



Ecosystem Credit Accounting System

Last updated July 13, 2009. For questions or comments contact us at info@willamettepartnership.org

PROCEDURE FOR THE WATER QUALITY: TEMPERATURE CALCULATOR (Shade-A-Lator Data Generation & Data Entry Instructions)

The Shade-a-Lator V. 6.2 is the approved metric for calculating Water Quality: Temperature Credits. Shade-a-Lator is a model, developed by Oregon's Department of Environmental Quality, that calculates thermal load reductions, in kcal/day/ft, from riparian shade restoration projects (<http://www.deq.state.or.us/wq/trading/trading.htm>). Generally, these projects are linear, extending from several hundred feet to several thousand along a stream. The assessment's spatial unit is a stream reach whose upstream-downstream boundaries are defined by the user, and whose lateral boundaries extend outward and perpendicular to the stream to a distance also defined by the user, but typically not more than 150 feet (the usual size of recommended buffers). Within the lateral buffer, the Shade-a-lator samples one set of attributes in 100ft bands and samples dominant vegetation type at 15 foot bands, in both cases moving from the stream out through the buffer.

The Shade-a-Lator currently sits in an Excel Spreadsheet, and data entry instructions are described below.

General Instructions:

1. Shade-A-Lator is to be used for only river/stream map units.
2. Data for the Shade-A-Lator must be entered relative to 100 ft segments. For map units delineated as ≤ 100 ft segments, the data can be transferred directly into the Shade-A-Lator spreadsheet. For map units larger than 100 ft, a separate entry is made for each 100 ft portion of the segment. Each of these segments will have identical information based on the datasheet for the map unit.
3. To determine the left and right riparian zone data the following steps must be taken.
 - a. Delineate the map units into 100 ft segments and number the segments in the direction of flow. NOTE: Keep track of original map unit numbers, as the final effective shade value will need to be entered into the Salmon Calculator Excel spreadsheet.
 - b. Identify/delineate 9 buffer zones each 15 ft wide starting at the wetted edge, for each 100 ft stream segment. These are identified as LZONE0 through LZONE8 and RZONE0 through RZONE8 depending on which side of the stream the zone is located. (Left and right zones are

established based on the standard practice of left vs. right in relation to the downstream flow.)

- c. Using the data for the adjacent map units (Habitat type, Dominant Strata Structure, Herbaceous Ground Cover, and Total Canopy Cover) determine the Riparian Code for each zone (codes can be found on the “Riparian Codes” page of the Shade-A-Lator spreadsheet). If a zone contains multiple types of riparian codes, use the code that represents the tallest vegetation within the zone. The zone information can be recorded on the Temperature Credit datasheet, or entered directly into the Shade-A-Lator spreadsheet.
 - d. For each segment, the data for elevation, aspect, wetted width, bankfull width, predominant depth, and channel incision the data can be taken directly from the Field datasheet and be recorded on the Temperature Credit datasheet, or entered directly into the Shade-A-Lator spreadsheet.
 - For map units greater than 200 ft in length, multiple entries are made into the Shade-A-Lator spreadsheet. The riparian code data will be directly related to each 100 ft segment, but the data for elevation, aspect, wetted width, bankfull width, predominant depth, and channel incision will be identical for each 100 ft portion
 - To determine the final value, average the effective shade percentage output, and enter that value into the Salmon Calculator Excel spreadsheet for the appropriate map unit.
4. After opening the spreadsheet, navigate to the “Data Entry” page. Nearly all of the information needed to calculate the temperature score for a site is completed on the “Data Entry” page of the spreadsheet.

Comment [c1]: May change to 50m segments based on DEQ IMD

“Data Entry” page:

5. If previous data was saved in the spreadsheet, clear this data before entering new data.
6. Using one row for each 100 ft section, enter the data for Project/Site Name, Map Unit ID, Elevation, Aspect, Wetted width, Bankfull width, Predominant depth, Channel incision, and the Left and Right Riparian Zones
 - a. If multiple entries are needed for a single map unit (>100 ft segment length), add text to the Map Unit ID so as to identify multiple results for the same map unit.
 - b. Enter Elevation, Wetted width, Bankfull width, Predominant depth, and Channel incision in feet, the spreadsheet will map the necessary conversions to meters.
 - c. When you are finished entering the data for a project, type “BLANK” on the next line in the project column. This will insert a blank row so that the final data will be easier to read. When you type “BLANK” in that cell, no other data needs to be entered into the other columns.
7. Once all data entry is completed go to the “Main Menu” page.

“Main Menu” page:

8. Information on this page is only entered into the cells that haven't been "grayed" out.
 - a. Enter the Project/Site Name in cell D2.
 - b. Enter the latitude (decimal degrees) for the site in cell D8.
 - c. Enter the longitude (decimal degrees) for the site in cell D9.
9. Check to make sure the model has been reset. If either the "Start Simulation" or "Run Vegematic" buttons are grayed out, click the "Reset" button to reset the model.
10. The first step in the temperature credit calculation is to generate the vegetation data for the model from the riparian code inputs. Click "Run Vegematic" button.
11. Once the vegetation data has been generated, you can run the model to calculate effective shade percentages. This is completed by clicking the "Start Simulation" button. The model will calculate the shade over the course of a day for each stream segment and output it on the "Output" page.
12. The final step is to transfer the "Effective Shade (%)" data for each map unit to corresponding entry in the Salmon Calculator spreadsheet. The Salmon spreadsheet will calculate the actual kcal value for the map unit. The data can be entered into the Salmon spreadsheet by the standard "cut and paste" method. NOTE the data in the "Effective Shade %" column is a formula, so the "Paste special/values" option should be used when transferring the data to the Salmon spreadsheet.