Skyline of Reno, Nevada (https://dipterists.org/icdx/).

Tachinidae presentations given during the 10th International Congress of Dipterology

Reno, Nevada, USA

Below are the abstracts of presentations given on Tachinidae during the *10th International Congress of Dipterology*. The Congress was held in the Silver Legacy Resort in Reno, 16–21 July, 2023, and the abstracts were published in the Abstracts Volume:

Gaimari, S.D., ed., Abstracts volume, 10th International Congress of Dipterology, 16–21 July 2023, Reno, Nevada, USA. Fly Times Supplement 5. xix + 238 pp.

A couple of reports about the Congress were published in the Fall issue of *Fly Times* and may be of interest to *Tachinid Times* readers:

Evenhuis, N.L. 2023. ICDX – Reno: a personal reflection from a Musca-teer. *Fly Times* 71: 93–96.
Gaimari, S.D. 2023. ICDX wrap-up. *Fly Times* 71: 97–102.

Di Marco, M., Santini, L., Corcos, D., Tschorsnig, H.-P. & Cerretti, P. Altitudinal homogenisation of mountain parasitoids across six decades.
(Page 44 in *Abstracts Volume*, oral presentation.)

Elevation gradients, characterized by significant environmental changes over short geographical distances, offer valuable insights into how biodiversity responds to climate change. High-altitude species often occupy specialized niches that render them particularly vulnerable to rapid environmental transformations. Recent evidence indicates that elevation strongly influences both the composition and intensity of host-parasitoid interactions. Parasitoid insects, crucial in regulating host populations and preventing outbreaks of herbivorous insects, may see their regulatory role impacted by climate change, especially in the case of specialized feeders. In this study, an exceptional dataset comprising over 46,000 records of parasitoid bristle flies (Diptera: Tachinidae) from various regions in Europe, spanning a wide range of altitudes and six decades, was analyzed. The objective

was to examine the temporal trend in the likelihood of encountering bristle flies with specialized diets (referred to as "oligophagous" species) at different altitudes. The aim was to determine whether the altitudinal gradient in specialization has undergone changes over time. The findings revealed a distinct reshuffling of bristle fly assemblages along altitudinal gradients, with specialized species becoming less abundant at higher elevations. Six decades ago, there was a clear altitudinal gradient in the proportion of specialized feeders, but over time, this proportion has become remarkably similar across different altitudinal bands. These results indicate an emerging homogenization in the dietary preferences of parasitoid communities, which could potentially reshape the ecological dynamics of mountain ecosystems by altering the mechanisms that regulate insect herbivory.

O'Hara, J.E. & Henderson, S.J. Catalogue of the Tachinidae (Insecta: Diptera) of the world.
(Page 157 in *Abstracts Volume*, poster presentation.)

The Tachinidae are one of the largest families of true flies (Diptera) with a species diversity that cannot be accurately estimated even to the nearest 10,000. The number of valid species names is approximately 8900, but undescribed species might exceed this number by two, three or more times based on preliminary data from surveys in biologically diverse parts of the world and caterpillar rearing programs such as those in Area de Conservación Guanacaste, Costa Rica and Yanayacu Biological Station, Ecuador. The present authors and the late D.M. Wood initiated a project about 15 years ago to prepare a comprehensive catalogue of the world Tachinidae to replace aging regional catalogues and to introduce a unified classification for the family. We are getting close to finishing this goal and have completed data entry for all generic and specific names (ca. 17,400), species distributions, and most of the name-bearing types (including sex(es), type locality(-ities) and depository(-ies)). The database can be queried to produce outputs of various sorts including catalogues/checklists by country or region, species lists by author, and name-bearing type lists by author, depository, country, and/or type locality. Two checklists of world Tachinidae have been prepared to date (2019, 2020) and a new one is planned for late 2023. The new checklist will include a hierarchical classification of the family with all valid generic and specific names, synonyms, species distributions, and references. Name-bearing type data, misidentifications, misspellings, and nomenclatural and other notes will be included in the world catalogue.

Pape, T., Cerretti, P., Szpila, K., Grzywacz, A., Wallman, J.F., Johnston, N.P., Beza-Beza, C.F., Yan, L., Zhang, D. & Wiegmann, B. Calibrated calyptrate classification.
(Page 164 in *Abstracts Volume*, oral presentation.)

Calyptrate phylogeny has seen major progress during the last two decades, and with an increasingly robust family-level topology driven by large amounts of molecular data, it is time to calibrate the classification. The position of Hippoboscoidea as a basal calyptrate lineage is solid, and the division into two families, Glossinidae and Hippoboscidae, has much to recommend it. The concept of a non-monophyletic 'muscoid grade' is growing in acceptance, and apart from uncertainty relating to the first few splits at the base of the Anthomyiidae–Scathophagidae clade, families are well-supported, and their emerging internal phylogenetic resolution provides the first hints at a realistic subfamily classification. Oestroidea are undoubtedly monophyletic, and although the exact position of each of the mono-specific families Mystacinobiidae and Ulurumyiidae is not yet fully settled, family-level phylogeny within the superfamily has finally achieved sufficient support to allow blow fly classification to rest on robust monophyly. A subfamily classification for blow flies is now up for scrutiny. Botflies were long suspected as derived blow flies, but this is rejected by recent analyses, while molecular and morphological data disagree on botfly monophyly. Polleniidae classification has shifted from being a blow fly subfamily to being sister to Tachinidae. Rhinophorinae, now in Calliphoridae with a surprising position as sister to the macrolarviparous

Ameniinae, are now ready for a tribal classification. Rhiniinae have also returned to the Calliphoridae, with both molecular and morphological evidence corroborating Bengaliinae + Rhiniinae as a clade dominated by termite-associated species. The traditional classification of Tachinidae into four subfamilies has largely stood the test of molecular data, with only minor modification needed if Macquartini + Myiophasiini is corroborated as a basal tachinid branch.

Perilla López, J.M. & Stireman, J.O. III. Radiations within radiations: phylogenomics and morphological evolution of the tachinid tribe Polideini (Diptera: Tachinidae).
(Page 166 in *Abstracts Volume,* oral presentation.)

Polideini comprise a relatively small, eclectic, and rapidly diversifying tribe of Tachinidae (Bristle flies) in the subfamily Tachininae. This mostly New World tribe was assembled by O'Hara in 2002, in which he drew diverse taxa from nine tribes and multiple subfamilies together into one wellsupported tribe. This important work also revised the North American genera of Polideini, however, the diverse Neotropical fauna was left largely unstudied. Here, we report on a phylogenomic analysis of the tribe using UCEs with focus on Neotropical taxa, including 59 taxa belonging to approximately 36 genera. Trees inferred via ML analysis of 676 (average) protein-coding UCE loci distribute the included taxa into 11 major clades, with most nodes being robustly supported. However, backbone nodes are very short, indicating an extremely rapid radiation of lineages, possibly associated with Andean orogeny. The tribe likely originated and diversified in South America, with multiple colonizations and one major radiation in the Nearctic. Each of the 11 major clades is morphologically diverse in itself, with limited external similarity of many contained taxa, although male terminalic traits support some relationships. Rampant intra-clade morphological disparity and convergent evolution plagues the phylogeny, with "hedge-hog body forms", bright coloration, setal patterns and "sarcophagiform" body habitus evolving repeatedly in different lineages. This morphological confusion makes it difficult to determine the affinities of unsequenced taxa. Hosts are unknown for most taxa, but the ancestral host was likely lepidopteran caterpillars and several lineages have colonized unusual host groups. This analysis provides a first step towards understanding the diversity and evolution of the Polideini. However, the majority of species and genera of Neotropical Polideini remain undescribed and unknown, and those included here likely represent just the "tip of the iceberg" of Neotropical Polideini diversity.

Stireman, J.O. III. Taxonomy and systematics of the American bristle fly genus *Xanthophyto* Townsend (Diptera: Tachinidae).
(Page 196 in *Abstracts Volume,* oral presentation.)

Xanthophyto is a small genus of New World Tachinidae consisting of four described species, two Nearctic and two Neotropical. Members resemble flesh flies (Sarcophagidae) in overall appearance, often with the tip of the abdomen reddish in color. They are parasitoids of various families of caterpillars, often concealed feeders associated with conifers. Over the past several years I have been in the process of taxonomically revising *Xanthophyto*, evaluating species relationships, and delimiting and describing new species using external morphology, male terminalia, CO1 mtDNA sequence data, distributions, and host associations. Despite their relatively large size and the abundance of several (undescribed) species, at least 10 undescribed species exist in North America and at least 20 undescribed species occur in the Neotropics. The genus appears to have originated in the Neotropics but there have been several recent radiations of species in North America, making species boundaries difficult to recognize. Male terminalia exhibit relatively little variation among species except at the broadest scales and there is considerable convergence in external traits. I highlight evolutionary relationships among taxa, patterns of morphological evolution, and ecological/biogeographical patterns in the genus.