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Opportunity in our Ignorance: Urban Biodiversity Study Reveals 30 New Species and One New Nearctic Record for *Megaselia* (Diptera: Phoridae) in Los Angeles (California, USA)

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Abstract

An urban biodiversity study sampling primarily from private backyards in Los Angeles, California (USA), reveals the presence of fifty-six species of *Megaselia* within the first few months of sampling. Thirty of these are described as new to science: *M. armstrongorum*, *M. bradyi*, *M. brejchaorum*, *M. carthayensis*, *M. ciancii*, *M. creasoni*, *M. defibaughorum*, *M. donahuei*, *M. francoae*, *M. fujiokai*, *M. hardingorum*, *M. heini*, *M. hentschkeae*, *M. hoffmanorum*, *M. hoggorum*, *M. hoguei*, *M. isaacmajorum*, *M. kelleri*, *M. lombardorum*, *M. marquezii*, *M. mikejohnsoni*, *M. oxboroughae*, *M. pisanoi*, *M. renwickorum*, *M. rodriguezorum*, *M. sacatelensis*, *M. seaverorum*, *M. sidneyae*, *M. steptoeae*, and *M. wiegmanae*. *M. largifrontalis* is newly reported from the Nearctic Region. The implications these findings have for future taxonomic work in *Megaselia*, particularly in urban areas, are discussed.

Key words: Diptera, Phoridae, urban biodiversity

Introduction

Urban areas are usually not considered to be richly biodiverse environments. They consist of highly degraded remnants of original habitats alongside of greatly modified areas planted with non-native species that are watered, fertilized and manipulated to fulfill new purposes. These environments are often neglected by researchers (who leave their homes in search of greener, richer environs to study), leaving the biodiversity of most cities un- or under-studied. In recent years this has been changing; studies of urban ecosystems in Baltimore and Phoenix in the United States (Grimm *et al.* 2000), as well as large projects in the United Kingdom (*e.g.*, Loram *et al.* 2007), Switzerland (Sattler *et al.* 2010), and elsewhere (*e.g.*, Bolger *et al.* 2000; Alberti *et al.* 2003; Crooks *et al.* 2004) have helped to raise the profile of urban ecology (*e.g.*, Shochat *et al.* 2006). In Los Angeles, ignorance of the urban environment has turned into an exciting research opportunity. The BioSCAN Project (Brown *et al.* 2014, Hartop 2014) has uncovered thirty fly species in a single genus that are new to science, and an additional species until now unknown from the Nearctic Region. These discoveries came after just three months of project sampling, which yielded over 10,000 specimens for examination. This is our first glimpse into the unknown richness of urban biodiversity in Los Angeles, and points to the tremendous deficiency of taxonomic knowledge about the fauna immediately surrounding the homes and workspaces of researchers. Apparently, we need not travel far to have plentiful opportunities for studying biodiversity.

Our main study group is the fly family Phoridae (Diptera), which is an extremely diverse family (Disney & Durska 2008) and are abundant in Malaise trap samples (Disney *et al.* 1982). In particular, we have focused on the large and species-rich genus *Megaselia* Rondani, from which we already have collected tens of thousands of specimens for examination. Although studies on urban *Megaselia* are few, some pre-existing information does exist from England. A limited survey of a large garden in London (UK) recorded 56 species of *Megaselia* and noted the recording (then) of 53 species from a suburban garden in Cambridge (UK) (Disney 2001); more have been added since, and the current total for it, and other gardens in Cambridge, is 57 species. We are turning up

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