID was greater in both low and high disturbance rooftop sections compared to a natural colony. These findings suggest rooftop-nesting gulls remain sensitive to human presence, regardless of the amount of exposure. FID can be used to define buffer zones for safe roof access and safe nesting. This case study highlights a replicable method for managing human-wildlife conflict and offers a novel, conservation-based solution to rooftop-nesting gull issues increasingly seen around the world.

Devi Tejaswini -- University of Montana

Advancing Snowmelt Affect Pollination & Reproductive Success in Cushion Plants

Devi Tejaswini, Meredith Zettlemoyer
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Abstract:
Advancing snowmelt has been linked to global shifts in flowering phenology. However, phenology is a function of both the environment and physiology. The ability of a plant to start flowering may vary with its physiology. Variation in phenology can impact plant-pollinator interactions via changes in plant traits; synchrony with co-flowering species; and pollination efficacy. Early flowering has been extensively studied by ecologists, yet its consequences on pollination and reproductive success remain poorly understood. To understand the consequences, we need to assess 1) floral traits, 2) floral synchrony with co-flowering species, and 3) pollinators visitation and successful pollination. We studied three focal species common to alpine tundra across the globe that overlap in their flowering periods. We use phenological data, physiological and floral traits, pollination observations, and experiments to address: What is the relative contribution of physiology, phenology, and pollination efficacy in the reproduction success of cushion plants across variable snowmelt regimes? We predict physiological and floral traits, and flowering phenology positively correlates with pollinator visitation, ultimately contributing to reproductive success. Understanding the relationship between physiology and changing phenology is critical to predicting organisms' response to increasing temperature. This study furthers our knowledge of several understudied mechanisms in alpine literature, including how phenology and physiology might change, how pollination rates might be affected by phenology and floral traits, and which parameters become limiting factors for successful pollination.

Arel Triyono -- Columbia University

Assessing Infrastructure Impacts on Eastern Hellbender Movement and Habitat

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Abstract:
Eastern Hellbenders are an iconic and rapidly declining freshwater salamander throughout eastern and central United States and are a candidate for listing under the Endangered Species Act. The eastern hellbender population in French Creek, Pennsylvania (PA) is considered one of the densest in the northern part of the species' range but is locally threatened by impacts from infrastructure development. Two bridges across French Creek near high-density populations, are set for replacement in

2025 and 2026; while bridge replacement raises concerns about downstream effects on hellbender habitat (e.g., via siltation, altered water quality), it remains unclear how such disturbances impact hellbenders directly. My work will answer two questions: (1) is there behavioral avoidance of infrastructure crossing hellbender habitat (i.e., can bridges lead to population fragmentation?) and (2) what are the effects of bridge replacement on hellbender movement and habitat selection? For infrastructure avoidance, we will evaluate hellbender movement and habitat selection upstream and downstream of one of the bridges via VHF telemetry. We will assess the downstream effects of bridge replacement on the habitat and water quality characteristics. This study will produce urgently needed data which will allow managers to mitigate potential impacts of infrastructure on hellbender populations and freshwater ecosystems.

Alma Lucrecia Trujillo -- Yale School of the Environment

Palm Diversity Along a Forest Edge-to-Interior Gradient

Alma L Trujillo-Miranda, Liza Comita
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Abstract:
Approximately 20% of remaining forests are located within 100 meters of an edge. The transition from forest to non-forest areas leads to biophysical changes, such as increased light availability and drier conditions, which influence species composition and diversity. The magnitude of these changes is influenced by the type of land use adjacent to the forest, where a more pronounced contrast between habitats resulting in more abrupt biophysical changes. Palms, abundant in Neotropical forests, play a crucial role as a dominant group. Despite their ecological significance, there is a notable research gap in understanding palm diversity patterns in human-modified landscapes. Our question is: How does the taxonomic diversity of palm communities, from seedlings to adults, vary along a forest edge-to-interior gradient with pasture and cacao edge contrasts? We carried out the study in 30 sites in remanent evergreen Choco Forest in northwestern Ecuador, 15 sites were adjacent to cacao crops and 15 to pasture. Plots (100 m2) for palm sampling were set every 20 m from the forest edge: 0-10 m, 30-40 m, 60-70 m, and 90-100 m. Three plots per distance were established, totaling 12 per site. We will present results on how the taxonomic diversity of palm communities across life stages, seedlings to adult palms, varies along the forest edge-to-interior gradient, comparing by types of edge and under different levels of landscape

forest cover. Our results will shed light on palm biodiversity patterns in human-modified landscapes.

Shaniya Utamidata -- Rutgers, The State University of New Jersey

Immersive Science Storytelling as Conservation Education for Indonesian Students

Shaniya Utamidata, Dena K Seidel, Erin R Vogel
Rutgers, The State University of New Jersey, New Brunswick, NJ, USA

Abstract:
In a megadiverse country such as Indonesia, involving young people in conservation is crucial to fostering a more environmentally conscious generation. At Rutgers University, the Immersive Learning Through Science Storytelling Lab takes an interdisciplinary approach, combining science communication and filmmaking to support students in turning complex research into engaging, more accessible narratives. The program has nurtured a new generation of science communicators with student-led films that raise awareness of environmental issues and build trust in science. Inspired by this model, we propose to adopt a similar program tailored to high school students in Indonesia. The goal is to give students hands-on experience in digital storytelling and science communication, helping them share the conservation challenges they see in their communities. Working closely with local scientists and conservationists and grounding their stories in culturally relevant narratives, students will produce short films that bring international attention to local environmental issues in Indonesia. An essential part of this method is to quantify how science-in-action films shape students' learning and interest in STEM in both participating students and audiences. The anticipated outcomes include enhanced student engagement in conservation, improved public awareness through student-produced media, and strengthened partnerships between educational institutions and conservation organizations in Indonesia. This approach educates students about conservation science and amplifies their voices to broader environmental discourses, contributing to more effective and inclusive conservation strategies.

Lisa Vebber -- Pennsylvania State University

Responsible Tourism Practices of Safari Guides and Tourists in Protected Areas

Lisa Vebber
Pennsylvania State University, University Park, PA, USA

Abstract:
In biodiverse regions of the Global South, wildlife tourism opportunities are a vital comparative economic advantage for generating revenue and growing local economies. As visitor numbers grow in Protected Areas across Africa, the need exists to provide data-driven inputs to policy, decision-making, and sustainable management of PAs to reduce risks to wildlife and the local livelihoods reliant upon tourism. Despite tour guides' significant influence as ambassadors, educators, and role models for conservation behaviors, their potential for minimizing the negative impacts of tourism is rarely acknowledged, leveraged, or studied. When explored in the context of Western tourists visiting developing countries, the socio-economic and cultural disparities create a non-coercive form of power dynamic between guides and tourists. Acknowledging the historical context of Western colonization of African nations and its continued impact in those countries today further expands the power inequalities. The Approach Inhibition Theory of Power explains how such power differences influence behavior. With this as the theoretical base, a combination of online surveys, semi-structured interviews, and direct observations of guides and tourists investigates the ethical decision-making process of wildlife tour guides and tourists and their associated behaviors during safari tourism activities. With data collection scheduled between May-August 2025 in Botswana, this will be the first opportunity to share early insights fresh from the field.

Theresa Vitovitch -- Rutgers University

The Pollinator Port Project: Artificial Habitats for Wild Bees In Urban Centers

Theresa Vitovitch[1], Majeed Assadi[1], Kimberly N. Russell[1,2]
[1]Rutgers, The State University of New Jersey, New Brunswick, NJ, USA; [2]American Museum of Natural History, New York, NY, USA

Abstract:
Wild bees are essential pollinators of native plants and are more effective at that task than commercial honeybees. Ground nesting bees in cities must deal with increased impervious surfaces, compacted soils and fewer patches of bare, undisturbed soil. Stem nesting bees lose nesting materials in highly landscaped sites, where "neatness" is prioritized. Urban spaces that wish to attract and support wild bees require not just

food resources for the adults, but nesting sites where their young can successfully overwinter. In collaboration with the Horticultural Society of New York and the New York City Department of Transportation, we designed and deployed artificial habitat islands ("Pollinator Ports") in pedestrian plazas to supplement bees' nesting and floral needs. Three types of artificial habitats (Bee Hotels & Vestre Leaves for cavity & stem nesting species and Bee Bunkers for the ground nesters) were deployed at eleven sites spanning all five boroughs from 2023 to 2025. Our goal for this project is to assess 1) the use of these habitats by wild bee species, 2) the practicality of the designs in the face of human disturbance and other urban challenges, and 3) the utility of these habitats in engaging and educating the public about native bee conservation. This project also provides a unique model for cross-organization collaboration between academic (Rutgers University), municipal (NYC DoT) and non-profit (The Hort) entities toward the goal of practical conservation of at-risk animals.

Katie Wang -- University of Toronto

Hope vs Urgency: Evolving Sentiment Trends in News Coverage of Biodiversity Loss

Katie Wang, Shelby Riskin
University of Toronto, Toronto, ON, Canada

Abstract:
Public perception of biodiversity issues can be influenced by the tone with which news articles and other communications are written. A positive tone may increase hope and motivate action, but a tone that is too positive may lead to complacency and a reduced sense of urgency. A negative tone can increase the sense of urgency, but being too negative can lead to feelings of hopelessness and decreased likelihood of motivating action. We investigated the sentiment over time of press releases, news media coverage, and scientific reports for two international bodies focused on biodiversity conservation, one science-focused (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, IPBES) and one policy-focused (Convention on Biological Diversity, CBD). We performed sentiment analysis on a dataset of 1108 news articles and 75 press releases with two lexicon-based methods (AFINN and SentiWordNet) and one LLM-based few-shot classification method (GPT-4o). We found that the sentiment over time of news media covering the policy-focused body (CBD) became significantly more positive between 1994 and 2024 for all sentiment analysis methods, whereas the sentiment of news media covering the science-focused body

(IPBES) became significantly more negative between 2016 and 2023 for both lexicon-based methods but not for the LLM-based model. Identifying these sentiment trends for biodiversity news media coverage can help inform future communication strategies that might encourage more action towards biodiversity conservation.

Sydney Wells -- Columbia University

Local Perceptions of the Proposed Re-Designation of Delaware Water Gap NRA

Sydney Wells, Viorel Popescu, Maya Moore, Bekka Brodie
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Abstract:
Delaware Water Gap National Recreation Area (DEWA) is an ecologically, geologically, archaeologically, and historically unique public land managed by the United States National Park Service. The area's history is notable for multiple instances of forced removal: first, of the Lenape who originally inhabited the area, and second, of residents displaced by the controversial Tocks Island Dam Project in the mid-twentieth century. These traumatic histories inform a current debate regarding the park—specifically, whether it should be re-designated as a National Park and Preserve. This debate is led by local community organizations and has garnered support on both sides from environmental groups, local municipalities, legislators, Indigenous political bodies, and other parties. This study employs digital and in-person public opinion surveys, administered to residents in the five counties surrounding DEWA, to elucidate local perceptions of the debate and park. Survey responses are analyzed across different demographic categories, such as county of residence and age, to provide a more nuanced understanding of public opinion. Offering a clearer view of community perspectives will help inform the ongoing discussion about DEWA's future and ensure that local voices are included in the conversation.

Garret Wiersma -- Regis University

Will Forest Wildfire Mitigation Strategies Affect Arthropod Communities?

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Regis University, Denver, CO, USA

Abstract:

The South-Western US is experiencing one of the longest droughts on record, which has resulted in high frequency and high severity wildfires in native forest along the Front Range. Local agencies are addressing this threat by implementing forest thinning as their main wildfire mitigation strategy. This action encompasses the selective removal of all young and some old Douglas fir stands (*Pseudosuga menziessi*), due to its higher flammability in pursuit of mitigating available ladder fuel. While this strategy is effective at reducing wildfire risk, their unintended consequences on the local fauna are poorly understood. A usually neglected but highly important component of temperate forest are arthropods communities, as they contribute to several ecosystem functions including predation, pollination, nutrient cycling, and herbivory. Our goal is to establish the current arthropod composition associated with forest stands dominated by Douglas fir that will undergo thinning next year, and identify similarities or differences with arthropods communities associated with neighboring forest stands dominated by Lodgepole pine (*Pinus contorta*) and Ponderosa pine (*Pinus ponderosa*) which will remain untouched. We sampled crawling and flying arthropods using Malaise and pitfall traps, as well as surveyed forest composition and structure at four plots in Berrian Mountain Park in Jefferson County (CO). Current data will provide information about the natural differences between communities associated with these forests and will allow for the determination of future variations as direct responses due to thinning processes.

Melissa Zarate -- Boston University

The Impact of Landscape Features on Yellow-Tailed Woolly Monkey Gene Flow

Melissa A Zarate[1], Sofia Weaver[1], Isabella Monedero Rodríguez[2], Maria Solis Quispe[3], Sam Shanee[4], Fanny M Cornejo[5], Mrinalini Watsa[6,7], Christopher A Schmitt[1]
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Abstract:

The yellow-tailed woolly monkey (*Lagothrix flavicauda*)—a Critically Endangered species endemic to the tropical cloud forests in northern and central Peru—faces the ongoing threat of extinction due to deforestation of its habitat. Its limited range and arboreality

make forest continuity essential for migration and gene flow, which are necessary for maintaining the genetic diversity that is crucial for a species' survival. To assess the impact of human-induced landscape changes on the spatial genetic structure of the species, we sequenced 9.8 kb of the mitochondrial genome (including the hypervariable region) from 30 individuals across four sites in Amazonas, Peru: one site from the district of Yambrasbama and three sites in the district of Corosha. We used these data to combine estimates of population differentiation and genetic diversity with landscape classification and forest cover quantification. GIS analyses reveal continuity of forest cover (>30% canopy cover) between the Corosha sites but lacking between the Yambrasbama and Corosha sites. Additionally, the presence of a highway and town between the Yambrasbama and Corosha further divides the populations. Thus far, a mantel test shows no significant correlation between genetic and geographic distance, implying that any genetic structure occurring between the sites is due to other factors causing population isolation—namely, natural and human-caused lack of forest. Quantifying these landscape barriers within the yellow-tailed woolly monkey range gives insight into what may inhibit gene flow across the landscape, as well as whether and how distinct management units can be decided to optimize conservation efforts.

Yan Zhang -- Columbia University

Post-Fire Mycorrhizal Dynamics Across a Burn Severity Gradient in Iñapari, Peru

Xiaoyan Zhang
Columbia University, New York, NY, USA

Abstract:
Fire disturbance is increasingly reshaping the Amazonian landscapes, with cascading effects on soil health, nutrient dynamics, and ecological recovery. While the post-fire landscape has shown great potential in vegetation recovery, the relationship between the burn severity and mycorrhizae community, key drivers of nutrient cycling and forest regrowth, remains poorly understood. This study investigates how burn severity influences post-fire mycorrhizal dynamics in a diverse tropical landscape in Iñapari, Peru. Using satellite-derived burn severity indices (Normalized Burn Ratio), we stratified the study area and examined variations in vegetation structure and topography. Mycorrhizal diversity and abundance were assessed through field sampling and DNA sequencing. We also measured physical and chemical soil properties, including soil moisture, pH, organic matter, cation exchange capacity, and nutrient levels, to explore

their correlation with mycorrhizal community composition. We hypothesize mycorrhizal diversity and abundance will be higher in areas with lower severity, reflecting lower disturbance and faster recovery. Additionally, we expect that the soil health and vegetation structure will be more advanced in recovery with lower severity fire areas compared to those with higher severity. Through integrating soil mycorrhizal community with satellite-derived data analysis and soil health assessments, this research aims to contribute to global conservation efforts by emphasizing the effect of burning activity on mycorrhizae community, highlighting how fire affects belowground symbiosis and resilience in Amazonian ecosystems.