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**PROGRAM GUIDE &
ABSTRACTS**

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BI-03

Marine invasion rates across the tree of life

Yoni Belmaker

Tel Aviv University, Tel Aviv University, Tel Aviv, Israel

Invasions are one of the most significant agents of biodiversity change. However, attempts to synthesize patterns across broad taxonomic groups have been hampered by sampling biases and the lack of standardized methodology. The Eastern Mediterranean is receiving a large influx of Red Sea species has followed the opening of the Suez Canal. These invasive species make up a large percentage of total species in this region and have substantially modified its biodiversity. This research focuses on this unique 'natural experiment', to understand the underlying correlated of invasion success across the tree of life, taking into account imperfect detection and variability in sampling effort through time. By statistically controlling for potential biases in detection rate over a wide range of taxa, we are able to show substantial variation in the rates of invasion. Specifically, taxa can be separated into groups, such as fishes, bivalves and algae, that are characterized by a fast and increasing invasion rates and groups such echinoderms, sponges and ascidians that have low and constant invasion rates. We further find that the best predictor of invasion rates is the date in which the first species of the group was seen in the Mediterranean, with taxa that arrived early characterized by high invasion rates. Taken together, we argue that such inter-taxa comparison can shed light into the main life-history attributes and environmental correlates associated with invasion success.

BI-04

Native climatic niche explains establishment success in exotic mammals

Olivier Broennimann¹, Blaise Petitpierre², Manuela González-Suárez³, Jonathan M. Jeschke⁴, Jonathan Rolland⁵, Sven Bacher⁶, Antoine Guisan¹

¹University of Lausanne, Lausanne, Switzerland

²University of Lausanne, Lausanne, Vaud, Switzerland

³University of Reading

⁴Freie Universität Berlin

⁵University of British Columbia

⁶University of Fribourg

Biological invasions represent increasing threats to biodiversity, ecosystems, but also to human economies and health. Major effort was accordingly put in recent years to better understand why some exotic species fail to establish, but others are successful. Successful exotics have passed several filters: geographic, abiotic and biotic. One key hypothesis in this regard is that, when introduced in a new range, an exotic species initially develops in environmental conditions similar to those in its native range, i.e. within its native niche. Yet, this hypothesis has so far remained largely untested. Here, using a large dataset of 989 introductions of 177 mammal species worldwide, we show with SDM suitability and niche innerness - two indices of the relative position of the introduction sites within the species' native niche - that climate matching to the native niche is a strong predictor of establishment success. The integration of such indices in pre-border risk assessments could improve chances to prevent invasions before introduction, and possibly avoid costly eradications.

BI-05

Assessment of health and vitality of a narrowly distributed habitat in a Mediterranean island, the case of the endemic *Cedrus brevifolia* forests in Cyprus.

Konstantinos Nikolaou¹, Thomas Boivin², Andreas Christou³, Nicolas-George Eliades⁴

¹Department of Forests, Ministry of Agriculture, Rural Development and Environment, Nicosia, Cyprus

²INRA UR629 Ecology of Mediterranean Forests, France

³Department of Forests, Ministry of Agriculture, Rural Development and Environment, Nicosia, Cyprus, Cyprus

⁴Frederick University, Nicosia, Cyprus

The habitat type “9590* *Cedrus brevifolia* forests (*Cedrosetum brevifolia*)” is a narrow (290 ha) endemic habitat type of Cyprus, included in the Annex I of the Directive 92/43/EEC, characterised as a priority habitat type. Its exclusive and limited area within the Pafos forest makes it inherently susceptible to many factors threatening its very existence. We focused on the biotic factors altering the survival and the reproductive success of trees, as key drivers of ecological and dynamic processes in this habitat during outbreaks. This survey used 12 sampling plots (0.1 ha) equally distributed among four vegetation types of the habitat type 9590*. Seed predation rates by *Megastigmus schimitscheki* (Hymenoptera: Torymidae) were assessed by X-ray radiography of seeds collected randomly in each plot in 2016. Bark beetle (Coleoptera: Curculionidae) populations were monitored twice a month between April and November 2017 using two baited slit traps per plot. Seed predation rates showed variation between the 12 sampling plots (0–18.6%) but were overall found to be low. The Coleoptera *Orthotomicus erosus*, *Hylurgus ligniperda* and *Aulonium* sp. (a predator of *O. erosus*) were the most abundantly trapped species and displayed a bivoltine cycle between June and November. *O. erosus* is likely to be the most harmful biotic factor to habitat type 9590* as it was found more abundant than *H. ligniperda* in all types of vegetation (cedars and pines), while *H. ligniperda* was restricted to pines. These results provide guidelines for the management of biotic risks in this vulnerable endemic habitat.

BI-06

Understanding plague's niche in native and naturalised regions

Henry Fell¹, Matthew Jones², Steve Atkinson³, Adam Algar¹

¹University of Nottingham, Nottingham, United Kingdom

²University of Nottingham, Nottingham, Nottinghamshire, United Kingdom

³University of Nottingham

Yersinia pestis is the bacterial agent of plague, the infectious disease responsible for three historic pandemics that repeatedly caused massive human mortality and influenced significant societal change. Plague is now classified as a re-emergent disease with both epidemics and isolated cases occurring with increasing regularity. Currently, plague is distributed across its native region of continental Asia, with naturalised populations across Africa and the Americas. What limits the geographical distribution of plague is still unknown, with a key debate centring on whether it is limited primarily by the environmental niche of *Y. pestis* or by the environmental niche of the hosts. There is further uncertainty regarding the survival of the bacteria during inter-epizootic periods, with environmental reservoirs of plague suggested as a potential explanation. Increasing our understanding of plague's current niche can aid in better understanding pivotal historical events as well as predicting future risk under rapid environmental change. In this work, we use pathogen and host locality data and species distribution modelling to test how pathogen and host niches influence plague's distribution in native and naturalised regions at continental scales.

BI-07

Role of Invasive shrub species on soil nutrients and microbial biomass of chir pine forest in Kumaun Himalaya, India

Mukesh Kumar¹, Shailendra Kumar², Lala Saha³, Satish Garkoti²

¹School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, India

²School of Environmental Sciences, Jawaharlal Nehru University

³Central University of Jharkhand, Ranchi, India, Central University of Jharkhand, Ranchi, India, Jharkhand, India

Soil microbial biomass constitutes 2- 5% of the soil organic carbon and plays significant role in cycling of nutrient and organic matter dynamics. Globalization has reinforced invasive alien species (IAS) *Lantana camara* and *Ageratina adenophora* to spread in Kumaun Himalaya. They are considered as a threat for plant biodiversity and nutrient cycling. This study concerns about the influence of IAS on soil nutrient and