

**Evolution of the semi-aquatic bugs
(Hemiptera: Heteroptera: Gerromorpha)
with a re-interpretation of the fossil record**

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Abstract. The fossil history of semi-aquatic bugs (Gerromorpha) is reviewed in light of the many important recent records and new developments in our understanding of the phylogeny of the group. Based on the age of its sister group, the Panheteroptera, the Gerromorpha probably extends back into the Triassic, even though the oldest fossil forms assigned to the group are dubious. The recent discovery of *Cretogerris albianus* Perrichot, Nel & Neraudeau, 2005 from the Lower Cretaceous shows that all families were present in the Mesozoic, and phylogenetic and biogeographic evidence suggest that most – perhaps all – extant subfamilies were also present at that time. By comparison, the fossil record of the families Hydrometridae and Gerridae is far richer than that of any other family, which allows a more detailed interpretation of the phylogenetic relationships among extinct and extant taxa of these two groups.

Keywords. Heteroptera, Gerromorpha, water striders, phylogeny, amber, Mo clay, historical biogeography, ecological phylogenetics, phylogeography

Introduction

The heteropteran infraorder Gerromorpha (ŠTYS & KERZHNER 1975), or semi-aquatic bugs, has been considered a distinct group since the time of DUFOUR (1833), who named the group ‘Amphibicorisae’, thus referring to their ability to walk on the surface of water, as distinct from the aquatic bugs, ‘Hydrocorisae’, and the terrestrial bugs, ‘Geocorisae’. ANDERSEN (1982) convincingly demonstrated that Gerromorpha was a monophyletic group, and could be diagnosed based on the presence of three pairs of cephalic trichobothria, quadriangular mandibular levers, pretarsi with one dorsal and one ventral arolium, and female genital tract with a gynatrial complex. He recognized eight gerromorphan families: Mesoveliidae,