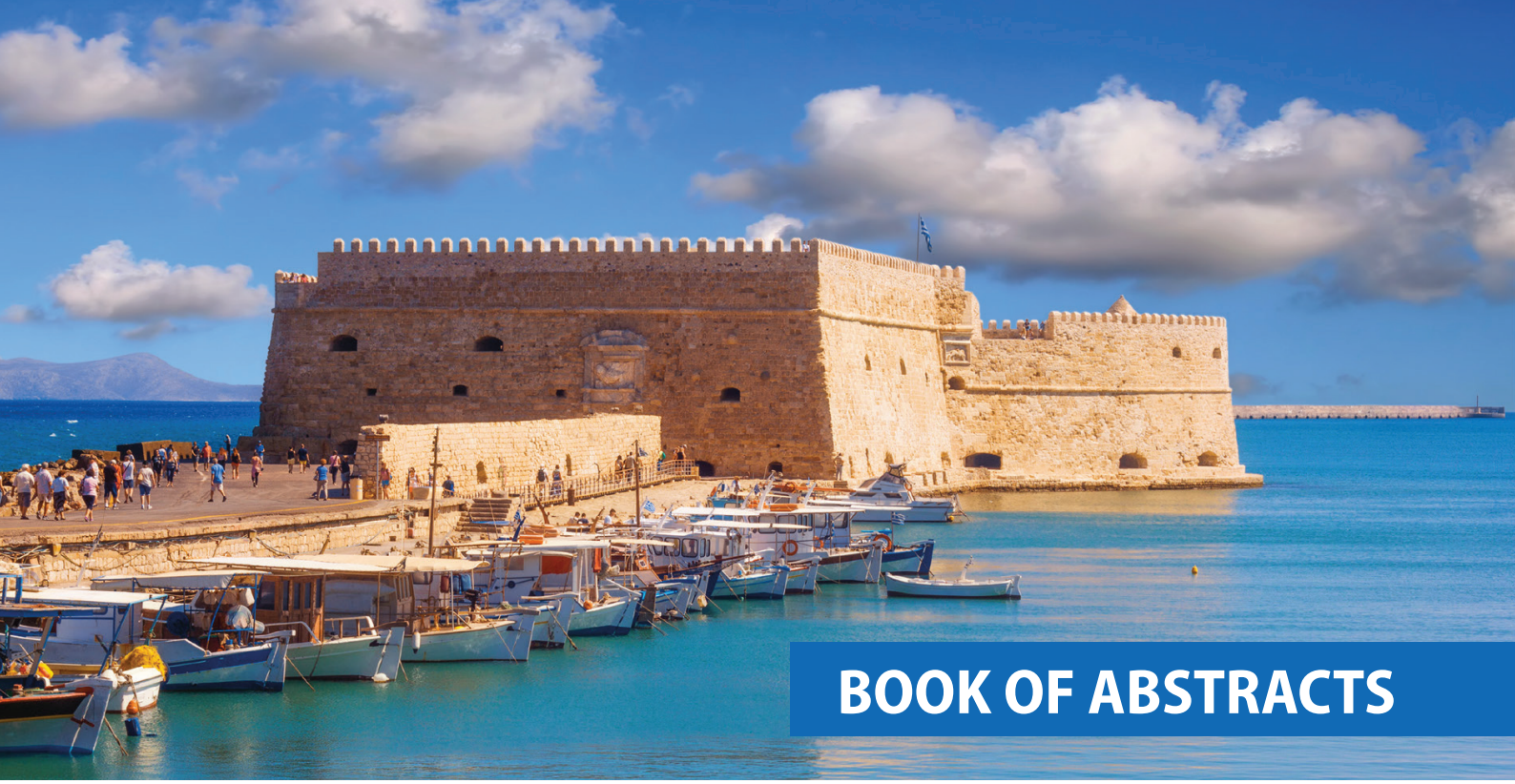

BOOK OF ABSTRACTS

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OC257. Invasion of the fruit fly *Bactrocera dorsalis* (Tephritidae), with a focus on the Indian Ocean Islands, a threat to Europe

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The polyphagous oriental fruit fly *Bactrocera dorsalis,* originating from Asia, started its invasion of Subsaharan Africa 20 years ago. Since then, it has spread very rapidly in continental African countries and has reached the Indian Ocean, becoming the main fruit pest in most countries. Several studies have been conducted in order i) to decipher the origin of invasive populations and ii) to understand the success of this spectacular invasion using ecological and genomic approaches. This was particularly studied in the context of successive invasions of fruit flies on the island of Réunion. On this island, after the invasion of *B. dorsalis,* a shift in the host range, spatial distribution and climatic niches for the generalist resident species, such as *Bactrocera zonata, Ceratitis quilicii* and *Ceratitis capitata* was demonstrated. Furthermore, field observations and laboratory experiments suggested the existence of apparent competition between the two *Bactrocera's* species via the parasitoid *F. arisanus,* which would have increased and accelerated the displacement of *B. zonata.* Regarding the origin of the invasion, using genome-wide SNP data and a multipronged approach, two independent invasion pathways were deciphered. A western pathway involving the migration of *B. dorsalis* from the east African coast into the Comoros, Mayotte and Madagascar. The Mascarene islands (Réunion and Mauritius) were colonized directly from Asia and formed a distinct cluster. The invasive population observed in the Mascarenes seems to have a greater impact on the resident species and on agriculture, so more attention should be paid to prevent any further spread of this new invader.

Keywords: *Bactrocera dorsalis*, competitive displacement, NGS analysis, genetic structuring, La Réunion, *Bactrocera zonata*

OC258. Exploring the impact of changing climate and irrigation patterns on the potential distribution of organisms: Insights from fruit fly case studies

A. M. Szyniszewska, T. Beale, G. López-Saldaña, B. Taylor, N. Papadopoulos, K. Kozyra, H.Gąsiorowska, N. Ota, D. J. Kriticos

Global change agents, including changing climate, land cover, and the rapid transport of people and goods, alter the distribution and abundance of many plant and animal species. Here, we explore how the changing climate suitability patterns and assumptions related to the distribution of irrigated areas impact the potential distribution of pests. We use CLIMEX combined with the CRU TS4 climate time series dataset to explore the temporal patterns of climate suitability for *Ceratitis capitata* (medfly) from 1970 to 2019 globally. At selected bellwether sites in Europe and North America, we found statistically significant trends in increasing climate suitability, as well as a substantial poleward (northward) expansion in the modelled potential range. To illustrate a new method for assessing the areas under irrigation, we use MODIS EVI (Enhanced Vegetation Indices) at 1 km spatial resolution and meteorological data from ECMWF to identify irrigated crop areas. The outputs are compared with CLIMEX-derived soil moisture data and demonstrated as an input to a CLIMEX environmental suitability model of *Bactrocera tryoni* (Queensland Fruit Fly) in southeastern Australia. Recent climate changes