

Standard Operating Procedure (SOP) 4.9.1.2

Instructions for the Modification of a Standard Spherical Convex Densiometer to a 17-Point Spherical Convex Densiometer

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1.0 INTRODUCTION

Densiometers are used to estimate canopy cover. Bioassessment physical habitat monitoring protocols require the use of a 17-point convex spherical densiometer (Ode 2007). The only densiometers currently available on the market are made of 24 grid squares. Therefore the user must modify the densiometer. The modification of the densiometer to 17-points helps avoid the difficult problem of overlap when the densiometer is read. Overlap seen in an unmodified densiometer is caused from lateral and overhead objects due to the curved reflecting surface of the densiometer (Strickler, 1959). This difficulty can be overcome by making the suggested modification. The method suggested here is the Strickler modification of densiometers by converting 24 grid squares to 17 points. The surface exposed after the modification emphasizes overhead vegetation over foreground vegetation, which is the main source of bias in canopy density measurements.

2.0 MATERIALS



- Black plastic (electrical) tape
- Scissors/knife



- Convex spherical densiometer

3.0 PROCEDURE

This method uses the Strickler (1959) modification of a convex spherical densiometer to correct for overestimation of canopy density that occurs when reading unmodified densiometers. Taping off the lower left and right portions of the mirror can eliminate this problem. This is shown in Figure 1. Black electrical tape works to cover the area below the upper centered 17 points and reduce the total points that can be read. Images 1 through 3 show an unmodified densiometer and two that have been modified.

Figure 1. Representation of the mirrored surface of a convex spherical densiometer showing the wedge shape area for taping the mirror and the intersection points used for the densiometer reading.

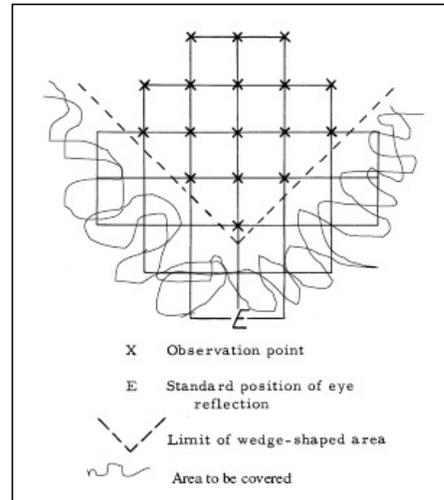


Image 1.



Unmodified densiometer

Image 2.



Modified with black tape.

Image 3.



Modified with narrow tape.

4.0 STORAGE AND MAINTENANCE

To store the densiometer, close the lid and securely fasten the clasp.
 Clean the face of the densiometer by dusting with a soft cloth.

5.0 REFERENCE

Strickler, Gerald S., 1959. Use of the densiometer to estimate density of forest canopy on permanent sample plots. USDA Forest Service, Pacific Northwest Forest and Range Exp. Sta. Research Note 180, Portland, Oregon, 5 pp.

Ode, Pete 2007 Standard Operating Procedures for Collecting Benthic Macroinvertebrate Samples and Associated Physical and Chemical Data for Ambient Bioassessments in California. State Water Resources Control Board, Surface Water Ambient Monitoring Program. 49 pp.