

Australian species of *Systemus* (Diptera: Dolichopodidae)

DANIEL J. BICKEL

Australian Museum,
P.O. Box A285, Sydney South, NSW 2000, Australia

ABSTRACT. *Systemus australis* and *S. curryi*, n. spp. are described from eastern Australia and Western Australia, respectively. *Systemus* is regarded as belonging to the dolichopodid subfamily Medeterinae.

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Although adults of *Systemus* are rarely encountered in the field, more is known of the life history and immature stages of *Systemus* than any other dolichopodid genus. The majority of museum specimens are the results of rearings from tree-hole debris and sap-fluxes, supplemented by collections made using passive mass-sampling techniques, such as malaise and light traps. Apart from the two new Australian species treated below, 16 species previously have been described: nine paleartic, six nearctic and one neotropical (Steyskal, 1970; Vaillant, 1978). Of these, larval habitats are known for eight paleartic and four nearctic species, and the larval and pupal morphology of five species has been described in detail (also see Lundbeck, 1912; Wirth, 1952; and Krivosheina, 1973).

The larvae of all known species are characterised by a distinctive thumb-like ventral proleg on the first abdominal segment, readily differentiated from the creeping welts of the posterior segments. Larvae have been reared from moist tree-hole debris and bleeding ulcers associated with a number of north temperate hardwood species. Such microhabitats, especially tree-holes with rotting debris accumulated over a period of years, often support a rich invertebrate fauna, providing suitable prey for *Systemus* larvae. Vaillant (1978), in a review of subject, has termed this microhabitat a 'dendrotelme' biotope. Specimens of the new Australian species were all taken as adults in traps. However, suitable larval tree-hole habitats are commonly encountered in the Australian bush, especially in cavities formed on twisted, broken or partially burnt eucalyptus

trees. Rearings from eucalyptus cavity debris might determine the life history of Australian *Systemus*.

Materials and Methods

The abbreviations of repositories where specimens are housed are listed in the Acknowledgements. All measurements are in millimetres. Morphological terminology follows McAlpine (1981) and Bickel (1985). In describing the male hypopygium, the terms 'dorsal' and 'ventral' refer to morphological position prior to rotation and torsion. Thus, in figures showing a left lateral view of the hypopygium, morphologically dorsal is at the bottom while morphologically ventral is at the top.

TAXONOMY

Genus *Systemus* Loew

Systemus Loew, 1857: 34. Type species, *Rhaphium adpropinquans* Loew (des. Foote, Coulson & Robinson 1966: 517) = *pallipes* (Rosen).

Description. The following description of adult *Systemus* is based on examination of the new Australian species and males of two nearctic species, *S. shannoni* and *S. eucerus*, and on published descriptions and figures of the remaining species.

HEAD: eyes with tiny setulae between facets; fronto-clypeal suture complete; proboscis projecting anteriorly, keel-like, with 6 unsclerotized pseudotracheae; single