Supplemental Information

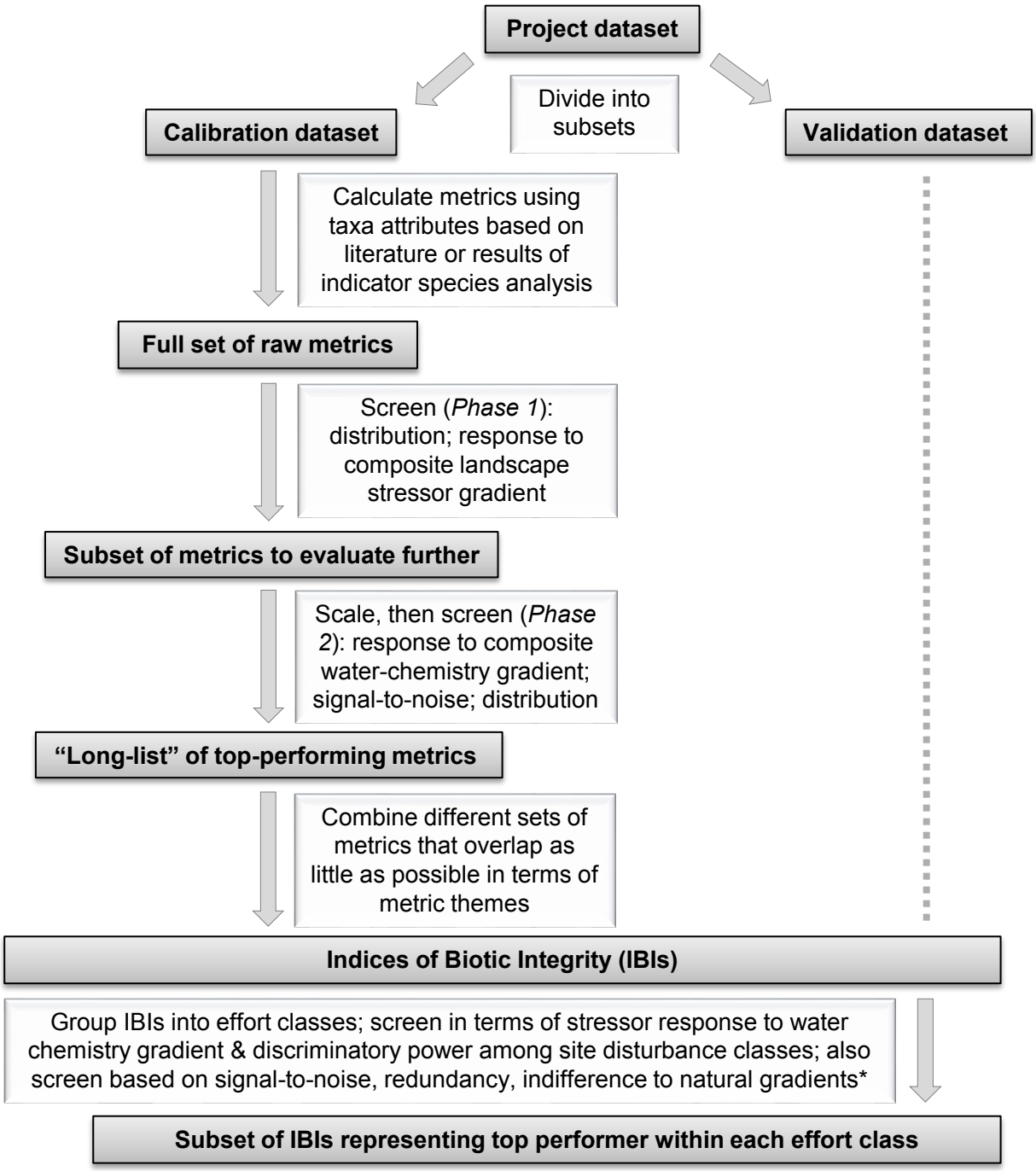
Development and comparison of stream indices of biotic integrity using diatoms vs. non-diatom algae vs. a combination

A. Elizabeth Fetscher, Rosalina Stancheva, J. Patrick Kociolek, Robert G. Sheath, Eric D. Stein, Raphael D. Mazor, Peter R. Ode and Lilian B. Busse

Online Resources

Online Resource 1: Flow diagram of metric and IBI development and screening process

Development and comparison of stream indices of biotic integrity using diatoms vs. non-diatom algae vs. a combination; J. Applied Phycology; A. Elizabeth Fetscher (Southern California Coastal Water Research Project, bettyf@sccwrp.org), Rosalina Stancheva, J. Patrick Kociolek, Robert G. Sheath, Eric D. Stein, Raphael D. Mazor, Peter R. Ode, Lilian B. Busse



*The validation dataset alone was used for the screens related to responses to anthropogenic stress, but validation + calibration data sets combined was used for the other IBI screens (signal-to-noise, redundancy, indifference to natural gradients)

Online Resource 2: Indicator assignments based on Indicator Species Analysis

Development and comparison of stream indices of biotic integrity using diatoms vs. non-diatom algae vs. a combination; J. Applied Phycology; A. Elizabeth Fetscher (Southern California Coastal Water Research Project, bettyf@sccwrp.org), Rosalina Stancheva, J. Patrick Kociolek, Robert G. Sheath, Eric D. Stein, Raphael D. Mazor, Peter R. Ode, Lilian B. Busse

See note below table for definitions of fields

Taxon	Indicator Class for TP	Indicator Class for DOC	Indicator Class for Cu	Indicator Class for TN	Indicator Class for "reference"
Anabaena cylindrica	NI	NI		NI	NI
Anabaena inaequalis	NI	NI	NI	NI	NI
Anabaena iyengarii	NI	NI		NI	NI
Anabaena oscillatorioides	NI	NI	NI	NI	NI
Anabaena sp 1	NI	NI	NI	NI	NI
Anabaena sp 2	NI	NI	NI	NI	NI
Anabaena sp 3	NI	NI		NI	NI
Anabaena sp 5	NI	NI		NI	NI
Anabaena variabilis	NI	NI	NI	NI	NI
Ankistrodesmus fusiformis	NI	NI	NI	NI	NI
Ankistrodesmus spiralis	NI	NI	NI	NI	NI
Apatococcus lobatus	NI	NI		NI	NI
Apatococcus sp 1	NI	NI	NI	NI	NI
Aphanocapsa delicatissima	NI	NI	NI	NI	NI
Aphanocapsa hyalina	NI	NI		NI	NI
Aphanocapsa parasitica	NI	NI	NI	NI	NI
Aphanocapsa planctonica	NI	NI		NI	NI
Aphanocapsa sp 1	NI	NI		NI	NI
Aphanochaete repens	NI	NI	NI	NI	NI
Aphanothece caldariorum	NI	NI		NI	NI
Aphanothece clathrata	NI	NI	NI	NI	NI
Aphanothece elabens	NI	NI		NI	NI
Aphanothece floccosa	NI	NI	NI	NI	NI
Aphanothece minutissima	NI	NI	NI	NI	NI
Aphanothece nebulosa	NI	NI		NI	NI
Aphanothece nidulans	NI	NI		NI	NI
Aphanothece saxicola	NI	NI		NI	NI
Aphanothece stagnina	NI	NI	NI	low	NI
Arthrospira sp 1	NI	NI	NI	NI	NI
Asterococcus limneticus	NI	NI	NI	NI	NI
Audouinella hermannii	NI	NI	NI	NI	NI
Batrachospermum boryanum	low	NI	NI	NI	NI
Batrachospermum sp 1	NI	NI	NI	NI	NI
Bulbochaete mirabilis	NI		NI	NI	NI
Bulbochaete sp 1	NI	NI	NI	NI	NI
Calothrix crustacea	NI	NI	NI	NI	NI
Calothrix epiphytica	NI	NI	NI	low	NI
Calothrix fusca	NI	NI	NI	low	NI
Calothrix parietina	NI	NI	NI	NI	reference
Calothrix sp 3	NI	NI		NI	NI
Capsosira brebissonii	NI	NI		NI	NI
Carteria sp 1	NI	NI	NI	NI	NI
Chaetophora elegans	NI	NI		NI	NI
Chaetophora incrassata	NI	NI		NI	NI
Chaetophora sp 1	NI	NI		NI	NI
Chaetosphaeridium globosur	NI	NI		NI	NI
Chamaesiphon confervicola	NI	NI	NI	NI	NI
Chamaesiphon incrustans	NI	NI	NI	NI	NI
Chamaesiphon investiens	NI	NI	NI	NI	NI
Chamaesiphon minutus	NI	NI	NI	NI	NI
Chamaesiphon polymorphus	low	NI	low	NI	reference
Chamaesiphon sp 1	NI	NI		NI	NI
Chamaesiphon subglobosus	NI	NI	NI	NI	NI
Chantransia sp 1	NI	NI	NI	NI	NI
Chantransia sp 2	NI	NI	NI	NI	NI
Chantransia sp 3	NI	NI	NI	NI	NI
Chara globularis	NI	NI	NI	NI	NI
Chara vulgaris	NI	NI	NI	NI	NI
Chlamydomonadopsis sp 1	NI	NI	NI	NI	NI

Chlamydomonas ehrenbergii	NI	NI	NI	NI	NI
Chlamydomonas snowiae	NI	NI	NI	NI	NI
Chlamydomonas sp 1	high	high	NI	high	NI
Chlamydomonas sp 2	NI	NI		NI	NI
Chlamydomonas stellata	NI	NI	NI	NI	NI
Chlorella sp 1	NI	NI	NI	NI	NI
Chlorella sp 2	NI	NI	NI	NI	NI
Chlorella sp 5	NI	NI	NI	NI	NI
Chlorella vulgaris	high	high	high	NI	NI
Chlorogloea sp 1	NI	NI	NI	NI	NI
Chlorophyta 1	NI	NI	NI	NI	NI
Chlorophyta 10	NI	NI	NI	NI	NI
Chlorophyta 11	NI	NI		NI	NI
Chlorophyta 12	NI	NI	NI	NI	NI
Chlorophyta 3	NI	NI	NI	NI	NI
Chlorophyta 4	NI	NI	NI	NI	NI
Chlorophyta 7	NI	NI		NI	NI
Chroococcopsis epiphytica	NI	NI	high	NI	NI
Chroococcopsis fluviatilis	NI	high	NI	NI	NI
Chroococcus dispersus	NI	NI	high	NI	NI
Chroococcus limneticus	low	NI	NI	NI	NI
Chroococcus minimus	NI	NI	high	NI	NI
Chroococcus minor	NI	NI	NI	NI	NI
Chroococcus minutus	NI	NI	NI	NI	NI
Chroococcus sp 1	NI	NI	NI	NI	NI
Chroococcus turgidus	NI	NI	NI	NI	NI
Chroococcus vacuolatus	NI	NI	NI	NI	NI
Chroodactylon ornatum	low	NI	NI	NI	reference
Chrysosphaera paludosa	NI	NI		NI	NI
Cladophora fracta	NI	NI	NI	NI	NI
Cladophora glomerata	high	high	high	high	non-reference
Clastidium rivulare	NI	NI		NI	NI
Clastidium setigerum	NI	NI		NI	NI
Closteriopsis acicularis	NI	NI	NI	NI	NI
Closterium acerosum	NI	high	NI	NI	NI
Closterium acerosum var tun	NI	NI	NI	NI	NI
Closterium attenuatum	NI	NI	NI	NI	NI
Closterium ehrenbergii	NI	NI		NI	NI
Closterium kuetzingii	NI	NI	NI	NI	NI
Closterium leibleinii	NI	NI		NI	NI
Closterium littorale	NI	NI	NI	NI	NI
Closterium moniliferum	NI	NI	NI	NI	NI
Closterium parvulum	NI	NI		NI	NI
Closterium parvulum var mai	NI	NI	NI	NI	NI
Closterium ralfsii var hybridu	NI	NI	NI	NI	NI
Coelastrum astroideum	NI	NI		NI	NI
Coleochaete sp 1	NI	NI		NI	NI
Compsopogon chalybeus	NI	NI	NI	NI	NI
Cosmarium granatum	NI	NI	NI	NI	NI
Cosmarium regnellii	NI	NI		NI	NI
Cosmarium reniforme	NI	NI	high	NI	NI
Cosmarium sp 2	NI	NI		NI	NI
Cosmarium sp 3	NI	NI		NI	NI
Cosmarium sportella var sub	NI	NI	NI	NI	NI
Cosmarium subcrenatum	NI	NI	NI	NI	NI
Cosmarium subtumidum var	NI	NI	NI	NI	NI
Cryptomonas anomala	NI	NI	NI	NI	NI
Cryptomonas erosa	NI	NI	NI	NI	NI
Cyanobium diatomicola	NI	NI		NI	NI
Cyanodermatium fluminense	NI	NI		NI	NI
Cyanostylon microcystoides	NI	NI	NI	NI	NI
Cyanothece aeruginosa	NI	NI	NI	NI	NI
Cylindrocapsa geminella	NI	NI		NI	NI
Cylindrocapsa geminella var	NI	NI		NI	NI
Cylindrospermum stagnale	NI	NI	NI	NI	NI
Desmodesmus armatus	NI	NI	NI	NI	NI
Dichothrix hosfordii	NI	NI		NI	NI
Dictyosphaerium ehrenbergia	NI	NI	NI	NI	NI
Dictyosphaerium pulchellum	NI	NI	NI	NI	NI
Dictyosphaerium sp 1	NI	NI	NI	NI	NI

Draparnaldia glomerata	NI	NI	NI	NI	NI
Draparnaldia mutabilis	NI		NI	NI	NI
Draparnaldia sp 1	NI		NI	NI	NI
Elakatothrix sp 1	NI	NI		NI	NI
Eudorina elegans	NI	high	NI	NI	NI
Euglena acus	NI	NI		NI	NI
Euglena sp 4	NI	NI	NI	NI	NI
Euglena variabilis	NI	NI		NI	NI
Euglena viridis	NI	NI	NI	NI	NI
Geitleribactron periphyticum	NI	NI		NI	NI
Geitlerinema amphibium	NI	NI	NI	NI	NI
Geitlerinema sp 1	NI	NI		NI	NI
Geitlerinema splendidum	NI	NI		NI	NI
Geminella interrupta	NI	NI	NI	NI	NI
Glaucospira sp 1	NI	NI	NI	NI	NI
Gloeobotrys limneticus	NI	NI	NI	NI	NI
Gloeocapsa fusco-lutea	NI	NI		NI	NI
Gloeocapsa punctata	NI	NI	NI	NI	NI
Gloeocystis vesiculosa	NI	NI	NI	NI	NI
Gomphosphaeria aponina	NI	NI	NI	NI	NI
Gomphosphaeria sp 1	NI	NI	NI	NI	NI
Gongrosira debaryana	NI	NI	NI	NI	NI
Gongrosira schmidlei	NI	NI	NI	NI	NI
Gongrosira sp 1	NI	NI	high	NI	NI
Gongrosira sp 2	NI	NI	NI	NI	NI
Gongrosira sp 3	NI	NI	NI	NI	NI
Gongrosira sp 4	NI	NI	NI	NI	NI
Hapalosiphon hibernicus	NI	NI		NI	NI
Heteroleibleinia kossinskajae	high	high	NI	NI	non-reference
Homoeothrix juliana	NI	NI	NI	NI	NI
Homoeothrix stagnalis	NI	NI	NI	NI	NI
Homoeothrix varians	NI	NI		NI	NI
Homoeothrix woronichinii	NI	NI		NI	NI
Hormidiopsis sp 1	NI	NI		NI	NI
Hydrodictyon reticulatum	NI	NI	NI	NI	NI
Hydrurus foetidus	NI	NI		NI	NI
Kirchneriella lunaris	NI	NI		NI	NI
Kirchneriella obesa	NI	NI	NI	NI	NI
Klebsormidium crenulatum	NI	NI	NI	NI	NI
Klebsormidium rivulare	NI	NI	NI	NI	NI
Klebsormidium sp 1	NI	NI	NI	NI	NI
Komvophoron constrictum	NI	NI		NI	NI
Komvophoron minutum	NI	NI	high	NI	NI
Leibleinia epiphytica	NI	NI		NI	NI
Leptolyngbya foveolarum	NI	high	NI	NI	NI
Leptolyngbya granulifera	NI	NI		NI	NI
Leptolyngbya notata	NI	NI	NI	NI	NI
Leptolyngbya sp 1	NI	NI	NI	NI	NI
Leptolyngbya tenuis	NI	NI	NI	NI	NI
Leptolyngbya valderiana	NI	NI		NI	NI
Lobomonas sp 1	NI	NI		NI	NI
Lyngbya aestuarii	NI	NI	NI	NI	NI
Lyngbya major	NI	NI	NI	NI	NI
Lyngbya martensiana	NI	NI		NI	NI
Merismopedia glauca	low	NI	NI	NI	NI
Merismopedia punctata	NI	high	high	high	NI
Merismopedia tenuissima	NI	high	NI	NI	non-reference
Merismopedia trolleri	NI	NI	NI	NI	NI
Micractinium pusillum	NI	NI		NI	NI
Microcoleus lacustris	NI	NI	NI	NI	NI
Microcrocis sp 1	NI	NI		NI	NI
Microcystis firma	NI	NI		NI	NI
Microspora abbreviata	NI	NI	NI	NI	NI
Microspora pachyderma	NI	NI	NI	NI	NI
Microspora tumidula	NI	NI	low	NI	NI
Mischococcus confervicola	NI	NI		NI	NI
Monoraphidium arcuatum	NI	high	NI	NI	NI
Monoraphidium contortum	NI	high	high	NI	NI
Monoraphidium minutum	NI	high	high	NI	NI
Mougeotia calcarea	low	NI	NI	NI	NI

Mougeotia sp 1	low	NI	NI	NI	NI
Mougeotia sp 2	low	NI	NI	NI	NI
Mougeotia sp 3	low	NI	NI	NI	reference
Mougeotia sp 4	NI	NI	NI	NI	NI
Mougeotia sp 6	NI	NI		NI	NI
Nephrocytium limneticum	NI	NI	NI	NI	NI
Netrium digitus	NI	NI		NI	NI
Nodularia harveyana	NI	NI	NI	NI	NI
Nodularia spumigena	NI	NI	NI	NI	NI
Nostoc linckia	NI	NI	NI	NI	NI
Nostoc parmelioides	NI	NI		NI	NI
Nostoc punctiforme	NI	NI		NI	NI
Nostoc sp 1	NI	NI	NI	NI	NI
Nostoc spongiaeforme	NI	NI		NI	NI
Nostoc verrucosum	low	NI	NI	low	reference
Nostochopsis lobatus	low	NI	NI	NI	NI
Oedogonium capilliforme	NI	NI	NI	NI	NI
Oedogonium multisporum	NI	NI		NI	NI
Oedogonium punctatostriatur	NI	NI		NI	NI
Oedogonium sp 1	NI	high	NI	NI	non-reference
Oedogonium sp 2	NI	NI	NI	NI	NI
Oedogonium sp 3	NI	NI	NI	NI	non-reference
Oedogonium sp 4	NI	NI	NI	NI	NI
Oedogonium sp 5	NI	NI	NI	high	NI
Oedogonium sp 6	NI	NI	NI	NI	NI
Oedogonium sp 9	NI	NI		NI	NI
Oedogonium vaucherii	NI	NI	NI	NI	NI
Oocystis borgei	NI	NI		NI	NI
Oocystis lacustris	NI		high	high	NI
Oocystis naegelii	NI	NI	NI	NI	NI
Oocystis natans	NI	NI		NI	NI
Oocystis parva	NI	high	high	NI	NI
Oocystis pusilla	NI	high	NI	NI	NI
Oocystis solitaria	low	NI	NI	NI	NI
Oocystis sp 1	NI	high	NI	NI	NI
Ophiocytium arbusculum	NI	NI	NI	NI	NI
Oscillatoria jenensis	NI	NI	NI	NI	NI
Oscillatoria limosa	NI	NI	NI	NI	NI
Oscillatoria nigro-viridis	NI	NI	NI	NI	NI
Oscillatoria sp 1	NI	NI	NI	NI	NI
Oscillatoria sp 2	NI	NI	NI	NI	NI
Palmellopsis gelatinosa	NI	NI	NI	NI	NI
Paralemanea catenata	low	NI	NI	NI	NI
Paulschulzia tenera	NI	NI		NI	NI
Pediastrum boryanum	NI	high	NI	high	non-reference
Pediastrum boryanum var lor	NI	NI	NI	NI	NI
Pediastrum cornutum	NI	NI		NI	NI
Pediastrum duplex	NI	high	NI	NI	NI
Pediastrum duplex var rugulc	NI	NI		NI	NI
Pediastrum integrum	NI	NI	NI	high	NI
Peridinium sp 1	NI		NI	NI	NI
Phacus acuminatus	NI	NI		NI	NI
Phacus caudatus	NI	NI		NI	NI
Phacus sp 1	NI	NI		NI	NI
Phacus sp 2	NI	NI		NI	NI
Phacus sp 3	NI	NI		NI	NI
Phaeogloea mucosa	NI	NI		NI	NI
Phormidium ambiguum	NI	NI	NI	NI	NI
Phormidium chalybeum	NI	NI		NI	NI
Phormidium cortianum	high	NI	NI	NI	NI
Phormidium incrustatum	low	NI	NI	NI	NI
Phormidium inundatum	NI	NI	NI	NI	NI
Phormidium retzii	NI	NI		NI	NI
Phormidium sp 1	low	NI	NI	NI	NI
Phormidium sp 2	NI	NI	NI	NI	NI
Phormidium sp 3	NI	NI	NI	NI	NI
Phormidium sp 4	NI	NI	NI	NI	NI
Phormidium sp 5	NI	NI	NI	NI	NI
Phormidium subfuscum	NI	NI	high	NI	NI
Phormidium uncinatum	NI	NI	NI	NI	NI

Pleurocapsa minor	NI	NI	NI	NI	NI
Pleurotaenium ehrenbergii	NI	NI		NI	NI
Prasiola mexicana	NI	NI		NI	NI
Protoderma viride	NI	NI	NI	NI	NI
Pseudanabaena sp 1	NI	NI	NI	NI	NI
Pseudocharaciopsis minuta	NI	NI	NI	NI	NI
Radiofilum conjunctivum	NI	NI		NI	NI
Rhizoclonium hieroglyphicum	NI	high	high	high	non-reference
Rhodomonas sp 1	NI	NI		NI	NI
Rivularia atra	NI	NI		NI	NI
Rivularia haematites	NI	NI	NI	NI	NI
Rivularia minutula	low	NI	NI	NI	NI
Scenedesmus abundans	high	high	high	NI	non-reference
Scenedesmus aculeolatus	NI	NI	NI	NI	NI
Scenedesmus acuminatus	high	NI	NI	NI	NI
Scenedesmus acutiformis	NI	NI	NI	high	NI
Scenedesmus apiculatus	NI	NI	NI	NI	NI
Scenedesmus armatus	NI	NI		NI	NI
Scenedesmus bicaudatus	NI	NI	NI	NI	NI
Scenedesmus brasiliensis	NI	NI		NI	NI
Scenedesmus circumfusus	NI	NI	NI	NI	NI
Scenedesmus communis	NI	high	high	NI	NI
Scenedesmus denticulatus	NI	NI	NI	NI	NI
Scenedesmus dimorphus	high	high	high	NI	non-reference
Scenedesmus dispar	NI	high	NI	NI	NI
Scenedesmus ellipticus	high	high	high	NI	non-reference
Scenedesmus flavescens	NI	NI	NI	NI	NI
Scenedesmus intermedius	high	high	high	NI	NI
Scenedesmus komarekii	NI	NI	NI	NI	NI
Scenedesmus magnus	NI	NI	NI	NI	NI
Scenedesmus microspina	NI	high	NI	NI	NI
Scenedesmus obliquus	NI	NI	NI	NI	NI
Scenedesmus opoliensis	high	high	NI	NI	NI
Scenedesmus raciborskii	NI	high	high	high	NI
Scenedesmus semipulcher	NI	NI	NI	NI	NI
Scenedesmus sp 1	NI	NI	NI	NI	NI
Scenedesmus sp 2	NI	high	NI	NI	NI
Scenedesmus sp 3	NI	NI		NI	NI
Schizothrix arenaria	NI	NI	NI	NI	NI
Schizothrix lacustris	NI	NI		NI	NI
Schizothrix sp 1	NI	NI	NI	NI	NI
Scytonema bohneri	NI	NI	NI	NI	NI
Scytonema crispum	NI	NI	NI	NI	NI
Sirodotia huillensis	NI	NI	NI	NI	NI
Sphaerobotrys fluviatilis	NI	NI	NI	NI	NI
Sphaerocystis planctonica	NI	NI	NI	NI	NI
Sphaerocystis schroeteri	NI	NI	NI	NI	NI
Spirogyra borgeana	low	NI	NI	NI	NI
Spirogyra fluviatilis	NI	NI	NI	NI	NI
Spirogyra lutetiana	NI	NI	NI	NI	NI
Spirogyra majuscula	low	NI	NI	NI	NI
Spirogyra parvula	NI		NI	NI	NI
Spirogyra sp 1	low	NI	NI	NI	NI
Spirogyra sp 10	NI	NI	NI	NI	NI
Spirogyra sp 111	NI	NI	NI	NI	NI
Spirogyra sp 12	NI	high	NI	NI	NI
Spirogyra sp 13	NI	NI	NI	NI	NI
Spirogyra sp 2	low	NI	NI	NI	NI
Spirogyra sp 222	NI	NI	NI	NI	NI
Spirogyra sp 3	NI	NI		NI	NI
Spirogyra sp 4	high	NI	NI	NI	NI
Spirogyra sp 5	NI	NI	NI	NI	NI
Spirogyra sp 6	NI	NI	NI	NI	NI
Spirogyra sp 7	NI	NI	NI	NI	NI
Spirogyra sp 8	NI	NI	NI	NI	NI
Spirogyra sp 9	NI	NI	NI	NI	NI
Spirogyra teodoresci	NI	NI	NI	NI	NI
Spirogyra varians	low	NI	NI	NI	NI
Spirogyra weberi	low	NI	NI	NI	NI
Spirulina corakiana	NI	NI		NI	NI

Spirulina major	NI	NI		NI	NI
Staurastrum lapponicum	NI	NI		NI	NI
Staurastrum orbiculare var m	NI	NI		NI	NI
Staurastrum punctulatum	NI	NI		NI	NI
Stauridium tetras	NI	NI	NI	NI	NI
Stigeoclonium lubricum	NI	NI		NI	NI
Stigeoclonium sp 1	NI	NI	NI	NI	NI
Stigeoclonium subsecundum	NI	NI	NI	NI	NI
Streptophyta 1	NI	NI	NI	NI	NI
Strombomonas sp 1	NI	NI		NI	NI
Stylococcus sp 1	NI	NI		NI	NI
Synechococcus nidulans	NI	NI		NI	NI
Synechococcus sp 1	NI	NI	NI	NI	NI
Tetraedron caudatum	NI	NI	NI	NI	NI
Tetraedron minimum	NI	NI	NI	NI	NI
Tetrasporidium javanicum	NI	NI	NI	NI	NI
Tolypothrix distorta	NI	low	NI	NI	reference
Tolypothrix tenuis	NI	NI		NI	NI
Trachelomonas hispida	NI	NI	NI	NI	NI
Trachelomonas sp 1	NI	NI	NI	NI	NI
Trachelomonas volvocina	NI	NI		NI	NI
Tribonema affine	NI	NI	NI	NI	NI
Tribonema minus	NI	NI	NI	NI	NI
Tribonema monochloron	NI	NI		NI	NI
Tribonema utriculosum	NI	NI	NI	NI	NI
Tribonema viride	NI	NI	low	low	NI
Tychonema sequanum	NI	NI	NI	NI	NI
Tychonema sp 2	low	NI	low	NI	NI
Ulothrix tenerrima	NI	NI	NI	NI	NI
Ulothrix tenuissima	NI	NI	NI	NI	NI
Ulothrix zonata	NI	low	NI	NI	reference
Ulva flexuosa	NI	high	NI	NI	non-reference
Uronema confervicola	NI	NI	NI	NI	NI
Vaucheria frigida	NI	NI	NI	NI	NI
Vaucheria geminata	NI	NI	NI	NI	NI
Vaucheria sessilis	NI	NI	NI	NI	NI
Vaucheria sp 1	NI	high	NI	high	NI
Vaucheria sp 2	NI	NI	NI	NI	NI
Vaucheria taylorii	NI	NI	NI	NI	NI
Vaucheria undulata	NI	NI		NI	NI
Woronichinia elorantae	NI	NI	NI	NI	NI
Xanthonema exile	NI	NI		NI	NI
Xenococcus minimus	NI	NI	NI	NI	NI
Zygnema aplanosporum	NI	NI	NI	NI	NI
Zygnema sp 1	low	NI	NI	NI	NI
Zygnema sp 2	NI	NI	NI	NI	NI
Zygnema stellinum	NI	NI	NI	NI	NI
Zygnema sterile	low	NI	NI	NI	NI

"NI" means the taxon was included in the analysis, but was not classified as a high/low indicator. Empty cells correspond to taxa that were not represented in the dataset used for the indicator species analysis associated with the corresponding water chemistry parameter, and as such, the indicator status of that species for that parameter is undefined. Note on data preparation for indicator species analysis: Study sites from the calibration dataset were grouped according to their measured total phosphorus (TP), total nitrogen (TN), DOC, and dissolved copper (Cu), as well as based on their site disturbance class. For the nutrients, we used the same concentration thresholds used by Potapova and Charles (2007) to assign study sites to “low” (under 0.2 mg/L for TN and 10ug/L for TP) vs. “high” (over 3mg/L for TN and 100 ug/L for TP) categories. For other constituents (e.g., DOC and dissolved Cu), we used the 25th quartile of full project data set values as the threshold for “low” and the 75th quartile for “high”. Monte Carlo was used to generate significance levels for each taxon’s group membership assignment. In calculating metrics, all taxa with significant indicator values associated with a “low” or “high” group were considered to be indicators for that constituent (or indicators for Reference/non-Reference status (Table 1)).

Online Resource 3: Metric definitions and screening results summary

Development and comparison of stream indices of biotic integrity using diatoms vs. non-diatom algae vs. a combination; J. Applied Phycology; A. Elizabeth Fetscher (Southern California Coastal Water Research Project, bettyf@sccwrp.org), Rosalina Stancheva, J. Patrick Kociolek, Robert G. Sheath, Eric D. Stein, Raphael D. Mazor, Peter R. Ode, Lilian B. Busse

Phase when (if) eliminated during screening	Metric	Assemblage	Level of Taxonomic ID required (soft-bodied algae)	Predicted Response to Human Disturbance	Metric category	Metric theme	Data type	Source of indicator values	Metric description*	Spearman's rho (all p values are < 0.01)	signal:noise
kept ("long list")	proportion low TP indicators (s, sp)	soft	species	decrease	tolerance/ sensitivity	phosphorus	relative species numbers	indicator species analysis	proportion of total species richness composed of low TP indicators	-0.65	3.2
kept ("long list")	proportion halobiontic (d)	diatom		increase	autecological guild	ionic strength	proportion of valves	van Dam et al. (1994)	proportion of valves that are brackish-fresh+brackish (i.e., they have a tolerance of, or requirements for, dissolved salts)	-0.6	7.5
kept ("long list")	proportion high DOC indicators (s, sp)	soft	species	increase	tolerance/ sensitivity	organic pollution	relative species numbers	indicator species analysis	proportion of total species richness composed of high DOCq indicators	-0.6	6.5
kept ("long list")	proportion A. minutissimum (d)	diatom		decrease	taxonomic group	A. minutissimum	proportion of valves		proportion of valves that are *Achnanthidium minutissimum*	-0.54	13.1
kept ("long list")	proportion "non-reference" indicators (s, sp)	soft	species	increase	relationship to reference	reference	relative species numbers	indicator species analysis	proportion of total species richness composed of indicators of "non-Reference" sites	-0.53	3.2
kept ("long list")	proportion N heterotrophs (d)	diatom		increase	autecological guild	organic pollution	proportion of valves	van Dam et al. (1994)	proportion of valves that are heterotrophs (includes both obligate and facultative heterotrophs)	-0.52	6.6
kept ("long list")	proportion high DOC indicators (s, b)	soft	species	increase	tolerance/ sensitivity	organic pollution	relative biovolumes	indicator species analysis	proportion of total micro+macro biovolume composed of indicators of high DOC	-0.52	13.3

kept ("long list")	proportion low TN indicators (d)	diatom		decrease	tolerance/ sensitivity	nitrogen	proportion of valves	Potapova and Charles (2007)	proportion of valves that are indicators for high TN levels (>3 mg/L)	-0.49	17.2
kept ("long list")	proportion low TP indicators (d)	diatom		decrease	tolerance/ sensitivity	phosphorus	proportion of valves	Potapova and Charles (2007)	proportion of valves that are indicators for high TP levels (> 0.1 mg/L)	-0.48	17.2
kept ("long list")	proportion requiring >50% DO saturation (d)	diatom		decrease	autecological guild	dissolved oxygen	proportion of valves	van Dam et al. (1994)	proportion of valves that require at least 50% dissolved oxygen saturation	-0.48	19.8
kept ("long list")	proportion poly- & eutrophic (d)	diatom		increase	autecological guild	nutrients	proportion of valves	van Dam et al. (1994)	proportion of valves that are polytrophic+eutrophic	-0.45	16.5
kept ("long list")	proportion sediment tolerant (highly motile) (d)	diatom		increase	morphological guild	sedimentation	proportion of valves		proportion of valves for which there is information that are highly motile (NOT moderately) + all planktonic	-0.44	11.2
kept ("long list")	proportion high Cu indicators (s, sp)	soft	species	increase	tolerance/ sensitivity	copper	relative species numbers	indicator species analysis	proportion of total species richness composed of high copper (dissolved) indicators	-0.41	2.6
kept ("long list")	proportion ZHR (s, m)	soft	species	decrease	taxonomic group	ZygnHeteroRhod	relative species number and biovolumes		mean of scores for the corresponding species number and biovolume metrics	-0.41	10.2
kept ("long list")	proportion of green algae belonging to CRUS (s, b)	soft	species	increase	taxonomic group	Chlorophyta	relative biovolumes		proportion of green algae (Chlorophyta+Charophyta) micro+macro biovolume composed of Cladophora glomerata, Rhizoclonium hieroglyphicum, Ulva flexuosa, and Stigeoclonium spp.	-0.39	23.4
kept ("long list")	proportion "non-reference" indicators (s, b)	soft	species	increase	relationship to reference	reference	relative biovolumes	indicator species analysis	proportion of total micro+macro biovolume composed of indicators of "non-Reference" sites	-0.39	5.6

kept ("long list")	proportion highly motile (d)	diatom		increase	morphological guild	sedimentation	proportion of valves		proportion of valves that are highly motile	-0.38	4.6
kept ("long list")	proportion requiring nearly 100% DO saturation (d)	diatom		decrease	autecological guild	dissolved oxygen	proportion of valves	van Dam et al. (1994)	proportion of valves that require nearly 100% dissolved oxygen saturation	-0.37	12.3
kept ("long list")	proportion ZHR (s, b)	soft	genus	decrease	taxonomic group	ZygnHeteroRhod	relative biovolumes		sum of the component metric scores	-0.34	5.6
kept ("long list")	proportion oligo- & beta-mesosaprobic (d)	diatom		decrease	autecological guild	organic pollution	proportion of valves	van Dam et al. (1994)	proportion of valves that are oligosaprobous+(beta-mesosaprobous)	-0.32	13.1
kept ("long list")	proportion Chlorophyta (s, b)	soft	phylum	increase	taxonomic group	Chlorophyta	relative biovolumes		proportion of total micro+macro biovolume composed of Chlorophyta	-0.27	3.3
2	proportion requiring >75% DO saturation (d)	diatom		decrease	autecological guild	dissolved oxygen	proportion of valves	van Dam et al. (1994)	proportion of valves that require at least 75% dissolved oxygen saturation		
2	proportion heterocystous (s, m)	soft	species	decrease	autecological guild	nitrogen	relative species number and biovolumes		mean of scores for the corresponding species number and biovolume metrics		
2	proportion heterocystous (s, sp)	soft	species	decrease	autecological guild	nitrogen	relative species numbers		proportion of total species that are heterocystous		
2	proportion of cyanobacteria belonging to heterocystous species (s, b)	soft	genus	decrease	autecological guild	nitrogen	relative biovolumes		proportion of cyanobacteria micro+macro biovolume composed of heterocystous species		
2	proportion of cyanobacteria belonging to heterocystous species (s, m)	soft	species	decrease	autecological guild	nitrogen	relative species number and biovolumes		mean of scores for the corresponding species number and biovolume metrics		
2	proportion of cyanobacteria belonging to heterocystous species (s, sp)	soft	species	decrease	autecological guild	nitrogen	relative species numbers		proportion of cyanobacteria species that are heterocystous		

2	proportion motile (d)	diatom		increase	morphological guild	sedimentation	proportion of valves		proportion of valves that are motile (includes highly + moderately motile)
2	proportion sediment tolerant (motile) (d)	diatom		increase	morphological guild	sedimentation	proportion of valves		proportion of all valves for which there is information that are motile (highly or moderately) + all planktonic
2	proportion "reference" indicators (s, b)	soft	species	decrease	relationship to reference	reference	relative biovolumes	indicator species analysis	proportion of total micro+macro biovolume composed of indicators of "Reference" sites
2	proportion "reference" indicators (s, sp)	soft	species	decrease	relationship to reference	reference	relative species numbers	indicator species analysis	proportion of total species richness composed of indicators of "Reference" sites
2	proportion CRU (s, b)	soft	species	increase	taxonomic group	Chlorophyta	relative biovolumes		proportion of total micro+macro biovolume composed of Cladophora glomerata, Rhizoclonium hieroglyphicum, and Ulva flexuosa
2	proportion of Chlorophyta belonging to CRU (s, b)	soft	species	increase	taxonomic group	Chlorophyta	relative biovolumes		proportion of Chlorophyta micro+macro biovolume composed of Cladophora glomerata, Rhizoclonium hieroglyphicum, and Ulva flexuosa
2	proportion ZHR (s, sp)	soft	species	decrease	taxonomic group	ZygnHeteroRhod	relative species numbers		sum of the component metric scores
2	proportion low Cu indicators (s, sp)	soft	species	decrease	tolerance/ sensitivity	copper	relative species numbers	indicator species analysis	proportion of total species richness composed of low copper (dissolved) indicators
2	proportion low TN indicators (s, b)	soft	species	decrease	tolerance/ sensitivity	nitrogen	relative biovolumes	indicator species analysis	proportion of total micro+macro biovolume composed of indicators of low TN

2	proportion low TN indicators (s, sp)	soft	species	decrease	tolerance/ sensitivity	nitrogen	relative species numbers	indicator species analysis	proportion of total species richness composed of low TN indicators
2	proportion low TP indicators (s, b)	soft	species	decrease	tolerance/ sensitivity	phosphorus	relative biovolumes	indicator species analysis	proportion of total micro+macro biovolume composed of indicators of low TP
1	proportion characteristic of "freshwater" (d)	diatom		decrease	autecological guild	ionic strength	proportion of valves	van Dam et al. (1994)	proportion of valves that are considered characteristic of freshwater (not brackish) habitats
1	proportion heterocystous (s, b)	soft	genus	decrease	autecological guild	nitrogen	relative biovolumes		proportion of total micro+macro biovolume composed of heterocystous species
1	proportion N fixers (d)	diatom		decrease	autecological guild	nitrogen	proportion of valves		proportion of valves belonging to genera that can fix N2 (Epithemia + Rhopalodia)
1	proportion meso- & oligo-meso- & oligotrophic (d)	diatom		decrease	autecological guild	nutrients	proportion of valves	van Dam et al. (1994)	proportion of valves that are mesotrophic+(oligo-mesotrophic)+oligotrophic
1	proportion oligo-meso- & oligotrophic (d)	diatom		decrease	autecological guild	nutrients	proportion of valves	van Dam et al. (1994)	proportion of valves that are (oligotrophic-mesotrophic)+oligotrophic
1	proportion alpha-poly- & polysaprobic (d)	diatom		increase	autecological guild	organic pollution	proportion of valves	van Dam et al. (1994)	proportion of valves that are (alpha-meso/polysaprobous)+polysaprobous
1	proportion N autotrophs (low N) (d)	diatom		decrease	autecological guild	organic pollution	proportion of valves	van Dam et al. (1994)	proportion of valves that are "N autotroph - low organic N"
1	proportion obligate N heterotrophs (d)	diatom		increase	autecological guild	organic pollution	proportion of valves	van Dam et al. (1994)	proportion of valves that are "N heterotroph - high organic N (obligate)"

1	proportion of total soft algae biovolume as microalgae	soft	phylum	decrease	community form	primary productivity	relative biovolumes	proportion of total biovolume of all micro+macro algae in the form of microalgae
1	total soft algal biovolume	soft	phylum	increase	community form	primary productivity	total biovolume	cubed root of total biovolume of all micro+macro algae
1	proportion centric (d)	diatom		increase	morphological guild	flow regime	proportion of valves	proportion of valves that are centric
1	proportion planktonic (d)	diatom		increase	morphological guild	flow regime	proportion of valves	proportion of valves that are planktonic
1	proportion araphid (d)	diatom		decrease	morphological guild	sedimentation	proportion of valves	proportion of valves that are araphid
1	proportion biraphid (d)	diatom		increase	morphological guild	sedimentation	proportion of valves	proportion of valves that are biraphid (includes reduced biraphids)
1	proportion flagellated (s, b)	soft	species	increase	morphological guild	sedimentation	relative biovolumes	proportion of total micro+macro biovolume composed of flagellated species
1	proportion flagellated (s, m)	soft	species	increase	morphological guild	sedimentation	relative species number and biovolumes	mean of scores for the corresponding species number and biovolume metrics
1	proportion flagellated (s, sp)	soft	species	increase	morphological guild	sedimentation	relative species numbers	proportion of total species that are flagellated
1	proportion Chlorophyta (s, m)	soft	species	increase	taxonomic group	Chlorophyta	relative species number and biovolumes	mean of scores for the corresponding species number and biovolume metrics
1	proportion Chlorophyta (s, sp)	soft	species	increase	taxonomic group	Chlorophyta	relative species numbers	proportion of total species that belong to Chlorophyta
1	proportion CRU (s, m)	soft	species	increase	taxonomic group	Chlorophyta	relative species number and biovolumes	mean of scores for the corresponding species number and biovolume metrics

1	proportion CRU (s, sp)	soft	species	increase	taxonomic group	Chlorophyta	relative species numbers	proportion of total species that are Cladophora glomerata, Rhizoclonium hieroglyphicum, and Ulva flexuosa
1	proportion CRUS (s, b)	soft	species	increase	taxonomic group	Chlorophyta	relative biovolumes	proportion of total micro+macro biovolume composed of Cladophora glomerata, Rhizoclonium hieroglyphicum, Ulva flexuosa, and Stigeoclonium spp.
1	proportion CRUS (s, m)	soft	species	increase	taxonomic group	Chlorophyta	relative species number and biovolumes	mean of scores for the corresponding species number and biovolume metrics
1	proportion CRUS (s, sp)	soft	species	increase	taxonomic group	Chlorophyta	relative species numbers	proportion of total species that are Cladophora glomerata, Rhizoclonium hieroglyphicum, Ulva flexuosa, and Stigeoclonium spp.
1	proportion of Chlorophyta belonging to CRU (s, m)	soft	species	increase	taxonomic group	Chlorophyta	relative species number and biovolumes	mean of scores for the corresponding species number and biovolume metrics
1	proportion of Chlorophyta belonging to CRUS (s, b)	soft	species	increase	taxonomic group	Chlorophyta	relative biovolumes	proportion of Chlorophyta micro+macro biovolume composed of Cladophora glomerata, Rhizoclonium hieroglyphicum, Ulva flexuosa, and Stigeoclonium spp.
1	proportion of Chlorophyta belonging to CRUS (s, m)	soft	species	increase	taxonomic group	Chlorophyta	relative species number and biovolumes	mean of scores for the corresponding species number and biovolume metrics

1	proportion of green algae belonging to CRUS (s, m)	soft	species	increase	taxonomic group	Chlorophyta	relative species number and biovolumes	mean of scores for the corresponding species number and biovolume metrics
1	proportion of green algae belonging to CRUS (s, sp)	soft	species	increase	taxonomic group	Chlorophyta	relative species numbers	proportion of total green algae (Chlorophyta+Charophyta) species that are Cladophora glomerata, Rhizoclonium hieroglyphicum, Ulva flexuosa, and Stigeoclonium spp.
1	proportion cyanobacteria (s, b)	soft	phylum	decrease	taxonomic group	cyanobacteria	relative biovolumes	proportion of total micro+macro biovolume composed of cyanobacteria
1	proportion cyanobacteria (s, m)	soft	species	decrease	taxonomic group	cyanobacteria	relative species number and biovolumes	mean of scores for the corresponding species number and biovolume metrics
1	proportion cyanobacteria (s, sp)	soft	species	decrease	taxonomic group	cyanobacteria	relative species numbers	proportion of total species that belong to cyanobacteria
1	proportion Rhodophyta (s, b)	soft	phylum	decrease	taxonomic group	Rhodophyta	relative biovolumes	proportion of total micro+macro biovolume composed of Rhodophyta
1	proportion Rhodophyta (s, m)	soft	species	decrease	taxonomic group	Rhodophyta	relative species number and biovolumes	mean of scores for the corresponding species number and biovolume metrics
1	proportion Rhodophyta (s, sp)	soft	species	decrease	taxonomic group	Rhodophyta	relative species numbers	proportion of total species that belong to Rhodophyta
1	proportion of green algae belonging to Zygnemataceae (s, b)	soft	family	decrease	taxonomic group	Zygnemataceae	relative biovolumes	proportion of green algae (Chlorophyta+Charophyta) micro+macro biovolume composed of Zygnemataceae

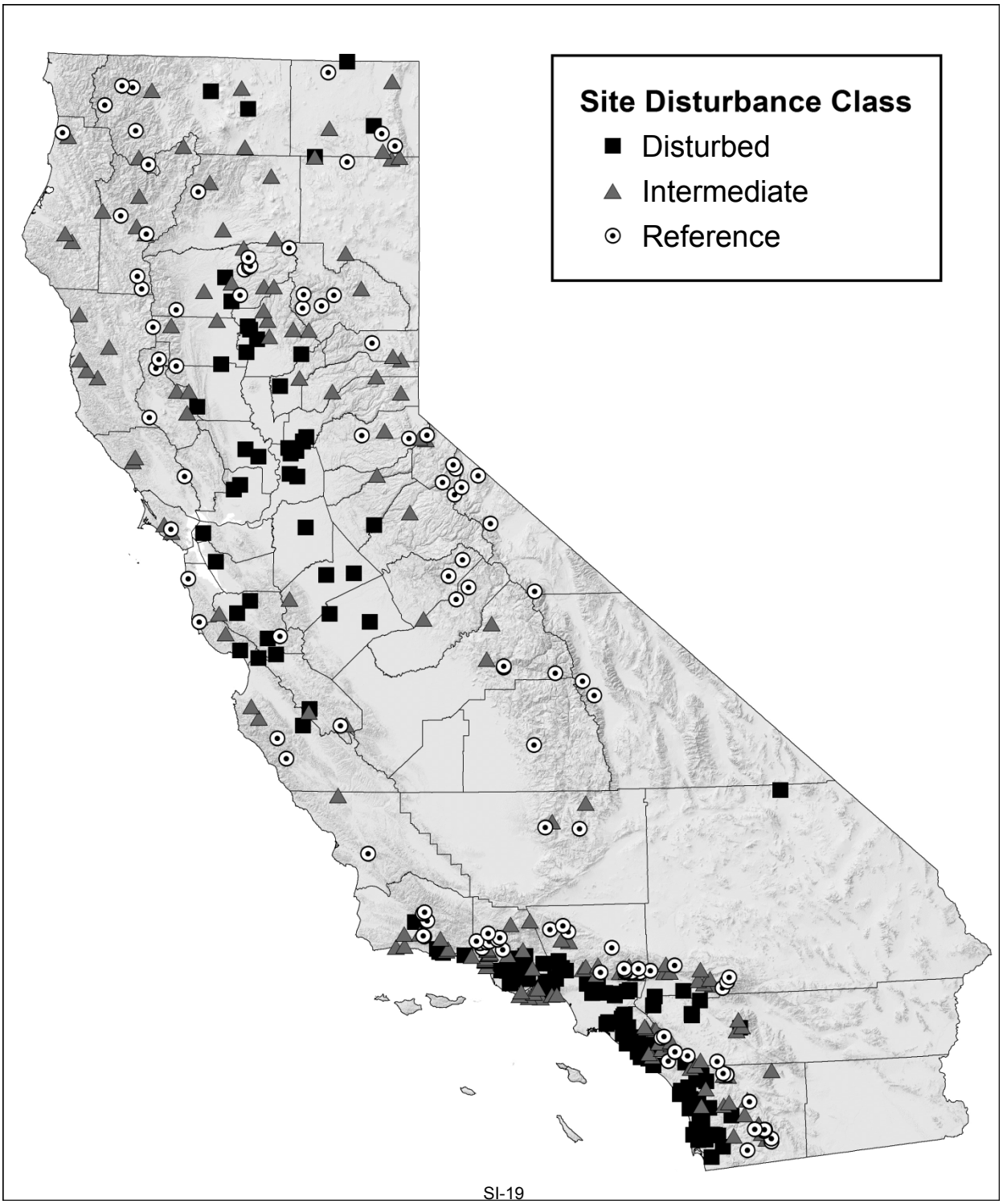
1	proportion of green algae belonging to Zygnemataceae (s, m)	soft	species	decrease	taxonomic group	Zygnemataceae	relative species number and biovolumes		mean of scores for the corresponding species number and biovolume metrics
1	proportion of green algae belonging to Zygnemataceae (s, sp)	soft	species	decrease	taxonomic group	Zygnemataceae	relative species numbers		proportion of total green algae (Chlorophyta+Charophyta) species belonging to Zygnemataceae
1	proportion Zygnemataceae (s, b)	soft	family	decrease	taxonomic group	Zygnemataceae	relative biovolumes		proportion of total micro+macro biovolume composed of Zygnemataceae
1	proportion Zygnemataceae (s, m)	soft	species	decrease	taxonomic group	Zygnemataceae	relative species number and biovolumes		mean of scores for the corresponding species number and biovolume metrics
1	proportion Zygnemataceae (s, sp)	soft	species	decrease	taxonomic group	Zygnemataceae	relative species numbers		proportion of total species that belong to Zygnemataceae
1	proportion high Cu indicators (s, b)	soft	species	increase	tolerance/ sensitivity	copper	relative biovolumes	indicator species analysis	proportion of total micro+macro biovolume composed of indicators of high copper (dissolved)
1	proportion low Cu indicators (s, b)	soft	species	decrease	tolerance/ sensitivity	copper	relative biovolumes	indicator species analysis	proportion of total micro+macro biovolume composed of indicators of low copper (dissolved)
1	proportion high TN indicators (s, b)	soft	species	increase	tolerance/ sensitivity	nitrogen	relative biovolumes	indicator species analysis	proportion of total micro+macro biovolume composed of indicators of high TN
1	proportion high TN indicators (s, sp)	soft	species	increase	tolerance/ sensitivity	nitrogen	relative species numbers	indicator species analysis	proportion of total species richness composed of high TN indicators
1	proportion low DOC indicators (s, b)	soft	species	decrease	tolerance/ sensitivity	organic pollution	relative biovolumes	indicator species analysis	proportion of total micro+macro biovolume composed of indicators of low DOC

1	proportion low DOC indicators (s, sp)	soft	species	decrease	tolerance/ sensitivity	organic pollution	relative species numbers	indicator species analysis	proportion of total species richness composed of low DOC indicators
1	proportion high TP indicators (s, b)	soft	species	increase	tolerance/ sensitivity	phosphorus	relative biovolumes	indicator species analysis	proportion of total micro+macro biovolume composed of indicators of high TP
1	proportion high TP indicators (s, sp)	soft	species	increase	tolerance/ sensitivity	phosphorus	relative species numbers	indicator species analysis	proportion of total species richness composed of high TP indicators

*In all cases where metrics were calculated based on proportion of valves, total number of species, or biovolumes associated within a certain indicator type, in any given sample, only the taxa for which indicator assignments were available were included in the corresponding metric calculation.

Online Resource 4: Locations of sites used for IBI development

Development and comparison of stream indices of biotic integrity using diatoms vs. non-diatom algae vs. a combination; J. Applied Phycology; A. Elizabeth Fetscher (Southern California Coastal Water Research Project, bettyf@sccwrp.org), Rosalina Stancheva, J. Patrick Kociolek, Robert G. Sheath, Eric D. Stein, Raphael D. Mazor, Peter R. Ode, Lilian B. Busse



Online Resource 5. Scoring ranges for diatom metrics used in IBIs

Development and comparison of stream indices of biotic integrity using diatoms vs. non-diatom algae vs. a combination; J. Applied Phycology; A. Elizabeth Fetscher (Southern California Coastal Water Research Project, bettyf@sccwrp.org), Rosalina Stancheva, J. Patrick Kociolek, Robert G. Sheath, Eric D. Stein, Raphael D. Mazor, Peter R. Ode, Lilian B. Busse

Metric score	proportion halobiontic (d)	proportion N heterotrophs (d)	proportion sediment tolerant (highly motile) (d)	proportion requiring >50% DO saturation (d)	proportion low TN indicators (d)	proportion low TP indicators (d)	proportion poly- & eutrophic (d)	proportion oligo- & beta-mesosaprobic (d)	proportion highly motile (d)	proportion A. minutissimum (d)	proportion requiring nearly 100% DO saturation (d)
0	0.533 +	0.512 +	0.488 +	0 to 0.632	0 to 0.009	0 to 0.009	0.954 +	0 to 0.221	0.417 +	0	0 to 0.023
1	0.475 to 0.532	0.445 to 0.511	0.436 to 0.487	0.633 to 0.673	0.010 to 0.093	0.010 to 0.090	0.880 to 0.953	0.222 to 0.300	0.373 to 0.416	> 0 to 0.034	0.024 to 0.087
2	0.417 to 0.474	0.389 to 0.444	0.385 to 0.435	0.674 to 0.713	0.094 to 0.177	0.091 to 0.171	0.806 to 0.879	0.301 to 0.380	0.329 to 0.372	0.035 to 0.068	0.088 to 0.152
3	0.359 to 0.416	0.333 to 0.388	0.333 to 0.384	0.714 to 0.754	0.178 to 0.260	0.172 to 0.252	0.732 to 0.805	0.381 to 0.460	0.286 to 0.328	0.069 to 0.102	0.153 to 0.216
4	0.301 to 0.358	0.277 to 0.332	0.282 to 0.332	0.755 to 0.794	0.261 to 0.344	0.253 to 0.333	0.659 to 0.731	0.461 to 0.539	0.242 to 0.285	0.103 to 0.136	0.217 to 0.281
5	0.243 to 0.300	0.221 to 0.276	0.231 to 0.281	0.795 to 0.835	0.345 to 0.428	0.334 to 0.414	0.585 to 0.658	0.540 to 0.619	0.198 to 0.241	0.137 to 0.170	0.282 to 0.345
6	0.185 to 0.242	0.165 to 0.220	0.179 to 0.230	0.836 to 0.875	0.429 to 0.512	0.415 to 0.495	0.511 to 0.584	0.620 to 0.699	0.155 to 0.197	0.171 to 0.204	0.346 to 0.410
7	0.127 to 0.184	0.109 to 0.164	0.128 to 0.178	0.876 to 0.916	0.513 to 0.595	0.496 to 0.576	0.437 to 0.510	0.700 to 0.778	0.111 to 0.154	0.205 to 0.239	0.411 to 0.474
8	0.069 to 0.126	0.053 to 0.108	0.076 to 0.127	0.917 to 0.956	0.596 to 0.679	0.577 to 0.658	0.363 to 0.436	0.779 to 0.858	0.067 to 0.110	0.240 to 0.273	0.475 to 0.539
9	0.011 to 0.068	0.008 to 0.052	0.025 to 0.075	0.957 to 0.997	0.680 to 0.763	0.659 to 0.739	0.289 to 0.362	0.859 to 0.938	0.024 to 0.066	0.274 to 0.307	0.540 to 0.603
10	< 0.011	< 0.008	< 0.025	> 0.997	> 0.763	> 0.739	< 0.289	> 0.938	< 0.024	> 0.307	> 0.603

Online Resource 6. Scoring ranges for soft algae metrics used in IBIs

Development and comparison of stream indices of biotic integrity using diatoms vs. non-diatom algae vs. a combination; J. Applied Phycology; A. Elizabeth Fetscher (Southern California Coastal Water Research Project, bettyf@sccwrp.org), Rosalina Stancheva, J. Patrick Kociolek, Robert G. Sheath, Eric D. Stein, Raphael D. Mazor, Peter R. Ode, Lilian B. Busse

Metric score	proportion high Cu indicators (s, sp)	proportion high DOC indicators (s, sp)	proportion low TP indicators (s, sp)	proportion ZHR (s, m)	proportion "non-reference" indicators (s, sp)	proportion high DOC indicators (s, b)	proportion "non-reference" indicators (s, b)	proportion ZHR (s, b)	proportion Chlorophyt a (s, b)	proportion of green algae belonging to CRUS (s, b)
0	0.357 +	0.714 +	0	0	0.462 +	1	0.999 +	0	0.999 +	1
1	0.317 to 0.356	0.650 to 0.713	> 0 to 0.032	> 0 to 0.067	0.419 to 0.461	0.889 to < 1	0.888 to 0.998	> 0 to 0.103	0.888 to 0.998	0.889 to < 1
2	0.278 to 0.316	0.586 to 0.649	0.033 to 0.064	0.068 to 0.134	0.376 to 0.418	0.778 to 0.888	0.777 to 0.887	0.104 to 0.205	0.777 to 0.887	0.778 to 0.888
3	0.238 to 0.277	0.521 to 0.585	0.065 to 0.096	0.135 to 0.202	0.333 to 0.375	0.667 to 0.777	0.666 to 0.776	0.206 to 0.308	0.666 to 0.776	0.667 to 0.777
4	0.198 to 0.237	0.457 to 0.520	0.097 to 0.128	0.203 to 0.269	0.291 to 0.332	0.555 to 0.666	0.555 to 0.665	0.309 to 0.411	0.555 to 0.665	0.555 to 0.666
5	0.159 to 0.197	0.393 to 0.456	0.129 to 0.160	0.270 to 0.336	0.248 to 0.290	0.444 to 0.554	0.444 to 0.554	0.412 to 0.513	0.444 to 0.554	0.444 to 0.554
6	0.119 to 0.158	0.329 to 0.392	0.161 to 0.192	0.337 to 0.403	0.205 to 0.247	0.333 to 0.443	0.333 to 0.443	0.514 to 0.616	0.333 to 0.443	0.333 to 0.443
7	0.079 to 0.118	0.264 to 0.328	0.193 to 0.224	0.404 to 0.470	0.162 to 0.204	0.222 to 0.332	0.222 to 0.332	0.617 to 0.719	0.222 to 0.332	0.222 to 0.332
8	0.040 to 0.078	0.200 to 0.263	0.225 to 0.255	0.471 to 0.537	0.120 to 0.161	0.111 to 0.221	0.111 to 0.221	0.720 to 0.821	0.111 to 0.221	0.111 to 0.221
9	0.001 to 0.039	0.136 to 0.199	0.256 to 0.287	0.538 to 0.605	0.077 to 0.119	0.001 to 0.110	0.001 to 0.110	0.822 to 0.924	0.001 to 0.110	0.001 to 0.110
10	< 0.001	< 0.136	> 0.287	> 0.605	< 0.077	< 0.001	< 0.001	> 0.924	< 0.001	< 0.001