

Condition of California Perennial Wadeable Streams Based on Algal Indicators

Elizabeth Fetscher¹, Martha A. Sutula¹, Lilian B. Busse², and Eric D. Stein¹

¹*Southern California Coastal Water Research Project*

²*San Diego Regional Water Quality Control Board*

EXECUTIVE SUMMARY

Algae can serve as indicators of stream ecological condition in two ways. Information about algal community composition can be used for bioassessment analogous to the way in which benthic macroinvertebrates (BMIs) are employed (e.g., as described in Ode et al. 2011). When algae occur in excess (i.e., in the case of eutrophication), stress to the system can result; as such, the total amount of algae present also becomes an indicator of stream health in its own right.

To date, the state of California has invested in several initiatives to build capacity for conducting stream algal assessment. This includes support for creation of a planning document funded by State Water Resources Control Board's (SWRCB) Surface Water Ambient Monitoring Program (SWAMP) (Fetscher and McLaughlin 2008) and establishment of SWAMP Standard Operating Procedures (SOPs) for field sample collection (Fetscher et al. 2009) and a laboratory processing and enumeration SOP (currently in review) for determining algal community composition. In addition, an algae Index of Biotic Integrity (IBI) for bioassessment of southern California streams was recently completed by Fetscher et al. (2013), and a state algae laboratory, based at California State University San Marcos, has been established.

Over the past several years, the state of California's Perennial Stream Assessment (PSA) and Reference Condition Management Program (RCMP), the southern California Stormwater Monitoring Coalition (SMC), and other smaller programs have collected and processed algae samples using the SWAMP protocols. As such, a substantial amount of standardized data on stream algae and instream, vascular macrophytes (together hereafter referred to as stream "primary producer indicators") have been collected in California since 2007. However, no consolidated analysis of these data has been conducted so far. This report represents such an effort. It addresses the following assessment questions of importance to regulatory agencies, regulated communities, and the public, with the two major stream-algae assessment themes the questions encompass covered in two chapters:

Full Text

[http://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/781_CA_Perennial_Wadeable Strea ms.pdf](http://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/781_CA_Perennial_Wadeable_Strea ms.pdf)