MAR 20, 2023

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MANUSCRIPT CITATION:
Clark, E. G., Jenkins, K. M., Brodersen, C. R. 2023. Back to life: Techniques for developing high-quality 3D reconstructions of plants and animals from digitized specimens. *PLOS ONE*.

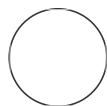**Protocol status:** Working
We use this collection and it's working

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🌐 3D Mesh Cleanup Tutorial

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Elizabeth G. Clark

ABSTRACT

This is the collection of protocols for developing 3D reconstructions of animals and plants from digitized specimens (see Clark et al. 2023). 3D Object files for use in the protocols are available at https://doi.org/10.6084/m9.figshare.21266568

ATTACHMENTS

671-1417.docx

This is the associated tutorials for *Back to life: Techniques for developing high-quality 3D reconstructions of plants and animals from digitized specimens*

This includes:

Beginner tutorial: Fossil plant cupule (*Petriellaea triangulata* [Shi et al. 2021])

- *Included files:* Cupule Cleanup Tutorial.docx
- *3D object files*: Cupule before.stl, Cupule before.obj
- *Necessary software*: Meshlab
- *Skills developed*: Shrinkwrapping, simplification

Intermediate tutorial: Reptile (*Sphenodon punctatus* [downloaded from Morphosource.org])

- *Included files*: Sphenodon Cleanup Tutorial.docx
- *3D object files*: Sphenodon with holes.stl, Sphenodon with holes.obj
- *Necessary software*: Meshlab, Autodesk Maya, Autodesk Fusion 360
- *Skills developed*: Rearticulation, repair of broken fossils, basic sculpting, shrinkwrapping.

Advanced tutorial: Fossil crab (*Cretapsara athanata*[Luque et al. 2021)]

- *Included files:* Crab Cleanup Tutorial.docx
- *3D object files:* Crab before.stl, Crab before.obj
- *Necessary software*: Meshlab, Autodesk Maya
- *Skills developed*: Debris removal, structural repair, shrinkwrapping, rearticulation, smoothing and simplification

Before starting:

Download 3D object files and install Meshlab, Autodesk Maya, and Fusion 360.

Download 3D Object files at https://doi.org/10.6084/m9.figshare.21266568

Meshlab is an opensource software available at https://www.meshlab.net/

Autodesk Maya and Fusion 360 are available with a student and educators license at https://www.autodesk.com/education/edu-software/overview

ATTACHMENTS

FILES

Protocol

NAME
3D Mesh Cleanup Tutorial: Fossil Plant Cupule (Beginner)

VERSION 1

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OPEN →

Protocol

NAME
3D Mesh Cleanup Tutorial: Sphenodon (Intermediate)

VERSION 1

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Protocol

NAME
3D Mesh Cleanup Tutorial: Fossil Crab (Advanced)

VERSION 1

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