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A high quality cellphone-based portable microscope for streamside data collection

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Abstract

Collection of biological samples in the field often presents issues of specimen damage or degradation caused by preservation methods, handling and transport to laboratory facilities for identification. Traditionally, the collection of high quality microscopic images in the field has not been a realistic possibility due to the size, weight and fragility of sufficiently high quality hardware. The Fletcher Lab in the Department of Bioengineering at the University of California Berkeley has developed a mobile microscope called the Cellscope to expand access to basic healthcare in remote regions. In collaboration with the Fletcher lab, the Southern California Coastal Water Research Project (SCCWRP) is modifying and applying this clinical tool for use in microscopic imaging for streamside data collection. Initial field tests have proven successful. Building on this collaboration, we will work to modify and embark on more extensive testing in 2014. Ultimately, imagery collected with the Cellscope will be integrated with other cell-phone based applications and tools under development to provide an easy-to-use, affordable, lightweight, professional quality data collection platform for water quality monitoring.