

**Supplementary information for:**

*"Improved estimation of two-dimensional area of coral colonies from underwater photographs"*

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**Monopod camera support instruction.**

Last edited by B. Neal 29 March 2013

Requirements: Created with 2011-2012 Solidworks 3D by Dessault Systemes Solidworks Corp. (Windows only)

All parts assemble with "monopod\_assembly.SLDASM". Last updated by Tali Treibitz, 28 April 2013. Static rendering below. Dimensions annotated here are also reproduced on the Solidworks parts, and can be modified as needed for size of target colonies.

Monopod is 1.25" aluminum tube. I also made one in solid rod, but this proved somewhat heavy. The rod was cut in half in the middle, and threaded for reassembly. I did use apply floatation at times to achieve reduced negative buoyancy underwater and increase ease of positioning. In some cases, when measuring every small colonies, I would use only one half of the monopod, and would remove the upper half.

The dual bubble levels used for orientation of the monopod are not shown in this rendering. They were mounted on top of the square camera cross piece, so as to be easily viewed when on SCUBA and floating above the assembly.

The oversize knobs enable adjustments to be made securely, quickly, and effectively underwater. The screw portions were tipped with silicone inserts to provide good holding against the monopod while also not scratching the surface.

Underwater, I would usually place the entire assembly down in a convenient place, not on any coral, and swim over and evaluate the best location for shooting the chosen target colony. I would then estimate the height of the maximal plane of the subject colony, and set the length reference as an approximation. I then place the end of the monopod on a piece of dead substrate, rotate the length reference in as close as possible to the subject colony, and carefully adjust the height of the reference while sighting horizontally. I then float above the apparatus, and sight the shot through the viewfinder. It is important to make sure all elements are correct before shooting, as it is not possible to determine which images are incorrectly framed in retrospect.

In shallow waters natural light is often sufficient, but for deeper colonies or for nighttime fluorescence imaging strobes are used. When positioning the strobes be sure

to not cast strong shadows on the subject, as accurate delineation of the edges is more difficult in strong shadows.

