



Notes on the functional morphology of terminalia from *Prorates ballmeri* Nagatomi and Liu (Diptera: Scenopinidae: Proratinae) collected while in copula, with a description of the previously unknown female

MARK A. METZ¹, SHAUN L. WINTERTON², & MICHAEL E. IRWIN³

¹Department of Natural Resources and Environmental Sciences, University of Illinois and Center for Biodiversity, Illinois Natural History Survey, Urbana-Champaign, 61801, USA; mametz@aol.com

²Molecular Systematics Laboratory, Department of Entomology, North Carolina State University, Raleigh, 27695-7613, USA; wintertonshaun@netscape.net

³Department of Natural Resources and Environmental Sciences, University of Illinois and Centers for Biodiversity and Economic Entomology, Illinois Natural History Survey, Urbana-Champaign, 61801, USA; m-irwin2@uiuc.edu

Abstract

A male and female specimen of *Prorates ballmeri* Nagatomi and Liu were collected while in copula. The specimens were dissected to find that the elongate distiphallus of the male had been inserted within the spermathecal ducts of the female. The association of the male and female genitalia for this species is figured and discussed in relation to associated taxa with similar genitalic features. The species was originally described from three male specimens, which did not allow for comprehensive study of the variation in many characters. The male is redescribed based on many newly collected specimens to include additional characters and the species variation and the previously unknown female is described. Additional notes on the taxonomy of the genus *Prorates* are included.

Key words: copulation, genitalia, mating, spermathecal sac

Introduction

The intermittent organ of male Scenopinidae (Diptera) is sclerotized and varies in structure and complexity among taxa. Some species possess extreme modifications in length and shape. One of these modifications includes the elongate tips of the bifurcate distiphallus, which in some species may be longer than the entire length of the fly. Beyond the descrip-