

Sarophorus diabolus sp. n. and *Sarophorus frolovi* sp. n. (Coleoptera: Scarabaeidae: Scarabaeinae) from South Africa

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The African Scarabaeinae genus *Sarophorus* Erichson, 1847 is distributed from Tanzania in the north to the Western Cape Province of South Africa. Of the 10 species currently recognised (Frolov & Scholtz 2003; Frolov 2004), six are restricted to South Africa (Frolov & Scholtz 2003). These medium-sized (5–10 mm) black to dark brown beetles are characterised by somewhat rectangular, densely punctate bodies, a clypeus that is sinuate medially and rounded to angulate or strongly protruded (as is the case for *Sarophorus bidentatus* Frolov & Scholtz 2003) at the sides, lateral margins of the elytra that are sinuate at the base, and anterior tibiae with three outer teeth and an acute, downward-curving spur (Frolov & Scholtz 2003; Davis *et al.* 2008).

Sarophorus species are superficially similar to *Pedaria* Castelnau, 1832. However, *Sarophorus* can readily be distinguished from *Pedaria* based on numerous characters, including a more rectangular shape, all sternites visible, and the presence of the sinuate basal area of the lateral elytral margins (Frolov & Scholtz 2003). Molecular phylogenetic reconstructions of the subfamily indicate that these genera are distantly related (Mlambo *et al.* 2015), and place *Sarophorus* close to *Frankenbergerius* Balthasar, 1938, *Coptorhina* Hope, 1830 and *Delopleurus* Erichson, 1847. Species of *Coptorhina*, *Delopleurus*, and *Frankenbergerius* often use fungi for feeding and breeding while most species of *Sarophorus* seem to prefer old carrion and/or old dung (Davis *et al.* 2008). However, at least one species (*Sarophorus costatus* Fähræus, 1857) has been collected using fresh cattle dung as bait (Davis *et al.* 2008). Breeding behaviour is unknown but may include tunnelling and/or kleptocoprid activities (Davis *et al.* 2008).

Two species-groups have been proposed within *Sarophorus* (Frolov & Scholtz 2003): the *tuberculatus*-group with (amongst other characters)

tuberculate elytral intervals and an unarmed internal sac of the aedeagus; and the *costatus*-group with densely punctate elytral intervals and an internal sac of the aedeagus that is armed with spinules (Frolov & Scholtz 2003). Parsimony analyses of morphological characters suggest that *S. bidentatus* Frolov & Scholtz, 2003, differs from these two species-groups by having asymmetrical sclerites in the internal sac of the aedeagus and lacking concavities on the propleura (Frolov 2004). *Sarophorus bidentatus*, as sister to all other taxa in the genus is suggested to be the sole representative of a third species-group (Frolov 2004).

During recent entomological surveys for biodiversity studies, individuals of two species of *Sarophorus* were collected. As this genus was recently revised (Frolov & Scholtz 2003) and again updated (Frolov 2004), we were able to easily compare these individuals to all described species. One of the species was collected in two remnant patches of Renosterveld vegetation (Porseleinberg –33.45995 18.88627 and Kasteelberg –33.36184 18.86692) (Mucina & Rutherford 2006) in the vicinity of Riebeeck-Kasteel in the Western Cape Province (Swartland region), South Africa (Fig. 1). Twelve of the 49 initially collected individuals were preserved as reference specimens for the biodiversity survey and were submitted to the Stellenbosch University Entomological Collection, Stellenbosch, South Africa (USEC). Traps were also set in numerous other smaller remnant patches of Renosterveld vegetation close to these sites, as well as in wheat fields spanning these sites up to and including the Elandsberg Nature Reserve to the east (–33.42928 19.03853), but these failed to capture any additional *Sarophorus* specimens (unpubl. data). Male individuals have strong protrusions on the anterior angles of the clypeus and both males and females lack concavities on the base of the propleura. These characters are considered diagnostic for the rare *S. bidentatus*,

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