

Title: Bringing microfossil specimens into the light: Using semi-automated digitization techniques to improve collection accessibility

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Abstract: Natural history collections are often considered remote and inaccessible without special permission from curators. Digitization of these collections can make them much more accessible to researchers, educators, and general enthusiasts alike, thereby removing the stigma of a lonely specimen on a dusty shelf in the back room of a museum that will never again see the light of day. We are in the process of digitizing the microfossils of the Indiana University Paleontology collection using the GIGAMacro Magnify2 Robotic Imaging System. This suite of software and hardware allows us to automate photography and post-production of high resolution images, thereby severely reducing the amount of time and labor needed to serve the data. Our hardware includes a Canon T6i 24 megapixel DSLR, a Canon MPE 65mm 1X to 5X lens, and a Canon MT26EX Dual Flash, all mounted on a lead system made with high performance precision IGUS Drylin anodized aluminum. The camera and its mount move over the tray of microfossil slides using bearings and rails. The software includes the GIGAMacro Capture Software (photography), GIGAMacro Viewer Software (display and annotation), Zerene Stacker (focus stacking), and Autopano GIGA (stitching). All of the metadata is kept in association with the images, uploaded to Notes from Nature, transcribed by community scientists, then everything is stored in the image archive, Imago. In ~460 hours we have photographed ~10,500 slides and have completed ~65% of our microfossil collection. Using the GIGAMacro system we are able update and store collection information in a more secure and longer lasting digital form. The advantages of this system are numerable and highly recommended for museums who are looking to bring their collections out of the shadows and back into the light.

Keywords: microfossils, GIGAMacro, paleontology, digitization, automation, semi-automation