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Digital X-ray Tomography as an alternative method for Invertebrate Taxonomy and dissecting valuable Invertebrate specimens.

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Macroderes Westwood (Scarabaeidae: Scarabaeinae) is a flightless dung beetle genus that is endemic to Namaqualand in the arid South-West of South-Africa. All species are strongly convex in shape and show uniform morphology. This makes it difficult to separate them even with the use of a conventional light microscope. Furthermore, some species are known only from single up to very few specimens.

3D Tomography as opposed to conventional 2D photography allows for the accurate placement of landmarks on homologous structures of different specimens. These 3D co-ordinates can be imported into morphometric and statistical software that makes between-species delineation possible. The main advantage of this technique is its non-invasive and non-destructive nature - that once a specimen is scanned it does not have to be touched again. Thus, there is no further risk to specimens that are often fragile, nor is there any necessity to conduct dissections to view obscured or internal structures.

Here we present preliminary results in a novel and alternative application in zoology to distinguish between the species in the dung beetle genus *Macroderes*.

**Submit a paper
for peer review
(SA Journal of Science)?
(Yes / No / Maybe)**

Maybe

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