A Technical Foundation for Biointegrity and Eutrophication Indicators and Thresholds for Modified Channels, Intermittent Streams, and Streams on the Central Valley Floor

Supplemental Material

Raphael D. Mazor

Andrew C. Rehn

Nicholas Lombardo

Martha Sutula

SOUTHERN CALIFORNIA COASTAL WATER RESEARCH PROJECT

Technical Report 1367

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SUPPLEMENTAL MATERIAL

Raphael D. Mazor[1], Andrew C. Rehn[2], Nicholas Lombardo[1], and Martha Sutula[1]

[1]*Southern California Coastal Water Research Project, Costa Mesa, CA*

[2]*California Department of Fish and Wildlife, Aquatic Bioassessment Lab, Rancho Cordova, CA*
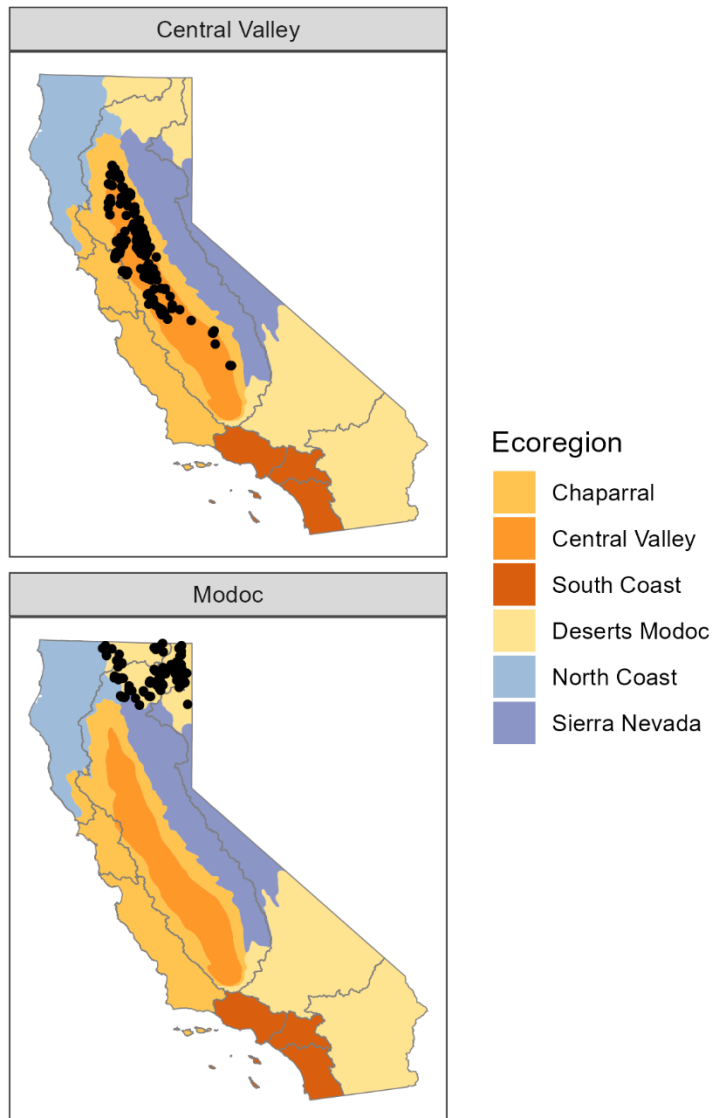
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Technical Report 1367

SUPPLEMENTAL MATERIAL

Supplement S1: Maps of sites used in selected data analyses

Supplement S1-1: Central Valley Floor and Modoc Plateau sites

These sites were used as "test sites" to evaluate the representativeness of bioassessment tool calibration data sets in Part 1: Bioassessment data and model fitness review.

Supplement S3: Regional response models

Regional Board	Study area	# sites
Central Valley	Central Valley	306
Central Valley	Modoc	104
Lahontan	Modoc	2
North Coast	Modoc	20
San Francisco Bay	Central Valley	5

Supplement S1-2: Perennial, regularly flowing, and seldomly flowing intermittent streams

These sites were used to evaluate the applicability of bioassessment indices in perennial (P), regularly flowing intermittent (RFI), and seldom flowing intermittent (SFI) reference sites.
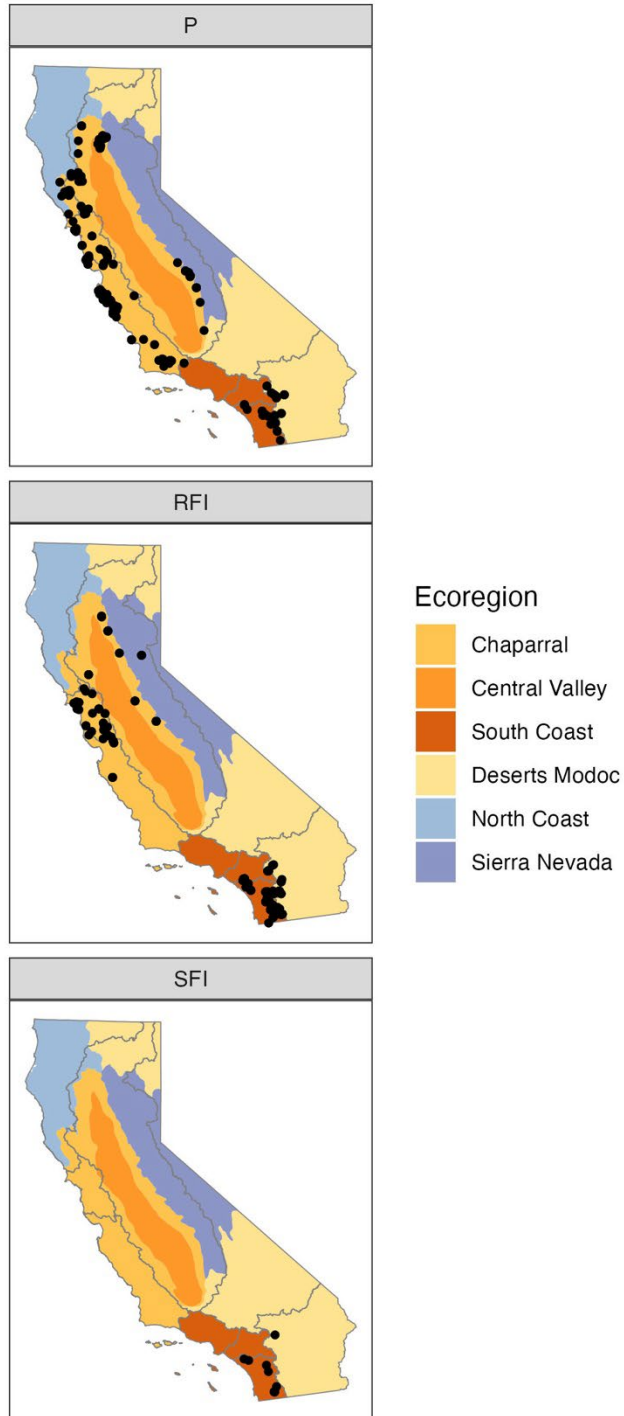
Supplement S3: Regional response models

Ecoregion	Flow status	# reference sites
Chaparral	Perennial	123
Chaparral	Regularly flowing intermittent	35
South Coast	Perennial	19
South Coast	Regularly flowing intermittent	53
South Coast	Seldom flowing intermittent	8
Deserts Modoc	Perennial	10
Deserts Modoc	Regularly flowing intermittent	10
Deserts Modoc	Seldom flowing intermittent	1
Sierra Nevada	Perennial	1
Sierra Nevada	Regularly flowing intermittent	1

Supplement S1-3: Bed and bank material

These sites were used to evaluate biointegrity and eutrophication indicators in streams classified based on bed and bank material.
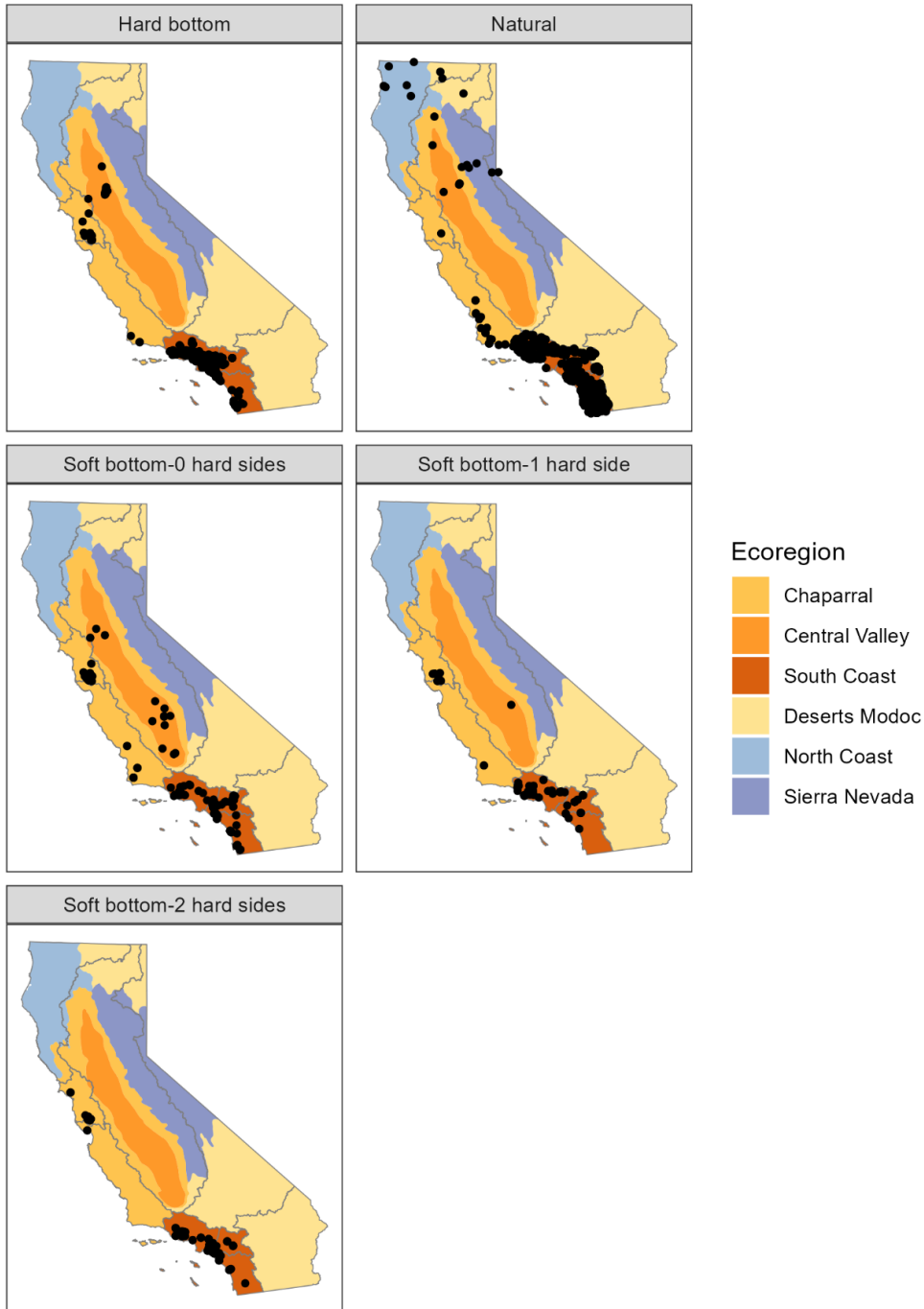

Note: Most soft-bottom channels in the Central Valley are also considered "constructed channels", as shown in Supplement S1-4.

Supplement S3: Regional response models

Ecoregion	Class	# sites
Chaparral	Hard bottom	16
Chaparral	Natural	17
Chaparral	Soft bottom-0 hard sides	29
Chaparral	Soft bottom-1 hard side	9
Chaparral	Soft bottom-2 hard sides	7
Central Valley	Hard bottom	11
Central Valley	Natural	4
Central Valley	Soft bottom-0 hard sides	13
Central Valley	Soft bottom-1 hard side	1
South Coast	Hard bottom	208
South Coast	Natural	664
South Coast	Soft bottom-0 hard sides	56
South Coast	Soft bottom-1 hard side	50
South Coast	Soft bottom-2 hard sides	64
Deserts Modoc	Natural	3
North Coast	Natural	6
Sierra Nevada	Natural	5

Supplement S1-4: Constructed channels

These sites were used to evaluate biointegrity and eutrophication indicators in constructed channels or channels with ambiguous watersheds.
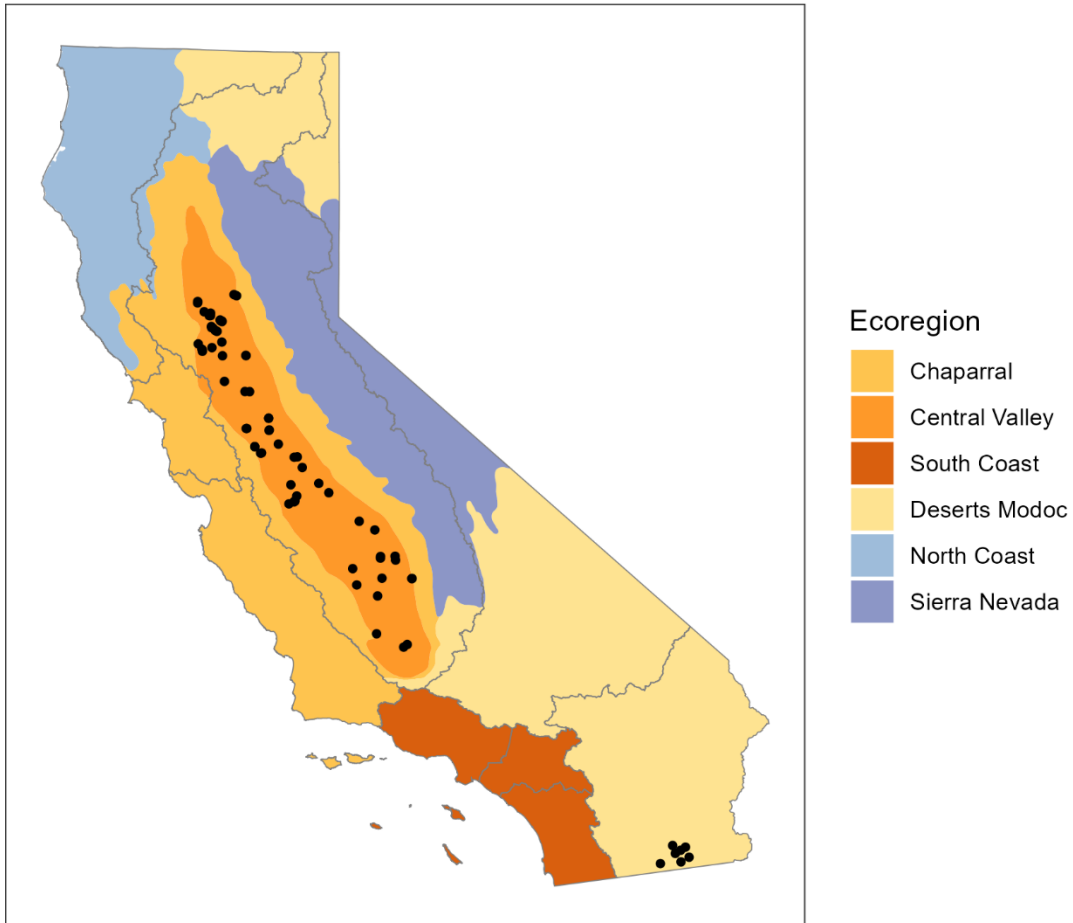
Ecoregion	# sites
Central Valley	65
Deserts Modoc	7

Supplement S2: Aerial imagery of high-scoring sites in the Central Valley ecoregion

Mill Creek ~0.6mi above Shasta Blvd (Tehama County)

Site code: 504PS0739.

Sample date: 2015-05-26. CSCI: 0.83

Watershed-scale (left) and reach-scale (right) aerial imagery

Deer Creek above Leininger Rd. (Tehama County)

504PS0227 (~3mi above Leininger Rd.)

Sample date: 2009-08-12. CSCI: 0.97

504FC1115 (~2.8mi above Leininger Rd)

Sample date: 2014-06-19. CSCI: 0.91

Watershed-scale (left) and reach-scale (right) aerial imagery

Field photos of site 504PS0227, taken on 2009-08-12.

Pine Creek ~0.2mi below Meridian Rd. (Tehama County)

504PS0574

Sample date: 2013-06-06. CSCI: 0.83

Watershed-scale (left) and reach-scale (right) aerial imagery

Butte Creek ~0.7 mi above Midway Rd. (Butte County)

520FCA019

Sample date: 2019-06-19. CSCI: 0.88

Sample date: 2019-07-08. CSCI: 0.59

Watershed-scale (left) and reach-scale (right) aerial imagery

Dry Creek at Hwy 149. (Butte County)

520FCA019

Sample date: 2004-04-07. CSCI: 0.94

Watershed-scale (left) and reach-scale (right) aerial imagery

Yuba River at Marysville (Yuba County)

515YRMxxx

Sample date: 1997-10-03. CSCI: 0.68

Sample date: 1998-10-08. CSCI: 0.96

Sample date: 1999-10-13. CSCI: 0.86

Sample date: 2000-10-27. CSCI: 0.75

Note: This site is likely boatable (i.e., non-wadeable). The CSCI is not intended for use in boatable streams.

Watershed-scale (left) and reach-scale (right) aerial imagery

American River ~1.4mi above Watt Ave (Sacramento County)

519FCA067

Sample date: 2008-09-09. CSCI: 0.86

Note: This site is considered boatable (i.e., non-wadeable). The CSCI is not intended for use in boatable streams.

Watershed-scale (left) and reach-scale (right) aerial imagery

Cosumnes River 0.25 mi. below Hwy 16 crossing (Sacramento County)

531Site14

Sample date: 1995-10-12. CSCI: 0.85

Watershed-scale (left) and reach-scale (right) aerial imagery

Tuolumne River ~4mi above Hickman Rd. (Stanislaus County)

535PS0265

Sample date: 2009-08-20. CSCI: 0.80
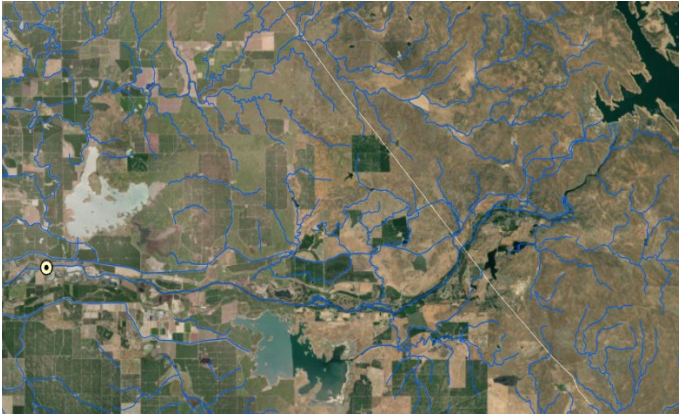
Watershed-scale (left) and reach-scale (right) aerial imagery

Field photos of site 535PS0265, taken on 2009-08-20.

Byrd Slough above Hwy 180. (Fresno County)

551PS0308

Sample date: 2010-07-27. CSCI: 0.81

Watershed-scale (left) and reach-scale (right) aerial imagery

Field photos of site 551PS0308, taken on 2010-07-27.

Supplement S3: Regional response models

Shape-constrained additive models were used to evaluate the responses of bioassessment indices to eutrophication stress at the statewide level, with results presented in Figure 43. Below we present models calculated for aggregated ecoregions (i.e., xeric vs. wet) as well as individual ecoregions (i.e., North Coast, Chaparral, South Coast, Central Valley, Sierra Nevada, and Desert/Modoc).

Statewide response models
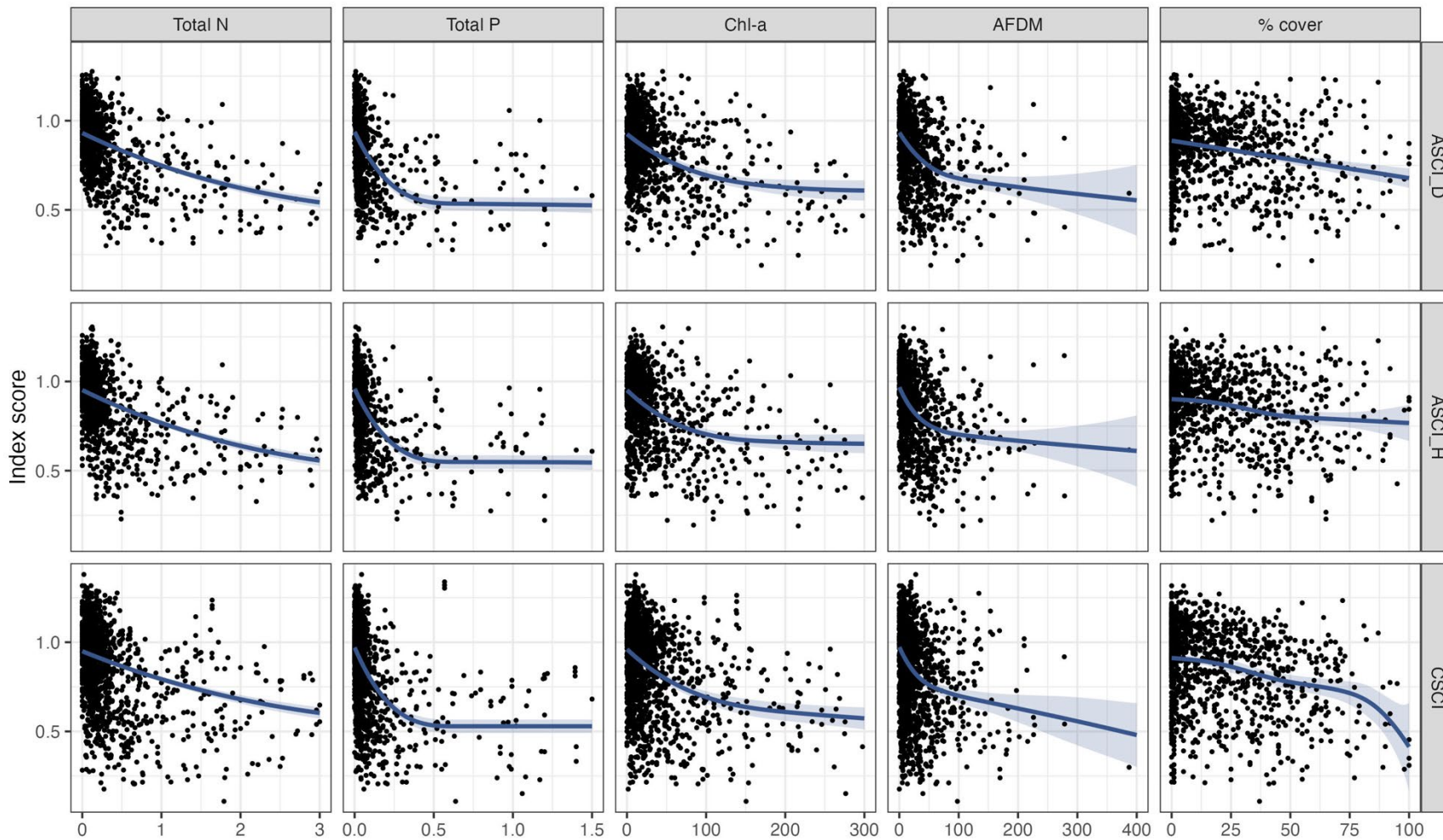
Aggregated ecoregional models
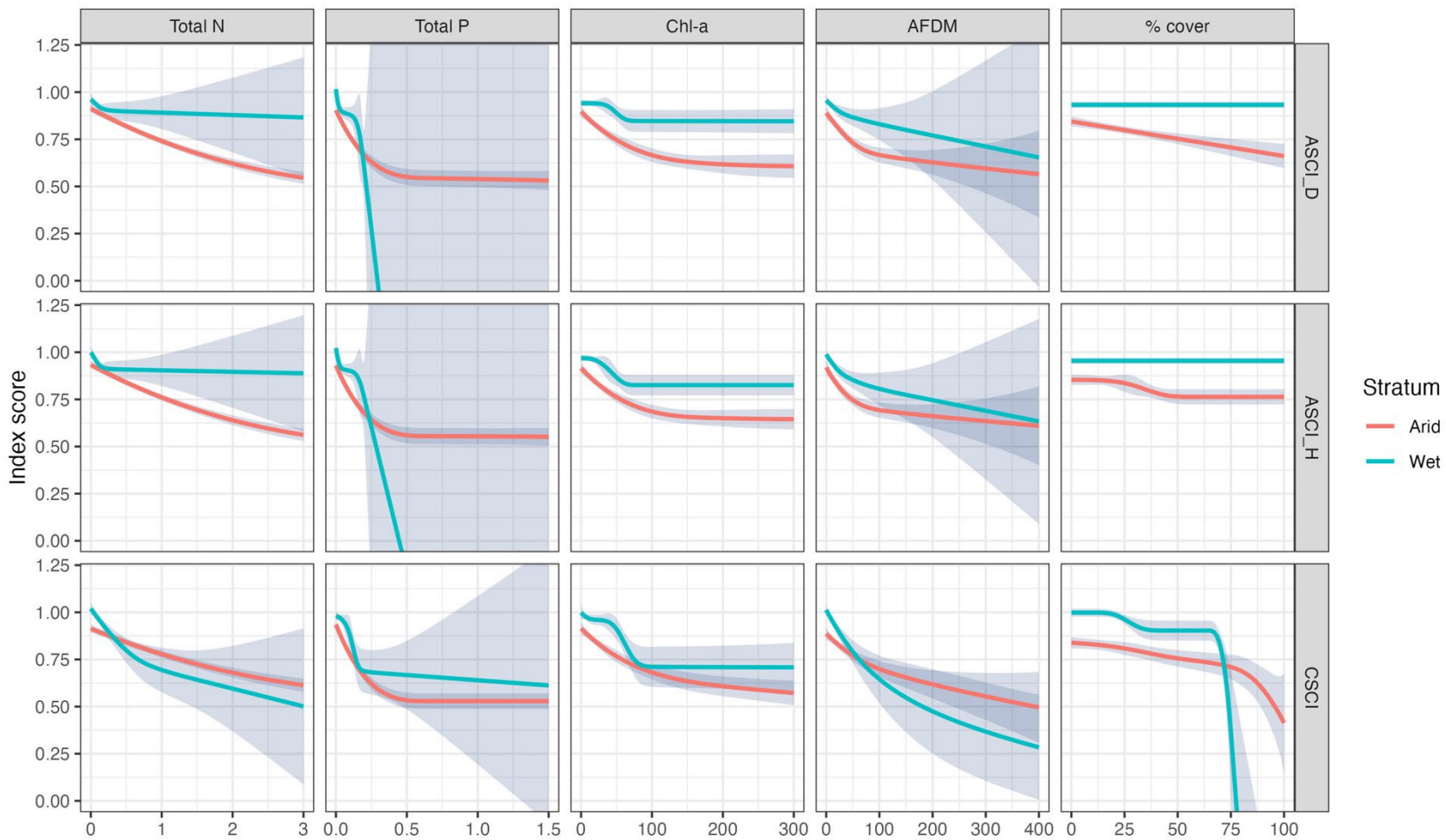
Arid aggregated ecoregion: Chaparral, South Coast, Central Valley, and Desert/Modoc

Supplement S3: Regional response models

Wet aggregated ecoregion: North Coast, Sierra Nevada

Ecoregional models
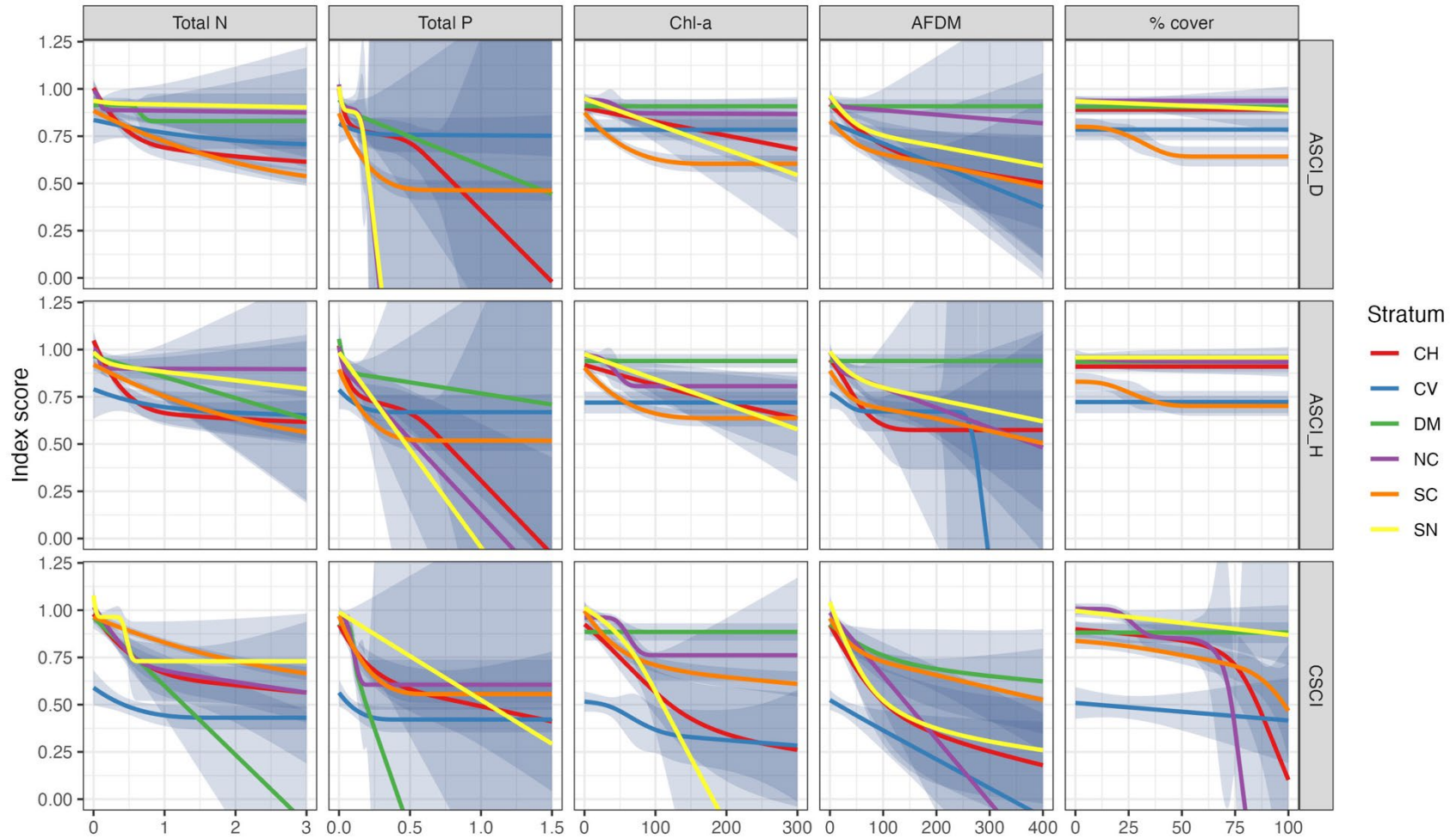
Supplement S3: Regional response models

Summaries of shape-constrained additive models developed at the statewide (Stratum = California), aggregated ecoregion (Stratum = Arid, Wet), or ecoregion (Stratum = Chaparral [CH], Central Valley [CV], Desert/Modoc [DM], North Coast [NC], South Coast [SC]) levels. AIC: Akaike information criterion. AIC_null: AIC for null model (i.e., a model based on mean index scores and not related to eutrophication levels). Lower AIC values indicate that the model extracts more information from the data. AIC values that are substantially lower than AIC_null values indicate eutrophication indicator values are useful for predicting index scores. Deviance explained: The percent of total deviance explained by the model. Higher values indicate that the model explains a higher percent of the variability in index scores. R^2: Adjusted r-squared of the model. Higher values indicate a stronger relationship between index scores and eutrophication indicator levels. F: F-statistic associated with the eutrophication indicator coefficient in the model. Higher values indicate a stronger relationship between index scores and eutrophication indicator levels. Blank cells indicate that a model could not be calibrated. p: p-value associated with the eutrophication indicator coefficient in the model. p-values are the probability of observing the data assuming that there is no relationship between index scores and eutrophication indicator levels. Lower values indicate a low probability that the observed relationship is due to random chance. Blank cells indicate that a model could not be calibrated. n: Number of samples used to calibrate the model.

Eutrophication indicator	Index	Stratum	AIC	AIC_null	Deviance explained	R^2	F	p	n
Total N	ASCI_D	California	-648	-271.5	37.9	0.378	483.4	5.66E-97	794
Total N	ASCI_H	California	-661.1	-263.1	39.7	0.396	244.1	1.34E-99	794
Total N	CSCI	California	-318.6	-16.4	22.8	0.227	119	7.54E-67	1186
Total P	ASCI_D	California	-546.6	-271.5	29.8	0.296	99.4	8.48E-63	794
Total P	ASCI_H	California	-557.5	-263.1	31.5	0.312	115.5	1.38E-69	794
Total P	CSCI	California	-338.3	-16.4	23.9	0.238	371.7	5.65E-77	1186
Chl-a	ASCI_D	California	-424.9	-271.5	18	0.178	86.7	1.08E-35	794
Chl-a	ASCI_H	California	-419.1	-263.1	18.2	0.18	86.1	7.41E-36	794
Chl-a	CSCI	California	-201.3	-16.4	14.8	0.146	63.6	2.47E-40	1186
AFDM	ASCI_D	California	-409.4	-271.5	16.5	0.162	51.3	4.35E-31	794
AFDM	ASCI_H	California	-410.4	-263.1	17.5	0.172	54.6	3.76E-33	794
AFDM	CSCI	California	-162	-16.4	12	0.118	45.1	5.08E-31	1186

Supplement S3: Regional response models

Eutrophication indicator	Index	Stratum	AIC	AIC_null	Deviance explained	R^2	F	p	n
% cover	ASCI_D	California	-308.9	-271.4	5.4	0.053	40.4	3.49E-10	708
% cover	ASCI_H	California	-307.5	-283.8	4	0.036	9.5	3.45E-06	708
% cover	CSCI	California	-108.4	-51.6	8.1	0.077	15.5	1.13E-12	756
Total N	ASCI_D	Arid	-343.4	-100.6	37.6	0.375	311.4	5.69E-62	519
Total N	ASCI_D	Wet	-336.3	-335	1.6	0.01	2.2	0.11732588	275
Total N	ASCI_H	Arid	-340.1	-87.4	39	0.388	150.1	1.92E-61	519
Total N	ASCI_H	Wet	-362.4	-353.7	4.3	0.037	6.1	0.00269288	275
Total N	CSCI	Arid	-104.4	69	21.8	0.215	68.2	3.21E-39	728
Total N	CSCI	Wet	-269	-235.8	7.8	0.074	15.7	4.44E-08	458
Total P	ASCI_D	Arid	-260.3	-100.6	27.3	0.269	56.6	1.17E-35	519
Total P	ASCI_D	Wet	-359.9	-335	10.9	0.098	8.5	3.24E-06	275
Total P	ASCI_H	Arid	-262.8	-87.4	29.4	0.291	68.7	1.08E-40	519
Total P	ASCI_H	Wet	-370.4	-353.7	8.1	0.07	6.5	0.0001065	275
Total P	CSCI	Arid	-130.4	69	24.2	0.241	231.3	6.22E-48	728
Total P	CSCI	Wet	-258.1	-235.8	5.7	0.052	9.9	6.39E-06	458
Chl-a	ASCI_D	Arid	-191.2	-100.6	16.7	0.164	51.6	1.76E-21	519
Chl-a	ASCI_D	Wet	-341.6	-335	3.4	0.029	5.6	0.00667092	275
Chl-a	ASCI_H	Arid	-169.3	-87.4	15.1	0.148	47.9	2.78E-18	519
Chl-a	ASCI_H	Wet	-375.9	-353.7	9.1	0.084	13.6	2.30E-06	275
Chl-a	CSCI	Arid	-27.2	69	13	0.127	34.9	1.37E-21	728
Chl-a	CSCI	Wet	-258.5	-235.8	5.9	0.054	9.8	5.09E-06	458
AFDM	ASCI_D	Arid	-163.1	-100.6	12.1	0.117	25	4.21E-14	519
AFDM	ASCI_D	Wet	-341.8	-335	3.7	0.031	4.7	0.00841059	275
AFDM	ASCI_H	Arid	-147	-87.4	11.7	0.112	23.6	1.13E-13	519
AFDM	ASCI_H	Wet	-374.7	-353.7	8.6	0.08	11.1	1.06E-05	275
AFDM	CSCI	Arid	24.7	69	6.5	0.062	18.4	4.06E-10	728
AFDM	CSCI	Wet	-279.8	-235.8	9.9	0.096	22.5	1.27E-10	458
% cover	ASCI_D	Arid	-128	-109.8	4.3	0.041	20.4	7.77E-06	461
% cover	ASCI_D	Wet	-298.4	-298.4	0	0			247

Supplement S3: Regional response models

Eutrophication indicator	Index	Stratum	AIC	AIC_null	Deviance explained	R^2	F	p	n
% cover	ASCI_H	Arid	-119.1	-109.5	2.9	0.025	6.9	0.0011374	461
% cover	ASCI_H	Wet	-325.2	-325.2	0	0			247
% cover	CSCI	Arid	-23.4	-4.3	5.1	0.045	7	4.28E-05	481
% cover	CSCI	Wet	-212.6	-193	8.2	0.076	12.2	8.35E-06	275
Total N	ASCI_D	CH	-152.3	-109.7	28.1	0.27	21.5	4.92E-10	142
Total N	ASCI_D	CV	-20	-21.3	4.4	0.004	0.7	0.4623678	39
Total N	ASCI_D	DM	-57.9	-58.7	2.1	0.004	1.2	0.27896479	57
Total N	ASCI_D	NC	-146	-141.3	7.1	0.055	3.6	0.0226716	120
Total N	ASCI_D	SC	-140	-6.2	38.3	0.381	173.3	3.38E-34	281
Total N	ASCI_D	SN	-187.1	-189.8	0.1	-0.008	0.1	0.8514072	155
Total N	ASCI_H	CH	-136.3	-84.1	32.6	0.317	29.1	2.37E-12	142
Total N	ASCI_H	CV	-16.1	-18.3	4.9	-0.006	0.7	0.51114213	39
Total N	ASCI_H	DM	-60.4	-60.5	3.4	0.016	1.9	0.17291549	57
Total N	ASCI_H	NC	-127.6	-122.2	7	0.057	4.4	0.01451495	120
Total N	ASCI_H	SC	-158	-8.9	42.2	0.417	79.5	1.54E-35	281
Total N	ASCI_H	SN	-237.9	-237.2	2.4	0.014	2.2	0.11326062	155
Total N	CSCI	CH	-60.2	-6.4	23.5	0.226	21.2	1.59E-12	220
Total N	CSCI	CV	-42.7	-38.9	12.7	0.095	3.9	0.02535436	57
Total N	CSCI	DM	-38.5	-28.5	16.3	0.15	12.5	0.00067214	68
Total N	CSCI	NC	-134	-109.8	11.1	0.103	11.6	3.39E-06	241
Total N	CSCI	SC	-126.1	15.6	31.9	0.314	55.1	1.14E-32	383
Total N	CSCI	SN	-133.8	-125.1	5.9	0.049	5.4	0.00297314	217
Total P	ASCI_D	CH	-137.5	-109.7	21.4	0.196	10	9.48E-07	142
Total P	ASCI_D	CV	-18.8	-21.3	1.7	-0.026	0.4	0.68205312	39
Total P	ASCI_D	DM	-57.9	-58.7	3	0.008	1	0.32183977	57
Total P	ASCI_D	NC	-149.1	-141.3	10.7	0.085	4.4	0.00493397	120
Total P	ASCI_D	SC	-117.5	-6.2	34	0.333	47.8	1.33E-26	281
Total P	ASCI_D	SN	-201.9	-189.8	11.5	0.095	5.3	0.00083004	155
Total P	ASCI_H	CH	-121.9	-84.1	26.8	0.251	13.8	6.08E-09	142

Supplement S3: Regional response models

Eutrophication indicator	Index	Stratum	AIC	AIC_null	Deviance explained	R^2	F	p	n
Total P	ASCI_H	CV	-17	-18.3	6.8	0.016	1.3	0.28327397	39
Total P	ASCI_H	DM	-64.8	-60.5	12.8	0.1	3.8	0.02693483	57
Total P	ASCI_H	NC	-127.8	-122.2	7.6	0.061	4.3	0.013168	120
Total P	ASCI_H	SC	-111.8	-8.9	31.6	0.311	64.3	4.63E-25	281
Total P	ASCI_H	SN	-244.7	-237.2	5.9	0.053	9.4	0.00242295	155
Total P	CSCI	CH	-31.9	-6.4	12.5	0.117	13.3	1.39E-06	220
Total P	CSCI	CV	-43.1	-38.9	13.4	0.102	4.2	0.02037424	57
Total P	CSCI	DM	-44.1	-28.5	26.4	0.234	7.8	0.00016591	68
Total P	CSCI	NC	-137	-109.8	12.1	0.114	16.4	1.95E-07	241
Total P	CSCI	SC	-122.4	15.6	30.6	0.304	168.1	3.44E-34	383
Total P	CSCI	SN	-124.2	-125.1	0.5	0	1.1	0.30158492	217
Chl-a	ASCI_D	CH	-112.8	-109.7	3.6	0.029	5.2	0.02455087	142
Chl-a	ASCI_D	CV	-21.3	-21.3	0	0			39
Chl-a	ASCI_D	DM	-58.7	-58.7	0	0			57
Chl-a	ASCI_D	NC	-141.5	-141.3	2.9	0.015	1.9	0.15475995	120
Chl-a	ASCI_D	SC	-51.2	-6.2	15.4	0.151	50.6	7.59E-12	281
Chl-a	ASCI_D	SN	-193.5	-189.8	3.7	0.03	5.6	0.01858452	155
Chl-a	ASCI_H	CH	-88.7	-84.1	4.8	0.04	5.8	0.01116813	142
Chl-a	ASCI_H	CV	-18.3	-18.3	0	0			39
Chl-a	ASCI_H	DM	-60.5	-60.5	0	0			57
Chl-a	ASCI_H	NC	-134.6	-122.2	12.8	0.113	8.6	0.00032717	120
Chl-a	ASCI_H	SC	-52.7	-8.9	15	0.147	49.3	1.41E-11	281
Chl-a	ASCI_H	SN	-243	-237.2	4.9	0.042	7.6	0.00622824	155
Chl-a	CSCI	CH	-35.4	-6.4	14.1	0.132	13.4	3.49E-07	220
Chl-a	CSCI	CV	-41.4	-38.9	10.6	0.074	2.6	0.07164369	57
Chl-a	CSCI	DM	-28.5	-28.5	0	0			68
Chl-a	CSCI	NC	-115.8	-109.8	3.3	0.029	8.1	0.0047279	241
Chl-a	CSCI	SC	-79.4	15.6	23.1	0.225	34.4	3.23E-21	383
Chl-a	CSCI	SN	-146.6	-125.1	10.9	0.102	12.1	6.89E-06	217

Supplement S3: Regional response models

Eutrophication indicator	Index	Stratum	AIC	AIC_null	Deviance explained	R^2	F	p	n
AFDM	ASCI_D	CH	-119.9	-109.7	9.2	0.081	6.8	0.00136115	142
AFDM	ASCI_D	CV	-23.8	-21.3	10.9	0.085	4.5	0.0399126	39
AFDM	ASCI_D	DM	-58.7	-58.7	0	0			57
AFDM	ASCI_D	NC	-140.4	-141.3	1.7	0.005	1.3	0.26617225	120
AFDM	ASCI_D	SC	-21.4	-6.2	6.5	0.059	8.2	0.00018516	281
AFDM	ASCI_D	SN	-198.5	-189.8	7.5	0.065	6.1	0.0029287	155
AFDM	ASCI_H	CH	-99.8	-84.1	13	0.117	10.4	6.17E-05	142
AFDM	ASCI_H	CV	-20.2	-18.3	14.1	0.093	2.9	0.0648751	39
AFDM	ASCI_H	DM	-60.5	-60.5	0	0			57
AFDM	ASCI_H	NC	-129.5	-122.2	8.7	0.073	4.9	0.00753803	120
AFDM	ASCI_H	SC	-28	-8.9	7.9	0.072	9.6	2.76E-05	281
AFDM	ASCI_H	SN	-248.1	-237.2	8.8	0.078	7.2	0.00097871	155
AFDM	CSCI	CH	-26.4	-6.4	10.2	0.094	10.7	1.89E-05	220
AFDM	CSCI	CV	-42.7	-38.9	9.8	0.081	5.7	0.0186826	57
AFDM	CSCI	DM	-30.1	-28.5	6.8	0.046	2.2	0.12309623	68
AFDM	CSCI	NC	-119.3	-109.8	4.7	0.043	11.3	0.00081376	241
AFDM	CSCI	SC	-21	15.6	10.4	0.098	13.5	9.67E-09	383
AFDM	CSCI	SN	-164.9	-125.1	18.2	0.175	22.1	7.62E-10	217
% cover	ASCI_D	CH	-106.1	-106.1	0	0			132
% cover	ASCI_D	CV	-19.7	-19.7	0	0			38
% cover	ASCI_D	DM	-55.4	-55.4	0	0			54
% cover	ASCI_D	NC	-126.1	-126.1	0	0			106
% cover	ASCI_D	SC	-32.9	-16.9	8.1	0.073	10.3	4.91E-05	237
% cover	ASCI_D	SN	-166.9	-168.5	0.3	-0.004	0.4	0.52327819	141
% cover	ASCI_H	CH	-93.5	-93.5	0	0			132
% cover	ASCI_H	CV	-17.2	-17.2	0	0			38
% cover	ASCI_H	DM	-56.3	-56.3	0	0			54
% cover	ASCI_H	NC	-108.8	-111.3	0.2	-0.011	0.2	0.75388785	106
% cover	ASCI_H	SC	-33	-23.3	5.6	0.048	7	0.00115246	237

Supplement S3: Regional response models

Eutrophication indicator	Index	Stratum	AIC	AIC_null	Deviance explained	R^2	F	p	n
% cover	ASCI_H	SN	-217.1	-217.1	0	0			141
% cover	CSCI	CH	-26	-18.5	8.3	0.068	4.9	0.00541892	135
% cover	CSCI	CV	-15.2	-16.7	1.2	-0.016	0.4	0.51473041	38
% cover	CSCI	DM	-13.5	-13.5	0	0			55
% cover	CSCI	NC	-111.3	-87.9	24.1	0.22	10.4	3.78E-06	105
% cover	CSCI	SC	-50.7	-38.5	6.9	0.058	5.7	0.00072257	253
% cover	CSCI	SN	-103	-103	1.2	0.006	2	0.15361957	170

Supplement S4: Biointegrity and eutrophication thresholds for intermittent streams, modified channels, and streams on the Central Valley floor derived at multiple levels of stringency

Potential biointegrity and eutrophication thresholds for different classes of streams. RFI-N: Regularly flowing intermittent streams in northern xeric California. RFI-S: Regularly flowing intermittent streams in southern California. CVF: Central Valley Floor. HB: Hard-bottom streams. SB2: Soft-bottom streams with two hardened banks. SB1: Soft-bottom streams with one hardened bank. SB0: Soft-bottom streams with no hardened banks. CC: Constructed channels. NA: Threshold could not be identified.

Note: This table may also be accessed from the threshold query dashboard (https://sccwrp.shinyapps.io/ModifiedChannelThresholds/)

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
Wadeable streams	Reference	30th percentile of reference values	High	Biointegrity	CSCI	0.92	
Wadeable streams	Reference	10th percentile of reference values	Intermediate	Biointegrity	CSCI	0.79	
Wadeable streams	Reference	1st percentile of reference values	Low	Biointegrity	CSCI	0.63	
RFI-N	Reference	30th percentile of reference values	High	Biointegrity	CSCI	0.73	
RFI-N	Reference	10th percentile of reference values	Intermediate	Biointegrity	CSCI	0.61	
RFI-N	Reference	1st percentile of reference values	Low	Biointegrity	CSCI	0.44	
RFI-S	Reference	30th percentile of reference values	High	Biointegrity	CSCI	0.89	
RFI-S	Reference	10th percentile of reference values	Intermediate	Biointegrity	CSCI	0.82	Biointegrity goal is higher than reference.

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
RFI-S	Reference	1st percentile of reference values	Low	Biointegrity	CSCI	0.71	Biointegrity goal is higher than reference.
CVF	Best observed	99th percentile of observed values	High	Biointegrity	CSCI	0.85	
CVF	Best observed	90th percentile of observed values	Intermediate	Biointegrity	CSCI	0.67	
CVF	Best observed	70th percentile of observed values	Low	Biointegrity	CSCI	0.52	
HB	Best observed	99th percentile of observed values	High	Biointegrity	CSCI	0.74	
HB	Best observed	90th percentile of observed values	Intermediate	Biointegrity	CSCI	0.67	
HB	Best observed	70th percentile of observed values	Low	Biointegrity	CSCI	0.55	
SB2	Best observed	99th percentile of observed values	High	Biointegrity	CSCI	0.96	Biointegrity goal is higher than reference.
SB2	Best observed	90th percentile of observed values	Intermediate	Biointegrity	CSCI	0.75	
SB2	Best observed	70th percentile of observed values	Low	Biointegrity	CSCI	0.64	Biointegrity goal is higher than reference.
SB1	Best observed	99th percentile of observed values	High	Biointegrity	CSCI	1.1	Biointegrity goal is higher than reference.
SB1	Best observed	90th percentile of observed values	Intermediate	Biointegrity	CSCI	1	Biointegrity goal is higher than reference.
SB1	Best observed	70th percentile of observed values	Low	Biointegrity	CSCI	0.81	Biointegrity goal is higher than reference.
SB0	Best observed	99th percentile of observed values	High	Biointegrity	CSCI	0.99	Biointegrity goal is higher than reference.
SB0	Best observed	90th percentile of observed values	Intermediate	Biointegrity	CSCI	0.78	
SB0	Best observed	70th percentile of observed values	Low	Biointegrity	CSCI	0.66	Biointegrity goal is higher than reference.

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
CC	Best observed	99th percentile of observed values	High	Biointegrity	CSCI	0.53	
CC	Best observed	90th percentile of observed values	Intermediate	Biointegrity	CSCI	0.45	
CC	Best observed	70th percentile of observed values	Low	Biointegrity	CSCI	0.37	
SB0_CVF	Best observed	99th percentile of observed values	High	Biointegrity	CSCI	0.51	
SB0_CVF	Best observed	90th percentile of observed values	Intermediate	Biointegrity	CSCI	0.47	
SB0_CVF	Best observed	70th percentile of observed values	Low	Biointegrity	CSCI	0.38	
HB_CVF	Best observed	99th percentile of observed values	High	Biointegrity	CSCI	0.57	
HB_CVF	Best observed	90th percentile of observed values	Intermediate	Biointegrity	CSCI	0.49	
HB_CVF	Best observed	70th percentile of observed values	Low	Biointegrity	CSCI	0.39	
CC_CVF	Best observed	99th percentile of observed values	High	Biointegrity	CSCI	0.53	
CC_CVF	Best observed	90th percentile of observed values	Intermediate	Biointegrity	CSCI	0.45	
CC_CVF	Best observed	70th percentile of observed values	Low	Biointegrity	CSCI	0.37	
Wadeable streams	Reference	30th percentile of reference values	High	Biointegrity	ASCI_D	0.94	
Wadeable streams	Reference	10th percentile of reference values	Intermediate	Biointegrity	ASCI_D	0.86	
Wadeable streams	Reference	1st percentile of reference values	Low	Biointegrity	ASCI_D	0.75	
RFI-N	Reference	30th percentile of reference values	High	Biointegrity	ASCI_D	0.98	Biointegrity goal is higher than reference.

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
RFI-N	Reference	10th percentile of reference values	Intermediate	Biointegrity	ASCI_D	0.9	Biointegrity goal is higher than reference.
RFI-N	Reference	1st percentile of reference values	Low	Biointegrity	ASCI_D	0.78	Biointegrity goal is higher than reference.
RFI-S	Reference	30th percentile of reference values	High	Biointegrity	ASCI_D	0.91	
RFI-S	Reference	10th percentile of reference values	Intermediate	Biointegrity	ASCI_D	0.8	
RFI-S	Reference	1st percentile of reference values	Low	Biointegrity	ASCI_D	0.66	
CVF	Best observed	99th percentile of observed values	High	Biointegrity	ASCI_D	1.13	Biointegrity goal is higher than reference.
CVF	Best observed	90th percentile of observed values	Intermediate	Biointegrity	ASCI_D	1.02	Biointegrity goal is higher than reference.
CVF	Best observed	70th percentile of observed values	Low	Biointegrity	ASCI_D	0.92	Biointegrity goal is higher than reference.
HB	Best observed	99th percentile of observed values	High	Biointegrity	ASCI_D	1.05	Biointegrity goal is higher than reference.
HB	Best observed	90th percentile of observed values	Intermediate	Biointegrity	ASCI_D	0.88	Biointegrity goal is higher than reference.
HB	Best observed	70th percentile of observed values	Low	Biointegrity	ASCI_D	0.74	
SB2	Best observed	99th percentile of observed values	High	Biointegrity	ASCI_D	0.93	
SB2	Best observed	90th percentile of observed values	Intermediate	Biointegrity	ASCI_D	0.77	
SB2	Best observed	70th percentile of observed values	Low	Biointegrity	ASCI_D	0.64	
SB1	Best observed	99th percentile of observed values	High	Biointegrity	ASCI_D	1.01	Biointegrity goal is higher than reference.
SB1	Best observed	90th percentile of observed values	Intermediate	Biointegrity	ASCI_D	0.85	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB1	Best observed	70th percentile of observed values	Low	Biointegrity	ASCI_D	0.68	
SB0	Best observed	99th percentile of observed values	High	Biointegrity	ASCI_D	1.01	Biointegrity goal is higher than reference.
SB0	Best observed	90th percentile of observed values	Intermediate	Biointegrity	ASCI_D	0.77	
SB0	Best observed	70th percentile of observed values	Low	Biointegrity	ASCI_D	0.68	
CC	Best observed	99th percentile of observed values	High	Biointegrity	ASCI_D	NA	Insufficient data
CC	Best observed	90th percentile of observed values	Intermediate	Biointegrity	ASCI_D	NA	Insufficient data
CC	Best observed	70th percentile of observed values	Low	Biointegrity	ASCI_D	NA	Insufficient data
SB0_CVF	Best observed	99th percentile of observed values	High	Biointegrity	ASCI_D	0.84	
SB0_CVF	Best observed	90th percentile of observed values	Intermediate	Biointegrity	ASCI_D	0.83	
SB0_CVF	Best observed	70th percentile of observed values	Low	Biointegrity	ASCI_D	0.8	Biointegrity goal is higher than reference.
HB_CVF	Best observed	99th percentile of observed values	High	Biointegrity	ASCI_D	1.05	Biointegrity goal is higher than reference.
HB_CVF	Best observed	90th percentile of observed values	Intermediate	Biointegrity	ASCI_D	1.03	Biointegrity goal is higher than reference.
HB_CVF	Best observed	70th percentile of observed values	Low	Biointegrity	ASCI_D	0.96	Biointegrity goal is higher than reference.
CC_CVF	Best observed	99th percentile of observed values	High	Biointegrity	ASCI_D	NA	Insufficient data
CC_CVF	Best observed	90th percentile of observed values	Intermediate	Biointegrity	ASCI_D	NA	Insufficient data
CC_CVF	Best observed	70th percentile of observed values	Low	Biointegrity	ASCI_D	NA	Insufficient data

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
Wadeable streams	Reference	30th percentile of reference values	High	Biointegrity	ASCI_H	0.94	
Wadeable streams	Reference	10th percentile of reference values	Intermediate	Biointegrity	ASCI_H	0.86	
Wadeable streams	Reference	1st percentile of reference values	Low	Biointegrity	ASCI_H	0.75	
RFI-N	Reference	30th percentile of reference values	High	Biointegrity	ASCI_H	0.96	
RFI-N	Reference	10th percentile of reference values	Intermediate	Biointegrity	ASCI_H	0.90	Biointegrity goal is higher than reference.
RFI-N	Reference	1st percentile of reference values	Low	Biointegrity	ASCI_H	0.81	Biointegrity goal is higher than reference.
RFI-S	Reference	30th percentile of reference values	High	Biointegrity	ASCI_H	0.91	
RFI-S	Reference	10th percentile of reference values	Intermediate	Biointegrity	ASCI_H	0.8	
RFI-S	Reference	1st percentile of reference values	Low	Biointegrity	ASCI_H	0.65	
CVF	Best observed	99th percentile of observed values	High	Biointegrity	ASCI_H	1.05	Biointegrity goal is higher than reference.
CVF	Best observed	90th percentile of observed values	Intermediate	Biointegrity	ASCI_H	0.94	Biointegrity goal is higher than reference.
CVF	Best observed	70th percentile of observed values	Low	Biointegrity	ASCI_H	0.8	Biointegrity goal is higher than reference.
HB	Best observed	99th percentile of observed values	High	Biointegrity	ASCI_H	1.02	Biointegrity goal is higher than reference.
HB	Best observed	90th percentile of observed values	Intermediate	Biointegrity	ASCI_H	0.87	Biointegrity goal is higher than reference.
HB	Best observed	70th percentile of observed values	Low	Biointegrity	ASCI_H	0.74	
SB2	Best observed	99th percentile of observed values	High	Biointegrity	ASCI_H	0.88	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB2	Best observed	90th percentile of observed values	Intermediate	Biointegrity	ASCI_H	0.76	
SB2	Best observed	70th percentile of observed values	Low	Biointegrity	ASCI_H	0.6	
SB1	Best observed	99th percentile of observed values	High	Biointegrity	ASCI_H	0.97	Biointegrity goal is higher than reference.
SB1	Best observed	90th percentile of observed values	Intermediate	Biointegrity	ASCI_H	0.86	
SB1	Best observed	70th percentile of observed values	Low	Biointegrity	ASCI_H	0.67	
SB0	Best observed	99th percentile of observed values	High	Biointegrity	ASCI_H	0.94	
SB0	Best observed	90th percentile of observed values	Intermediate	Biointegrity	ASCI_H	0.79	
SB0	Best observed	70th percentile of observed values	Low	Biointegrity	ASCI_H	0.64	
CC	Best observed	99th percentile of observed values	High	Biointegrity	ASCI_H	NA	Insufficient data
CC	Best observed	90th percentile of observed values	Intermediate	Biointegrity	ASCI_H	NA	Insufficient data
CC	Best observed	70th percentile of observed values	Low	Biointegrity	ASCI_H	NA	Insufficient data
SB0_CVF	Best observed	99th percentile of observed values	High	Biointegrity	ASCI_H	0.74	
SB0_CVF	Best observed	90th percentile of observed values	Intermediate	Biointegrity	ASCI_H	0.73	
SB0_CVF	Best observed	70th percentile of observed values	Low	Biointegrity	ASCI_H	0.72	
HB_CVF	Best observed	99th percentile of observed values	High	Biointegrity	ASCI_H	0.95	Biointegrity goal is higher than reference.
HB_CVF	Best observed	90th percentile of observed values	Intermediate	Biointegrity	ASCI_H	0.93	Biointegrity goal is higher than reference.

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
HB_CVF	Best observed	70th percentile of observed values	Low	Biointegrity	ASCI_H	0.8	Biointegrity goal is higher than reference.
CC_CVF	Best observed	99th percentile of observed values	High	Biointegrity	ASCI_H	NA	Insufficient data
CC_CVF	Best observed	90th percentile of observed values	Intermediate	Biointegrity	ASCI_H	NA	Insufficient data
CC_CVF	Best observed	70th percentile of observed values	Low	Biointegrity	ASCI_H	NA	Insufficient data
Wadeable streams	Reference	70th percentile of reference values	High	Eutrophication	TN	0.131	
Wadeable streams	Reference	90th percentile of reference values	Intermediate	Eutrophication	TN	0.233	
Wadeable streams	Reference	99th percentile of reference values	Low	Eutrophication	TN	1.639	
RFI-N	Reference	70th percentile of reference values	High	Eutrophication	TN	0.33	
RFI-N	Reference	90th percentile of reference values	Intermediate	Eutrophication	TN	0.579	
RFI-N	Reference	99th percentile of reference values	Low	Eutrophication	TN	2.229	
RFI-S	Reference	70th percentile of reference values	High	Eutrophication	TN	0.254	
RFI-S	Reference	90th percentile of reference values	Intermediate	Eutrophication	TN	0.351	
RFI-S	Reference	99th percentile of reference values	Low	Eutrophication	TN	0.558	
CVF	Best observed	1st percentile of observed values	High	Eutrophication	TN	0.037	
CVF	Best observed	10th percentile of observed values	Intermediate	Eutrophication	TN	0.143	
CVF	Best observed	30th percentile of observed values	Low	Eutrophication	TN	0.32	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
HB	Best observed	1st percentile of observed values	High	Eutrophication	TN	0.029	
HB	Best observed	10th percentile of observed values	Intermediate	Eutrophication	TN	0.43	
HB	Best observed	30th percentile of observed values	Low	Eutrophication	TN	1.109	
SB2	Best observed	1st percentile of observed values	High	Eutrophication	TN	0.163	
SB2	Best observed	10th percentile of observed values	Intermediate	Eutrophication	TN	0.436	
SB2	Best observed	30th percentile of observed values	Low	Eutrophication	TN	0.924	
SB1	Best observed	1st percentile of observed values	High	Eutrophication	TN	0	
SB1	Best observed	10th percentile of observed values	Intermediate	Eutrophication	TN	0.261	
SB1	Best observed	30th percentile of observed values	Low	Eutrophication	TN	0.379	
SB0	Best observed	1st percentile of observed values	High	Eutrophication	TN	0.341	
SB0	Best observed	10th percentile of observed values	Intermediate	Eutrophication	TN	0.497	
SB0	Best observed	30th percentile of observed values	Low	Eutrophication	TN	0.781	
CC	Best observed	1st percentile of observed values	High	Eutrophication	TN	NA	Insufficient data
CC	Best observed	10th percentile of observed values	Intermediate	Eutrophication	TN	NA	Insufficient data
CC	Best observed	30th percentile of observed values	Low	Eutrophication	TN	NA	Insufficient data
Wadeable streams	Reference	70th percentile of reference values	High	Eutrophication	TP	0.024	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
Wadeable streams	Reference	90th percentile of reference values	Intermediate	Eutrophication	TP	0.058	
Wadeable streams	Reference	99th percentile of reference values	Low	Eutrophication	TP	0.202	
RFI-N	Reference	70th percentile of reference values	High	Eutrophication	TP	0.184	
RFI-N	Reference	90th percentile of reference values	Intermediate	Eutrophication	TP	0.495	
RFI-N	Reference	99th percentile of reference values	Low	Eutrophication	TP	0.547	
RFI-S	Reference	70th percentile of reference values	High	Eutrophication	TP	0.055	
RFI-S	Reference	90th percentile of reference values	Intermediate	Eutrophication	TP	0.175	
RFI-S	Reference	99th percentile of reference values	Low	Eutrophication	TP	0.267	
CVF	Best observed	1st percentile of observed values	High	Eutrophication	TP	0.012	
CVF	Best observed	10th percentile of observed values	Intermediate	Eutrophication	TP	0.028	
CVF	Best observed	30th percentile of observed values	Low	Eutrophication	TP	0.055	
HB	Best observed	1st percentile of observed values	High	Eutrophication	TP	0	
HB	Best observed	10th percentile of observed values	Intermediate	Eutrophication	TP	0.028	
HB	Best observed	30th percentile of observed values	Low	Eutrophication	TP	0.068	
SB2	Best observed	1st percentile of observed values	High	Eutrophication	TP	0	
SB2	Best observed	10th percentile of observed values	Intermediate	Eutrophication	TP	0.009	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB2	Best observed	30th percentile of observed values	Low	Eutrophication	TP	0.05	
SB1	Best observed	1st percentile of observed values	High	Eutrophication	TP	0.007	
SB1	Best observed	10th percentile of observed values	Intermediate	Eutrophication	TP	0.011	
SB1	Best observed	30th percentile of observed values	Low	Eutrophication	TP	0.048	
SB0	Best observed	1st percentile of observed values	High	Eutrophication	TP	0.01	
SB0	Best observed	10th percentile of observed values	Intermediate	Eutrophication	TP	0.039	
SB0	Best observed	30th percentile of observed values	Low	Eutrophication	TP	0.075	
CC	Best observed	1st percentile of observed values	High	Eutrophication	TP	NA	Insufficient data
CC	Best observed	10th percentile of observed values	Intermediate	Eutrophication	TP	NA	Insufficient data
CC	Best observed	30th percentile of observed values	Low	Eutrophication	TP	NA	Insufficient data
Wadeable streams	Reference	70th percentile of reference values	High	Eutrophication	Chl-a	14.3	
Wadeable streams	Reference	90th percentile of reference values	Intermediate	Eutrophication	Chl-a	29.7	
Wadeable streams	Reference	99th percentile of reference values	Low	Eutrophication	Chl-a	59.9	
RFI-N	Reference	70th percentile of reference values	High	Eutrophication	Chl-a	15.4	
RFI-N	Reference	90th percentile of reference values	Intermediate	Eutrophication	Chl-a	38	
RFI-N	Reference	99th percentile of reference values	Low	Eutrophication	Chl-a	85.3	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
RFI-S	Reference	70th percentile of reference values	High	Eutrophication	Chl-a	17.9	
RFI-S	Reference	90th percentile of reference values	Intermediate	Eutrophication	Chl-a	33.9	
RFI-S	Reference	99th percentile of reference values	Low	Eutrophication	Chl-a	131.4	
CVF	Best observed	1st percentile of observed values	High	Eutrophication	Chl-a	1.1	
CVF	Best observed	10th percentile of observed values	Intermediate	Eutrophication	Chl-a	4.2	
CVF	Best observed	30th percentile of observed values	Low	Eutrophication	Chl-a	7.6	
HB	Best observed	1st percentile of observed values	High	Eutrophication	Chl-a	4.8	
HB	Best observed	10th percentile of observed values	Intermediate	Eutrophication	Chl-a	18.8	
HB	Best observed	30th percentile of observed values	Low	Eutrophication	Chl-a	34.7	
SB2	Best observed	1st percentile of observed values	High	Eutrophication	Chl-a	7.7	
SB2	Best observed	10th percentile of observed values	Intermediate	Eutrophication	Chl-a	18.4	
SB2	Best observed	30th percentile of observed values	Low	Eutrophication	Chl-a	61.4	
SB1	Best observed	1st percentile of observed values	High	Eutrophication	Chl-a	1	
SB1	Best observed	10th percentile of observed values	Intermediate	Eutrophication	Chl-a	5.5	
SB1	Best observed	30th percentile of observed values	Low	Eutrophication	Chl-a	26.6	
SB0	Best observed	1st percentile of observed values	High	Eutrophication	Chl-a	1.3	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB0	Best observed	10th percentile of observed values	Intermediate	Eutrophication	Chl-a	9	
SB0	Best observed	30th percentile of observed values	Low	Eutrophication	Chl-a	43.7	
CC	Best observed	1st percentile of observed values	High	Eutrophication	Chl-a	NA	Insufficient data
CC	Best observed	10th percentile of observed values	Intermediate	Eutrophication	Chl-a	NA	Insufficient data
CC	Best observed	30th percentile of observed values	Low	Eutrophication	Chl-a	NA	Insufficient data
Wadeable streams	Reference	70th percentile of reference values	High	Eutrophication	AFDM	11.4	
Wadeable streams	Reference	90th percentile of reference values	Intermediate	Eutrophication	AFDM	27.3	
Wadeable streams	Reference	99th percentile of reference values	Low	Eutrophication	AFDM	95.4	
RFI-N	Reference	70th percentile of reference values	High	Eutrophication	AFDM	13.3	
RFI-N	Reference	90th percentile of reference values	Intermediate	Eutrophication	AFDM	26.2	
RFI-N	Reference	99th percentile of reference values	Low	Eutrophication	AFDM	32.3	
RFI-S	Reference	70th percentile of reference values	High	Eutrophication	AFDM	26.1	
RFI-S	Reference	90th percentile of reference values	Intermediate	Eutrophication	AFDM	56.2	
RFI-S	Reference	99th percentile of reference values	Low	Eutrophication	AFDM	95.8	
CVF	Best observed	1st percentile of observed values	High	Eutrophication	AFDM	2.1	
CVF	Best observed	10th percentile of observed values	Intermediate	Eutrophication	AFDM	4.3	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
CVF	Best observed	30th percentile of observed values	Low	Eutrophication	AFDM	9.2	
HB	Best observed	1st percentile of observed values	High	Eutrophication	AFDM	4.1	
HB	Best observed	10th percentile of observed values	Intermediate	Eutrophication	AFDM	9.5	
HB	Best observed	30th percentile of observed values	Low	Eutrophication	AFDM	22	
SB2	Best observed	1st percentile of observed values	High	Eutrophication	AFDM	3.7	
SB2	Best observed	10th percentile of observed values	Intermediate	Eutrophication	AFDM	14.6	
SB2	Best observed	30th percentile of observed values	Low	Eutrophication	AFDM	28.4	
SB1	Best observed	1st percentile of observed values	High	Eutrophication	AFDM	2.2	
SB1	Best observed	10th percentile of observed values	Intermediate	Eutrophication	AFDM	7.2	
SB1	Best observed	30th percentile of observed values	Low	Eutrophication	AFDM	25	
SB0	Best observed	1st percentile of observed values	High	Eutrophication	AFDM	3.2	
SB0	Best observed	10th percentile of observed values	Intermediate	Eutrophication	AFDM	15.6	
SB0	Best observed	30th percentile of observed values	Low	Eutrophication	AFDM	30	
CC	Best observed	1st percentile of observed values	High	Eutrophication	AFDM	NA	Insufficient data
CC	Best observed	10th percentile of observed values	Intermediate	Eutrophication	AFDM	NA	Insufficient data
CC	Best observed	30th percentile of observed values	Low	Eutrophication	AFDM	NA	Insufficient data

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
Wadeable streams	Reference	70th percentile of reference values	High	Eutrophication	% cover	18	
Wadeable streams	Reference	90th percentile of reference values	Intermediate	Eutrophication	% cover	39	
Wadeable streams	Reference	99th percentile of reference values	Low	Eutrophication	% cover	68	
RFI-N	Reference	70th percentile of reference values	High	Eutrophication	% cover	24	
RFI-N	Reference	90th percentile of reference values	Intermediate	Eutrophication	% cover	31	
RFI-N	Reference	99th percentile of reference values	Low	Eutrophication	% cover	42	
RFI-S	Reference	70th percentile of reference values	High	Eutrophication	% cover	39	
RFI-S	Reference	90th percentile of reference values	Intermediate	Eutrophication	% cover	55	
RFI-S	Reference	99th percentile of reference values	Low	Eutrophication	% cover	87	
CVF	Best observed	1st percentile of observed values	High	Eutrophication	% cover	0	
CVF	Best observed	10th percentile of observed values	Intermediate	Eutrophication	% cover	0	
CVF	Best observed	30th percentile of observed values	Low	Eutrophication	% cover	2	
HB	Best observed	1st percentile of observed values	High	Eutrophication	% cover	0	
HB	Best observed	10th percentile of observed values	Intermediate	Eutrophication	% cover	10	
HB	Best observed	30th percentile of observed values	Low	Eutrophication	% cover	35	
SB2	Best observed	1st percentile of observed values	High	Eutrophication	% cover	0	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB2	Best observed	10th percentile of observed values	Intermediate	Eutrophication	% cover	10	
SB2	Best observed	30th percentile of observed values	Low	Eutrophication	% cover	26	
SB1	Best observed	1st percentile of observed values	High	Eutrophication	% cover	1	
SB1	Best observed	10th percentile of observed values	Intermediate	Eutrophication	% cover	4	
SB1	Best observed	30th percentile of observed values	Low	Eutrophication	% cover	9	
SB0	Best observed	1st percentile of observed values	High	Eutrophication	% cover	0	
SB0	Best observed	10th percentile of observed values	Intermediate	Eutrophication	% cover	5	
SB0	Best observed	30th percentile of observed values	Low	Eutrophication	% cover	16	
CC	Best observed	1st percentile of observed values	High	Eutrophication	% cover	NA	Insufficient data
CC	Best observed	10th percentile of observed values	Intermediate	Eutrophication	% cover	NA	Insufficient data
CC	Best observed	30th percentile of observed values	Low	Eutrophication	% cover	NA	Insufficient data
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_D score above 0.94.	High	Eutrophication	TN	0.141	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_D score above 0.86.	Intermediate	Eutrophication	TN	0.33	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_D score above 0.75.	Low	Eutrophication	TN	1.081	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_H score above 0.94.	High	Eutrophication	TN	0.132	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_H score above 0.86.	Intermediate	Eutrophication	TN	0.24	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_H score above 0.75.	Low	Eutrophication	TN	1.258	
Wadeable streams	Response	Logistic model, 80% probability of attaining CSCI score above 0.92.	High	Eutrophication	TN	0.682	
Wadeable streams	Response	Logistic model, 80% probability of attaining CSCI score above 0.79.	Intermediate	Eutrophication	TN	1.189	
Wadeable streams	Response	Logistic model, 80% probability of attaining CSCI score above 0.63.	Low	Eutrophication	TN	NA	No threshold identified
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_D score above 0.94.	High	Eutrophication	TP	0.021	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_D score above 0.86.	Intermediate	Eutrophication	TP	0.054	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_D score above 0.75.	Low	Eutrophication	TP	0.141	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_H score above 0.94.	High	Eutrophication	TP	0.03	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_H score above 0.86.	Intermediate	Eutrophication	TP	0.054	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_H score above 0.75.	Low	Eutrophication	TP	0.156	
Wadeable streams	Response	Logistic model, 80% probability of attaining CSCI score above 0.92.	High	Eutrophication	TP	0.051	
Wadeable streams	Response	Logistic model, 80% probability of attaining CSCI score above 0.79.	Intermediate	Eutrophication	TP	0.194	
Wadeable streams	Response	Logistic model, 80% probability of attaining CSCI score above 0.63.	Low	Eutrophication	TP	0.77	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_D score above 0.94.	High	Eutrophication	Chl-a	46.8	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_D score above 0.86.	Intermediate	Eutrophication	Chl-a	46.8	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_D score above 0.75.	Low	Eutrophication	Chl-a	83.2	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_H score above 0.94.	High	Eutrophication	Chl-a	46.5	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_H score above 0.86.	Intermediate	Eutrophication	Chl-a	44.1	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_H score above 0.75.	Low	Eutrophication	Chl-a	77.8	
Wadeable streams	Response	Logistic model, 80% probability of attaining CSCI score above 0.92.	High	Eutrophication	Chl-a	26.4	
Wadeable streams	Response	Logistic model, 80% probability of attaining CSCI score above 0.79.	Intermediate	Eutrophication	Chl-a	48.9	
Wadeable streams	Response	Logistic model, 80% probability of attaining CSCI score above 0.63.	Low	Eutrophication	Chl-a	98.5	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_D score above 0.94.	High	Eutrophication	AFDM	17.3	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_D score above 0.86.	Intermediate	Eutrophication	AFDM	24.8	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_D score above 0.75.	Low	Eutrophication	AFDM	42	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_H score above 0.94.	High	Eutrophication	AFDM	19.5	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_H score above 0.86.	Intermediate	Eutrophication	AFDM	24.8	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_H score above 0.75.	Low	Eutrophication	AFDM	45.8	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
Wadeable streams	Response	Logistic model, 80% probability of attaining CSCI score above 0.92.	High	Eutrophication	AFDM	25.5	
Wadeable streams	Response	Logistic model, 80% probability of attaining CSCI score above 0.79.	Intermediate	Eutrophication	AFDM	41.3	
Wadeable streams	Response	Logistic model, 80% probability of attaining CSCI score above 0.63.	Low	Eutrophication	AFDM	68.3	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_D score above 0.94.	High	Eutrophication	% cover	23	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_D score above 0.86.	Intermediate	Eutrophication	% cover	27	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_D score above 0.75.	Low	Eutrophication	% cover	37	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_H score above 0.94.	High	Eutrophication	% cover	29	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_H score above 0.86.	Intermediate	Eutrophication	% cover	31	
Wadeable streams	Response	Logistic model, 80% probability of attaining ASCI_H score above 0.75.	Low	Eutrophication	% cover	41	
Wadeable streams	Response	Logistic model, 80% probability of attaining CSCI score above 0.92.	High	Eutrophication	% cover	21	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
Wadeable streams	Response	Logistic model, 80% probability of attaining CSCI score above 0.79.	Intermediate	Eutrophication	% cover	31	
Wadeable streams	Response	Logistic model, 80% probability of attaining CSCI score above 0.63.	Low	Eutrophication	% cover	53	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_D score above 0.94.	High	Eutrophication	TN	NA	No threshold identified
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_D score above 0.86.	Intermediate	Eutrophication	TN	0.348	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_D score above 0.75.	Low	Eutrophication	TN	0.991	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_H score above 0.94.	High	Eutrophication	TN	0.054	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_H score above 0.86.	Intermediate	Eutrophication	TN	0.453	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_H score above 0.75.	Low	Eutrophication	TN	1.114	
Wadeable streams	Response	Additive model, 50% probability of attaining CSCI score above 0.92.	High	Eutrophication	TN	0.165	
Wadeable streams	Response	Additive model, 50% probability of attaining CSCI score above 0.79.	Intermediate	Eutrophication	TN	1.021	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
Wadeable streams	Response	Additive model, 50% probability of attaining CSCI score above 0.63.	Low	Eutrophication	TN	2.601	
RFI-N	Response	Additive model, 50% probability of attaining ASCI_D score above 0.98.	High	Eutrophication	TN	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_D score above 0.9.	Intermediate	Eutrophication	TN	0.147	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_D score above 0.78.	Low	Eutrophication	TN	0.802	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_H score above 0.96.	High	Eutrophication	TN	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_H score above 0.9.	Intermediate	Eutrophication	TN	0.246	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_H score above 0.81.	Low	Eutrophication	TN	0.736	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining CSCI score above 0.73.	High	Eutrophication	TN	1.514	
RFI-N	Response	Additive model, 50% probability of attaining CSCI score above 0.61.	Intermediate	Eutrophication	TN	2.895	
RFI-N	Response	Additive model, 50% probability of attaining CSCI score above 0.44.	Low	Eutrophication	TN	NA	No threshold identified

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
RFI-S	Response	Additive model, 50% probability of attaining ASCI_D score above 0.91.	High	Eutrophication	TN	0.099	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_D score above 0.8.	Intermediate	Eutrophication	TN	0.682	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_D score above 0.66.	Low	Eutrophication	TN	1.658	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_H score above 0.91.	High	Eutrophication	TN	0.198	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_H score above 0.8.	Intermediate	Eutrophication	TN	0.796	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_H score above 0.65.	Low	Eutrophication	TN	1.895	
RFI-S	Response	Additive model, 50% probability of attaining CSCI score above 0.89.	High	Eutrophication	TN	0.345	
RFI-S	Response	Additive model, 50% probability of attaining CSCI score above 0.82.	Intermediate	Eutrophication	TN	0.802	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-S	Response	Additive model, 50% probability of attaining CSCI score above 0.71.	Low	Eutrophication	TN	1.697	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_D score above 1.13.	High	Eutrophication	TN	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
CVF	Response	Additive model, 50% probability of attaining ASCI_D score above 1.02.	Intermediate	Eutrophication	TN	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_D score above 0.92.	Low	Eutrophication	TN	0.051	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_H score above 1.05.	High	Eutrophication	TN	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_H score above 0.94.	Intermediate	Eutrophication	TN	0.054	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_H score above 0.8.	Low	Eutrophication	TN	0.796	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining CSCI score above 0.85.	High	Eutrophication	TN	0.598	
CVF	Response	Additive model, 50% probability of attaining CSCI score above 0.67.	Intermediate	Eutrophication	TN	2.108	
CVF	Response	Additive model, 50% probability of attaining CSCI score above 0.52.	Low	Eutrophication	TN	NA	No threshold identified
HB	Response	Additive model, 50% probability of attaining ASCI_D score above 1.05.	High	Eutrophication	TN	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
HB	Response	Additive model, 50% probability of attaining ASCI_D score above 0.88.	Intermediate	Eutrophication	TN	0.246	Eutrophication threshold is set for a biointegrity goal that is above reference.

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
HB	Response	Additive model, 50% probability of attaining ASCI_D score above 0.74.	Low	Eutrophication	TN	1.057	
HB	Response	Additive model, 50% probability of attaining ASCI_H score above 1.02.	High	Eutrophication	TN	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
HB	Response	Additive model, 50% probability of attaining ASCI_H score above 0.87.	Intermediate	Eutrophication	TN	0.402	Eutrophication threshold is set for a biointegrity goal that is above reference.
HB	Response	Additive model, 50% probability of attaining ASCI_H score above 0.74.	Low	Eutrophication	TN	1.18	
HB	Response	Additive model, 50% probability of attaining CSCI score above 0.74.	High	Eutrophication	TN	1.423	
HB	Response	Additive model, 50% probability of attaining CSCI score above 0.67.	Intermediate	Eutrophication	TN	2.108	
HB	Response	Additive model, 50% probability of attaining CSCI score above 0.55.	Low	Eutrophication	TN	NA	No threshold identified
SB2	Response	Additive model, 50% probability of attaining ASCI_D score above 0.93.	High	Eutrophication	TN	0.003	
SB2	Response	Additive model, 50% probability of attaining ASCI_D score above 0.77.	Intermediate	Eutrophication	TN	0.862	
SB2	Response	Additive model, 50% probability of attaining ASCI_D score above 0.64.	Low	Eutrophication	TN	1.835	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB2	Response	Additive model, 50% probability of attaining ASCI_H score above 0.88.	High	Eutrophication	TN	0.348	
SB2	Response	Additive model, 50% probability of attaining ASCI_H score above 0.76.	Intermediate	Eutrophication	TN	1.045	
SB2	Response	Additive model, 50% probability of attaining ASCI_H score above 0.6.	Low	Eutrophication	TN	2.411	
SB2	Response	Additive model, 50% probability of attaining CSCI score above 0.96.	High	Eutrophication	TN	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB2	Response	Additive model, 50% probability of attaining CSCI score above 0.75.	Intermediate	Eutrophication	TN	1.339	
SB2	Response	Additive model, 50% probability of attaining CSCI score above 0.64.	Low	Eutrophication	TN	2.468	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining ASCI_D score above 1.01.	High	Eutrophication	TN	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining ASCI_D score above 0.85.	Intermediate	Eutrophication	TN	0.402	
SB1	Response	Additive model, 50% probability of attaining ASCI_D score above 0.68.	Low	Eutrophication	TN	1.492	
SB1	Response	Additive model, 50% probability of attaining ASCI_H score above 0.97.	High	Eutrophication	TN	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB1	Response	Additive model, 50% probability of attaining ASCI_H score above 0.86.	Intermediate	Eutrophication	TN	0.453	
SB1	Response	Additive model, 50% probability of attaining ASCI_H score above 0.67.	Low	Eutrophication	TN	1.718	
SB1	Response	Additive model, 50% probability of attaining CSCI score above 1.1.	High	Eutrophication	TN	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining CSCI score above 1.	Intermediate	Eutrophication	TN	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining CSCI score above 0.81.	Low	Eutrophication	TN	0.874	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB0	Response	Additive model, 50% probability of attaining ASCI_D score above 1.01.	High	Eutrophication	TN	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB0	Response	Additive model, 50% probability of attaining ASCI_D score above 0.77.	Intermediate	Eutrophication	TN	0.862	
SB0	Response	Additive model, 50% probability of attaining ASCI_D score above 0.68.	Low	Eutrophication	TN	1.492	
SB0	Response	Additive model, 50% probability of attaining ASCI_H score above 0.94.	High	Eutrophication	TN	0.054	
SB0	Response	Additive model, 50% probability of attaining ASCI_H score above 0.79.	Intermediate	Eutrophication	TN	0.856	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB0	Response	Additive model, 50% probability of attaining ASCI_H score above 0.64.	Low	Eutrophication	TN	1.991	
SB0	Response	Additive model, 50% probability of attaining CSCI score above 0.99.	High	Eutrophication	TN	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB0	Response	Additive model, 50% probability of attaining CSCI score above 0.78.	Intermediate	Eutrophication	TN	1.099	
SB0	Response	Additive model, 50% probability of attaining CSCI score above 0.66.	Low	Eutrophication	TN	2.222	Eutrophication threshold is set for a biointegrity goal that is above reference.
CC	Response	Additive model, 50% probability of attaining ASCI_D score above NA.	High	Eutrophication	TN	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_D score above NA.	Intermediate	Eutrophication	TN	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_D score above NA.	Low	Eutrophication	TN	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_H score above NA.	High	Eutrophication	TN	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_H score above NA.	Intermediate	Eutrophication	TN	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_H score above NA.	Low	Eutrophication	TN	NA	Insufficient data

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
CC	Response	Additive model, 50% probability of attaining CSCI score above 0.53.	High	Eutrophication	TN	NA	No threshold identified
CC	Response	Additive model, 50% probability of attaining CSCI score above 0.45.	Intermediate	Eutrophication	TN	NA	No threshold identified
CC	Response	Additive model, 50% probability of attaining CSCI score above 0.37.	Low	Eutrophication	TN	NA	No threshold identified
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_D score above 0.94.	High	Eutrophication	TP	NA	No threshold identified
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_D score above 0.86.	Intermediate	Eutrophication	TP	0.044	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_D score above 0.75.	Low	Eutrophication	TP	0.122	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_H score above 0.94.	High	Eutrophication	TP	0.009	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_H score above 0.86.	Intermediate	Eutrophication	TP	0.056	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_H score above 0.75.	Low	Eutrophication	TP	0.135	
Wadeable streams	Response	Additive model, 50% probability of attaining CSCI score above 0.92.	High	Eutrophication	TP	0.026	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
Wadeable streams	Response	Additive model, 50% probability of attaining CSCI score above 0.79.	Intermediate	Eutrophication	TP	0.102	
Wadeable streams	Response	Additive model, 50% probability of attaining CSCI score above 0.63.	Low	Eutrophication	TP	0.249	
RFI-N	Response	Additive model, 50% probability of attaining ASCI_D score above 0.98.	High	Eutrophication	TP	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_D score above 0.9.	Intermediate	Eutrophication	TP	0.02	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_D score above 0.78.	Low	Eutrophication	TP	0.099	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_H score above 0.96.	High	Eutrophication	TP	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_H score above 0.9.	Intermediate	Eutrophication	TP	0.032	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_H score above 0.81.	Low	Eutrophication	TP	0.09	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining CSCI score above 0.73.	High	Eutrophication	TP	0.147	
RFI-N	Response	Additive model, 50% probability of attaining CSCI score above 0.61.	Intermediate	Eutrophication	TP	0.276	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
RFI-N	Response	Additive model, 50% probability of attaining CSCI score above 0.44.	Low	Eutrophication	TP	NA	No threshold identified
RFI-S	Response	Additive model, 50% probability of attaining ASCI_D score above 0.91.	High	Eutrophication	TP	0.015	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_D score above 0.8.	Intermediate	Eutrophication	TP	0.084	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_D score above 0.66.	Low	Eutrophication	TP	0.21	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_H score above 0.91.	High	Eutrophication	TP	0.026	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_H score above 0.8.	Intermediate	Eutrophication	TP	0.096	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_H score above 0.65.	Low	Eutrophication	TP	0.24	
RFI-S	Response	Additive model, 50% probability of attaining CSCI score above 0.89.	High	Eutrophication	TP	0.041	
RFI-S	Response	Additive model, 50% probability of attaining CSCI score above 0.82.	Intermediate	Eutrophication	TP	0.083	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-S	Response	Additive model, 50% probability of attaining CSCI score above 0.71.	Low	Eutrophication	TP	0.165	Eutrophication threshold is set for a biointegrity goal that is above reference.

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
CVF	Response	Additive model, 50% probability of attaining ASCI_D score above 1.13.	High	Eutrophication	TP	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_D score above 1.02.	Intermediate	Eutrophication	TP	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_D score above 0.92.	Low	Eutrophication	TP	0.009	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_H score above 1.05.	High	Eutrophication	TP	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_H score above 0.94.	Intermediate	Eutrophication	TP	0.009	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_H score above 0.8.	Low	Eutrophication	TP	0.096	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining CSCI score above 0.85.	High	Eutrophication	TP	0.065	
CVF	Response	Additive model, 50% probability of attaining CSCI score above 0.67.	Intermediate	Eutrophication	TP	0.203	
CVF	Response	Additive model, 50% probability of attaining CSCI score above 0.52.	Low	Eutrophication	TP	NA	No threshold identified
HB	Response	Additive model, 50% probability of attaining ASCI_D score above 1.05.	High	Eutrophication	TP	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
HB	Response	Additive model, 50% probability of attaining ASCI_D score above 0.88.	Intermediate	Eutrophication	TP	0.032	Eutrophication threshold is set for a biointegrity goal that is above reference.
HB	Response	Additive model, 50% probability of attaining ASCI_D score above 0.74.	Low	Eutrophication	TP	0.131	
HB	Response	Additive model, 50% probability of attaining ASCI_H score above 1.02.	High	Eutrophication	TP	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
HB	Response	Additive model, 50% probability of attaining ASCI_H score above 0.87.	Intermediate	Eutrophication	TP	0.05	Eutrophication threshold is set for a biointegrity goal that is above reference.
HB	Response	Additive model, 50% probability of attaining ASCI_H score above 0.74.	Low	Eutrophication	TP	0.144	
HB	Response	Additive model, 50% probability of attaining CSCI score above 0.74.	High	Eutrophication	TP	0.14	
HB	Response	Additive model, 50% probability of attaining CSCI score above 0.67.	Intermediate	Eutrophication	TP	0.203	
HB	Response	Additive model, 50% probability of attaining CSCI score above 0.55.	Low	Eutrophication	TP	0.408	
SB2	Response	Additive model, 50% probability of attaining ASCI_D score above 0.93.	High	Eutrophication	TP	0.003	
SB2	Response	Additive model, 50% probability of attaining ASCI_D score above 0.77.	Intermediate	Eutrophication	TP	0.107	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB2	Response	Additive model, 50% probability of attaining ASCI_D score above 0.64.	Low	Eutrophication	TP	0.236	
SB2	Response	Additive model, 50% probability of attaining ASCI_H score above 0.88.	High	Eutrophication	TP	0.044	
SB2	Response	Additive model, 50% probability of attaining ASCI_H score above 0.76.	Intermediate	Eutrophication	TP	0.128	
SB2	Response	Additive model, 50% probability of attaining ASCI_H score above 0.6.	Low	Eutrophication	TP	0.323	
SB2	Response	Additive model, 50% probability of attaining CSCI score above 0.96.	High	Eutrophication	TP	0.005	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB2	Response	Additive model, 50% probability of attaining CSCI score above 0.75.	Intermediate	Eutrophication	TP	0.132	
SB2	Response	Additive model, 50% probability of attaining CSCI score above 0.64.	Low	Eutrophication	TP	0.236	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining ASCI_D score above 1.01.	High	Eutrophication	TP	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining ASCI_D score above 0.85.	Intermediate	Eutrophication	TP	0.051	
SB1	Response	Additive model, 50% probability of attaining ASCI_D score above 0.68.	Low	Eutrophication	TP	0.188	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB1	Response	Additive model, 50% probability of attaining ASCI_H score above 0.97.	High	Eutrophication	TP	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining ASCI_H score above 0.86.	Intermediate	Eutrophication	TP	0.056	
SB1	Response	Additive model, 50% probability of attaining ASCI_H score above 0.67.	Low	Eutrophication	TP	0.215	
SB1	Response	Additive model, 50% probability of attaining CSCI score above 1.1.	High	Eutrophication	TP	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining CSCI score above 1.	Intermediate	Eutrophication	TP	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining CSCI score above 0.81.	Low	Eutrophication	TP	0.089	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB0	Response	Additive model, 50% probability of attaining ASCI_D score above 1.01.	High	Eutrophication	TP	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB0	Response	Additive model, 50% probability of attaining ASCI_D score above 0.77.	Intermediate	Eutrophication	TP	0.107	
SB0	Response	Additive model, 50% probability of attaining ASCI_D score above 0.68.	Low	Eutrophication	TP	0.188	
SB0	Response	Additive model, 50% probability of attaining ASCI_H score above 0.94.	High	Eutrophication	TP	0.009	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB0	Response	Additive model, 50% probability of attaining ASCI_H score above 0.79.	Intermediate	Eutrophication	TP	0.104	
SB0	Response	Additive model, 50% probability of attaining ASCI_H score above 0.64.	Low	Eutrophication	TP	0.254	
SB0	Response	Additive model, 50% probability of attaining CSCI score above 0.99.	High	Eutrophication	TP	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB0	Response	Additive model, 50% probability of attaining CSCI score above 0.78.	Intermediate	Eutrophication	TP	0.11	
SB0	Response	Additive model, 50% probability of attaining CSCI score above 0.66.	Low	Eutrophication	TP	0.213	Eutrophication threshold is set for a biointegrity goal that is above reference.
CC	Response	Additive model, 50% probability of attaining ASCI_D score above NA.	High	Eutrophication	TP	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_D score above NA.	Intermediate	Eutrophication	TP	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_D score above NA.	Low	Eutrophication	TP	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_H score above NA.	High	Eutrophication	TP	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_H score above NA.	Intermediate	Eutrophication	TP	NA	Insufficient data

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
CC	Response	Additive model, 50% probability of attaining ASCI_H score above NA.	Low	Eutrophication	TP	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining CSCI score above 0.53.	High	Eutrophication	TP	0.557	
CC	Response	Additive model, 50% probability of attaining CSCI score above 0.45.	Intermediate	Eutrophication	TP	NA	No threshold identified
CC	Response	Additive model, 50% probability of attaining CSCI score above 0.37.	Low	Eutrophication	TP	NA	No threshold identified
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_D score above 0.94.	High	Eutrophication	Chl-a	NA	No threshold identified
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_D score above 0.86.	Intermediate	Eutrophication	Chl-a	19.5	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_D score above 0.75.	Low	Eutrophication	Chl-a	64.9	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_H score above 0.94.	High	Eutrophication	Chl-a	2.4	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_H score above 0.86.	Intermediate	Eutrophication	Chl-a	24.3	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_H score above 0.75.	Low	Eutrophication	Chl-a	68.2	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
Wadeable streams	Response	Additive model, 50% probability of attaining CSCI score above 0.92.	High	Eutrophication	Chl-a	10.2	
Wadeable streams	Response	Additive model, 50% probability of attaining CSCI score above 0.79.	Intermediate	Eutrophication	Chl-a	51.1	
Wadeable streams	Response	Additive model, 50% probability of attaining CSCI score above 0.63.	Low	Eutrophication	Chl-a	160.1	
RFI-N	Response	Additive model, 50% probability of attaining ASCI_D score above 0.98.	High	Eutrophication	Chl-a	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_D score above 0.9.	Intermediate	Eutrophication	Chl-a	6.9	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_D score above 0.78.	Low	Eutrophication	Chl-a	50.2	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_H score above 0.96.	High	Eutrophication	Chl-a	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_H score above 0.9.	Intermediate	Eutrophication	Chl-a	12.6	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_H score above 0.81.	Low	Eutrophication	Chl-a	41.4	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining CSCI score above 0.73.	High	Eutrophication	Chl-a	77.5	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
RFI-N	Response	Additive model, 50% probability of attaining CSCI score above 0.61.	Intermediate	Eutrophication	Chl-a	197.6	
RFI-N	Response	Additive model, 50% probability of attaining CSCI score above 0.44.	Low	Eutrophication	Chl-a	NA	No threshold identified
RFI-S	Response	Additive model, 50% probability of attaining ASCI_D score above 0.91.	High	Eutrophication	Chl-a	4.2	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_D score above 0.8.	Intermediate	Eutrophication	Chl-a	41.7	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_D score above 0.66.	Low	Eutrophication	Chl-a	134.5	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_H score above 0.91.	High	Eutrophication	Chl-a	10.2	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_H score above 0.8.	Intermediate	Eutrophication	Chl-a	45	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_H score above 0.65.	Low	Eutrophication	Chl-a	NA	No threshold identified
RFI-S	Response	Additive model, 50% probability of attaining CSCI score above 0.89.	High	Eutrophication	Chl-a	18.3	
RFI-S	Response	Additive model, 50% probability of attaining CSCI score above 0.82.	Intermediate	Eutrophication	Chl-a	39.9	Eutrophication threshold is set for a biointegrity goal that is above reference.

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
RFI-S	Response	Additive model, 50% probability of attaining CSCI score above 0.71.	Low	Eutrophication	Chl-a	88.6	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_D score above 1.13.	High	Eutrophication	Chl-a	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_D score above 1.02.	Intermediate	Eutrophication	Chl-a	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_D score above 0.92.	Low	Eutrophication	Chl-a	1.2	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_H score above 1.05.	High	Eutrophication	Chl-a	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_H score above 0.94.	Intermediate	Eutrophication	Chl-a	2.4	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_H score above 0.8.	Low	Eutrophication	Chl-a	45	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining CSCI score above 0.85.	High	Eutrophication	Chl-a	30	
CVF	Response	Additive model, 50% probability of attaining CSCI score above 0.67.	Intermediate	Eutrophication	Chl-a	116.2	
CVF	Response	Additive model, 50% probability of attaining CSCI score above 0.52.	Low	Eutrophication	Chl-a	NA	No threshold identified

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
HB	Response	Additive model, 50% probability of attaining ASCI_D score above 1.05.	High	Eutrophication	Chl-a	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
HB	Response	Additive model, 50% probability of attaining ASCI_D score above 0.88.	Intermediate	Eutrophication	Chl-a	13.2	Eutrophication threshold is set for a biointegrity goal that is above reference.
HB	Response	Additive model, 50% probability of attaining ASCI_D score above 0.74.	Low	Eutrophication	Chl-a	70.3	
HB	Response	Additive model, 50% probability of attaining ASCI_H score above 1.02.	High	Eutrophication	Chl-a	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
HB	Response	Additive model, 50% probability of attaining ASCI_H score above 0.87.	Intermediate	Eutrophication	Chl-a	21.3	Eutrophication threshold is set for a biointegrity goal that is above reference.
HB	Response	Additive model, 50% probability of attaining ASCI_H score above 0.74.	Low	Eutrophication	Chl-a	73.9	
HB	Response	Additive model, 50% probability of attaining CSCI score above 0.74.	High	Eutrophication	Chl-a	72.7	
HB	Response	Additive model, 50% probability of attaining CSCI score above 0.67.	Intermediate	Eutrophication	Chl-a	116.2	
HB	Response	Additive model, 50% probability of attaining CSCI score above 0.55.	Low	Eutrophication	Chl-a	NA	No threshold identified
SB2	Response	Additive model, 50% probability of attaining ASCI_D score above 0.93.	High	Eutrophication	Chl-a	NA	No threshold identified

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB2	Response	Additive model, 50% probability of attaining ASCI_D score above 0.77.	Intermediate	Eutrophication	Chl-a	55	
SB2	Response	Additive model, 50% probability of attaining ASCI_D score above 0.64.	Low	Eutrophication	Chl-a	166.1	
SB2	Response	Additive model, 50% probability of attaining ASCI_H score above 0.88.	High	Eutrophication	Chl-a	18.3	
SB2	Response	Additive model, 50% probability of attaining ASCI_H score above 0.76.	Intermediate	Eutrophication	Chl-a	63.1	
SB2	Response	Additive model, 50% probability of attaining ASCI_H score above 0.6.	Low	Eutrophication	Chl-a	NA	No threshold identified
SB2	Response	Additive model, 50% probability of attaining CSCI score above 0.96.	High	Eutrophication	Chl-a	0	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB2	Response	Additive model, 50% probability of attaining CSCI score above 0.75.	Intermediate	Eutrophication	Chl-a	67.9	
SB2	Response	Additive model, 50% probability of attaining CSCI score above 0.64.	Low	Eutrophication	Chl-a	146.5	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining ASCI_D score above 1.01.	High	Eutrophication	Chl-a	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining ASCI_D score above 0.85.	Intermediate	Eutrophication	Chl-a	23.1	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB1	Response	Additive model, 50% probability of attaining ASCI_D score above 0.68.	Low	Eutrophication	Chl-a	112.6	
SB1	Response	Additive model, 50% probability of attaining ASCI_H score above 0.97.	High	Eutrophication	Chl-a	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining ASCI_H score above 0.86.	Intermediate	Eutrophication	Chl-a	24.3	
SB1	Response	Additive model, 50% probability of attaining ASCI_H score above 0.67.	Low	Eutrophication	Chl-a	152.6	
SB1	Response	Additive model, 50% probability of attaining CSCI score above 1.1.	High	Eutrophication	Chl-a	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining CSCI score above 1.	Intermediate	Eutrophication	Chl-a	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining CSCI score above 0.81.	Low	Eutrophication	Chl-a	43.5	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB0	Response	Additive model, 50% probability of attaining ASCI_D score above 1.01.	High	Eutrophication	Chl-a	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB0	Response	Additive model, 50% probability of attaining ASCI_D score above 0.77.	Intermediate	Eutrophication	Chl-a	55	
SB0	Response	Additive model, 50% probability of attaining ASCI_D score above 0.68.	Low	Eutrophication	Chl-a	112.6	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB0	Response	Additive model, 50% probability of attaining ASCI_H score above 0.94.	High	Eutrophication	Chl-a	2.4	
SB0	Response	Additive model, 50% probability of attaining ASCI_H score above 0.79.	Intermediate	Eutrophication	Chl-a	49.2	
SB0	Response	Additive model, 50% probability of attaining ASCI_H score above 0.64.	Low	Eutrophication	Chl-a	NA	No threshold identified
SB0	Response	Additive model, 50% probability of attaining CSCI score above 0.99.	High	Eutrophication	Chl-a	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB0	Response	Additive model, 50% probability of attaining CSCI score above 0.78.	Intermediate	Eutrophication	Chl-a	55	
SB0	Response	Additive model, 50% probability of attaining CSCI score above 0.66.	Low	Eutrophication	Chl-a	124.9	Eutrophication threshold is set for a biointegrity goal that is above reference.
CC	Response	Additive model, 50% probability of attaining ASCI_D score above NA.	High	Eutrophication	Chl-a	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_D score above NA.	Intermediate	Eutrophication	Chl-a	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_D score above NA.	Low	Eutrophication	Chl-a	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_H score above NA.	High	Eutrophication	Chl-a	NA	Insufficient data

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
CC	Response	Additive model, 50% probability of attaining ASCI_H score above NA.	Intermediate	Eutrophication	Chl-a	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_H score above NA.	Low	Eutrophication	Chl-a	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining CSCI score above 0.53.	High	Eutrophication	Chl-a	NA	No threshold identified
CC	Response	Additive model, 50% probability of attaining CSCI score above 0.45.	Intermediate	Eutrophication	Chl-a	NA	No threshold identified
CC	Response	Additive model, 50% probability of attaining CSCI score above 0.37.	Low	Eutrophication	Chl-a	NA	No threshold identified
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_D score above 0.94.	High	Eutrophication	AFDM	NA	No threshold identified
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_D score above 0.86.	Intermediate	Eutrophication	AFDM	15.2	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_D score above 0.75.	Low	Eutrophication	AFDM	48	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_H score above 0.94.	High	Eutrophication	AFDM	3.6	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_H score above 0.86.	Intermediate	Eutrophication	AFDM	17.6	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_H score above 0.75.	Low	Eutrophication	AFDM	52.9	
Wadeable streams	Response	Additive model, 50% probability of attaining CSCI score above 0.92.	High	Eutrophication	AFDM	7.6	
Wadeable streams	Response	Additive model, 50% probability of attaining CSCI score above 0.79.	Intermediate	Eutrophication	AFDM	37.2	
Wadeable streams	Response	Additive model, 50% probability of attaining CSCI score above 0.63.	Low	Eutrophication	AFDM	197.8	
RFI-N	Response	Additive model, 50% probability of attaining ASCI_D score above 0.98.	High	Eutrophication	AFDM	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_D score above 0.9.	Intermediate	Eutrophication	AFDM	6.4	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_D score above 0.78.	Low	Eutrophication	AFDM	37.2	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_H score above 0.96.	High	Eutrophication	AFDM	0.8	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_H score above 0.9.	Intermediate	Eutrophication	AFDM	10	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_H score above 0.81.	Low	Eutrophication	AFDM	29.6	Eutrophication threshold is set for a biointegrity goal that is above reference.

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
RFI-N	Response	Additive model, 50% probability of attaining CSCI score above 0.73.	High	Eutrophication	AFDM	70.5	
RFI-N	Response	Additive model, 50% probability of attaining CSCI score above 0.61.	Intermediate	Eutrophication	AFDM	226.2	
RFI-N	Response	Additive model, 50% probability of attaining CSCI score above 0.44.	Low	Eutrophication	AFDM	NA	No threshold identified
RFI-S	Response	Additive model, 50% probability of attaining ASCI_D score above 0.91.	High	Eutrophication	AFDM	4.4	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_D score above 0.8.	Intermediate	Eutrophication	AFDM	30.8	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_D score above 0.66.	Low	Eutrophication	AFDM	127.3	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_H score above 0.91.	High	Eutrophication	AFDM	8.4	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_H score above 0.8.	Intermediate	Eutrophication	AFDM	32.4	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_H score above 0.65.	Low	Eutrophication	AFDM	257.9	
RFI-S	Response	Additive model, 50% probability of attaining CSCI score above 0.89.	High	Eutrophication	AFDM	12.8	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
RFI-S	Response	Additive model, 50% probability of attaining CSCI score above 0.82.	Intermediate	Eutrophication	AFDM	28	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-S	Response	Additive model, 50% probability of attaining CSCI score above 0.71.	Low	Eutrophication	AFDM	88.5	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_D score above 1.13.	High	Eutrophication	AFDM	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_D score above 1.02.	Intermediate	Eutrophication	AFDM	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_D score above 0.92.	Low	Eutrophication	AFDM	2.4	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_H score above 1.05.	High	Eutrophication	AFDM	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_H score above 0.94.	Intermediate	Eutrophication	AFDM	3.6	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_H score above 0.8.	Low	Eutrophication	AFDM	32.4	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining CSCI score above 0.85.	High	Eutrophication	AFDM	20.8	
CVF	Response	Additive model, 50% probability of attaining CSCI score above 0.67.	Intermediate	Eutrophication	AFDM	139.7	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
CVF	Response	Additive model, 50% probability of attaining CSCI score above 0.52.	Low	Eutrophication	AFDM	348.3	
HB	Response	Additive model, 50% probability of attaining ASCI_D score above 1.05.	High	Eutrophication	AFDM	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
HB	Response	Additive model, 50% probability of attaining ASCI_D score above 0.88.	Intermediate	Eutrophication	AFDM	10.8	Eutrophication threshold is set for a biointegrity goal that is above reference.
HB	Response	Additive model, 50% probability of attaining ASCI_D score above 0.74.	Low	Eutrophication	AFDM	52.5	
HB	Response	Additive model, 50% probability of attaining ASCI_H score above 1.02.	High	Eutrophication	AFDM	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
HB	Response	Additive model, 50% probability of attaining ASCI_H score above 0.87.	Intermediate	Eutrophication	AFDM	15.6	Eutrophication threshold is set for a biointegrity goal that is above reference.
HB	Response	Additive model, 50% probability of attaining ASCI_H score above 0.74.	Low	Eutrophication	AFDM	58.9	
HB	Response	Additive model, 50% probability of attaining CSCI score above 0.74.	High	Eutrophication	AFDM	62.5	
HB	Response	Additive model, 50% probability of attaining CSCI score above 0.67.	Intermediate	Eutrophication	AFDM	139.7	
HB	Response	Additive model, 50% probability of attaining CSCI score above 0.55.	Low	Eutrophication	AFDM	308.7	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB2	Response	Additive model, 50% probability of attaining ASCI_D score above 0.93.	High	Eutrophication	AFDM	0.4	
SB2	Response	Additive model, 50% probability of attaining ASCI_D score above 0.77.	Intermediate	Eutrophication	AFDM	40.4	
SB2	Response	Additive model, 50% probability of attaining ASCI_D score above 0.64.	Low	Eutrophication	AFDM	171	
SB2	Response	Additive model, 50% probability of attaining ASCI_H score above 0.88.	High	Eutrophication	AFDM	13.6	
SB2	Response	Additive model, 50% probability of attaining ASCI_H score above 0.76.	Intermediate	Eutrophication	AFDM	47.6	
SB2	Response	Additive model, 50% probability of attaining ASCI_H score above 0.6.	Low	Eutrophication	AFDM	NA	No threshold identified
SB2	Response	Additive model, 50% probability of attaining CSCI score above 0.96.	High	Eutrophication	AFDM	1.6	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB2	Response	Additive model, 50% probability of attaining CSCI score above 0.75.	Intermediate	Eutrophication	AFDM	56.1	
SB2	Response	Additive model, 50% probability of attaining CSCI score above 0.64.	Low	Eutrophication	AFDM	183.4	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining ASCI_D score above 1.01.	High	Eutrophication	AFDM	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB1	Response	Additive model, 50% probability of attaining ASCI_D score above 0.85.	Intermediate	Eutrophication	AFDM	17.6	
SB1	Response	Additive model, 50% probability of attaining ASCI_D score above 0.68.	Low	Eutrophication	AFDM	95.3	
SB1	Response	Additive model, 50% probability of attaining ASCI_H score above 0.97.	High	Eutrophication	AFDM	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining ASCI_H score above 0.86.	Intermediate	Eutrophication	AFDM	17.6	
SB1	Response	Additive model, 50% probability of attaining ASCI_H score above 0.67.	Low	Eutrophication	AFDM	191.4	
SB1	Response	Additive model, 50% probability of attaining CSCI score above 1.1.	High	Eutrophication	AFDM	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining CSCI score above 1.	Intermediate	Eutrophication	AFDM	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining CSCI score above 0.81.	Low	Eutrophication	AFDM	30.8	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB0	Response	Additive model, 50% probability of attaining ASCI_D score above 1.01.	High	Eutrophication	AFDM	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB0	Response	Additive model, 50% probability of attaining ASCI_D score above 0.77.	Intermediate	Eutrophication	AFDM	40.4	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB0	Response	Additive model, 50% probability of attaining ASCI_D score above 0.68.	Low	Eutrophication	AFDM	95.3	
SB0	Response	Additive model, 50% probability of attaining ASCI_H score above 0.94.	High	Eutrophication	AFDM	3.6	
SB0	Response	Additive model, 50% probability of attaining ASCI_H score above 0.79.	Intermediate	Eutrophication	AFDM	35.6	
SB0	Response	Additive model, 50% probability of attaining ASCI_H score above 0.64.	Low	Eutrophication	AFDM	293.5	
SB0	Response	Additive model, 50% probability of attaining CSCI score above 0.99.	High	Eutrophication	AFDM	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB0	Response	Additive model, 50% probability of attaining CSCI score above 0.78.	Intermediate	Eutrophication	AFDM	41.2	
SB0	Response	Additive model, 50% probability of attaining CSCI score above 0.66.	Low	Eutrophication	AFDM	154.2	Eutrophication threshold is set for a biointegrity goal that is above reference.
CC	Response	Additive model, 50% probability of attaining ASCI_D score above NA.	High	Eutrophication	AFDM	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_D score above NA.	Intermediate	Eutrophication	AFDM	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_D score above NA.	Low	Eutrophication	AFDM	NA	Insufficient data

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
CC	Response	Additive model, 50% probability of attaining ASCI_H score above NA.	High	Eutrophication	AFDM	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_H score above NA.	Intermediate	Eutrophication	AFDM	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_H score above NA.	Low	Eutrophication	AFDM	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining CSCI score above 0.53.	High	Eutrophication	AFDM	335.1	
CC	Response	Additive model, 50% probability of attaining CSCI score above 0.45.	Intermediate	Eutrophication	AFDM	NA	No threshold identified
CC	Response	Additive model, 50% probability of attaining CSCI score above 0.37.	Low	Eutrophication	AFDM	NA	No threshold identified
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_D score above 0.94.	High	Eutrophication	% cover	NA	No threshold identified
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_D score above 0.86.	Intermediate	Eutrophication	% cover	13	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_D score above 0.75.	Low	Eutrophication	% cover	66	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_H score above 0.94.	High	Eutrophication	% cover	NA	No threshold identified

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_H score above 0.86.	Intermediate	Eutrophication	% cover	27	
Wadeable streams	Response	Additive model, 50% probability of attaining ASCI_H score above 0.75.	Low	Eutrophication	% cover	NA	No threshold identified
Wadeable streams	Response	Additive model, 50% probability of attaining CSCI score above 0.92.	High	Eutrophication	% cover	NA	No threshold identified
Wadeable streams	Response	Additive model, 50% probability of attaining CSCI score above 0.79.	Intermediate	Eutrophication	% cover	45	
Wadeable streams	Response	Additive model, 50% probability of attaining CSCI score above 0.63.	Low	Eutrophication	% cover	87	
RFI-N	Response	Additive model, 50% probability of attaining ASCI_D score above 0.98.	High	Eutrophication	% cover	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_D score above 0.9.	Intermediate	Eutrophication	% cover	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_D score above 0.78.	Low	Eutrophication	% cover	51	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_H score above 0.96.	High	Eutrophication	% cover	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining ASCI_H score above 0.9.	Intermediate	Eutrophication	% cover	1	Eutrophication threshold is set for a biointegrity goal that is above reference.

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
RFI-N	Response	Additive model, 50% probability of attaining ASCI_H score above 0.81.	Low	Eutrophication	% cover	45	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-N	Response	Additive model, 50% probability of attaining CSCI score above 0.73.	High	Eutrophication	% cover	71	
RFI-N	Response	Additive model, 50% probability of attaining CSCI score above 0.61.	Intermediate	Eutrophication	% cover	88	
RFI-N	Response	Additive model, 50% probability of attaining CSCI score above 0.44.	Low	Eutrophication	% cover	99	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_D score above 0.91.	High	Eutrophication	% cover	NA	No threshold identified
RFI-S	Response	Additive model, 50% probability of attaining ASCI_D score above 0.8.	Intermediate	Eutrophication	% cover	42	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_D score above 0.66.	Low	Eutrophication	% cover	NA	No threshold identified
RFI-S	Response	Additive model, 50% probability of attaining ASCI_H score above 0.91.	High	Eutrophication	% cover	NA	No threshold identified
RFI-S	Response	Additive model, 50% probability of attaining ASCI_H score above 0.8.	Intermediate	Eutrophication	% cover	53	
RFI-S	Response	Additive model, 50% probability of attaining ASCI_H score above 0.65.	Low	Eutrophication	% cover	NA	No threshold identified

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
RFI-S	Response	Additive model, 50% probability of attaining CSCI score above 0.89.	High	Eutrophication	% cover	15	
RFI-S	Response	Additive model, 50% probability of attaining CSCI score above 0.82.	Intermediate	Eutrophication	% cover	36	Eutrophication threshold is set for a biointegrity goal that is above reference.
RFI-S	Response	Additive model, 50% probability of attaining CSCI score above 0.71.	Low	Eutrophication	% cover	76	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_D score above 1.13.	High	Eutrophication	% cover	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_D score above 1.02.	Intermediate	Eutrophication	% cover	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_D score above 0.92.	Low	Eutrophication	% cover	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_H score above 1.05.	High	Eutrophication	% cover	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_H score above 0.94.	Intermediate	Eutrophication	% cover	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining ASCI_H score above 0.8.	Low	Eutrophication	% cover	53	Eutrophication threshold is set for a biointegrity goal that is above reference.
CVF	Response	Additive model, 50% probability of attaining CSCI score above 0.85.	High	Eutrophication	% cover	29	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
CVF	Response	Additive model, 50% probability of attaining CSCI score above 0.67.	Intermediate	Eutrophication	% cover	82	
CVF	Response	Additive model, 50% probability of attaining CSCI score above 0.52.	Low	Eutrophication	% cover	94	
HB	Response	Additive model, 50% probability of attaining ASCI_D score above 1.05.	High	Eutrophication	% cover	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
HB	Response	Additive model, 50% probability of attaining ASCI_D score above 0.88.	Intermediate	Eutrophication	% cover	4	Eutrophication threshold is set for a biointegrity goal that is above reference.
HB	Response	Additive model, 50% probability of attaining ASCI_D score above 0.74.	Low	Eutrophication	% cover	70	
HB	Response	Additive model, 50% probability of attaining ASCI_H score above 1.02.	High	Eutrophication	% cover	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
HB	Response	Additive model, 50% probability of attaining ASCI_H score above 0.87.	Intermediate	Eutrophication	% cover	23	Eutrophication threshold is set for a biointegrity goal that is above reference.
HB	Response	Additive model, 50% probability of attaining ASCI_H score above 0.74.	Low	Eutrophication	% cover	NA	No threshold identified
HB	Response	Additive model, 50% probability of attaining CSCI score above 0.74.	High	Eutrophication	% cover	67	
HB	Response	Additive model, 50% probability of attaining CSCI score above 0.67.	Intermediate	Eutrophication	% cover	82	

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
HB	Response	Additive model, 50% probability of attaining CSCI score above 0.55.	Low	Eutrophication	% cover	92	
SB2	Response	Additive model, 50% probability of attaining ASCI_D score above 0.93.	High	Eutrophication	% cover	NA	No threshold identified
SB2	Response	Additive model, 50% probability of attaining ASCI_D score above 0.77.	Intermediate	Eutrophication	% cover	56	
SB2	Response	Additive model, 50% probability of attaining ASCI_D score above 0.64.	Low	Eutrophication	% cover	NA	No threshold identified
SB2	Response	Additive model, 50% probability of attaining ASCI_H score above 0.88.	High	Eutrophication	% cover	18	
SB2	Response	Additive model, 50% probability of attaining ASCI_H score above 0.76.	Intermediate	Eutrophication	% cover	NA	No threshold identified
SB2	Response	Additive model, 50% probability of attaining ASCI_H score above 0.6.	Low	Eutrophication	% cover	NA	No threshold identified
SB2	Response	Additive model, 50% probability of attaining CSCI score above 0.96.	High	Eutrophication	% cover	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB2	Response	Additive model, 50% probability of attaining CSCI score above 0.75.	Intermediate	Eutrophication	% cover	63	
SB2	Response	Additive model, 50% probability of attaining CSCI score above 0.64.	Low	Eutrophication	% cover	86	Eutrophication threshold is set for a biointegrity goal that is above reference.

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB1	Response	Additive model, 50% probability of attaining ASCI_D score above 1.01.	High	Eutrophication	% cover	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining ASCI_D score above 0.85.	Intermediate	Eutrophication	% cover	18	
SB1	Response	Additive model, 50% probability of attaining ASCI_D score above 0.68.	Low	Eutrophication	% cover	99	
SB1	Response	Additive model, 50% probability of attaining ASCI_H score above 0.97.	High	Eutrophication	% cover	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining ASCI_H score above 0.86.	Intermediate	Eutrophication	% cover	27	
SB1	Response	Additive model, 50% probability of attaining ASCI_H score above 0.67.	Low	Eutrophication	% cover	NA	No threshold identified
SB1	Response	Additive model, 50% probability of attaining CSCI score above 1.1.	High	Eutrophication	% cover	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining CSCI score above 1.	Intermediate	Eutrophication	% cover	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB1	Response	Additive model, 50% probability of attaining CSCI score above 0.81.	Low	Eutrophication	% cover	39	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB0	Response	Additive model, 50% probability of attaining ASCI_D score above 1.01.	High	Eutrophication	% cover	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
SB0	Response	Additive model, 50% probability of attaining ASCI_D score above 0.77.	Intermediate	Eutrophication	% cover	56	
SB0	Response	Additive model, 50% probability of attaining ASCI_D score above 0.68.	Low	Eutrophication	% cover	99	
SB0	Response	Additive model, 50% probability of attaining ASCI_H score above 0.94.	High	Eutrophication	% cover	NA	No threshold identified
SB0	Response	Additive model, 50% probability of attaining ASCI_H score above 0.79.	Intermediate	Eutrophication	% cover	66	
SB0	Response	Additive model, 50% probability of attaining ASCI_H score above 0.64.	Low	Eutrophication	% cover	NA	No threshold identified
SB0	Response	Additive model, 50% probability of attaining CSCI score above 0.99.	High	Eutrophication	% cover	NA	Eutrophication threshold is set for a biointegrity goal that is above reference.
SB0	Response	Additive model, 50% probability of attaining CSCI score above 0.78.	Intermediate	Eutrophication	% cover	48	
SB0	Response	Additive model, 50% probability of attaining CSCI score above 0.66.	Low	Eutrophication	% cover	84	Eutrophication threshold is set for a biointegrity goal that is above reference.
CC	Response	Additive model, 50% probability of attaining ASCI_D score above NA.	High	Eutrophication	% cover	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_D score above NA.	Intermediate	Eutrophication	% cover	NA	Insufficient data

Supplement S4: Thresholds at multiple levels of stringency

Class	Approach	Details	Stringency	Indicator type	Indicator	Threshold	Flag
CC	Response	Additive model, 50% probability of attaining ASCI_D score above NA.	Low	Eutrophication	% cover	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_H score above NA.	High	Eutrophication	% cover	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_H score above NA.	Intermediate	Eutrophication	% cover	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining ASCI_H score above NA.	Low	Eutrophication	% cover	NA	Insufficient data
CC	Response	Additive model, 50% probability of attaining CSCI score above 0.53.	High	Eutrophication	% cover	94	
CC	Response	Additive model, 50% probability of attaining CSCI score above 0.45.	Intermediate	Eutrophication	% cover	98	
CC	Response	Additive model, 50% probability of attaining CSCI score above 0.37.	Low	Eutrophication	% cover	NA	No threshold identified