# Evaluating top-down, bottom-up, and environmental drivers of pelagic food web dynamics along an estuarine gradient

Tanya L. Rogers, Samuel M. Bashevkin, Christina E. Burdi, Denise D. Colombano, Peter N. Dudley, Brian Mahardja, Lara Mitchell, Sarah Perry, Parsa Saffarinia

## Appendix S2: Supplemental data and model tables

Table S1. Variable definitions and temporal extent for the monthly and annual datasets.

| Variable | Monthly years (missing months) | Annual years (missing years) | Definition |
| --- | --- | --- | --- |
| Ammonia | 1995‒2020 (0) | 1980‒2020 (0) | from the Discrete Environmental Monitoring Program (EMP) at DWR - year-round |
| Amphipods catch | 1997‒2020 (18) | 1975‒2020 (1) | from 5 different sources - year-round - see Bashevkin et al. 2022 |
| Amphipods mass | 1997‒2020 (18) | 1975‒2020 (1) | from 5 different sources - year-round - see Bashevkin et al. 2022 |
| Centrarchids DJFMP | 1995‒2020 (3) |  | year-round - beach seines - biomass |
| Cladocera | 1995‒2020 (2) | 1975‒2020 (0) | from 5 different sources - year-round - see Bashevkin et al. 2022 |
| Cladocera catch | 1995‒2020 (2) | 1975‒2020 (0) | from 5 different sources - year-round - see Bashevkin et al. 2022 |
| Cladocera energy | 1995‒2020 (2) | 1975‒2020 (0) | from 5 different sources - year-round - see Bashevkin et al. 2022 |
| Corbicula | 1997‒2020 (18) | 1975‒2020 (1) | from the Environmental Monitoring Program (EMP) Benthic Survey at DWR - year-round |
| Delta smelt BSMT | 1995‒2020 (38) | 1980‒2020 (1) | year-round - midwater trawl - biomass |
| Delta smelt BSOT | 1995‒2020 (18) | 1980‒2020 (0) | year-round - otter trawl - biomass |
| Delta smelt FMWT |  | 1975‒2020 (1) | fall (September - December) - midwater trawl - biomass |
| Delta smelt STN |  | 1975‒2021 (0) | summer (June - August) - townet - biomass |
| Dissolved Inorganic Nitrogen | 1995‒2020 (0) |  | from the Discrete Environmental Monitoring Program (EMP) at DWR - year-round |
| Dissolved Orthophos | 1995‒2020 (0) | 1980‒2020 (0) | from the Discrete Environmental Monitoring Program (EMP) at DWR - year-round |
| Estuarine fishes BSMT | 1995‒2020 (38) | 1980‒2020 (1) | year-round - midwater trawl - biomass of estuarine pelagic forage fishes |
| Estuarine fishes BSOT | 1995‒2020 (18) | 1980‒2020 (0) | year-round - otter trawl - biomass of estuarine pelagic forage fishes |
| Estuarine fishes FMWT |  | 1975‒2020 (1) | fall (September - December) - midwater trawl - biomass of estuarine pelagic forage fishes |
| Estuarine fishes STN |  | 1975‒2021 (0) | summer (June - August) - townet - biomass of estuarine pelagic forage fishes |
| Flow | 1995‒2020 (0) | 1975‒2020 (0) | year-round - mean Delta outflow (water leaving the Delta to the Bay) |
| Herbivorous copepods | 1995‒2020 (2) | 1975‒2020 (0) | from 5 different sources - year-round - see Bashevkin et al. 2022 |
| Herbivorous copepods catch | 1995‒2020 (2) | 1975‒2020 (0) | from 5 different sources - year-round - see Bashevkin et al. 2022 |
| Herbivorous copepods energy | 1995‒2020 (2) | 1975‒2020 (0) | from 5 different sources - year-round - see Bashevkin et al. 2022 |
| Herbivorous zooplankton biomass | 1995‒2020 (2) | 1975‒2020 (0) | summed herbivorous zooplankton biomass |
| Herbivorous zooplankton energy | 1995‒2020 (2) | 1975‒2020 (0) | summed herbivorous zooplankton energy |
| Longfin smelt BSMT | 1995‒2020 (38) | 1980‒2020 (1) | year-round - midwater trawl - biomass |
| Longfin smelt BSOT | 1995‒2020 (18) | 1980‒2020 (0) | year-round - otter trawl - biomass |
| Longfin smelt FMWT |  | 1975‒2020 (1) | fall (September - December) - midwater trawl - biomass |
| Longfin smelt STN |  | 1975‒2021 (0) | summer (June - August) - townet - biomass |
| Marine fishes BSMT | 1995‒2020 (38) | 1980‒2020 (1) | year-round - midwater trawl - biomass |
| Marine fishes BSOT | 1995‒2020 (18) | 1980‒2020 (0) | year-round - otter trawl - biomass |
| Marine fishes FMWT |  | 1975‒2020 (1) | fall (September - December) - midwater trawl - biomass |
| Marine fishes STN |  | 1975‒2021 (0) | summer (June - August) - townet - biomass |
| Mississippi silverside DJFMP | 1995‒2020 (3) | 1976‒2020 (0) | year-round - beach seines - biomass |
| Mysids | 1995‒2020 (2) | 1975‒2020 (0) | from 5 different sources - year-round - see Bashevkin et al. 2022 |
| Mysids catch | 1995‒2020 (2) | 1975‒2020 (0) | from 5 different sources - year-round - see Bashevkin et al. 2022 |
| Mysids energy | 1995‒2020 (2) | 1975‒2020 (0) | from 5 different sources - year-round - see Bashevkin et al. 2022 |
| Nitrate and Nitrite | 1995‒2020 (0) | 1980‒2020 (0) | from the Discrete Environmental Monitoring Program (EMP) at DWR - year-round |
| Phytoplankton | 1995‒2020 (0) | 1980‒2020 (0) | from the Discrete Environmental Monitoring Program (EMP) at DWR - year-round |
| Potamocorbula | 1997‒2020 (18) | 1975‒2020 (1) | from the Environmental Monitoring Program (EMP) Benthic Survey at DWR - year-round |
| Predatory copepods | 1995‒2020 (2) | 1975‒2020 (0) | from 5 different sources - year-round - see Bashevkin et al. 2022 |
| Predatory copepods catch | 1995‒2020 (2) | 1975‒2020 (0) | from 5 different sources - year-round - see Bashevkin et al. 2022 |
| Predatory copepods energy | 1995‒2020 (2) | 1975‒2020 (0) | from 5 different sources - year-round - see Bashevkin et al. 2022 |
| Predatory zooplankton biomass | 1995‒2020 (2) | 1975‒2020 (0) | summed predatory zooplankton biomass |
| Predatory zooplankton energy | 1995‒2020 (2) | 1975‒2020 (0) | summed predatory zooplankton energy |
| Rotifers catch | 1995‒2020 (2) | 1975‒2020 (0) | from 5 different sources - year-round - see Bashevkin et al. 2022 |
| Rotifers energy | 1995‒2020 (2) | 1975‒2020 (0) | from 5 different sources - year-round - see Bashevkin et al. 2022 |
| Rotifers mass | 1995‒2020 (2) | 1975‒2020 (0) | from 5 different sources - year-round - see Bashevkin et al. 2022 |
| Secchi | 1995‒2020 (0) | 1980‒2020 (0) | from the Discrete Environmental Monitoring Program (EMP) at DWR - year-round |
| Striped bass age 1+ BSMT | 1995‒2020 (38) |  | year-round - midwater trawl - biomass of age 1+ individuals |
| Striped bass age 1+ BSOT | 1995‒2020 (18) |  | year-round - otter trawl - biomass of age 1+ individuals |
| Striped bass BSMT | 1995‒2020 (38) | 1980‒2020 (1) | year-round - midwater trawl - biomass of age 0 individuals |
| Striped bass BSOT | 1995‒2020 (18) | 1980‒2020 (0) | year-round - otter trawl - biomass of age 0 individuals |
| Striped bass FMWT |  | 1975‒2020 (1) | fall (September - December) - midwater trawl - biomass of age 0 individuals |
| Striped bass STN |  | 1975‒2021 (0) | summer (June - August) - townet - biomass of age 0 individuals |
| Temperature | 1995‒2020 (0) | 1980‒2020 (0) | from the Discrete Environmental Monitoring Program (EMP) at DWR - year-round |
| Total zooplankton biomass | 1995‒2020 (2) | 1975‒2020 (0) | summed zooplankton biomass |
| Total zooplankton energy | 1995‒2020 (2) | 1975‒2020 (0) | summed zooplankton energy |
| Turbidity | 1995‒2020 (0) | 1980‒2020 (0) | negative secchi depth |

Table S2. Stations used to calculate input data for annual and monthly models.

| Survey | Temporal resolution | Stations |
| --- | --- | --- |
| Bay Study | Annual | 427, 428, 429, 431, 432, 433, 534, 535, 736, 837 |
| DJFMP | Annual | MS001N, SJ001S, SJ005N, SR012E, SR012E, SR014W, TM001N |
| EMP Benthic | Annual | D4-L, D7-C, D28A-L |
| EMP Nutrients | Annual | D26, D28A, D4, D6, D7, D8 |
| EMP Zoop | Annual | NZD28, NZ054, NZ074, NZ048, NZ086, NZ064, NZ060, NZ028, NZS42, NZ032 |
| FMWT | Annual | 338, 339, 401, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 501, 502, 503, 504, 505, 507, 508, 509, 510, 511, 512, 513, 515, 516, 517, 518, 519, 601, 602, 603, 604, 605, 606, 608, 701, 703, 704, 705, 706, 707, 708, 709, 710, 711, 802, 804, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 902, 904, 905, 906, 908, 915 |
| STN | Annual | 405, 411, 418, 501, 504, 508, 513, 519, 520, 602, 606, 609, 610, 704, 706, 707, 711, 801, 804, 809, 812, 815, 902, 906, 915 |
| Bay Study | Monthly | 317, 318, 319, 320, 321, 322, 323, 325, 427, 428, 429, 430, 431, 432, 433, 534, 535, 736, 837, 345, 346, 447, 750, 751, 752, 853, 760, 761, 863, 864, 865 |
| DJFMP | Monthly | SR014W, SR012E, MS001N, TM001N, SJ005N, SJ001S, OR003W, OR014W, SR012E |
| EMP Benthic | Monthly | D4-L, D6-R, D7-C, D16-L, D28A-L, D24-L, D41-C, D41A-C |
| EMP Nutrients | Monthly | D26, D28A, D4, D41, D6, D7, D8 |
| EMP Zoop | Monthly | NZD28, NZ054, NZ074, NZ048, NZD16, NZ086, NZ064, NZ060, NZ028, NZS42, NZ032, NZD41, NZD06 |

Table S3. Path coefficients for annual and annual-regional SEMS.

| Model | Region | Response | op | Predictor | Effect | se | pvalue |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Detrended | Sacramento | chla | ~ | corbic | 0.4860 | 0.1312 | 0.0002 |
| Detrended | Sacramento | chla | ~ | flow | 0.1432 | 0.1506 | 0.3415 |
| Detrended | Sacramento | chla | ~ | temp | 0.1667 | 0.1276 | 0.1913 |
| Detrended | Sacramento | chla | ~ | turbid | 0.1926 | 0.1341 | 0.1508 |
| Detrended | Sacramento | hzoop | ~ | chla | 0.3931 | 0.1594 | 0.0136 |
| Detrended | Sacramento | hzoop | ~ | corbic | -0.0633 | 0.1880 | 0.7365 |
| Detrended | Sacramento | hzoop | ~ | flow | 0.0270 | 0.1829 | 0.8826 |
| Detrended | Sacramento | hzoop | ~ | temp | 0.1665 | 0.1542 | 0.2803 |
| Detrended | Sacramento | hzoop | ~ | turbid | -0.0721 | 0.1671 | 0.6660 |
| Detrended | Sacramento | pzoop | ~ | chla | 0.7302 | 0.0955 | 0.0000 |
| Detrended | Sacramento | pzoop | ~ | corbic | 0.2671 | 0.1096 | 0.0148 |
| Detrended | Sacramento | pzoop | ~ | flow | -0.4966 | 0.1034 | 0.0000 |
| Detrended | Sacramento | pzoop | ~ | temp | 0.0184 | 0.0933 | 0.8435 |
| Detrended | Sacramento | pzoop | ~ | turbid | 0.0065 | 0.0986 | 0.9472 |
| Detrended | Sacramento | pzoop | ~ | hzoop | 0.0177 | 0.0917 | 0.8471 |
| Detrended | Sacramento | fish | ~ | chla | -0.7132 | 0.3269 | 0.0291 |
| Detrended | Sacramento | fish | ~ | hzoop | 0.1530 | 0.1634 | 0.3492 |
| Detrended | Sacramento | fish | ~ | pzoop | 0.5734 | 0.2814 | 0.0416 |
| Detrended | Sacramento | fish | ~ | corbic | -0.6484 | 0.2421 | 0.0074 |
| Detrended | Sacramento | fish | ~ | flow | 0.5380 | 0.2443 | 0.0277 |
| Detrended | Sacramento | fish | ~ | temp | 0.2221 | 0.1837 | 0.2266 |
| Detrended | Sacramento | fish | ~ | turbid | 0.0846 | 0.1983 | 0.6697 |
| Detrended | Sacramento | fish | =~ | estfish | 0.6155 | 0.1286 | 0.0000 |
| Detrended | Sacramento | fish | =~ | estfish\_stn | 0.7256 | 0.1396 | 0.0000 |
| Detrended | Sacramento | estfish\_stn | ~~ | chla | 0.6757 | 0.1661 | 0.0000 |
| Detrended | Sacramento | estfish | ~~ | estfish | 0.6211 | 0.1583 | 0.0001 |
| Detrended | Sacramento | estfish\_stn | ~~ | estfish\_stn | 0.6237 | 0.2351 | 0.0080 |
| Detrended | Sacramento | chla | ~~ | chla | 0.7078 | 0.1038 | 0.0000 |
| Detrended | Sacramento | hzoop | ~~ | hzoop | 0.8304 | 0.1058 | 0.0000 |
| Detrended | Sacramento | pzoop | ~~ | pzoop | 0.2863 | 0.0718 | 0.0001 |
| Detrended | Sacramento | fish | ~~ | fish | 0.4444 | 0.1769 | 0.0120 |
| Detrended | Sacramento | corbic | ~~ | corbic | 1.0000 | 0.0000 |  |
| Detrended | Sacramento | corbic | ~~ | flow | 0.3769 | 0.0000 |  |
| Detrended | Sacramento | corbic | ~~ | temp | -0.1741 | 0.0000 |  |
| Detrended | Sacramento | corbic | ~~ | turbid | -0.2650 | 0.0000 |  |
| Detrended | Sacramento | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Detrended | Sacramento | flow | ~~ | temp | -0.3757 | 0.0000 |  |
| Detrended | Sacramento | flow | ~~ | turbid | 0.2872 | 0.0000 |  |
| Detrended | Sacramento | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Detrended | Sacramento | temp | ~~ | turbid | -0.0296 | 0.0000 |  |
| Detrended | Sacramento | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Detrended | San Joaquin | chla | ~ | corbic | 0.1201 | 0.1555 | 0.4400 |
| Detrended | San Joaquin | chla | ~ | flow | -0.0340 | 0.1678 | 0.8396 |
| Detrended | San Joaquin | chla | ~ | temp | 0.1756 | 0.1549 | 0.2568 |
| Detrended | San Joaquin | chla | ~ | turbid | -0.0475 | 0.1630 | 0.7707 |
| Detrended | San Joaquin | hzoop | ~ | chla | 0.4583 | 0.1154 | 0.0001 |
| Detrended | San Joaquin | hzoop | ~ | corbic | 0.2814 | 0.1221 | 0.0212 |
| Detrended | San Joaquin | hzoop | ~ | flow | -0.0084 | 0.1359 | 0.9509 |
| Detrended | San Joaquin | hzoop | ~ | temp | 0.0368 | 0.1298 | 0.7768 |
| Detrended | San Joaquin | hzoop | ~ | turbid | -0.1838 | 0.1298 | 0.1568 |
| Detrended | San Joaquin | pzoop | ~ | chla | 0.5160 | 0.1209 | 0.0000 |
| Detrended | San Joaquin | pzoop | ~ | corbic | -0.1184 | 0.1226 | 0.3342 |
| Detrended | San Joaquin | pzoop | ~ | flow | -0.0125 | 0.1239 | 0.9198 |
| Detrended | San Joaquin | pzoop | ~ | temp | 0.1449 | 0.1174 | 0.2173 |
| Detrended | San Joaquin | pzoop | ~ | turbid | -0.0903 | 0.1229 | 0.4627 |
| Detrended | San Joaquin | pzoop | ~ | hzoop | 0.2177 | 0.1413 | 0.1235 |
| Detrended | San Joaquin | fish | ~ | hzoop | 0.2551 | 0.1656 | 0.1234 |
| Detrended | San Joaquin | fish | ~ | pzoop | -0.3011 | 0.1561 | 0.0537 |
| Detrended | San Joaquin | fish | ~ | corbic | 0.1126 | 0.1485 | 0.4482 |
| Detrended | San Joaquin | fish | ~ | flow | 0.0051 | 0.1486 | 0.9727 |
| Detrended | San Joaquin | fish | ~ | temp | 0.1178 | 0.1435 | 0.4117 |
| Detrended | San Joaquin | fish | ~ | turbid | 0.3880 | 0.1349 | 0.0040 |
| Detrended | San Joaquin | fish | =~ | estfish | 1.0000 | 0.0000 |  |
| Detrended | San Joaquin | estfish | ~~ | estfish | 0.0000 | 0.0000 |  |
| Detrended | San Joaquin | chla | ~~ | chla | 0.9500 | 0.0655 | 0.0000 |
| Detrended | San Joaquin | hzoop | ~~ | hzoop | 0.6213 | 0.1169 | 0.0000 |
| Detrended | San Joaquin | pzoop | ~~ | pzoop | 0.5169 | 0.1117 | 0.0000 |
| Detrended | San Joaquin | fish | ~~ | fish | 0.7428 | 0.1137 | 0.0000 |
| Detrended | San Joaquin | corbic | ~~ | corbic | 1.0000 | 0.0000 |  |
| Detrended | San Joaquin | corbic | ~~ | flow | 0.1815 | 0.0000 |  |
| Detrended | San Joaquin | corbic | ~~ | temp | 0.0040 | 0.0000 |  |
| Detrended | San Joaquin | corbic | ~~ | turbid | -0.0951 | 0.0000 |  |
| Detrended | San Joaquin | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Detrended | San Joaquin | flow | ~~ | temp | -0.2024 | 0.0000 |  |
| Detrended | San Joaquin | flow | ~~ | turbid | 0.2808 | 0.0000 |  |
| Detrended | San Joaquin | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Detrended | San Joaquin | temp | ~~ | turbid | 0.1064 | 0.0000 |  |
| Detrended | San Joaquin | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Detrended | Suisun | chla | ~ | potam | 0.1777 | 0.1564 | 0.2561 |
| Detrended | Suisun | chla | ~ | flow | 0.6290 | 0.1690 | 0.0002 |
| Detrended | Suisun | chla | ~ | temp | -0.3245 | 0.1323 | 0.0142 |
| Detrended | Suisun | chla | ~ | turbid | -0.4176 | 0.1692 | 0.0136 |
| Detrended | Suisun | hzoop | ~ | chla | 0.4931 | 0.1207 | 0.0000 |
| Detrended | Suisun | hzoop | ~ | potam | -0.0356 | 0.1322 | 0.7875 |
| Detrended | Suisun | hzoop | ~ | flow | 0.4195 | 0.1731 | 0.0153 |
| Detrended | Suisun | hzoop | ~ | temp | -0.0056 | 0.1234 | 0.9637 |
| Detrended | Suisun | hzoop | ~ | turbid | -0.5108 | 0.1472 | 0.0005 |
| Detrended | Suisun | pzoop | ~ | chla | 0.4911 | 0.1127 | 0.0000 |
| Detrended | Suisun | pzoop | ~ | potam | 0.0346 | 0.1008 | 0.7318 |
| Detrended | Suisun | pzoop | ~ | flow | -0.3008 | 0.1451 | 0.0381 |
| Detrended | Suisun | pzoop | ~ | temp | -0.0478 | 0.0939 | 0.6107 |
| Detrended | Suisun | pzoop | ~ | turbid | 0.0292 | 0.1351 | 0.8287 |
| Detrended | Suisun | pzoop | ~ | hzoop | 0.5076 | 0.1172 | 0.0000 |
| Detrended | Suisun | fish | ~ | hzoop | 0.0856 | 0.1648 | 0.6037 |
| Detrended | Suisun | fish | ~ | pzoop | 0.2782 | 0.1505 | 0.0645 |
| Detrended | Suisun | fish | ~ | potam | -0.1305 | 0.1140 | 0.2525 |
| Detrended | Suisun | fish | ~ | flow | 0.7923 | 0.1555 | 0.0000 |
| Detrended | Suisun | fish | ~ | temp | -0.0635 | 0.1053 | 0.5465 |
| Detrended | Suisun | fish | ~ | turbid | -0.0124 | 0.1540 | 0.9356 |
| Detrended | Suisun | fish | =~ | estfish | 0.6981 | 0.0819 | 0.0000 |
| Detrended | Suisun | fish | =~ | estfish\_stn | 0.7858 | 0.0657 | 0.0000 |
| Detrended | Suisun | fish | =~ | estfish\_bsmt | 0.6496 | 0.0913 | 0.0000 |
| Detrended | Suisun | estfish | ~~ | estfish | 0.5127 | 0.1144 | 0.0000 |
| Detrended | Suisun | estfish\_stn | ~~ | estfish\_stn | 0.3825 | 0.1033 | 0.0002 |
| Detrended | Suisun | estfish\_bsmt | ~~ | estfish\_bsmt | 0.5780 | 0.1186 | 0.0000 |
| Detrended | Suisun | chla | ~~ | chla | 0.7026 | 0.1118 | 0.0000 |
| Detrended | Suisun | hzoop | ~~ | hzoop | 0.4726 | 0.1018 | 0.0000 |
| Detrended | Suisun | pzoop | ~~ | pzoop | 0.2740 | 0.0726 | 0.0002 |
| Detrended | Suisun | fish | ~~ | fish | 0.0526 | 0.0912 | 0.5636 |
| Detrended | Suisun | potam | ~~ | potam | 1.0000 | 0.0000 |  |
| Detrended | Suisun | potam | ~~ | flow | -0.5268 | 0.0000 |  |
| Detrended | Suisun | potam | ~~ | temp | 0.2990 | 0.0000 |  |
| Detrended | Suisun | potam | ~~ | turbid | -0.3924 | 0.0000 |  |
| Detrended | Suisun | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Detrended | Suisun | flow | ~~ | temp | -0.2786 | 0.0000 |  |
| Detrended | Suisun | flow | ~~ | turbid | 0.6744 | 0.0000 |  |
| Detrended | Suisun | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Detrended | Suisun | temp | ~~ | turbid | -0.2766 | 0.0000 |  |
| Detrended | Suisun | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Detrended | Whole Estuary | chla | ~ | potam | 0.2584 | 0.1789 | 0.1485 |
| Detrended | Whole Estuary | chla | ~ | flow | 0.3423 | 0.1745 | 0.0499 |
| Detrended | Whole Estuary | chla | ~ | temp | -0.0611 | 0.1646 | 0.7105 |
| Detrended | Whole Estuary | hzoop | ~ | chla | 0.6313 | 0.1034 | 0.0000 |
| Detrended | Whole Estuary | hzoop | ~ | potam | -0.0700 | 0.1544 | 0.6501 |
| Detrended | Whole Estuary | hzoop | ~ | flow | 0.0074 | 0.1576 | 0.9625 |
| Detrended | Whole Estuary | hzoop | ~ | temp | 0.0639 | 0.1347 | 0.6351 |
| Detrended | Whole Estuary | pzoop | ~ | chla | 0.6553 | 0.0929 | 0.0000 |
| Detrended | Whole Estuary | pzoop | ~ | potam | 0.0539 | 0.0953 | 0.5717 |
| Detrended | Whole Estuary | pzoop | ~ | flow | -0.1941 | 0.0971 | 0.0456 |
| Detrended | Whole Estuary | pzoop | ~ | hzoop | 0.3169 | 0.0979 | 0.0012 |
| Detrended | Whole Estuary | pzoop | ~ | temp | -0.0891 | 0.0833 | 0.2846 |
| Detrended | Whole Estuary | fish | ~ | hzoop | 0.1170 | 0.1563 | 0.4542 |
| Detrended | Whole Estuary | fish | ~ | pzoop | 0.3977 | 0.1592 | 0.0125 |
| Detrended | Whole Estuary | fish | ~ | flow | 0.6744 | 0.1472 | 0.0000 |
| Detrended | Whole Estuary | fish | ~ | turbid | 0.1344 | 0.1276 | 0.2921 |
| Detrended | Whole Estuary | fish | ~ | temp | 0.2302 | 0.1215 | 0.0582 |
| Detrended | Whole Estuary | fish | ~ | potam | -0.2263 | 0.1356 | 0.0953 |
| Detrended | Whole Estuary | fish | =~ | estfish | 0.6112 | 0.1040 | 0.0000 |
| Detrended | Whole Estuary | fish | =~ | estfish\_stn | 0.6241 | 0.1017 | 0.0000 |
| Detrended | Whole Estuary | fish | =~ | estfish\_bsmt | 0.7500 | 0.0805 | 0.0000 |
| Detrended | Whole Estuary | estfish | ~~ | estfish | 0.6265 | 0.1271 | 0.0000 |
| Detrended | Whole Estuary | estfish\_stn | ~~ | estfish\_stn | 0.6105 | 0.1270 | 0.0000 |
| Detrended | Whole Estuary | estfish\_bsmt | ~~ | estfish\_bsmt | 0.4374 | 0.1208 | 0.0003 |
| Detrended | Whole Estuary | chla | ~~ | chla | 0.9067 | 0.0855 | 0.0000 |
| Detrended | Whole Estuary | hzoop | ~~ | hzoop | 0.6049 | 0.1201 | 0.0000 |
| Detrended | Whole Estuary | pzoop | ~~ | pzoop | 0.2285 | 0.0634 | 0.0003 |
| Detrended | Whole Estuary | fish | ~~ | fish | 0.0705 | 0.1185 | 0.5519 |
| Detrended | Whole Estuary | potam | ~~ | potam | 1.0000 | 0.0000 |  |
| Detrended | Whole Estuary | potam | ~~ | flow | -0.5556 | 0.0000 |  |
| Detrended | Whole Estuary | potam | ~~ | temp | 0.3586 | 0.0000 |  |
| Detrended | Whole Estuary | potam | ~~ | turbid | -0.2760 | 0.0000 |  |
| Detrended | Whole Estuary | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Detrended | Whole Estuary | flow | ~~ | temp | -0.3633 | 0.0000 |  |
| Detrended | Whole Estuary | flow | ~~ | turbid | 0.5118 | 0.0000 |  |
| Detrended | Whole Estuary | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Detrended | Whole Estuary | temp | ~~ | turbid | -0.0441 | 0.0000 |  |
| Detrended | Whole Estuary | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Original | Sacramento | chla | ~ | corbic | 0.4497 | 0.1121 | 0.0001 |
| Original | Sacramento | chla | ~ | flow | 0.2008 | 0.1373 | 0.1436 |
| Original | Sacramento | chla | ~ | temp | 0.1777 | 0.1254 | 0.1565 |
| Original | Sacramento | chla | ~ | turbid | 0.1056 | 0.1289 | 0.4126 |
| Original | Sacramento | hzoop | ~ | chla | 0.1676 | 0.1409 | 0.2343 |
| Original | Sacramento | hzoop | ~ | corbic | 0.3840 | 0.1330 | 0.0039 |
| Original | Sacramento | hzoop | ~ | flow | -0.1588 | 0.1415 | 0.2617 |
| Original | Sacramento | hzoop | ~ | temp | 0.0864 | 0.1299 | 0.5060 |
| Original | Sacramento | hzoop | ~ | turbid | 0.4475 | 0.1095 | 0.0000 |
| Original | Sacramento | pzoop | ~ | chla | 0.6016 | 0.0892 | 0.0000 |
| Original | Sacramento | pzoop | ~ | corbic | 0.3612 | 0.0978 | 0.0002 |
| Original | Sacramento | pzoop | ~ | flow | -0.4792 | 0.0902 | 0.0000 |
| Original | Sacramento | pzoop | ~ | temp | -0.0037 | 0.0846 | 0.9652 |
| Original | Sacramento | pzoop | ~ | turbid | 0.1286 | 0.0918 | 0.1612 |
| Original | Sacramento | pzoop | ~ | hzoop | 0.1338 | 0.1011 | 0.1858 |
| Original | Sacramento | fish | ~ | chla | -0.6863 | 0.2162 | 0.0015 |
| Original | Sacramento | fish | ~ | hzoop | 0.5237 | 0.1443 | 0.0003 |
| Original | Sacramento | fish | ~ | pzoop | 0.6097 | 0.2253 | 0.0068 |
| Original | Sacramento | fish | ~ | corbic | -0.3462 | 0.1765 | 0.0499 |
| Original | Sacramento | fish | ~ | flow | 0.3203 | 0.1776 | 0.0714 |
| Original | Sacramento | fish | ~ | temp | 0.0923 | 0.1299 | 0.4774 |
| Original | Sacramento | fish | ~ | turbid | 0.3255 | 0.1390 | 0.0192 |
| Original | Sacramento | fish | =~ | estfish | 0.8084 | 0.0709 | 0.0000 |
| Original | Sacramento | fish | =~ | estfish\_stn | 0.8434 | 0.0804 | 0.0000 |
| Original | Sacramento | estfish\_stn | ~~ | chla | 0.5948 | 0.1606 | 0.0002 |
| Original | Sacramento | estfish | ~~ | estfish | 0.3464 | 0.1146 | 0.0025 |
| Original | Sacramento | estfish\_stn | ~~ | estfish\_stn | 0.4039 | 0.1428 | 0.0047 |
| Original | Sacramento | chla | ~~ | chla | 0.6859 | 0.1021 | 0.0000 |
| Original | Sacramento | hzoop | ~~ | hzoop | 0.5653 | 0.1041 | 0.0000 |
| Original | Sacramento | pzoop | ~~ | pzoop | 0.2351 | 0.0580 | 0.0001 |
| Original | Sacramento | fish | ~~ | fish | 0.2744 | 0.1076 | 0.0107 |
| Original | Sacramento | corbic | ~~ | corbic | 1.0000 | 0.0000 |  |
| Original | Sacramento | corbic | ~~ | flow | 0.3782 | 0.0000 |  |
| Original | Sacramento | corbic | ~~ | temp | -0.2155 | 0.0000 |  |
| Original | Sacramento | corbic | ~~ | turbid | 0.1434 | 0.0000 |  |
| Original | Sacramento | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Original | Sacramento | flow | ~~ | temp | -0.3905 | 0.0000 |  |
| Original | Sacramento | flow | ~~ | turbid | 0.3100 | 0.0000 |  |
| Original | Sacramento | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Original | Sacramento | temp | ~~ | turbid | -0.1037 | 0.0000 |  |
| Original | Sacramento | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Original | San Joaquin | chla | ~ | corbic | 0.2832 | 0.1417 | 0.0458 |
| Original | San Joaquin | chla | ~ | flow | -0.1280 | 0.1399 | 0.3600 |
| Original | San Joaquin | chla | ~ | temp | 0.0810 | 0.1396 | 0.5615 |
| Original | San Joaquin | chla | ~ | turbid | 0.3726 | 0.1385 | 0.0071 |
| Original | San Joaquin | hzoop | ~ | chla | 0.5227 | 0.1140 | 0.0000 |
| Original | San Joaquin | hzoop | ~ | corbic | 0.3779 | 0.1149 | 0.0010 |
| Original | San Joaquin | hzoop | ~ | flow | -0.0630 | 0.1118 | 0.5735 |
| Original | San Joaquin | hzoop | ~ | temp | -0.0253 | 0.1104 | 0.8186 |
| Original | San Joaquin | hzoop | ~ | turbid | -0.0231 | 0.1267 | 0.8552 |
| Original | San Joaquin | pzoop | ~ | chla | 0.5156 | 0.1250 | 0.0000 |
| Original | San Joaquin | pzoop | ~ | corbic | -0.0389 | 0.1204 | 0.7468 |
| Original | San Joaquin | pzoop | ~ | flow | -0.0710 | 0.0997 | 0.4762 |
| Original | San Joaquin | pzoop | ~ | temp | 0.0493 | 0.0981 | 0.6150 |
| Original | San Joaquin | pzoop | ~ | turbid | 0.1778 | 0.1117 | 0.1116 |
| Original | San Joaquin | pzoop | ~ | hzoop | 0.2793 | 0.1393 | 0.0449 |
| Original | San Joaquin | fish | ~ | hzoop | 0.2551 | 0.1238 | 0.0393 |
| Original | San Joaquin | fish | ~ | pzoop | -0.1211 | 0.1182 | 0.3055 |
| Original | San Joaquin | fish | ~ | corbic | 0.1746 | 0.1047 | 0.0955 |
| Original | San Joaquin | fish | ~ | flow | -0.0796 | 0.0878 | 0.3646 |
| Original | San Joaquin | fish | ~ | temp | 0.0171 | 0.0861 | 0.8427 |
| Original | San Joaquin | fish | ~ | turbid | 0.7935 | 0.0812 | 0.0000 |
| Original | San Joaquin | fish | =~ | estfish | 0.9210 | 0.0386 | 0.0000 |
| Original | San Joaquin | fish | =~ | estfish\_stn | 0.7637 | 0.0662 | 0.0000 |
| Original | San Joaquin | fish | =~ | estfish\_bsmt | 0.5825 | 0.1044 | 0.0000 |
| Original | San Joaquin | estfish | ~~ | estfish | 0.1518 | 0.0710 | 0.0326 |
| Original | San Joaquin | estfish\_stn | ~~ | estfish\_stn | 0.4167 | 0.1012 | 0.0000 |
| Original | San Joaquin | estfish\_bsmt | ~~ | estfish\_bsmt | 0.6606 | 0.1217 | 0.0000 |
| Original | San Joaquin | chla | ~~ | chla | 0.7242 | 0.1117 | 0.0000 |
| Original | San Joaquin | hzoop | ~~ | hzoop | 0.4461 | 0.0988 | 0.0000 |
| Original | San Joaquin | pzoop | ~~ | pzoop | 0.3518 | 0.0865 | 0.0000 |
| Original | San Joaquin | fish | ~~ | fish | 0.1362 | 0.0689 | 0.0481 |
| Original | San Joaquin | corbic | ~~ | corbic | 1.0000 | 0.0000 |  |
| Original | San Joaquin | corbic | ~~ | flow | 0.1955 | 0.0000 |  |
| Original | San Joaquin | corbic | ~~ | temp | -0.1689 | 0.0000 |  |
| Original | San Joaquin | corbic | ~~ | turbid | 0.4043 | 0.0000 |  |
| Original | San Joaquin | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Original | San Joaquin | flow | ~~ | temp | -0.2199 | 0.0000 |  |
| Original | San Joaquin | flow | ~~ | turbid | 0.2303 | 0.0000 |  |
| Original | San Joaquin | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Original | San Joaquin | temp | ~~ | turbid | -0.2027 | 0.0000 |  |
| Original | San Joaquin | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Original | Suisun | chla | ~ | potam | -0.2850 | 0.1629 | 0.0802 |
| Original | Suisun | chla | ~ | flow | 0.2798 | 0.1763 | 0.1125 |
| Original | Suisun | chla | ~ | temp | -0.2781 | 0.1422 | 0.0506 |
| Original | Suisun | chla | ~ | turbid | -0.2134 | 0.1890 | 0.2588 |
| Original | Suisun | hzoop | ~ | chla | 0.6252 | 0.1015 | 0.0000 |
| Original | Suisun | hzoop | ~ | potam | -0.3526 | 0.1239 | 0.0044 |
| Original | Suisun | hzoop | ~ | flow | 0.1063 | 0.1365 | 0.4361 |
| Original | Suisun | hzoop | ~ | temp | 0.0478 | 0.1134 | 0.6733 |
| Original | Suisun | hzoop | ~ | turbid | -0.2841 | 0.1402 | 0.0428 |
| Original | Suisun | pzoop | ~ | chla | 0.4300 | 0.0993 | 0.0000 |
| Original | Suisun | pzoop | ~ | potam | -0.0136 | 0.0903 | 0.8802 |
| Original | Suisun | pzoop | ~ | flow | -0.3641 | 0.0920 | 0.0001 |
| Original | Suisun | pzoop | ~ | temp | -0.0177 | 0.0736 | 0.8100 |
| Original | Suisun | pzoop | ~ | turbid | 0.1482 | 0.0972 | 0.1273 |
| Original | Suisun | pzoop | ~ | hzoop | 0.6064 | 0.1002 | 0.0000 |
| Original | Suisun | fish | ~ | hzoop | 0.2472 | 0.1572 | 0.1157 |
| Original | Suisun | fish | ~ | pzoop | 0.2675 | 0.1463 | 0.0675 |
| Original | Suisun | fish | ~ | potam | -0.3273 | 0.1002 | 0.0011 |
| Original | Suisun | fish | ~ | flow | 0.2218 | 0.1098 | 0.0434 |
| Original | Suisun | fish | ~ | temp | 0.0062 | 0.0810 | 0.9394 |
| Original | Suisun | fish | ~ | turbid | 0.2621 | 0.1107 | 0.0179 |
| Original | Suisun | fish | =~ | estfish | 0.8750 | 0.0398 | 0.0000 |
| Original | Suisun | fish | =~ | estfish\_stn | 0.8847 | 0.0378 | 0.0000 |
| Original | Suisun | fish | =~ | estfish\_bsmt | 0.7548 | 0.0675 | 0.0000 |
| Original | Suisun | estfish | ~~ | estfish | 0.2344 | 0.0697 | 0.0008 |
| Original | Suisun | estfish\_stn | ~~ | estfish\_stn | 0.2174 | 0.0668 | 0.0011 |
| Original | Suisun | estfish\_bsmt | ~~ | estfish\_bsmt | 0.4302 | 0.1019 | 0.0000 |
| Original | Suisun | chla | ~~ | chla | 0.7190 | 0.1117 | 0.0000 |
| Original | Suisun | hzoop | ~~ | hzoop | 0.3850 | 0.0910 | 0.0000 |
| Original | Suisun | pzoop | ~~ | pzoop | 0.1612 | 0.0460 | 0.0005 |
| Original | Suisun | fish | ~~ | fish | 0.0801 | 0.0484 | 0.0979 |
| Original | Suisun | potam | ~~ | potam | 1.0000 | 0.0000 |  |
| Original | Suisun | potam | ~~ | flow | -0.4816 | 0.0000 |  |
| Original | Suisun | potam | ~~ | temp | 0.4001 | 0.0000 |  |
| Original | Suisun | potam | ~~ | turbid | -0.5489 | 0.0000 |  |
| Original | Suisun | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Original | Suisun | flow | ~~ | temp | -0.2948 | 0.0000 |  |
| Original | Suisun | flow | ~~ | turbid | 0.6585 | 0.0000 |  |
| Original | Suisun | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Original | Suisun | temp | ~~ | turbid | -0.3542 | 0.0000 |  |
| Original | Suisun | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Original | Whole Estuary | chla | ~ | potam | -0.3407 | 0.1708 | 0.0461 |
| Original | Whole Estuary | chla | ~ | flow | 0.0546 | 0.1738 | 0.7532 |
| Original | Whole Estuary | chla | ~ | temp | -0.0354 | 0.1659 | 0.8308 |
| Original | Whole Estuary | hzoop | ~ | chla | 0.6665 | 0.0869 | 0.0000 |
| Original | Whole Estuary | hzoop | ~ | potam | -0.3063 | 0.1236 | 0.0132 |
| Original | Whole Estuary | hzoop | ~ | flow | -0.0945 | 0.1164 | 0.4168 |
| Original | Whole Estuary | hzoop | ~ | temp | 0.0526 | 0.1111 | 0.6358 |
| Original | Whole Estuary | pzoop | ~ | chla | 0.6103 | 0.0891 | 0.0000 |
| Original | Whole Estuary | pzoop | ~ | potam | -0.0311 | 0.0832 | 0.7087 |
| Original | Whole Estuary | pzoop | ~ | flow | -0.1998 | 0.0737 | 0.0067 |
| Original | Whole Estuary | pzoop | ~ | hzoop | 0.3791 | 0.0977 | 0.0001 |
| Original | Whole Estuary | pzoop | ~ | temp | -0.0708 | 0.0688 | 0.3035 |
| Original | Whole Estuary | fish | ~ | hzoop | 0.2993 | 0.1312 | 0.0226 |
| Original | Whole Estuary | fish | ~ | pzoop | 0.1534 | 0.1253 | 0.2209 |
| Original | Whole Estuary | fish | ~ | flow | 0.1336 | 0.0849 | 0.1155 |
| Original | Whole Estuary | fish | ~ | turbid | 0.3977 | 0.0883 | 0.0000 |
| Original | Whole Estuary | fish | ~ | temp | 0.0631 | 0.0799 | 0.4301 |
| Original | Whole Estuary | fish | ~ | potam | -0.3214 | 0.1086 | 0.0031 |
| Original | Whole Estuary | fish | =~ | estfish | 0.8945 | 0.0345 | 0.0000 |
| Original | Whole Estuary | fish | =~ | estfish\_stn | 0.8767 | 0.0382 | 0.0000 |
| Original | Whole Estuary | fish | =~ | estfish\_bsmt | 0.7615 | 0.0648 | 0.0000 |
| Original | Whole Estuary | estfish | ~~ | estfish | 0.2000 | 0.0618 | 0.0012 |
| Original | Whole Estuary | estfish\_stn | ~~ | estfish\_stn | 0.2313 | 0.0670 | 0.0006 |
| Original | Whole Estuary | estfish\_bsmt | ~~ | estfish\_bsmt | 0.4201 | 0.0986 | 0.0000 |
| Original | Whole Estuary | chla | ~~ | chla | 0.8478 | 0.1005 | 0.0000 |
| Original | Whole Estuary | hzoop | ~~ | hzoop | 0.3800 | 0.0923 | 0.0000 |
| Original | Whole Estuary | pzoop | ~~ | pzoop | 0.1437 | 0.0417 | 0.0006 |
| Original | Whole Estuary | fish | ~~ | fish | 0.0740 | 0.0453 | 0.1023 |
| Original | Whole Estuary | potam | ~~ | potam | 1.0000 | 0.0000 |  |
| Original | Whole Estuary | potam | ~~ | flow | -0.5255 | 0.0000 |  |
| Original | Whole Estuary | potam | ~~ | temp | 0.4520 | 0.0000 |  |
| Original | Whole Estuary | potam | ~~ | turbid | -0.6302 | 0.0000 |  |
| Original | Whole Estuary | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Original | Whole Estuary | flow | ~~ | temp | -0.3772 | 0.0000 |  |
| Original | Whole Estuary | flow | ~~ | turbid | 0.4185 | 0.0000 |  |
| Original | Whole Estuary | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Original | Whole Estuary | temp | ~~ | turbid | -0.2278 | 0.0000 |  |
| Original | Whole Estuary | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |

Table S4. Path coefficients for monthly-regional SEMS.

| Model | Region | Response | op | Predictor | Effect | se | pvalue |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Upper trophic | San Pablo | hzoop | ~ | chla\_1 | -0.0014 | 0.0637 | 0.9825 |
| Upper trophic | San Pablo | hzoop | ~ | hzoop\_1 | 0.3263 | 0.0628 | 0.0000 |
| Upper trophic | San Pablo | hzoop | ~ | pzoop\_1 | 0.0655 | 0.0659 | 0.3206 |
| Upper trophic | San Pablo | hzoop | ~ | potam\_1 | -0.2117 | 0.0633 | 0.0008 |
| Upper trophic | San Pablo | hzoop | ~ | estfish\_bsmt\_1 | -0.1755 | 0.0675 | 0.0094 |
| Upper trophic | San Pablo | hzoop | ~ | flow | -0.0197 | 0.0725 | 0.7853 |
| Upper trophic | San Pablo | hzoop | ~ | temp | -0.0759 | 0.0682 | 0.2655 |
| Upper trophic | San Pablo | hzoop | ~ | turbid | 0.0360 | 0.0719 | 0.6161 |
| Upper trophic | San Pablo | pzoop | ~ | hzoop\_1 | 0.0540 | 0.0664 | 0.4164 |
| Upper trophic | San Pablo | pzoop | ~ | pzoop\_1 | 0.3476 | 0.0607 | 0.0000 |
| Upper trophic | San Pablo | pzoop | ~ | potam\_1 | -0.1095 | 0.0640 | 0.0872 |
| Upper trophic | San Pablo | pzoop | ~ | estfish\_bsmt\_1 | -0.0293 | 0.0684 | 0.6681 |
| Upper trophic | San Pablo | pzoop | ~ | flow | 0.0756 | 0.0717 | 0.2921 |
| Upper trophic | San Pablo | pzoop | ~ | temp | -0.0185 | 0.0682 | 0.7859 |
| Upper trophic | San Pablo | pzoop | ~ | turbid | 0.2150 | 0.0698 | 0.0021 |
| Upper trophic | San Pablo | estfish\_bsmt | ~ | hzoop\_1 | -0.1918 | 0.0595 | 0.0013 |
| Upper trophic | San Pablo | estfish\_bsmt | ~ | pzoop\_1 | 0.1280 | 0.0611 | 0.0360 |
| Upper trophic | San Pablo | estfish\_bsmt | ~ | estfish\_bsmt\_1 | 0.3550 | 0.0617 | 0.0000 |
| Upper trophic | San Pablo | estfish\_bsmt | ~ | flow | 0.0920 | 0.0679 | 0.1755 |
| Upper trophic | San Pablo | estfish\_bsmt | ~ | temp | -0.0319 | 0.0641 | 0.6190 |
| Upper trophic | San Pablo | estfish\_bsmt | ~ | turbid | 0.2297 | 0.0660 | 0.0005 |
| Upper trophic | San Pablo | estfish\_bsmt | ~ | marfish\_bsmt\_1 | 0.0012 | 0.0611 | 0.9850 |
| Upper trophic | San Pablo | estfish\_bsmt | ~ | sbass1\_bsmt\_1 | -0.0185 | 0.0651 | 0.7760 |
| Upper trophic | San Pablo | hzoop | ~~ | hzoop | 0.7540 | 0.0507 | 0.0000 |
| Upper trophic | San Pablo | pzoop | ~~ | pzoop | 0.7498 | 0.0508 | 0.0000 |
| Upper trophic | San Pablo | estfish\_bsmt | ~~ | estfish\_bsmt | 0.6412 | 0.0504 | 0.0000 |
| Upper trophic | San Pablo | hzoop | ~~ | pzoop | -0.0424 | 0.0722 | 0.5568 |
| Upper trophic | San Pablo | hzoop | ~~ | estfish\_bsmt | -0.0656 | 0.0720 | 0.3622 |
| Upper trophic | San Pablo | pzoop | ~~ | estfish\_bsmt | -0.1228 | 0.0713 | 0.0849 |
| Upper trophic | San Pablo | chla\_1 | ~~ | chla\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | San Pablo | chla\_1 | ~~ | hzoop\_1 | 0.1250 | 0.0000 |  |
| Upper trophic | San Pablo | chla\_1 | ~~ | pzoop\_1 | -0.0095 | 0.0000 |  |
| Upper trophic | San Pablo | chla\_1 | ~~ | potam\_1 | 0.0308 | 0.0000 |  |
| Upper trophic | San Pablo | chla\_1 | ~~ | estfish\_bsmt\_1 | -0.0672 | 0.0000 |  |
| Upper trophic | San Pablo | chla\_1 | ~~ | flow | 0.0526 | 0.0000 |  |
| Upper trophic | San Pablo | chla\_1 | ~~ | temp | 0.0224 | 0.0000 |  |
| Upper trophic | San Pablo | chla\_1 | ~~ | turbid | -0.0446 | 0.0000 |  |
| Upper trophic | San Pablo | chla\_1 | ~~ | marfish\_bsmt\_1 | -0.0197 | 0.0000 |  |
| Upper trophic | San Pablo | chla\_1 | ~~ | sbass1\_bsmt\_1 | -0.2022 | 0.0000 |  |
| Upper trophic | San Pablo | hzoop\_1 | ~~ | hzoop\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | San Pablo | hzoop\_1 | ~~ | pzoop\_1 | 0.0782 | 0.0000 |  |
| Upper trophic | San Pablo | hzoop\_1 | ~~ | potam\_1 | -0.2007 | 0.0000 |  |
| Upper trophic | San Pablo | hzoop\_1 | ~~ | estfish\_bsmt\_1 | -0.2110 | 0.0000 |  |
| Upper trophic | San Pablo | hzoop\_1 | ~~ | flow | -0.0200 | 0.0000 |  |
| Upper trophic | San Pablo | hzoop\_1 | ~~ | temp | 0.2136 | 0.0000 |  |
| Upper trophic | San Pablo | hzoop\_1 | ~~ | turbid | 0.0010 | 0.0000 |  |
| Upper trophic | San Pablo | hzoop\_1 | ~~ | marfish\_bsmt\_1 | -0.0599 | 0.0000 |  |
| Upper trophic | San Pablo | hzoop\_1 | ~~ | sbass1\_bsmt\_1 | -0.1239 | 0.0000 |  |
| Upper trophic | San Pablo | pzoop\_1 | ~~ | pzoop\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | San Pablo | pzoop\_1 | ~~ | potam\_1 | -0.0352 | 0.0000 |  |
| Upper trophic | San Pablo | pzoop\_1 | ~~ | estfish\_bsmt\_1 | 0.0251 | 0.0000 |  |
| Upper trophic | San Pablo | pzoop\_1 | ~~ | flow | 0.2441 | 0.0000 |  |
| Upper trophic | San Pablo | pzoop\_1 | ~~ | temp | -0.1639 | 0.0000 |  |
| Upper trophic | San Pablo | pzoop\_1 | ~~ | turbid | 0.1955 | 0.0000 |  |
| Upper trophic | San Pablo | pzoop\_1 | ~~ | marfish\_bsmt\_1 | -0.2075 | 0.0000 |  |
| Upper trophic | San Pablo | pzoop\_1 | ~~ | sbass1\_bsmt\_1 | 0.1433 | 0.0000 |  |
| Upper trophic | San Pablo | potam\_1 | ~~ | potam\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | San Pablo | potam\_1 | ~~ | estfish\_bsmt\_1 | 0.2060 | 0.0000 |  |
| Upper trophic | San Pablo | potam\_1 | ~~ | flow | 0.0436 | 0.0000 |  |
| Upper trophic | San Pablo | potam\_1 | ~~ | temp | -0.0726 | 0.0000 |  |
| Upper trophic | San Pablo | potam\_1 | ~~ | turbid | 0.0736 | 0.0000 |  |
| Upper trophic | San Pablo | potam\_1 | ~~ | marfish\_bsmt\_1 | 0.0361 | 0.0000 |  |
| Upper trophic | San Pablo | potam\_1 | ~~ | sbass1\_bsmt\_1 | 0.1590 | 0.0000 |  |
| Upper trophic | San Pablo | estfish\_bsmt\_1 | ~~ | estfish\_bsmt\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | San Pablo | estfish\_bsmt\_1 | ~~ | flow | 0.2520 | 0.0000 |  |
| Upper trophic | San Pablo | estfish\_bsmt\_1 | ~~ | temp | -0.2459 | 0.0000 |  |
| Upper trophic | San Pablo | estfish\_bsmt\_1 | ~~ | turbid | 0.2012 | 0.0000 |  |
| Upper trophic | San Pablo | estfish\_bsmt\_1 | ~~ | marfish\_bsmt\_1 | 0.0840 | 0.0000 |  |
| Upper trophic | San Pablo | estfish\_bsmt\_1 | ~~ | sbass1\_bsmt\_1 | 0.3628 | 0.0000 |  |
| Upper trophic | San Pablo | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Upper trophic | San Pablo | flow | ~~ | temp | -0.1859 | 0.0000 |  |
| Upper trophic | San Pablo | flow | ~~ | turbid | 0.4303 | 0.0000 |  |
| Upper trophic | San Pablo | flow | ~~ | marfish\_bsmt\_1 | -0.2332 | 0.0000 |  |
| Upper trophic | San Pablo | flow | ~~ | sbass1\_bsmt\_1 | 0.1682 | 0.0000 |  |
| Upper trophic | San Pablo | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Upper trophic | San Pablo | temp | ~~ | turbid | -0.2611 | 0.0000 |  |
| Upper trophic | San Pablo | temp | ~~ | marfish\_bsmt\_1 | 0.1440 | 0.0000 |  |
| Upper trophic | San Pablo | temp | ~~ | sbass1\_bsmt\_1 | -0.2778 | 0.0000 |  |
| Upper trophic | San Pablo | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Upper trophic | San Pablo | turbid | ~~ | marfish\_bsmt\_1 | -0.0830 | 0.0000 |  |
| Upper trophic | San Pablo | turbid | ~~ | sbass1\_bsmt\_1 | 0.3117 | 0.0000 |  |
| Upper trophic | San Pablo | marfish\_bsmt\_1 | ~~ | marfish\_bsmt\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | San Pablo | marfish\_bsmt\_1 | ~~ | sbass1\_bsmt\_1 | -0.0740 | 0.0000 |  |
| Upper trophic | San Pablo | sbass1\_bsmt\_1 | ~~ | sbass1\_bsmt\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | Suisun | hzoop | ~ | chla\_1 | 0.0730 | 0.0613 | 0.2337 |
| Upper trophic | Suisun | hzoop | ~ | hzoop\_1 | 0.3490 | 0.0657 | 0.0000 |
| Upper trophic | Suisun | hzoop | ~ | pzoop\_1 | 0.0326 | 0.0616 | 0.5964 |
| Upper trophic | Suisun | hzoop | ~ | potam\_1 | -0.2160 | 0.0626 | 0.0006 |
| Upper trophic | Suisun | hzoop | ~ | estfish\_bsmt\_1 | -0.0171 | 0.0597 | 0.7739 |
| Upper trophic | Suisun | hzoop | ~ | flow | 0.1848 | 0.0641 | 0.0039 |
| Upper trophic | Suisun | hzoop | ~ | temp | 0.0247 | 0.0598 | 0.6791 |
| Upper trophic | Suisun | hzoop | ~ | turbid | -0.1874 | 0.0618 | 0.0024 |
| Upper trophic | Suisun | pzoop | ~ | chla\_1 | 0.1858 | 0.0595 | 0.0018 |
| Upper trophic | Suisun | pzoop | ~ | hzoop\_1 | 0.1121 | 0.0689 | 0.1038 |
| Upper trophic | Suisun | pzoop | ~ | pzoop\_1 | 0.4106 | 0.0554 | 0.0000 |
| Upper trophic | Suisun | pzoop | ~ | potam\_1 | -0.0852 | 0.0630 | 0.1763 |
| Upper trophic | Suisun | pzoop | ~ | estfish\_bsmt\_1 | 0.0339 | 0.0595 | 0.5693 |
| Upper trophic | Suisun | pzoop | ~ | flow | -0.1027 | 0.0648 | 0.1128 |
| Upper trophic | Suisun | pzoop | ~ | temp | 0.1897 | 0.0584 | 0.0012 |
| Upper trophic | Suisun | pzoop | ~ | turbid | 0.0352 | 0.0628 | 0.5748 |
| Upper trophic | Suisun | estfish\_bsmt | ~ | hzoop\_1 | 0.1323 | 0.0691 | 0.0556 |
| Upper trophic | Suisun | estfish\_bsmt | ~ | pzoop\_1 | -0.0767 | 0.0666 | 0.2495 |
| Upper trophic | Suisun | estfish\_bsmt | ~ | estfish\_bsmt\_1 | 0.1690 | 0.0684 | 0.0135 |
| Upper trophic | Suisun | estfish\_bsmt | ~ | flow | -0.2100 | 0.0687 | 0.0022 |
| Upper trophic | Suisun | estfish\_bsmt | ~ | temp | 0.0172 | 0.0642 | 0.7883 |
| Upper trophic | Suisun | estfish\_bsmt | ~ | turbid | 0.2322 | 0.0641 | 0.0003 |
| Upper trophic | Suisun | estfish\_bsmt | ~ | sbass1\_bsmt\_1 | 0.2240 | 0.0644 | 0.0005 |
| Upper trophic | Suisun | hzoop | ~~ | hzoop | 0.6686 | 0.0485 | 0.0000 |
| Upper trophic | Suisun | pzoop | ~~ | pzoop | 0.6664 | 0.0484 | 0.0000 |
| Upper trophic | Suisun | estfish\_bsmt | ~~ | estfish\_bsmt | 0.7873 | 0.0471 | 0.0000 |
| Upper trophic | Suisun | hzoop | ~~ | pzoop | 0.2610 | 0.0643 | 0.0000 |
| Upper trophic | Suisun | hzoop | ~~ | estfish\_bsmt | -0.1029 | 0.0683 | 0.1318 |
| Upper trophic | Suisun | pzoop | ~~ | estfish\_bsmt | 0.1848 | 0.0667 | 0.0056 |
| Upper trophic | Suisun | chla\_1 | ~~ | chla\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | Suisun | chla\_1 | ~~ | hzoop\_1 | 0.3588 | 0.0000 |  |
| Upper trophic | Suisun | chla\_1 | ~~ | pzoop\_1 | 0.1026 | 0.0000 |  |
| Upper trophic | Suisun | chla\_1 | ~~ | potam\_1 | -0.0225 | 0.0000 |  |
| Upper trophic | Suisun | chla\_1 | ~~ | estfish\_bsmt\_1 | -0.0464 | 0.0000 |  |
| Upper trophic | Suisun | chla\_1 | ~~ | flow | 0.1857 | 0.0000 |  |
| Upper trophic | Suisun | chla\_1 | ~~ | temp | -0.1830 | 0.0000 |  |
| Upper trophic | Suisun | chla\_1 | ~~ | turbid | 0.0068 | 0.0000 |  |
| Upper trophic | Suisun | chla\_1 | ~~ | sbass1\_bsmt\_1 | -0.0850 | 0.0000 |  |
| Upper trophic | Suisun | hzoop\_1 | ~~ | hzoop\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | Suisun | hzoop\_1 | ~~ | pzoop\_1 | 0.2750 | 0.0000 |  |
| Upper trophic | Suisun | hzoop\_1 | ~~ | potam\_1 | -0.3374 | 0.0000 |  |
| Upper trophic | Suisun | hzoop\_1 | ~~ | estfish\_bsmt\_1 | -0.0294 | 0.0000 |  |
| Upper trophic | Suisun | hzoop\_1 | ~~ | flow | 0.3579 | 0.0000 |  |
| Upper trophic | Suisun | hzoop\_1 | ~~ | temp | -0.1467 | 0.0000 |  |
| Upper trophic | Suisun | hzoop\_1 | ~~ | turbid | 0.1242 | 0.0000 |  |
| Upper trophic | Suisun | hzoop\_1 | ~~ | sbass1\_bsmt\_1 | -0.0531 | 0.0000 |  |
| Upper trophic | Suisun | pzoop\_1 | ~~ | pzoop\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | Suisun | pzoop\_1 | ~~ | potam\_1 | -0.1338 | 0.0000 |  |
| Upper trophic | Suisun | pzoop\_1 | ~~ | estfish\_bsmt\_1 | 0.2113 | 0.0000 |  |
| Upper trophic | Suisun | pzoop\_1 | ~~ | flow | -0.0472 | 0.0000 |  |
| Upper trophic | Suisun | pzoop\_1 | ~~ | temp | 0.0876 | 0.0000 |  |
| Upper trophic | Suisun | pzoop\_1 | ~~ | turbid | 0.0589 | 0.0000 |  |
| Upper trophic | Suisun | pzoop\_1 | ~~ | sbass1\_bsmt\_1 | 0.0573 | 0.0000 |  |
| Upper trophic | Suisun | potam\_1 | ~~ | potam\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | Suisun | potam\_1 | ~~ | estfish\_bsmt\_1 | -0.1251 | 0.0000 |  |
| Upper trophic | Suisun | potam\_1 | ~~ | flow | -0.2855 | 0.0000 |  |
| Upper trophic | Suisun | potam\_1 | ~~ | temp | 0.0481 | 0.0000 |  |
| Upper trophic | Suisun | potam\_1 | ~~ | turbid | -0.3259 | 0.0000 |  |
| Upper trophic | Suisun | potam\_1 | ~~ | sbass1\_bsmt\_1 | 0.0260 | 0.0000 |  |
| Upper trophic | Suisun | estfish\_bsmt\_1 | ~~ | estfish\_bsmt\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | Suisun | estfish\_bsmt\_1 | ~~ | flow | -0.1253 | 0.0000 |  |
| Upper trophic | Suisun | estfish\_bsmt\_1 | ~~ | temp | -0.0436 | 0.0000 |  |
| Upper trophic | Suisun | estfish\_bsmt\_1 | ~~ | turbid | 0.1400 | 0.0000 |  |
| Upper trophic | Suisun | estfish\_bsmt\_1 | ~~ | sbass1\_bsmt\_1 | 0.4133 | 0.0000 |  |
| Upper trophic | Suisun | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Upper trophic | Suisun | flow | ~~ | temp | -0.1649 | 0.0000 |  |
| Upper trophic | Suisun | flow | ~~ | turbid | 0.2877 | 0.0000 |  |
| Upper trophic | Suisun | flow | ~~ | sbass1\_bsmt\_1 | -0.1677 | 0.0000 |  |
| Upper trophic | Suisun | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Upper trophic | Suisun | temp | ~~ | turbid | -0.2118 | 0.0000 |  |
| Upper trophic | Suisun | temp | ~~ | sbass1\_bsmt\_1 | 0.0619 | 0.0000 |  |
| Upper trophic | Suisun | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Upper trophic | Suisun | turbid | ~~ | sbass1\_bsmt\_1 | 0.0758 | 0.0000 |  |
| Upper trophic | Suisun | sbass1\_bsmt\_1 | ~~ | sbass1\_bsmt\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | Sacramento | hzoop | ~ | chla\_1 | 0.0370 | 0.0665 | 0.5779 |
| Upper trophic | Sacramento | hzoop | ~ | hzoop\_1 | 0.2120 | 0.0672 | 0.0016 |
| Upper trophic | Sacramento | hzoop | ~ | pzoop\_1 | 0.0391 | 0.0719 | 0.5861 |
| Upper trophic | Sacramento | hzoop | ~ | corbic\_1 | 0.0047 | 0.0662 | 0.9437 |
| Upper trophic | Sacramento | hzoop | ~ | estfish\_bsmt\_1 | -0.0843 | 0.0724 | 0.2443 |
| Upper trophic | Sacramento | hzoop | ~ | flow | 0.2414 | 0.0731 | 0.0010 |
| Upper trophic | Sacramento | hzoop | ~ | temp | 0.1107 | 0.0676 | 0.1016 |
| Upper trophic | Sacramento | hzoop | ~ | turbid | 0.1847 | 0.0664 | 0.0054 |
| Upper trophic | Sacramento | pzoop | ~ | chla\_1 | 0.2481 | 0.0568 | 0.0000 |
| Upper trophic | Sacramento | pzoop | ~ | hzoop\_1 | 0.1723 | 0.0602 | 0.0042 |
| Upper trophic | Sacramento | pzoop | ~ | pzoop\_1 | 0.2287 | 0.0620 | 0.0002 |
| Upper trophic | Sacramento | pzoop | ~ | corbic\_1 | 0.0304 | 0.0588 | 0.6057 |
| Upper trophic | Sacramento | pzoop | ~ | estfish\_bsmt\_1 | -0.0638 | 0.0643 | 0.3213 |
| Upper trophic | Sacramento | pzoop | ~ | flow | -0.4357 | 0.0603 | 0.0000 |
| Upper trophic | Sacramento | pzoop | ~ | temp | 0.0815 | 0.0602 | 0.1756 |
| Upper trophic | Sacramento | pzoop | ~ | turbid | 0.0038 | 0.0602 | 0.9497 |
| Upper trophic | Sacramento | estfish\_bsmt | ~ | hzoop\_1 | 0.1386 | 0.0667 | 0.0376 |
| Upper trophic | Sacramento | estfish\_bsmt | ~ | pzoop\_1 | 0.0111 | 0.0683 | 0.8713 |
| Upper trophic | Sacramento | estfish\_bsmt | ~ | estfish\_bsmt\_1 | 0.1292 | 0.0702 | 0.0658 |
| Upper trophic | Sacramento | estfish\_bsmt | ~ | flow | -0.4352 | 0.0654 | 0.0000 |
| Upper trophic | Sacramento | estfish\_bsmt | ~ | temp | -0.0154 | 0.0647 | 0.8119 |
| Upper trophic | Sacramento | estfish\_bsmt | ~ | turbid | 0.0601 | 0.0658 | 0.3614 |
| Upper trophic | Sacramento | estfish\_bsmt | ~ | sside\_1 | -0.0170 | 0.0648 | 0.7927 |
| Upper trophic | Sacramento | estfish\_bsmt | ~ | cent\_1 | -0.1254 | 0.0649 | 0.0534 |
| Upper trophic | Sacramento | estfish\_bsmt | ~ | sbass1\_bsmt\_1 | 0.0905 | 0.0676 | 0.1807 |
| Upper trophic | Sacramento | hzoop | ~~ | hzoop | 0.8160 | 0.0480 | 0.0000 |
| Upper trophic | Sacramento | pzoop | ~~ | pzoop | 0.6415 | 0.0501 | 0.0000 |
| Upper trophic | Sacramento | estfish\_bsmt | ~~ | estfish\_bsmt | 0.7311 | 0.0508 | 0.0000 |
| Upper trophic | Sacramento | hzoop | ~~ | pzoop | 0.2483 | 0.0675 | 0.0002 |
| Upper trophic | Sacramento | hzoop | ~~ | estfish\_bsmt | -0.0723 | 0.0716 | 0.3127 |
| Upper trophic | Sacramento | pzoop | ~~ | estfish\_bsmt | -0.0033 | 0.0720 | 0.9636 |
| Upper trophic | Sacramento | chla\_1 | ~~ | chla\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | Sacramento | chla\_1 | ~~ | hzoop\_1 | 0.1005 | 0.0000 |  |
| Upper trophic | Sacramento | chla\_1 | ~~ | pzoop\_1 | 0.0716 | 0.0000 |  |
| Upper trophic | Sacramento | chla\_1 | ~~ | corbic\_1 | -0.0838 | 0.0000 |  |
| Upper trophic | Sacramento | chla\_1 | ~~ | estfish\_bsmt\_1 | 0.0105 | 0.0000 |  |
| Upper trophic | Sacramento | chla\_1 | ~~ | flow | 0.1033 | 0.0000 |  |
| Upper trophic | Sacramento | chla\_1 | ~~ | temp | -0.0128 | 0.0000 |  |
| Upper trophic | Sacramento | chla\_1 | ~~ | turbid | 0.1526 | 0.0000 |  |
| Upper trophic | Sacramento | chla\_1 | ~~ | sside\_1 | 0.0026 | 0.0000 |  |
| Upper trophic | Sacramento | chla\_1 | ~~ | cent\_1 | 0.0007 | 0.0000 |  |
| Upper trophic | Sacramento | chla\_1 | ~~ | sbass1\_bsmt\_1 | -0.1068 | 0.0000 |  |
| Upper trophic | Sacramento | hzoop\_1 | ~~ | hzoop\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | Sacramento | hzoop\_1 | ~~ | pzoop\_1 | 0.1557 | 0.0000 |  |
| Upper trophic | Sacramento | hzoop\_1 | ~~ | corbic\_1 | -0.0029 | 0.0000 |  |
| Upper trophic | Sacramento | hzoop\_1 | ~~ | estfish\_bsmt\_1 | -0.0533 | 0.0000 |  |
| Upper trophic | Sacramento | hzoop\_1 | ~~ | flow | 0.2366 | 0.0000 |  |
| Upper trophic | Sacramento | hzoop\_1 | ~~ | temp | -0.0604 | 0.0000 |  |
| Upper trophic | Sacramento | hzoop\_1 | ~~ | turbid | -0.0169 | 0.0000 |  |
| Upper trophic | Sacramento | hzoop\_1 | ~~ | sside\_1 | -0.2478 | 0.0000 |  |
| Upper trophic | Sacramento | hzoop\_1 | ~~ | cent\_1 | -0.0408 | 0.0000 |  |
| Upper trophic | Sacramento | hzoop\_1 | ~~ | sbass1\_bsmt\_1 | -0.0608 | 0.0000 |  |
| Upper trophic | Sacramento | pzoop\_1 | ~~ | pzoop\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | Sacramento | pzoop\_1 | ~~ | corbic\_1 | -0.0675 | 0.0000 |  |
| Upper trophic | Sacramento | pzoop\_1 | ~~ | estfish\_bsmt\_1 | 0.2987 | 0.0000 |  |
| Upper trophic | Sacramento | pzoop\_1 | ~~ | flow | -0.2656 | 0.0000 |  |
| Upper trophic | Sacramento | pzoop\_1 | ~~ | temp | 0.1255 | 0.0000 |  |
| Upper trophic | Sacramento | pzoop\_1 | ~~ | turbid | 0.0797 | 0.0000 |  |
| Upper trophic | Sacramento | pzoop\_1 | ~~ | sside\_1 | 0.0823 | 0.0000 |  |
| Upper trophic | Sacramento | pzoop\_1 | ~~ | cent\_1 | 0.0125 | 0.0000 |  |
| Upper trophic | Sacramento | pzoop\_1 | ~~ | sbass1\_bsmt\_1 | 0.1558 | 0.0000 |  |
| Upper trophic | Sacramento | corbic\_1 | ~~ | corbic\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | Sacramento | corbic\_1 | ~~ | estfish\_bsmt\_1 | 0.0587 | 0.0000 |  |
| Upper trophic | Sacramento | corbic\_1 | ~~ | flow | 0.0111 | 0.0000 |  |
| Upper trophic | Sacramento | corbic\_1 | ~~ | temp | -0.1465 | 0.0000 |  |
| Upper trophic | Sacramento | corbic\_1 | ~~ | turbid | -0.0269 | 0.0000 |  |
| Upper trophic | Sacramento | corbic\_1 | ~~ | sside\_1 | -0.0415 | 0.0000 |  |
| Upper trophic | Sacramento | corbic\_1 | ~~ | cent\_1 | -0.1736 | 0.0000 |  |
| Upper trophic | Sacramento | corbic\_1 | ~~ | sbass1\_bsmt\_1 | -0.0916 | 0.0000 |  |
| Upper trophic | Sacramento | estfish\_bsmt\_1 | ~~ | estfish\_bsmt\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | Sacramento | estfish\_bsmt\_1 | ~~ | flow | -0.3233 | 0.0000 |  |
| Upper trophic | Sacramento | estfish\_bsmt\_1 | ~~ | temp | 0.1322 | 0.0000 |  |
| Upper trophic | Sacramento | estfish\_bsmt\_1 | ~~ | turbid | 0.1945 | 0.0000 |  |
| Upper trophic | Sacramento | estfish\_bsmt\_1 | ~~ | sside\_1 | 0.0015 | 0.0000 |  |
| Upper trophic | Sacramento | estfish\_bsmt\_1 | ~~ | cent\_1 | -0.1100 | 0.0000 |  |
| Upper trophic | Sacramento | estfish\_bsmt\_1 | ~~ | sbass1\_bsmt\_1 | 0.3098 | 0.0000 |  |
| Upper trophic | Sacramento | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Upper trophic | Sacramento | flow | ~~ | temp | -0.2464 | 0.0000 |  |
| Upper trophic | Sacramento | flow | ~~ | turbid | 0.0668 | 0.0000 |  |
| Upper trophic | Sacramento | flow | ~~ | sside\_1 | -0.1297 | 0.0000 |  |
| Upper trophic | Sacramento | flow | ~~ | cent\_1 | -0.1874 | 0.0000 |  |
| Upper trophic | Sacramento | flow | ~~ | sbass1\_bsmt\_1 | -0.1226 | 0.0000 |  |
| Upper trophic | Sacramento | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Upper trophic | Sacramento | temp | ~~ | turbid | 0.0471 | 0.0000 |  |
| Upper trophic | Sacramento | temp | ~~ | sside\_1 | 0.1189 | 0.0000 |  |
| Upper trophic | Sacramento | temp | ~~ | cent\_1 | 0.1279 | 0.0000 |  |
| Upper trophic | Sacramento | temp | ~~ | sbass1\_bsmt\_1 | 0.1260 | 0.0000 |  |
| Upper trophic | Sacramento | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Upper trophic | Sacramento | turbid | ~~ | sside\_1 | 0.0922 | 0.0000 |  |
| Upper trophic | Sacramento | turbid | ~~ | cent\_1 | -0.1754 | 0.0000 |  |
| Upper trophic | Sacramento | turbid | ~~ | sbass1\_bsmt\_1 | 0.2705 | 0.0000 |  |
| Upper trophic | Sacramento | sside\_1 | ~~ | sside\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | Sacramento | sside\_1 | ~~ | cent\_1 | 0.0630 | 0.0000 |  |
| Upper trophic | Sacramento | sside\_1 | ~~ | sbass1\_bsmt\_1 | -0.0131 | 0.0000 |  |
| Upper trophic | Sacramento | cent\_1 | ~~ | cent\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | Sacramento | cent\_1 | ~~ | sbass1\_bsmt\_1 | -0.2034 | 0.0000 |  |
| Upper trophic | Sacramento | sbass1\_bsmt\_1 | ~~ | sbass1\_bsmt\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | San Joaquin | hzoop | ~ | chla\_1 | 0.2410 | 0.0649 | 0.0002 |
| Upper trophic | San Joaquin | hzoop | ~ | hzoop\_1 | 0.2078 | 0.0643 | 0.0012 |
| Upper trophic | San Joaquin | hzoop | ~ | pzoop\_1 | -0.0274 | 0.0700 | 0.6953 |
| Upper trophic | San Joaquin | hzoop | ~ | corbic\_1 | 0.0683 | 0.0650 | 0.2939 |
| Upper trophic | San Joaquin | hzoop | ~ | estfish\_bsmt\_1 | 0.0033 | 0.0678 | 0.9614 |
| Upper trophic | San Joaquin | hzoop | ~ | flow | 0.1946 | 0.0636 | 0.0022 |
| Upper trophic | San Joaquin | hzoop | ~ | temp | 0.1687 | 0.0642 | 0.0086 |
| Upper trophic | San Joaquin | hzoop | ~ | turbid | -0.0411 | 0.0658 | 0.5323 |
| Upper trophic | San Joaquin | pzoop | ~ | chla\_1 | 0.2902 | 0.0579 | 0.0000 |
| Upper trophic | San Joaquin | pzoop | ~ | hzoop\_1 | 0.1556 | 0.0590 | 0.0083 |
| Upper trophic | San Joaquin | pzoop | ~ | pzoop\_1 | 0.3172 | 0.0598 | 0.0000 |
| Upper trophic | San Joaquin | pzoop | ~ | corbic\_1 | -0.0619 | 0.0580 | 0.2856 |
| Upper trophic | San Joaquin | pzoop | ~ | estfish\_bsmt\_1 | 0.0168 | 0.0613 | 0.7840 |
| Upper trophic | San Joaquin | pzoop | ~ | flow | -0.1310 | 0.0585 | 0.0251 |
| Upper trophic | San Joaquin | pzoop | ~ | temp | -0.0371 | 0.0592 | 0.5306 |
| Upper trophic | San Joaquin | pzoop | ~ | turbid | 0.0993 | 0.0592 | 0.0936 |
| Upper trophic | San Joaquin | estfish\_bsmt | ~ | chla\_1 | 0.1388 | 0.0674 | 0.0396 |
| Upper trophic | San Joaquin | estfish\_bsmt | ~ | hzoop\_1 | 0.1423 | 0.0668 | 0.0331 |
| Upper trophic | San Joaquin | estfish\_bsmt | ~ | pzoop\_1 | -0.0499 | 0.0703 | 0.4780 |
| Upper trophic | San Joaquin | estfish\_bsmt | ~ | estfish\_bsmt\_1 | 0.1936 | 0.0680 | 0.0044 |
| Upper trophic | San Joaquin | estfish\_bsmt | ~ | flow | -0.0907 | 0.0664 | 0.1718 |
| Upper trophic | San Joaquin | estfish\_bsmt | ~ | temp | -0.0278 | 0.0657 | 0.6725 |
| Upper trophic | San Joaquin | estfish\_bsmt | ~ | turbid | 0.2109 | 0.0700 | 0.0026 |
| Upper trophic | San Joaquin | estfish\_bsmt | ~ | sside\_1 | 0.0556 | 0.0645 | 0.3892 |
| Upper trophic | San Joaquin | estfish\_bsmt | ~ | cent\_1 | -0.0757 | 0.0696 | 0.2765 |
| Upper trophic | San Joaquin | estfish\_bsmt | ~ | sbass1\_bsmt\_1 | 0.0682 | 0.0692 | 0.3241 |
| Upper trophic | San Joaquin | hzoop | ~~ | hzoop | 0.8100 | 0.0476 | 0.0000 |
| Upper trophic | San Joaquin | pzoop | ~~ | pzoop | 0.6637 | 0.0498 | 0.0000 |
| Upper trophic | San Joaquin | estfish\_bsmt | ~~ | estfish\_bsmt | 0.8100 | 0.0476 | 0.0000 |
| Upper trophic | San Joaquin | hzoop | ~~ | pzoop | 0.1653 | 0.0690 | 0.0165 |
| Upper trophic | San Joaquin | hzoop | ~~ | estfish\_bsmt | 0.0518 | 0.0707 | 0.4634 |
| Upper trophic | San Joaquin | pzoop | ~~ | estfish\_bsmt | 0.1910 | 0.0683 | 0.0052 |
| Upper trophic | San Joaquin | chla\_1 | ~~ | chla\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | San Joaquin | chla\_1 | ~~ | hzoop\_1 | 0.1547 | 0.0000 |  |
| Upper trophic | San Joaquin | chla\_1 | ~~ | pzoop\_1 | 0.2907 | 0.0000 |  |
| Upper trophic | San Joaquin | chla\_1 | ~~ | corbic\_1 | -0.0521 | 0.0000 |  |
| Upper trophic | San Joaquin | chla\_1 | ~~ | estfish\_bsmt\_1 | 0.0762 | 0.0000 |  |
| Upper trophic | San Joaquin | chla\_1 | ~~ | flow | -0.0635 | 0.0000 |  |
| Upper trophic | San Joaquin | chla\_1 | ~~ | temp | 0.0846 | 0.0000 |  |
| Upper trophic | San Joaquin | chla\_1 | ~~ | turbid | 0.0354 | 0.0000 |  |
| Upper trophic | San Joaquin | chla\_1 | ~~ | sside\_1 | 0.0746 | 0.0000 |  |
| Upper trophic | San Joaquin | chla\_1 | ~~ | cent\_1 | -0.1588 | 0.0000 |  |
| Upper trophic | San Joaquin | chla\_1 | ~~ | sbass1\_bsmt\_1 | -0.0741 | 0.0000 |  |
| Upper trophic | San Joaquin | hzoop\_1 | ~~ | hzoop\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | San Joaquin | hzoop\_1 | ~~ | pzoop\_1 | 0.1908 | 0.0000 |  |
| Upper trophic | San Joaquin | hzoop\_1 | ~~ | corbic\_1 | 0.0909 | 0.0000 |  |
| Upper trophic | San Joaquin | hzoop\_1 | ~~ | estfish\_bsmt\_1 | 0.0051 | 0.0000 |  |
| Upper trophic | San Joaquin | hzoop\_1 | ~~ | flow | 0.0721 | 0.0000 |  |
| Upper trophic | San Joaquin | hzoop\_1 | ~~ | temp | 0.0453 | 0.0000 |  |
| Upper trophic | San Joaquin | hzoop\_1 | ~~ | turbid | -0.0432 | 0.0000 |  |
| Upper trophic | San Joaquin | hzoop\_1 | ~~ | sside\_1 | -0.0206 | 0.0000 |  |
| Upper trophic | San Joaquin | hzoop\_1 | ~~ | cent\_1 | -0.0556 | 0.0000 |  |
| Upper trophic | San Joaquin | hzoop\_1 | ~~ | sbass1\_bsmt\_1 | 0.1572 | 0.0000 |  |
| Upper trophic | San Joaquin | pzoop\_1 | ~~ | pzoop\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | San Joaquin | pzoop\_1 | ~~ | corbic\_1 | 0.0264 | 0.0000 |  |
| Upper trophic | San Joaquin | pzoop\_1 | ~~ | estfish\_bsmt\_1 | 0.2523 | 0.0000 |  |
| Upper trophic | San Joaquin | pzoop\_1 | ~~ | flow | -0.0894 | 0.0000 |  |
| Upper trophic | San Joaquin | pzoop\_1 | ~~ | temp | 0.1279 | 0.0000 |  |
| Upper trophic | San Joaquin | pzoop\_1 | ~~ | turbid | 0.0642 | 0.0000 |  |
| Upper trophic | San Joaquin | pzoop\_1 | ~~ | sside\_1 | 0.1144 | 0.0000 |  |
| Upper trophic | San Joaquin | pzoop\_1 | ~~ | cent\_1 | -0.1641 | 0.0000 |  |
| Upper trophic | San Joaquin | pzoop\_1 | ~~ | sbass1\_bsmt\_1 | 0.0772 | 0.0000 |  |
| Upper trophic | San Joaquin | corbic\_1 | ~~ | corbic\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | San Joaquin | corbic\_1 | ~~ | estfish\_bsmt\_1 | -0.0338 | 0.0000 |  |
| Upper trophic | San Joaquin | corbic\_1 | ~~ | flow | 0.0827 | 0.0000 |  |
| Upper trophic | San Joaquin | corbic\_1 | ~~ | temp | -0.0791 | 0.0000 |  |
| Upper trophic | San Joaquin | corbic\_1 | ~~ | turbid | 0.1426 | 0.0000 |  |
| Upper trophic | San Joaquin | corbic\_1 | ~~ | sside\_1 | -0.2038 | 0.0000 |  |
| Upper trophic | San Joaquin | corbic\_1 | ~~ | cent\_1 | -0.1074 | 0.0000 |  |
| Upper trophic | San Joaquin | corbic\_1 | ~~ | sbass1\_bsmt\_1 | 0.0590 | 0.0000 |  |
| Upper trophic | San Joaquin | estfish\_bsmt\_1 | ~~ | estfish\_bsmt\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | San Joaquin | estfish\_bsmt\_1 | ~~ | flow | -0.1188 | 0.0000 |  |
| Upper trophic | San Joaquin | estfish\_bsmt\_1 | ~~ | temp | 0.1746 | 0.0000 |  |
| Upper trophic | San Joaquin | estfish\_bsmt\_1 | ~~ | turbid | 0.1361 | 0.0000 |  |
| Upper trophic | San Joaquin | estfish\_bsmt\_1 | ~~ | sside\_1 | 0.0405 | 0.0000 |  |
| Upper trophic | San Joaquin | estfish\_bsmt\_1 | ~~ | cent\_1 | -0.1975 | 0.0000 |  |
| Upper trophic | San Joaquin | estfish\_bsmt\_1 | ~~ | sbass1\_bsmt\_1 | 0.2177 | 0.0000 |  |
| Upper trophic | San Joaquin | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Upper trophic | San Joaquin | flow | ~~ | temp | -0.0496 | 0.0000 |  |
| Upper trophic | San Joaquin | flow | ~~ | turbid | 0.0996 | 0.0000 |  |
| Upper trophic | San Joaquin | flow | ~~ | sside\_1 | -0.0093 | 0.0000 |  |
| Upper trophic | San Joaquin | flow | ~~ | cent\_1 | 0.0875 | 0.0000 |  |
| Upper trophic | San Joaquin | flow | ~~ | sbass1\_bsmt\_1 | -0.1340 | 0.0000 |  |
| Upper trophic | San Joaquin | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Upper trophic | San Joaquin | temp | ~~ | turbid | -0.0262 | 0.0000 |  |
| Upper trophic | San Joaquin | temp | ~~ | sside\_1 | 0.1052 | 0.0000 |  |
| Upper trophic | San Joaquin | temp | ~~ | cent\_1 | -0.0145 | 0.0000 |  |
| Upper trophic | San Joaquin | temp | ~~ | sbass1\_bsmt\_1 | -0.0369 | 0.0000 |  |
| Upper trophic | San Joaquin | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Upper trophic | San Joaquin | turbid | ~~ | sside\_1 | -0.0400 | 0.0000 |  |
| Upper trophic | San Joaquin | turbid | ~~ | cent\_1 | -0.3208 | 0.0000 |  |
| Upper trophic | San Joaquin | turbid | ~~ | sbass1\_bsmt\_1 | 0.2649 | 0.0000 |  |
| Upper trophic | San Joaquin | sside\_1 | ~~ | sside\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | San Joaquin | sside\_1 | ~~ | cent\_1 | -0.1680 | 0.0000 |  |
| Upper trophic | San Joaquin | sside\_1 | ~~ | sbass1\_bsmt\_1 | -0.0004 | 0.0000 |  |
| Upper trophic | San Joaquin | cent\_1 | ~~ | cent\_1 | 1.0000 | 0.0000 |  |
| Upper trophic | San Joaquin | cent\_1 | ~~ | sbass1\_bsmt\_1 | -0.0534 | 0.0000 |  |
| Upper trophic | San Joaquin | sbass1\_bsmt\_1 | ~~ | sbass1\_bsmt\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | San Pablo | din | ~ | din\_1 | 0.4014 | 0.0495 | 0.0000 |
| Lower trophic | San Pablo | din | ~ | chla | -0.1986 | 0.0537 | 0.0002 |
| Lower trophic | San Pablo | din | ~ | hzoop\_1 | 0.0553 | 0.0562 | 0.3250 |
| Lower trophic | San Pablo | din | ~ | pzoop\_1 | -0.0954 | 0.0561 | 0.0892 |
| Lower trophic | San Pablo | din | ~ | potam\_1 | -0.0176 | 0.0557 | 0.7512 |
| Lower trophic | San Pablo | din | ~ | flow | -0.1759 | 0.0598 | 0.0033 |
| Lower trophic | San Pablo | din | ~ | temp | -0.1217 | 0.0578 | 0.0354 |
| Lower trophic | San Pablo | din | ~ | turbid | 0.1304 | 0.0604 | 0.0307 |
| Lower trophic | San Pablo | chla | ~ | din\_1 | 0.0133 | 0.0666 | 0.8419 |
| Lower trophic | San Pablo | chla | ~ | chla\_1 | 0.2602 | 0.0624 | 0.0000 |
| Lower trophic | San Pablo | chla | ~ | hzoop\_1 | -0.0264 | 0.0653 | 0.6856 |
| Lower trophic | San Pablo | chla | ~ | potam\_1 | -0.0266 | 0.0644 | 0.6794 |
| Lower trophic | San Pablo | chla | ~ | flow | 0.0702 | 0.0689 | 0.3088 |
| Lower trophic | San Pablo | chla | ~ | temp | 0.1526 | 0.0665 | 0.0217 |
| Lower trophic | San Pablo | chla | ~ | turbid | -0.0528 | 0.0701 | 0.4514 |
| Lower trophic | San Pablo | potam | ~ | chla\_1 | 0.0572 | 0.0473 | 0.2267 |
| Lower trophic | San Pablo | potam | ~ | hzoop\_1 | -0.0729 | 0.0494 | 0.1399 |
| Lower trophic | San Pablo | potam | ~ | pzoop\_1 | -0.1599 | 0.0486 | 0.0010 |
| Lower trophic | San Pablo | potam | ~ | potam\_1 | 0.6291 | 0.0351 | 0.0000 |
| Lower trophic | San Pablo | potam | ~ | flow | 0.1029 | 0.0519 | 0.0473 |
| Lower trophic | San Pablo | potam | ~ | temp | -0.0391 | 0.0505 | 0.4388 |
| Lower trophic | San Pablo | potam | ~ | turbid | 0.0335 | 0.0528 | 0.5256 |
| Lower trophic | San Pablo | din | ~~ | din | 0.6798 | 0.0469 | 0.0000 |
| Lower trophic | San Pablo | chla | ~~ | chla | 0.9113 | 0.0347 | 0.0000 |
| Lower trophic | San Pablo | potam | ~~ | potam | 0.5173 | 0.0409 | 0.0000 |
| Lower trophic | San Pablo | din | ~~ | potam | -0.0959 | 0.0648 | 0.1389 |
| Lower trophic | San Pablo | din\_1 | ~~ | din\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | San Pablo | din\_1 | ~~ | hzoop\_1 | 0.0289 | 0.0000 |  |
| Lower trophic | San Pablo | din\_1 | ~~ | pzoop\_1 | -0.0128 | 0.0000 |  |
| Lower trophic | San Pablo | din\_1 | ~~ | potam\_1 | -0.0974 | 0.0000 |  |
| Lower trophic | San Pablo | din\_1 | ~~ | flow | -0.1323 | 0.0000 |  |
| Lower trophic | San Pablo | din\_1 | ~~ | temp | -0.1013 | 0.0000 |  |
| Lower trophic | San Pablo | din\_1 | ~~ | turbid | 0.0761 | 0.0000 |  |
| Lower trophic | San Pablo | din\_1 | ~~ | chla\_1 | -0.2496 | 0.0000 |  |
| Lower trophic | San Pablo | hzoop\_1 | ~~ | hzoop\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | San Pablo | hzoop\_1 | ~~ | pzoop\_1 | 0.0985 | 0.0000 |  |
| Lower trophic | San Pablo | hzoop\_1 | ~~ | potam\_1 | -0.2169 | 0.0000 |  |
| Lower trophic | San Pablo | hzoop\_1 | ~~ | flow | -0.0351 | 0.0000 |  |
| Lower trophic | San Pablo | hzoop\_1 | ~~ | temp | 0.1631 | 0.0000 |  |
| Lower trophic | San Pablo | hzoop\_1 | ~~ | turbid | -0.0017 | 0.0000 |  |
| Lower trophic | San Pablo | hzoop\_1 | ~~ | chla\_1 | 0.0987 | 0.0000 |  |
| Lower trophic | San Pablo | pzoop\_1 | ~~ | pzoop\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | San Pablo | pzoop\_1 | ~~ | potam\_1 | -0.0382 | 0.0000 |  |
| Lower trophic | San Pablo | pzoop\_1 | ~~ | flow | 0.2448 | 0.0000 |  |
| Lower trophic | San Pablo | pzoop\_1 | ~~ | temp | -0.1293 | 0.0000 |  |
| Lower trophic | San Pablo | pzoop\_1 | ~~ | turbid | 0.1805 | 0.0000 |  |
| Lower trophic | San Pablo | pzoop\_1 | ~~ | chla\_1 | -0.0459 | 0.0000 |  |
| Lower trophic | San Pablo | potam\_1 | ~~ | potam\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | San Pablo | potam\_1 | ~~ | flow | 0.0657 | 0.0000 |  |
| Lower trophic | San Pablo | potam\_1 | ~~ | temp | -0.0699 | 0.0000 |  |
| Lower trophic | San Pablo | potam\_1 | ~~ | turbid | 0.0556 | 0.0000 |  |
| Lower trophic | San Pablo | potam\_1 | ~~ | chla\_1 | 0.0048 | 0.0000 |  |
| Lower trophic | San Pablo | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Lower trophic | San Pablo | flow | ~~ | temp | -0.1939 | 0.0000 |  |
| Lower trophic | San Pablo | flow | ~~ | turbid | 0.3840 | 0.0000 |  |
| Lower trophic | San Pablo | flow | ~~ | chla\_1 | 0.0009 | 0.0000 |  |
| Lower trophic | San Pablo | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Lower trophic | San Pablo | temp | ~~ | turbid | -0.2925 | 0.0000 |  |
| Lower trophic | San Pablo | temp | ~~ | chla\_1 | -0.0679 | 0.0000 |  |
| Lower trophic | San Pablo | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Lower trophic | San Pablo | turbid | ~~ | chla\_1 | -0.0347 | 0.0000 |  |
| Lower trophic | San Pablo | chla\_1 | ~~ | chla\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | Suisun | din | ~ | din\_1 | 0.4433 | 0.0422 | 0.0000 |
| Lower trophic | Suisun | din | ~ | chla | -0.1291 | 0.0401 | 0.0013 |
| Lower trophic | Suisun | din | ~ | hzoop\_1 | -0.0045 | 0.0460 | 0.9223 |
| Lower trophic | Suisun | din | ~ | pzoop\_1 | 0.0345 | 0.0418 | 0.4094 |
| Lower trophic | Suisun | din | ~ | potam\_1 | 0.0383 | 0.0447 | 0.3910 |
| Lower trophic | Suisun | din | ~ | flow | -0.4247 | 0.0427 | 0.0000 |
| Lower trophic | Suisun | din | ~ | temp | 0.0375 | 0.0402 | 0.3509 |
| Lower trophic | Suisun | din | ~ | turbid | 0.1189 | 0.0428 | 0.0055 |
| Lower trophic | Suisun | chla | ~ | din\_1 | -0.1259 | 0.0712 | 0.0771 |
| Lower trophic | Suisun | chla | ~ | chla\_1 | 0.1496 | 0.0647 | 0.0207 |
| Lower trophic | Suisun | chla | ~ | hzoop\_1 | 0.0701 | 0.0683 | 0.3048 |
| Lower trophic | Suisun | chla | ~ | potam\_1 | 0.0138 | 0.0691 | 0.8416 |
| Lower trophic | Suisun | chla | ~ | flow | 0.0775 | 0.0703 | 0.2704 |
| Lower trophic | Suisun | chla | ~ | temp | -0.0637 | 0.0616 | 0.3014 |
| Lower trophic | Suisun | chla | ~ | turbid | -0.0247 | 0.0664 | 0.7102 |
| Lower trophic | Suisun | potam | ~ | din\_1 | 0.0136 | 0.0451 | 0.7630 |
| Lower trophic | Suisun | potam | ~ | chla\_1 | -0.0267 | 0.0412 | 0.5170 |
| Lower trophic | Suisun | potam | ~ | hzoop\_1 | -0.0061 | 0.0456 | 0.8933 |
| Lower trophic | Suisun | potam | ~ | pzoop\_1 | 0.0724 | 0.0405 | 0.0735 |
| Lower trophic | Suisun | potam | ~ | potam\_1 | 0.7188 | 0.0323 | 0.0000 |
| Lower trophic | Suisun | potam | ~ | flow | -0.1237 | 0.0443 | 0.0052 |
| Lower trophic | Suisun | potam | ~ | temp | -0.0074 | 0.0391 | 0.8492 |
| Lower trophic | Suisun | potam | ~ | turbid | -0.0762 | 0.0416 | 0.0667 |
| Lower trophic | Suisun | din | ~~ | din | 0.3799 | 0.0313 | 0.0000 |
| Lower trophic | Suisun | chla | ~~ | chla | 0.9021 | 0.0343 | 0.0000 |
| Lower trophic | Suisun | potam | ~~ | potam | 0.3551 | 0.0293 | 0.0000 |
| Lower trophic | Suisun | din | ~~ | potam | 0.0275 | 0.0623 | 0.6592 |
| Lower trophic | Suisun | din\_1 | ~~ | din\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | Suisun | din\_1 | ~~ | hzoop\_1 | -0.3554 | 0.0000 |  |
| Lower trophic | Suisun | din\_1 | ~~ | pzoop\_1 | -0.0250 | 0.0000 |  |
| Lower trophic | Suisun | din\_1 | ~~ | potam\_1 | 0.3039 | 0.0000 |  |
| Lower trophic | Suisun | din\_1 | ~~ | flow | -0.4524 | 0.0000 |  |
| Lower trophic | Suisun | din\_1 | ~~ | temp | 0.1385 | 0.0000 |  |
| Lower trophic | Suisun | din\_1 | ~~ | turbid | -0.0792 | 0.0000 |  |
| Lower trophic | Suisun | din\_1 | ~~ | chla\_1 | -0.3110 | 0.0000 |  |
| Lower trophic | Suisun | hzoop\_1 | ~~ | hzoop\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | Suisun | hzoop\_1 | ~~ | pzoop\_1 | 0.3412 | 0.0000 |  |
| Lower trophic | Suisun | hzoop\_1 | ~~ | potam\_1 | -0.3143 | 0.0000 |  |
| Lower trophic | Suisun | hzoop\_1 | ~~ | flow | 0.2977 | 0.0000 |  |
| Lower trophic | Suisun | hzoop\_1 | ~~ | temp | -0.1169 | 0.0000 |  |
| Lower trophic | Suisun | hzoop\_1 | ~~ | turbid | 0.0996 | 0.0000 |  |
| Lower trophic | Suisun | hzoop\_1 | ~~ | chla\_1 | 0.3444 | 0.0000 |  |
| Lower trophic | Suisun | pzoop\_1 | ~~ | pzoop\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | Suisun | pzoop\_1 | ~~ | potam\_1 | -0.1232 | 0.0000 |  |
| Lower trophic | Suisun | pzoop\_1 | ~~ | flow | -0.0380 | 0.0000 |  |
| Lower trophic | Suisun | pzoop\_1 | ~~ | temp | 0.0919 | 0.0000 |  |
| Lower trophic | Suisun | pzoop\_1 | ~~ | turbid | 0.0002 | 0.0000 |  |
| Lower trophic | Suisun | pzoop\_1 | ~~ | chla\_1 | 0.1449 | 0.0000 |  |
| Lower trophic | Suisun | potam\_1 | ~~ | potam\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | Suisun | potam\_1 | ~~ | flow | -0.3155 | 0.0000 |  |
| Lower trophic | Suisun | potam\_1 | ~~ | temp | 0.0303 | 0.0000 |  |
| Lower trophic | Suisun | potam\_1 | ~~ | turbid | -0.3586 | 0.0000 |  |
| Lower trophic | Suisun | potam\_1 | ~~ | chla\_1 | -0.0484 | 0.0000 |  |
| Lower trophic | Suisun | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Lower trophic | Suisun | flow | ~~ | temp | -0.1557 | 0.0000 |  |
| Lower trophic | Suisun | flow | ~~ | turbid | 0.2880 | 0.0000 |  |
| Lower trophic | Suisun | flow | ~~ | chla\_1 | 0.1492 | 0.0000 |  |
| Lower trophic | Suisun | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Lower trophic | Suisun | temp | ~~ | turbid | -0.1897 | 0.0000 |  |
| Lower trophic | Suisun | temp | ~~ | chla\_1 | -0.1651 | 0.0000 |  |
| Lower trophic | Suisun | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Lower trophic | Suisun | turbid | ~~ | chla\_1 | -0.0119 | 0.0000 |  |
| Lower trophic | Suisun | chla\_1 | ~~ | chla\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | Sacramento | din | ~ | din\_1 | 0.4119 | 0.0420 | 0.0000 |
| Lower trophic | Sacramento | din | ~ | chla | -0.1708 | 0.0382 | 0.0000 |
| Lower trophic | Sacramento | din | ~ | hzoop\_1 | 0.0712 | 0.0388 | 0.0665 |
| Lower trophic | Sacramento | din | ~ | pzoop\_1 | 0.0601 | 0.0407 | 0.1394 |
| Lower trophic | Sacramento | din | ~ | corbic\_1 | -0.0351 | 0.0378 | 0.3527 |
| Lower trophic | Sacramento | din | ~ | flow | -0.4578 | 0.0398 | 0.0000 |
| Lower trophic | Sacramento | din | ~ | temp | 0.0425 | 0.0384 | 0.2681 |
| Lower trophic | Sacramento | din | ~ | turbid | 0.0946 | 0.0378 | 0.0124 |
| Lower trophic | Sacramento | chla | ~ | din\_1 | -0.1602 | 0.0742 | 0.0309 |
| Lower trophic | Sacramento | chla | ~ | chla\_1 | 0.1865 | 0.0618 | 0.0025 |
| Lower trophic | Sacramento | chla | ~ | hzoop\_1 | -0.0880 | 0.0622 | 0.1574 |
| Lower trophic | Sacramento | chla | ~ | corbic\_1 | -0.0170 | 0.0613 | 0.7812 |
| Lower trophic | Sacramento | chla | ~ | pzoop\_1 | -0.0961 | 0.0665 | 0.1486 |
| Lower trophic | Sacramento | chla | ~ | flow | -0.0676 | 0.0702 | 0.3353 |
| Lower trophic | Sacramento | chla | ~ | temp | 0.1359 | 0.0608 | 0.0254 |
| Lower trophic | Sacramento | chla | ~ | turbid | 0.1277 | 0.0605 | 0.0348 |
| Lower trophic | Sacramento | corbic | ~ | chla\_1 | 0.0443 | 0.0545 | 0.4159 |
| Lower trophic | Sacramento | corbic | ~ | hzoop\_1 | 0.0099 | 0.0565 | 0.8610 |
| Lower trophic | Sacramento | corbic | ~ | pzoop\_1 | -0.0154 | 0.0582 | 0.7913 |
| Lower trophic | Sacramento | corbic | ~ | corbic\_1 | 0.4627 | 0.0470 | 0.0000 |
| Lower trophic | Sacramento | corbic | ~ | flow | 0.0893 | 0.0589 | 0.1296 |
| Lower trophic | Sacramento | corbic | ~ | temp | -0.0331 | 0.0561 | 0.5544 |
| Lower trophic | Sacramento | corbic | ~ | turbid | -0.1241 | 0.0541 | 0.0217 |
| Lower trophic | Sacramento | din | ~~ | din | 0.3407 | 0.0289 | 0.0000 |
| Lower trophic | Sacramento | chla | ~~ | chla | 0.8883 | 0.0361 | 0.0000 |
| Lower trophic | Sacramento | corbic | ~~ | corbic | 0.7378 | 0.0441 | 0.0000 |
| Lower trophic | Sacramento | din | ~~ | corbic | 0.0005 | 0.0626 | 0.9938 |
| Lower trophic | Sacramento | din\_1 | ~~ | din\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | Sacramento | din\_1 | ~~ | hzoop\_1 | -0.1732 | 0.0000 |  |
| Lower trophic | Sacramento | din\_1 | ~~ | pzoop\_1 | 0.3422 | 0.0000 |  |
| Lower trophic | Sacramento | din\_1 | ~~ | corbic\_1 | -0.1725 | 0.0000 |  |
| Lower trophic | Sacramento | din\_1 | ~~ | flow | -0.4620 | 0.0000 |  |
| Lower trophic | Sacramento | din\_1 | ~~ | temp | 0.1502 | 0.0000 |  |
| Lower trophic | Sacramento | din\_1 | ~~ | turbid | 0.1484 | 0.0000 |  |
| Lower trophic | Sacramento | din\_1 | ~~ | chla\_1 | -0.2353 | 0.0000 |  |
| Lower trophic | Sacramento | hzoop\_1 | ~~ | hzoop\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | Sacramento | hzoop\_1 | ~~ | pzoop\_1 | 0.1286 | 0.0000 |  |
| Lower trophic | Sacramento | hzoop\_1 | ~~ | corbic\_1 | -0.0030 | 0.0000 |  |
| Lower trophic | Sacramento | hzoop\_1 | ~~ | flow | 0.2229 | 0.0000 |  |
| Lower trophic | Sacramento | hzoop\_1 | ~~ | temp | -0.0223 | 0.0000 |  |
| Lower trophic | Sacramento | hzoop\_1 | ~~ | turbid | -0.0495 | 0.0000 |  |
| Lower trophic | Sacramento | hzoop\_1 | ~~ | chla\_1 | 0.0490 | 0.0000 |  |
| Lower trophic | Sacramento | pzoop\_1 | ~~ | pzoop\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | Sacramento | pzoop\_1 | ~~ | corbic\_1 | -0.1373 | 0.0000 |  |
| Lower trophic | Sacramento | pzoop\_1 | ~~ | flow | -0.2681 | 0.0000 |  |
| Lower trophic | Sacramento | pzoop\_1 | ~~ | temp | 0.1706 | 0.0000 |  |
| Lower trophic | Sacramento | pzoop\_1 | ~~ | turbid | 0.0537 | 0.0000 |  |
| Lower trophic | Sacramento | pzoop\_1 | ~~ | chla\_1 | 0.1070 | 0.0000 |  |
| Lower trophic | Sacramento | corbic\_1 | ~~ | corbic\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | Sacramento | corbic\_1 | ~~ | flow | 0.0611 | 0.0000 |  |
| Lower trophic | Sacramento | corbic\_1 | ~~ | temp | -0.1698 | 0.0000 |  |
| Lower trophic | Sacramento | corbic\_1 | ~~ | turbid | -0.1016 | 0.0000 |  |
| Lower trophic | Sacramento | corbic\_1 | ~~ | chla\_1 | -0.0802 | 0.0000 |  |
| Lower trophic | Sacramento | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Lower trophic | Sacramento | flow | ~~ | temp | -0.2116 | 0.0000 |  |
| Lower trophic | Sacramento | flow | ~~ | turbid | 0.0625 | 0.0000 |  |
| Lower trophic | Sacramento | flow | ~~ | chla\_1 | 0.0419 | 0.0000 |  |
| Lower trophic | Sacramento | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Lower trophic | Sacramento | temp | ~~ | turbid | -0.0032 | 0.0000 |  |
| Lower trophic | Sacramento | temp | ~~ | chla\_1 | -0.0133 | 0.0000 |  |
| Lower trophic | Sacramento | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Lower trophic | Sacramento | turbid | ~~ | chla\_1 | 0.0913 | 0.0000 |  |
| Lower trophic | Sacramento | chla\_1 | ~~ | chla\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | San Joaquin | din | ~ | din\_1 | 0.4074 | 0.0509 | 0.0000 |
| Lower trophic | San Joaquin | din | ~ | chla | -0.1432 | 0.0514 | 0.0054 |
| Lower trophic | San Joaquin | din | ~ | hzoop\_1 | -0.0149 | 0.0525 | 0.7763 |
| Lower trophic | San Joaquin | din | ~ | pzoop\_1 | 0.1161 | 0.0521 | 0.0259 |
| Lower trophic | San Joaquin | din | ~ | corbic\_1 | 0.0471 | 0.0522 | 0.3669 |
| Lower trophic | San Joaquin | din | ~ | flow | -0.0499 | 0.0522 | 0.3385 |
| Lower trophic | San Joaquin | din | ~ | temp | 0.0530 | 0.0514 | 0.3025 |
| Lower trophic | San Joaquin | din | ~ | turbid | 0.2476 | 0.0554 | 0.0000 |
| Lower trophic | San Joaquin | chla | ~ | din\_1 | 0.1032 | 0.0642 | 0.1080 |
| Lower trophic | San Joaquin | chla | ~ | chla\_1 | 0.3312 | 0.0555 | 0.0000 |
| Lower trophic | San Joaquin | chla | ~ | hzoop\_1 | 0.0543 | 0.0598 | 0.3634 |
| Lower trophic | San Joaquin | chla | ~ | corbic\_1 | 0.0973 | 0.0593 | 0.1005 |
| Lower trophic | San Joaquin | chla | ~ | flow | -0.1003 | 0.0591 | 0.0897 |
| Lower trophic | San Joaquin | chla | ~ | temp | 0.0180 | 0.0582 | 0.7570 |
| Lower trophic | San Joaquin | chla | ~ | turbid | -0.0260 | 0.0660 | 0.6938 |
| Lower trophic | San Joaquin | corbic | ~ | chla\_1 | 0.0614 | 0.0588 | 0.2968 |
| Lower trophic | San Joaquin | corbic | ~ | hzoop\_1 | -0.0238 | 0.0589 | 0.6866 |
| Lower trophic | San Joaquin | corbic | ~ | pzoop\_1 | -0.0414 | 0.0594 | 0.4861 |
| Lower trophic | San Joaquin | corbic | ~ | corbic\_1 | 0.3178 | 0.0541 | 0.0000 |
| Lower trophic | San Joaquin | corbic | ~ | flow | 0.0811 | 0.0574 | 0.1577 |
| Lower trophic | San Joaquin | corbic | ~ | temp | -0.0777 | 0.0571 | 0.1738 |
| Lower trophic | San Joaquin | corbic | ~ | turbid | 0.1846 | 0.0567 | 0.0011 |
| Lower trophic | San Joaquin | din | ~~ | din | 0.6504 | 0.0441 | 0.0000 |
| Lower trophic | San Joaquin | chla | ~~ | chla | 0.8517 | 0.0395 | 0.0000 |
| Lower trophic | San Joaquin | corbic | ~~ | corbic | 0.8078 | 0.0421 | 0.0000 |
| Lower trophic | San Joaquin | din | ~~ | corbic | -0.0251 | 0.0625 | 0.6877 |
| Lower trophic | San Joaquin | din\_1 | ~~ | din\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | San Joaquin | din\_1 | ~~ | hzoop\_1 | 0.0278 | 0.0000 |  |
| Lower trophic | San Joaquin | din\_1 | ~~ | pzoop\_1 | 0.0681 | 0.0000 |  |
| Lower trophic | San Joaquin | din\_1 | ~~ | corbic\_1 | 0.0697 | 0.0000 |  |
| Lower trophic | San Joaquin | din\_1 | ~~ | flow | -0.0593 | 0.0000 |  |
| Lower trophic | San Joaquin | din\_1 | ~~ | temp | 0.0016 | 0.0000 |  |
| Lower trophic | San Joaquin | din\_1 | ~~ | turbid | 0.4203 | 0.0000 |  |
| Lower trophic | San Joaquin | din\_1 | ~~ | chla\_1 | -0.0661 | 0.0000 |  |
| Lower trophic | San Joaquin | hzoop\_1 | ~~ | hzoop\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | San Joaquin | hzoop\_1 | ~~ | pzoop\_1 | 0.1941 | 0.0000 |  |
| Lower trophic | San Joaquin | hzoop\_1 | ~~ | corbic\_1 | 0.0744 | 0.0000 |  |
| Lower trophic | San Joaquin | hzoop\_1 | ~~ | flow | 0.1288 | 0.0000 |  |
| Lower trophic | San Joaquin | hzoop\_1 | ~~ | temp | 0.0587 | 0.0000 |  |
| Lower trophic | San Joaquin | hzoop\_1 | ~~ | turbid | -0.0164 | 0.0000 |  |
| Lower trophic | San Joaquin | hzoop\_1 | ~~ | chla\_1 | 0.1911 | 0.0000 |  |
| Lower trophic | San Joaquin | pzoop\_1 | ~~ | pzoop\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | San Joaquin | pzoop\_1 | ~~ | corbic\_1 | -0.0063 | 0.0000 |  |
| Lower trophic | San Joaquin | pzoop\_1 | ~~ | flow | -0.0671 | 0.0000 |  |
| Lower trophic | San Joaquin | pzoop\_1 | ~~ | temp | 0.1698 | 0.0000 |  |
| Lower trophic | San Joaquin | pzoop\_1 | ~~ | turbid | 0.0369 | 0.0000 |  |
| Lower trophic | San Joaquin | pzoop\_1 | ~~ | chla\_1 | 0.2365 | 0.0000 |  |
| Lower trophic | San Joaquin | corbic\_1 | ~~ | corbic\_1 | 1.0000 | 0.0000 |  |
| Lower trophic | San Joaquin | corbic\_1 | ~~ | flow | 0.1161 | 0.0000 |  |
| Lower trophic | San Joaquin | corbic\_1 | ~~ | temp | -0.0887 | 0.0000 |  |
| Lower trophic | San Joaquin | corbic\_1 | ~~ | turbid | 0.2097 | 0.0000 |  |
| Lower trophic | San Joaquin | corbic\_1 | ~~ | chla\_1 | -0.0004 | 0.0000 |  |
| Lower trophic | San Joaquin | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Lower trophic | San Joaquin | flow | ~~ | temp | -0.0281 | 0.0000 |  |
| Lower trophic | San Joaquin | flow | ~~ | turbid | 0.0829 | 0.0000 |  |
| Lower trophic | San Joaquin | flow | ~~ | chla\_1 | -0.0816 | 0.0000 |  |
| Lower trophic | San Joaquin | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Lower trophic | San Joaquin | temp | ~~ | turbid | -0.0694 | 0.0000 |  |
| Lower trophic | San Joaquin | temp | ~~ | chla\_1 | 0.0675 | 0.0000 |  |
| Lower trophic | San Joaquin | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Lower trophic | San Joaquin | turbid | ~~ | chla\_1 | 0.0734 | 0.0000 |  |
| Lower trophic | San Joaquin | chla\_1 | ~~ | chla\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | San Pablo | chla | ~ | chla\_1 | 0.2043 | 0.0676 | 0.0025 |
| Zooplankton | San Pablo | chla | ~ | hcope\_1 | 0.0757 | 0.0697 | 0.2774 |
| Zooplankton | San Pablo | chla | ~ | amphi\_1 | 0.0294 | 0.0851 | 0.7303 |
| Zooplankton | San Pablo | chla | ~ | rotif\_1 | -0.0781 | 0.0730 | 0.2845 |
| Zooplankton | San Pablo | chla | ~ | potam\_1 | -0.0063 | 0.0695 | 0.9277 |
| Zooplankton | San Pablo | chla | ~ | flow | 0.1414 | 0.0854 | 0.0977 |
| Zooplankton | San Pablo | chla | ~ | turbid | -0.0901 | 0.0780 | 0.2482 |
| Zooplankton | San Pablo | chla | ~ | temp | 0.1580 | 0.0708 | 0.0256 |
| Zooplankton | San Pablo | hcope | ~ | chla\_1 | 0.0716 | 0.0655 | 0.2740 |
| Zooplankton | San Pablo | hcope | ~ | hcope\_1 | 0.2357 | 0.0683 | 0.0006 |
| Zooplankton | San Pablo | hcope | ~ | pcope\_1 | 0.0664 | 0.0697 | 0.3409 |
| Zooplankton | San Pablo | hcope | ~ | potam\_1 | -0.1573 | 0.0678 | 0.0203 |
| Zooplankton | San Pablo | hcope | ~ | flow | -0.0668 | 0.0768 | 0.3847 |
| Zooplankton | San Pablo | hcope | ~ | turbid | -0.0161 | 0.0751 | 0.8304 |
| Zooplankton | San Pablo | hcope | ~ | temp | -0.0505 | 0.0707 | 0.4750 |
| Zooplankton | San Pablo | hcope | ~ | estfish\_bsmt\_1 | -0.1302 | 0.0738 | 0.0777 |
| Zooplankton | San Pablo | amphi | ~ | chla\_1 | 0.0444 | 0.0322 | 0.1678 |
| Zooplankton | San Pablo | amphi | ~ | amphi\_1 | 0.7441 | 0.0295 | 0.0000 |
| Zooplankton | San Pablo | amphi | ~ | flow | -0.2492 | 0.0393 | 0.0000 |
| Zooplankton | San Pablo | amphi | ~ | turbid | -0.0106 | 0.0360 | 0.7673 |
| Zooplankton | San Pablo | amphi | ~ | temp | 0.0128 | 0.0336 | 0.7036 |
| Zooplankton | San Pablo | amphi | ~ | estfish\_bsmt\_1 | 0.0418 | 0.0342 | 0.2211 |
| Zooplankton | San Pablo | rotif | ~ | chla\_1 | -0.1723 | 0.0641 | 0.0072 |
| Zooplankton | San Pablo | rotif | ~ | rotif\_1 | 0.3775 | 0.0592 | 0.0000 |
| Zooplankton | San Pablo | rotif | ~ | flow | 0.1032 | 0.0746 | 0.1666 |
| Zooplankton | San Pablo | rotif | ~ | turbid | 0.0085 | 0.0733 | 0.9080 |
| Zooplankton | San Pablo | rotif | ~ | temp | 0.0551 | 0.0685 | 0.4210 |
| Zooplankton | San Pablo | rotif | ~ | estfish\_bsmt\_1 | 0.0085 | 0.0688 | 0.9015 |
| Zooplankton | San Pablo | pcope | ~ | hcope\_1 | 0.0459 | 0.0683 | 0.5021 |
| Zooplankton | San Pablo | pcope | ~ | pcope\_1 | 0.3014 | 0.0638 | 0.0000 |
| Zooplankton | San Pablo | pcope | ~ | potam\_1 | -0.1053 | 0.0662 | 0.1119 |
| Zooplankton | San Pablo | pcope | ~ | flow | 0.2014 | 0.0728 | 0.0056 |
| Zooplankton | San Pablo | pcope | ~ | turbid | 0.0808 | 0.0723 | 0.2635 |
| Zooplankton | San Pablo | pcope | ~ | temp | 0.1521 | 0.0677 | 0.0247 |
| Zooplankton | San Pablo | pcope | ~ | estfish\_bsmt\_1 | -0.0076 | 0.0722 | 0.9162 |
| Zooplankton | San Pablo | chla | ~~ | chla | 0.8987 | 0.0402 | 0.0000 |
| Zooplankton | San Pablo | hcope | ~~ | hcope | 0.8518 | 0.0455 | 0.0000 |
| Zooplankton | San Pablo | amphi | ~~ | amphi | 0.1932 | 0.0193 | 0.0000 |
| Zooplankton | San Pablo | rotif | ~~ | rotif | 0.8074 | 0.0484 | 0.0000 |
| Zooplankton | San Pablo | pcope | ~~ | pcope | 0.8022 | 0.0488 | 0.0000 |
| Zooplankton | San Pablo | chla | ~~ | hcope | 0.0567 | 0.0719 | 0.4302 |
| Zooplankton | San Pablo | chla | ~~ | amphi | 0.0509 | 0.0720 | 0.4791 |
| Zooplankton | San Pablo | chla | ~~ | rotif | 0.1034 | 0.0714 | 0.1477 |
| Zooplankton | San Pablo | chla | ~~ | pcope | -0.0190 | 0.0721 | 0.7928 |
| Zooplankton | San Pablo | hcope | ~~ | amphi | -0.0262 | 0.0721 | 0.7162 |
| Zooplankton | San Pablo | hcope | ~~ | rotif | 0.0404 | 0.0721 | 0.5752 |
| Zooplankton | San Pablo | hcope | ~~ | pcope | -0.2385 | 0.0681 | 0.0005 |
| Zooplankton | San Pablo | amphi | ~~ | rotif | -0.0812 | 0.0717 | 0.2573 |
| Zooplankton | San Pablo | amphi | ~~ | pcope | -0.0215 | 0.0721 | 0.7655 |
| Zooplankton | San Pablo | rotif | ~~ | pcope | 0.0677 | 0.0718 | 0.3459 |
| Zooplankton | San Pablo | chla\_1 | ~~ | chla\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | San Pablo | chla\_1 | ~~ | hcope\_1 | 0.0931 | 0.0000 |  |
| Zooplankton | San Pablo | chla\_1 | ~~ | amphi\_1 | 0.0826 | 0.0000 |  |
| Zooplankton | San Pablo | chla\_1 | ~~ | rotif\_1 | 0.0275 | 0.0000 |  |
| Zooplankton | San Pablo | chla\_1 | ~~ | potam\_1 | 0.0189 | 0.0000 |  |
| Zooplankton | San Pablo | chla\_1 | ~~ | flow | 0.0450 | 0.0000 |  |
| Zooplankton | San Pablo | chla\_1 | ~~ | turbid | -0.0746 | 0.0000 |  |
| Zooplankton | San Pablo | chla\_1 | ~~ | temp | 0.0209 | 0.0000 |  |
| Zooplankton | San Pablo | chla\_1 | ~~ | pcope\_1 | 0.0158 | 0.0000 |  |
| Zooplankton | San Pablo | chla\_1 | ~~ | estfish\_bsmt\_1 | -0.0947 | 0.0000 |  |
| Zooplankton | San Pablo | hcope\_1 | ~~ | hcope\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | San Pablo | hcope\_1 | ~~ | amphi\_1 | 0.0954 | 0.0000 |  |
| Zooplankton | San Pablo | hcope\_1 | ~~ | rotif\_1 | 0.0683 | 0.0000 |  |
| Zooplankton | San Pablo | hcope\_1 | ~~ | potam\_1 | -0.1153 | 0.0000 |  |
| Zooplankton | San Pablo | hcope\_1 | ~~ | flow | -0.0409 | 0.0000 |  |
| Zooplankton | San Pablo | hcope\_1 | ~~ | turbid | -0.0195 | 0.0000 |  |
| Zooplankton | San Pablo | hcope\_1 | ~~ | temp | 0.1573 | 0.0000 |  |
| Zooplankton | San Pablo | hcope\_1 | ~~ | pcope\_1 | -0.1426 | 0.0000 |  |
| Zooplankton | San Pablo | hcope\_1 | ~~ | estfish\_bsmt\_1 | -0.2515 | 0.0000 |  |
| Zooplankton | San Pablo | amphi\_1 | ~~ | amphi\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | San Pablo | amphi\_1 | ~~ | rotif\_1 | -0.2845 | 0.0000 |  |
| Zooplankton | San Pablo | amphi\_1 | ~~ | potam\_1 | -0.0711 | 0.0000 |  |
| Zooplankton | San Pablo | amphi\_1 | ~~ | flow | -0.5277 | 0.0000 |  |
| Zooplankton | San Pablo | amphi\_1 | ~~ | turbid | -0.3219 | 0.0000 |  |
| Zooplankton | San Pablo | amphi\_1 | ~~ | temp | 0.0788 | 0.0000 |  |
| Zooplankton | San Pablo | amphi\_1 | ~~ | pcope\_1 | -0.2108 | 0.0000 |  |
| Zooplankton | San Pablo | amphi\_1 | ~~ | estfish\_bsmt\_1 | -0.2771 | 0.0000 |  |
| Zooplankton | San Pablo | rotif\_1 | ~~ | rotif\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | San Pablo | rotif\_1 | ~~ | potam\_1 | -0.1383 | 0.0000 |  |
| Zooplankton | San Pablo | rotif\_1 | ~~ | flow | 0.1417 | 0.0000 |  |
| Zooplankton | San Pablo | rotif\_1 | ~~ | turbid | -0.0376 | 0.0000 |  |
| Zooplankton | San Pablo | rotif\_1 | ~~ | temp | 0.0637 | 0.0000 |  |
| Zooplankton | San Pablo | rotif\_1 | ~~ | pcope\_1 | 0.1840 | 0.0000 |  |
| Zooplankton | San Pablo | rotif\_1 | ~~ | estfish\_bsmt\_1 | -0.0426 | 0.0000 |  |
| Zooplankton | San Pablo | potam\_1 | ~~ | potam\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | San Pablo | potam\_1 | ~~ | flow | 0.0482 | 0.0000 |  |
| Zooplankton | San Pablo | potam\_1 | ~~ | turbid | 0.0636 | 0.0000 |  |
| Zooplankton | San Pablo | potam\_1 | ~~ | temp | -0.0710 | 0.0000 |  |
| Zooplankton | San Pablo | potam\_1 | ~~ | pcope\_1 | -0.1363 | 0.0000 |  |
| Zooplankton | San Pablo | potam\_1 | ~~ | estfish\_bsmt\_1 | 0.2039 | 0.0000 |  |
| Zooplankton | San Pablo | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Zooplankton | San Pablo | flow | ~~ | turbid | 0.4229 | 0.0000 |  |
| Zooplankton | San Pablo | flow | ~~ | temp | -0.1983 | 0.0000 |  |
| Zooplankton | San Pablo | flow | ~~ | pcope\_1 | 0.1709 | 0.0000 |  |
| Zooplankton | San Pablo | flow | ~~ | estfish\_bsmt\_1 | 0.2587 | 0.0000 |  |
| Zooplankton | San Pablo | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Zooplankton | San Pablo | turbid | ~~ | temp | -0.2356 | 0.0000 |  |
| Zooplankton | San Pablo | turbid | ~~ | pcope\_1 | 0.0777 | 0.0000 |  |
| Zooplankton | San Pablo | turbid | ~~ | estfish\_bsmt\_1 | 0.1749 | 0.0000 |  |
| Zooplankton | San Pablo | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Zooplankton | San Pablo | temp | ~~ | pcope\_1 | -0.0394 | 0.0000 |  |
| Zooplankton | San Pablo | temp | ~~ | estfish\_bsmt\_1 | -0.2456 | 0.0000 |  |
| Zooplankton | San Pablo | pcope\_1 | ~~ | pcope\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | San Pablo | pcope\_1 | ~~ | estfish\_bsmt\_1 | -0.0871 | 0.0000 |  |
| Zooplankton | San Pablo | estfish\_bsmt\_1 | ~~ | estfish\_bsmt\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | Suisun | chla | ~ | chla\_1 | 0.1474 | 0.0684 | 0.0312 |
| Zooplankton | Suisun | chla | ~ | hcope\_1 | 0.0711 | 0.0698 | 0.3083 |
| Zooplankton | Suisun | chla | ~ | amphi\_1 | 0.1379 | 0.0697 | 0.0480 |
| Zooplankton | Suisun | chla | ~ | rotif\_1 | 0.1108 | 0.0679 | 0.1024 |
| Zooplankton | Suisun | chla | ~ | potam\_1 | -0.0505 | 0.0737 | 0.4934 |
| Zooplankton | Suisun | chla | ~ | flow | 0.0826 | 0.0719 | 0.2505 |
| Zooplankton | Suisun | chla | ~ | turbid | 0.0694 | 0.0741 | 0.3487 |
| Zooplankton | Suisun | chla | ~ | temp | -0.1051 | 0.0657 | 0.1097 |
| Zooplankton | Suisun | chla | ~ | mysid\_1 | -0.1691 | 0.0696 | 0.0151 |
| Zooplankton | Suisun | hcope | ~ | chla\_1 | 0.0408 | 0.0656 | 0.5339 |
| Zooplankton | Suisun | hcope | ~ | hcope\_1 | 0.3078 | 0.0650 | 0.0000 |
| Zooplankton | Suisun | hcope | ~ | pcope\_1 | -0.1045 | 0.0639 | 0.1019 |
| Zooplankton | Suisun | hcope | ~ | mysid\_1 | 0.0493 | 0.0708 | 0.4858 |
| Zooplankton | Suisun | hcope | ~ | potam\_1 | -0.1706 | 0.0668 | 0.0107 |
| Zooplankton | Suisun | hcope | ~ | flow | -0.1349 | 0.0693 | 0.0518 |
| Zooplankton | Suisun | hcope | ~ | turbid | -0.1192 | 0.0708 | 0.0926 |
| Zooplankton | Suisun | hcope | ~ | temp | 0.0647 | 0.0639 | 0.3109 |
| Zooplankton | Suisun | hcope | ~ | estfish\_bsmt\_1 | 0.0502 | 0.0633 | 0.4277 |
| Zooplankton | Suisun | hcope | ~ | rotif\_1 | 0.1916 | 0.0634 | 0.0025 |
| Zooplankton | Suisun | amphi | ~ | chla\_1 | -0.0427 | 0.0357 | 0.2310 |
| Zooplankton | Suisun | amphi | ~ | amphi\_1 | 0.7866 | 0.0263 | 0.0000 |
| Zooplankton | Suisun | amphi | ~ | mysid\_1 | 0.0765 | 0.0366 | 0.0366 |
| Zooplankton | Suisun | amphi | ~ | flow | 0.0076 | 0.0371 | 0.8368 |
| Zooplankton | Suisun | amphi | ~ | turbid | -0.1031 | 0.0387 | 0.0078 |
| Zooplankton | Suisun | amphi | ~ | temp | -0.0998 | 0.0355 | 0.0049 |
| Zooplankton | Suisun | amphi | ~ | estfish\_bsmt\_1 | -0.1761 | 0.0363 | 0.0000 |
| Zooplankton | Suisun | rotif | ~ | chla\_1 | 0.0193 | 0.0618 | 0.7554 |
| Zooplankton | Suisun | rotif | ~ | rotif\_1 | 0.3346 | 0.0585 | 0.0000 |
| Zooplankton | Suisun | rotif | ~ | flow | 0.2159 | 0.0631 | 0.0006 |
| Zooplankton | Suisun | rotif | ~ | turbid | -0.0960 | 0.0636 | 0.1313 |
| Zooplankton | Suisun | rotif | ~ | temp | 0.0275 | 0.0610 | 0.6518 |
| Zooplankton | Suisun | rotif | ~ | estfish\_bsmt\_1 | -0.1808 | 0.0580 | 0.0018 |
| Zooplankton | Suisun | pcope | ~ | hcope\_1 | -0.1253 | 0.0572 | 0.0285 |
| Zooplankton | Suisun | pcope | ~ | pcope\_1 | 0.4045 | 0.0515 | 0.0000 |
| Zooplankton | Suisun | pcope | ~ | mysid\_1 | 0.1146 | 0.0610 | 0.0604 |
| Zooplankton | Suisun | pcope | ~ | potam\_1 | 0.0459 | 0.0604 | 0.4468 |
| Zooplankton | Suisun | pcope | ~ | flow | 0.1307 | 0.0599 | 0.0291 |
| Zooplankton | Suisun | pcope | ~ | turbid | -0.1378 | 0.0614 | 0.0248 |
| Zooplankton | Suisun | pcope | ~ | temp | 0.2276 | 0.0533 | 0.0000 |
| Zooplankton | Suisun | pcope | ~ | estfish\_bsmt\_1 | 0.0262 | 0.0564 | 0.6422 |
| Zooplankton | Suisun | pcope | ~ | rotif\_1 | 0.1692 | 0.0557 | 0.0024 |
| Zooplankton | Suisun | mysid | ~ | chla\_1 | 0.1795 | 0.0569 | 0.0016 |
| Zooplankton | Suisun | mysid | ~ | hcope\_1 | 0.0695 | 0.0594 | 0.2422 |
| Zooplankton | Suisun | mysid | ~ | pcope\_1 | 0.1138 | 0.0561 | 0.0427 |
| Zooplankton | Suisun | mysid | ~ | amphi\_1 | -0.1320 | 0.0589 | 0.0249 |
| Zooplankton | Suisun | mysid | ~ | mysid\_1 | 0.3722 | 0.0583 | 0.0000 |
| Zooplankton | Suisun | mysid | ~ | flow | -0.1675 | 0.0581 | 0.0039 |
| Zooplankton | Suisun | mysid | ~ | turbid | 0.2577 | 0.0612 | 0.0000 |
| Zooplankton | Suisun | mysid | ~ | temp | 0.1020 | 0.0564 | 0.0702 |
| Zooplankton | Suisun | mysid | ~ | estfish\_bsmt\_1 | -0.0265 | 0.0581 | 0.6485 |
| Zooplankton | Suisun | chla | ~~ | chla | 0.8525 | 0.0427 | 0.0000 |
| Zooplankton | Suisun | hcope | ~~ | hcope | 0.7913 | 0.0460 | 0.0000 |
| Zooplankton | Suisun | amphi | ~~ | amphi | 0.2487 | 0.0231 | 0.0000 |
| Zooplankton | Suisun | rotif | ~~ | rotif | 0.7361 | 0.0479 | 0.0000 |
| Zooplankton | Suisun | pcope | ~~ | pcope | 0.5993 | 0.0459 | 0.0000 |
| Zooplankton | Suisun | mysid | ~~ | mysid | 0.6220 | 0.0469 | 0.0000 |
| Zooplankton | Suisun | chla | ~~ | hcope | 0.2176 | 0.0650 | 0.0008 |
| Zooplankton | Suisun | chla | ~~ | amphi | -0.0149 | 0.0682 | 0.8265 |
| Zooplankton | Suisun | chla | ~~ | rotif | 0.1833 | 0.0659 | 0.0054 |
| Zooplankton | Suisun | chla | ~~ | pcope | 0.0220 | 0.0682 | 0.7464 |
| Zooplankton | Suisun | chla | ~~ | mysid | 0.1326 | 0.0670 | 0.0478 |
| Zooplankton | Suisun | hcope | ~~ | amphi | -0.0818 | 0.0677 | 0.2274 |
| Zooplankton | Suisun | hcope | ~~ | rotif | -0.0176 | 0.0682 | 0.7962 |
| Zooplankton | Suisun | hcope | ~~ | pcope | 0.1178 | 0.0673 | 0.0797 |
| Zooplankton | Suisun | hcope | ~~ | mysid | 0.3066 | 0.0618 | 0.0000 |
| Zooplankton | Suisun | amphi | ~~ | rotif | 0.0899 | 0.0676 | 0.1838 |
| Zooplankton | Suisun | amphi | ~~ | pcope | 0.1690 | 0.0663 | 0.0107 |
| Zooplankton | Suisun | amphi | ~~ | mysid | -0.0963 | 0.0676 | 0.1542 |
| Zooplankton | Suisun | rotif | ~~ | pcope | 0.0949 | 0.0676 | 0.1602 |
| Zooplankton | Suisun | rotif | ~~ | mysid | 0.0442 | 0.0681 | 0.5165 |
| Zooplankton | Suisun | pcope | ~~ | mysid | 0.0915 | 0.0676 | 0.1763 |
| Zooplankton | Suisun | chla\_1 | ~~ | chla\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | Suisun | chla\_1 | ~~ | hcope\_1 | 0.2085 | 0.0000 |  |
| Zooplankton | Suisun | chla\_1 | ~~ | amphi\_1 | 0.1632 | 0.0000 |  |
| Zooplankton | Suisun | chla\_1 | ~~ | rotif\_1 | 0.2629 | 0.0000 |  |
| Zooplankton | Suisun | chla\_1 | ~~ | potam\_1 | -0.0333 | 0.0000 |  |
| Zooplankton | Suisun | chla\_1 | ~~ | flow | 0.1784 | 0.0000 |  |
| Zooplankton | Suisun | chla\_1 | ~~ | turbid | 0.0038 | 0.0000 |  |
| Zooplankton | Suisun | chla\_1 | ~~ | temp | -0.1893 | 0.0000 |  |
| Zooplankton | Suisun | chla\_1 | ~~ | mysid\_1 | 0.0814 | 0.0000 |  |
| Zooplankton | Suisun | chla\_1 | ~~ | pcope\_1 | 0.0554 | 0.0000 |  |
| Zooplankton | Suisun | chla\_1 | ~~ | estfish\_bsmt\_1 | -0.0223 | 0.0000 |  |
| Zooplankton | Suisun | hcope\_1 | ~~ | hcope\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | Suisun | hcope\_1 | ~~ | amphi\_1 | -0.0564 | 0.0000 |  |
| Zooplankton | Suisun | hcope\_1 | ~~ | rotif\_1 | -0.0131 | 0.0000 |  |
| Zooplankton | Suisun | hcope\_1 | ~~ | potam\_1 | -0.2747 | 0.0000 |  |
| Zooplankton | Suisun | hcope\_1 | ~~ | flow | 0.0143 | 0.0000 |  |
| Zooplankton | Suisun | hcope\_1 | ~~ | turbid | 0.1907 | 0.0000 |  |
| Zooplankton | Suisun | hcope\_1 | ~~ | temp | -0.0464 | 0.0000 |  |
| Zooplankton | Suisun | hcope\_1 | ~~ | mysid\_1 | 0.3694 | 0.0000 |  |
| Zooplankton | Suisun | hcope\_1 | ~~ | pcope\_1 | 0.0531 | 0.0000 |  |
| Zooplankton | Suisun | hcope\_1 | ~~ | estfish\_bsmt\_1 | 0.0084 | 0.0000 |  |
| Zooplankton | Suisun | amphi\_1 | ~~ | amphi\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | Suisun | amphi\_1 | ~~ | rotif\_1 | 0.2319 | 0.0000 |  |
| Zooplankton | Suisun | amphi\_1 | ~~ | potam\_1 | 0.3420 | 0.0000 |  |
| Zooplankton | Suisun | amphi\_1 | ~~ | flow | -0.0576 | 0.0000 |  |
| Zooplankton | Suisun | amphi\_1 | ~~ | turbid | -0.3454 | 0.0000 |  |
| Zooplankton | Suisun | amphi\_1 | ~~ | temp | 0.0837 | 0.0000 |  |
| Zooplankton | Suisun | amphi\_1 | ~~ | mysid\_1 | -0.2408 | 0.0000 |  |
| Zooplankton | Suisun | amphi\_1 | ~~ | pcope\_1 | 0.2147 | 0.0000 |  |
| Zooplankton | Suisun | amphi\_1 | ~~ | estfish\_bsmt\_1 | -0.3082 | 0.0000 |  |
| Zooplankton | Suisun | rotif\_1 | ~~ | rotif\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | Suisun | rotif\_1 | ~~ | potam\_1 | -0.0484 | 0.0000 |  |
| Zooplankton | Suisun | rotif\_1 | ~~ | flow | 0.2172 | 0.0000 |  |
| Zooplankton | Suisun | rotif\_1 | ~~ | turbid | -0.1159 | 0.0000 |  |
| Zooplankton | Suisun | rotif\_1 | ~~ | temp | -0.0435 | 0.0000 |  |
| Zooplankton | Suisun | rotif\_1 | ~~ | mysid\_1 | -0.0142 | 0.0000 |  |
| Zooplankton | Suisun | rotif\_1 | ~~ | pcope\_1 | 0.2869 | 0.0000 |  |
| Zooplankton | Suisun | rotif\_1 | ~~ | estfish\_bsmt\_1 | -0.1522 | 0.0000 |  |
| Zooplankton | Suisun | potam\_1 | ~~ | potam\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | Suisun | potam\_1 | ~~ | flow | -0.3025 | 0.0000 |  |
| Zooplankton | Suisun | potam\_1 | ~~ | turbid | -0.3648 | 0.0000 |  |
| Zooplankton | Suisun | potam\_1 | ~~ | temp | 0.0305 | 0.0000 |  |
| Zooplankton | Suisun | potam\_1 | ~~ | mysid\_1 | -0.2872 | 0.0000 |  |
| Zooplankton | Suisun | potam\_1 | ~~ | pcope\_1 | 0.0818 | 0.0000 |  |
| Zooplankton | Suisun | potam\_1 | ~~ | estfish\_bsmt\_1 | -0.1156 | 0.0000 |  |
| Zooplankton | Suisun | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Zooplankton | Suisun | flow | ~~ | turbid | 0.2973 | 0.0000 |  |
| Zooplankton | Suisun | flow | ~~ | temp | -0.1584 | 0.0000 |  |
| Zooplankton | Suisun | flow | ~~ | mysid\_1 | -0.0603 | 0.0000 |  |
| Zooplankton | Suisun | flow | ~~ | pcope\_1 | -0.0027 | 0.0000 |  |
| Zooplankton | Suisun | flow | ~~ | estfish\_bsmt\_1 | -0.1207 | 0.0000 |  |
| Zooplankton | Suisun | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Zooplankton | Suisun | turbid | ~~ | temp | -0.1942 | 0.0000 |  |
| Zooplankton | Suisun | turbid | ~~ | mysid\_1 | 0.2132 | 0.0000 |  |
| Zooplankton | Suisun | turbid | ~~ | pcope\_1 | -0.2165 | 0.0000 |  |
| Zooplankton | Suisun | turbid | ~~ | estfish\_bsmt\_1 | 0.1250 | 0.0000 |  |
| Zooplankton | Suisun | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Zooplankton | Suisun | temp | ~~ | mysid\_1 | 0.0308 | 0.0000 |  |
| Zooplankton | Suisun | temp | ~~ | pcope\_1 | 0.1468 | 0.0000 |  |
| Zooplankton | Suisun | temp | ~~ | estfish\_bsmt\_1 | -0.0425 | 0.0000 |  |
| Zooplankton | Suisun | mysid\_1 | ~~ | mysid\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | Suisun | mysid\_1 | ~~ | pcope\_1 | 0.1006 | 0.0000 |  |
| Zooplankton | Suisun | mysid\_1 | ~~ | estfish\_bsmt\_1 | 0.2646 | 0.0000 |  |
| Zooplankton | Suisun | pcope\_1 | ~~ | pcope\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | Suisun | pcope\_1 | ~~ | estfish\_bsmt\_1 | -0.0836 | 0.0000 |  |
| Zooplankton | Suisun | estfish\_bsmt\_1 | ~~ | estfish\_bsmt\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | Sacramento | chla | ~ | chla\_1 | 0.1487 | 0.0674 | 0.0274 |
| Zooplankton | Sacramento | chla | ~ | hcope\_1 | -0.0245 | 0.0750 | 0.7442 |
| Zooplankton | Sacramento | chla | ~ | clad\_1 | 0.1861 | 0.0750 | 0.0130 |
| Zooplankton | Sacramento | chla | ~ | amphi\_1 | 0.0556 | 0.0677 | 0.4119 |
| Zooplankton | Sacramento | chla | ~ | rotif\_1 | -0.0436 | 0.0713 | 0.5412 |
| Zooplankton | Sacramento | chla | ~ | corbic\_1 | -0.0241 | 0.0675 | 0.7209 |
| Zooplankton | Sacramento | chla | ~ | flow | -0.0298 | 0.0768 | 0.6985 |
| Zooplankton | Sacramento | chla | ~ | turbid | 0.0993 | 0.0705 | 0.1591 |
| Zooplankton | Sacramento | chla | ~ | temp | 0.1246 | 0.0700 | 0.0750 |
| Zooplankton | Sacramento | hcope | ~ | chla\_1 | -0.0119 | 0.0510 | 0.8162 |
| Zooplankton | Sacramento | hcope | ~ | hcope\_1 | 0.1275 | 0.0713 | 0.0737 |
| Zooplankton | Sacramento | hcope | ~ | pcope\_1 | -0.1308 | 0.0589 | 0.0264 |
| Zooplankton | Sacramento | hcope | ~ | mysid\_1 | 0.0575 | 0.0750 | 0.4430 |
| Zooplankton | Sacramento | hcope | ~ | corbic\_1 | 0.1252 | 0.0511 | 0.0142 |
| Zooplankton | Sacramento | hcope | ~ | flow | -0.4977 | 0.0537 | 0.0000 |
| Zooplankton | Sacramento | hcope | ~ | turbid | 0.1148 | 0.0603 | 0.0570 |
| Zooplankton | Sacramento | hcope | ~ | temp | 0.1271 | 0.0566 | 0.0248 |
| Zooplankton | Sacramento | hcope | ~ | estfish\_bsmt\_1 | 0.0097 | 0.0606 | 0.8724 |
| Zooplankton | Sacramento | clad | ~ | chla\_1 | -0.0349 | 0.0553 | 0.5279 |
| Zooplankton | Sacramento | clad | ~ | clad\_1 | 0.3562 | 0.0551 | 0.0000 |
| Zooplankton | Sacramento | clad | ~ | pcope\_1 | 0.0156 | 0.0575 | 0.7858 |
| Zooplankton | Sacramento | clad | ~ | flow | 0.4278 | 0.0569 | 0.0000 |
| Zooplankton | Sacramento | clad | ~ | turbid | 0.0036 | 0.0588 | 0.9515 |
| Zooplankton | Sacramento | clad | ~ | temp | 0.0500 | 0.0562 | 0.3737 |
| Zooplankton | Sacramento | clad | ~ | estfish\_bsmt\_1 | 0.0190 | 0.0588 | 0.7471 |
| Zooplankton | Sacramento | amphi | ~ | chla\_1 | 0.0575 | 0.0589 | 0.3289 |
| Zooplankton | Sacramento | amphi | ~ | amphi\_1 | 0.5137 | 0.0479 | 0.0000 |
| Zooplankton | Sacramento | amphi | ~ | flow | 0.0560 | 0.0651 | 0.3900 |
| Zooplankton | Sacramento | amphi | ~ | turbid | -0.0209 | 0.0615 | 0.7334 |
| Zooplankton | Sacramento | amphi | ~ | temp | -0.0437 | 0.0609 | 0.4733 |
| Zooplankton | Sacramento | amphi | ~ | estfish\_bsmt\_1 | -0.0788 | 0.0638 | 0.2168 |
| Zooplankton | Sacramento | rotif | ~ | chla\_1 | -0.0809 | 0.0618 | 0.1904 |
| Zooplankton | Sacramento | rotif | ~ | rotif\_1 | 0.1514 | 0.0617 | 0.0141 |
| Zooplankton | Sacramento | rotif | ~ | flow | 0.3815 | 0.0631 | 0.0000 |
| Zooplankton | Sacramento | rotif | ~ | turbid | -0.0500 | 0.0644 | 0.4371 |
| Zooplankton | Sacramento | rotif | ~ | temp | -0.0735 | 0.0633 | 0.2453 |
| Zooplankton | Sacramento | rotif | ~ | estfish\_bsmt\_1 | -0.0153 | 0.0664 | 0.8183 |
| Zooplankton | Sacramento | pcope | ~ | hcope\_1 | -0.1137 | 0.0798 | 0.1541 |
| Zooplankton | Sacramento | pcope | ~ | pcope\_1 | 0.2568 | 0.0635 | 0.0001 |
| Zooplankton | Sacramento | pcope | ~ | clad\_1 | -0.1284 | 0.0663 | 0.0528 |
| Zooplankton | Sacramento | pcope | ~ | mysid\_1 | 0.0593 | 0.0841 | 0.4803 |
| Zooplankton | Sacramento | pcope | ~ | corbic\_1 | 0.0593 | 0.0604 | 0.3263 |
| Zooplankton | Sacramento | pcope | ~ | flow | -0.1825 | 0.0702 | 0.0094 |
| Zooplankton | Sacramento | pcope | ~ | turbid | -0.2354 | 0.0662 | 0.0004 |
| Zooplankton | Sacramento | pcope | ~ | temp | 0.0702 | 0.0644 | 0.2754 |
| Zooplankton | Sacramento | pcope | ~ | estfish\_bsmt\_1 | -0.0648 | 0.0679 | 0.3403 |
| Zooplankton | Sacramento | pcope | ~ | chla\_1 | 0.1408 | 0.0615 | 0.0220 |
| Zooplankton | Sacramento | mysid | ~ | hcope\_1 | -0.0181 | 0.0716 | 0.8000 |
| Zooplankton | Sacramento | mysid | ~ | pcope\_1 | -0.0674 | 0.0595 | 0.2567 |
| Zooplankton | Sacramento | mysid | ~ | mysid\_1 | 0.1746 | 0.0732 | 0.0171 |
| Zooplankton | Sacramento | mysid | ~ | amphi\_1 | -0.0800 | 0.0509 | 0.1159 |
| Zooplankton | Sacramento | mysid | ~ | flow | -0.4276 | 0.0569 | 0.0000 |
| Zooplankton | Sacramento | mysid | ~ | turbid | 0.2362 | 0.0602 | 0.0001 |
| Zooplankton | Sacramento | mysid | ~ | temp | 0.0851 | 0.0573 | 0.1372 |
| Zooplankton | Sacramento | mysid | ~ | estfish\_bsmt\_1 | 0.0617 | 0.0612 | 0.3130 |
| Zooplankton | Sacramento | chla | ~~ | chla | 0.9072 | 0.0374 | 0.0000 |
| Zooplankton | Sacramento | hcope | ~~ | hcope | 0.5949 | 0.0471 | 0.0000 |
| Zooplankton | Sacramento | clad | ~~ | clad | 0.6076 | 0.0475 | 0.0000 |
| Zooplankton | Sacramento | amphi | ~~ | amphi | 0.7131 | 0.0485 | 0.0000 |
| Zooplankton | Sacramento | rotif | ~~ | rotif | 0.7730 | 0.0483 | 0.0000 |
| Zooplankton | Sacramento | pcope | ~~ | pcope | 0.7542 | 0.0485 | 0.0000 |
| Zooplankton | Sacramento | mysid | ~~ | mysid | 0.6195 | 0.0479 | 0.0000 |
| Zooplankton | Sacramento | chla | ~~ | hcope | 0.0339 | 0.0698 | 0.6272 |
| Zooplankton | Sacramento | chla | ~~ | clad | 0.1754 | 0.0677 | 0.0096 |
| Zooplankton | Sacramento | chla | ~~ | amphi | 0.0255 | 0.0698 | 0.7151 |
| Zooplankton | Sacramento | chla | ~~ | rotif | 0.1079 | 0.0690 | 0.1181 |
| Zooplankton | Sacramento | chla | ~~ | pcope | -0.0658 | 0.0695 | 0.3439 |
| Zooplankton | Sacramento | chla | ~~ | mysid | 0.1153 | 0.0689 | 0.0943 |
| Zooplankton | Sacramento | hcope | ~~ | clad | -0.1212 | 0.0688 | 0.0782 |
| Zooplankton | Sacramento | hcope | ~~ | amphi | 0.0831 | 0.0694 | 0.2307 |
| Zooplankton | Sacramento | hcope | ~~ | rotif | -0.0134 | 0.0698 | 0.8481 |
| Zooplankton | Sacramento | hcope | ~~ | pcope | 0.1099 | 0.0690 | 0.1112 |
| Zooplankton | Sacramento | hcope | ~~ | mysid | 0.3949 | 0.0590 | 0.0000 |
| Zooplankton | Sacramento | clad | ~~ | amphi | 0.0062 | 0.0698 | 0.9296 |
| Zooplankton | Sacramento | clad | ~~ | rotif | 0.1420 | 0.0684 | 0.0379 |
| Zooplankton | Sacramento | clad | ~~ | pcope | -0.0687 | 0.0695 | 0.3229 |
| Zooplankton | Sacramento | clad | ~~ | mysid | -0.1335 | 0.0686 | 0.0516 |
| Zooplankton | Sacramento | amphi | ~~ | rotif | -0.1795 | 0.0676 | 0.0079 |
| Zooplankton | Sacramento | amphi | ~~ | pcope | -0.1251 | 0.0687 | 0.0687 |
| Zooplankton | Sacramento | amphi | ~~ | mysid | 0.1489 | 0.0683 | 0.0293 |
| Zooplankton | Sacramento | rotif | ~~ | pcope | 0.1818 | 0.0675 | 0.0071 |
| Zooplankton | Sacramento | rotif | ~~ | mysid | 0.0033 | 0.0698 | 0.9619 |
| Zooplankton | Sacramento | pcope | ~~ | mysid | 0.1957 | 0.0672 | 0.0036 |
| Zooplankton | Sacramento | chla\_1 | ~~ | chla\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | Sacramento | chla\_1 | ~~ | hcope\_1 | 0.0323 | 0.0000 |  |
| Zooplankton | Sacramento | chla\_1 | ~~ | clad\_1 | 0.1603 | 0.0000 |  |
| Zooplankton | Sacramento | chla\_1 | ~~ | amphi\_1 | -0.0234 | 0.0000 |  |
| Zooplankton | Sacramento | chla\_1 | ~~ | rotif\_1 | -0.0038 | 0.0000 |  |
| Zooplankton | Sacramento | chla\_1 | ~~ | corbic\_1 | -0.1008 | 0.0000 |  |
| Zooplankton | Sacramento | chla\_1 | ~~ | flow | 0.0939 | 0.0000 |  |
| Zooplankton | Sacramento | chla\_1 | ~~ | turbid | 0.1184 | 0.0000 |  |
| Zooplankton | Sacramento | chla\_1 | ~~ | temp | -0.0308 | 0.0000 |  |
| Zooplankton | Sacramento | chla\_1 | ~~ | pcope\_1 | -0.1408 | 0.0000 |  |
| Zooplankton | Sacramento | chla\_1 | ~~ | mysid\_1 | 0.0978 | 0.0000 |  |
| Zooplankton | Sacramento | chla\_1 | ~~ | estfish\_bsmt\_1 | -0.0117 | 0.0000 |  |
| Zooplankton | Sacramento | hcope\_1 | ~~ | hcope\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | Sacramento | hcope\_1 | ~~ | clad\_1 | -0.3390 | 0.0000 |  |
| Zooplankton | Sacramento | hcope\_1 | ~~ | amphi\_1 | -0.0206 | 0.0000 |  |
| Zooplankton | Sacramento | hcope\_1 | ~~ | rotif\_1 | -0.2335 | 0.0000 |  |
| Zooplankton | Sacramento | hcope\_1 | ~~ | corbic\_1 | 0.0427 | 0.0000 |  |
| Zooplankton | Sacramento | hcope\_1 | ~~ | flow | -0.3322 | 0.0000 |  |
| Zooplankton | Sacramento | hcope\_1 | ~~ | turbid | 0.1964 | 0.0000 |  |
| Zooplankton | Sacramento | hcope\_1 | ~~ | temp | 0.2201 | 0.0000 |  |
| Zooplankton | Sacramento | hcope\_1 | ~~ | pcope\_1 | 0.2074 | 0.0000 |  |
| Zooplankton | Sacramento | hcope\_1 | ~~ | mysid\_1 | 0.6384 | 0.0000 |  |
| Zooplankton | Sacramento | hcope\_1 | ~~ | estfish\_bsmt\_1 | 0.2948 | 0.0000 |  |
| Zooplankton | Sacramento | clad\_1 | ~~ | clad\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | Sacramento | clad\_1 | ~~ | amphi\_1 | 0.0988 | 0.0000 |  |
| Zooplankton | Sacramento | clad\_1 | ~~ | rotif\_1 | 0.3174 | 0.0000 |  |
| Zooplankton | Sacramento | clad\_1 | ~~ | corbic\_1 | 0.0639 | 0.0000 |  |
| Zooplankton | Sacramento | clad\_1 | ~~ | flow | 0.3619 | 0.0000 |  |
| Zooplankton | Sacramento | clad\_1 | ~~ | turbid | -0.0777 | 0.0000 |  |
| Zooplankton | Sacramento | clad\_1 | ~~ | temp | -0.0825 | 0.0000 |  |
| Zooplankton | Sacramento | clad\_1 | ~~ | pcope\_1 | -0.1996 | 0.0000 |  |
| Zooplankton | Sacramento | clad\_1 | ~~ | mysid\_1 | -0.3593 | 0.0000 |  |
| Zooplankton | Sacramento | clad\_1 | ~~ | estfish\_bsmt\_1 | -0.2134 | 0.0000 |  |
| Zooplankton | Sacramento | amphi\_1 | ~~ | amphi\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | Sacramento | amphi\_1 | ~~ | rotif\_1 | -0.0998 | 0.0000 |  |
| Zooplankton | Sacramento | amphi\_1 | ~~ | corbic\_1 | 0.1414 | 0.0000 |  |
| Zooplankton | Sacramento | amphi\_1 | ~~ | flow | 0.1215 | 0.0000 |  |
| Zooplankton | Sacramento | amphi\_1 | ~~ | turbid | 0.1530 | 0.0000 |  |
| Zooplankton | Sacramento | amphi\_1 | ~~ | temp | -0.0645 | 0.0000 |  |
| Zooplankton | Sacramento | amphi\_1 | ~~ | pcope\_1 | -0.1515 | 0.0000 |  |
| Zooplankton | Sacramento | amphi\_1 | ~~ | mysid\_1 | -0.0314 | 0.0000 |  |
| Zooplankton | Sacramento | amphi\_1 | ~~ | estfish\_bsmt\_1 | 0.0404 | 0.0000 |  |
| Zooplankton | Sacramento | rotif\_1 | ~~ | rotif\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | Sacramento | rotif\_1 | ~~ | corbic\_1 | 0.0891 | 0.0000 |  |
| Zooplankton | Sacramento | rotif\_1 | ~~ | flow | 0.2436 | 0.0000 |  |
| Zooplankton | Sacramento | rotif\_1 | ~~ | turbid | -0.1848 | 0.0000 |  |
| Zooplankton | Sacramento | rotif\_1 | ~~ | temp | -0.1064 | 0.0000 |  |
| Zooplankton | Sacramento | rotif\_1 | ~~ | pcope\_1 | 0.1329 | 0.0000 |  |
| Zooplankton | Sacramento | rotif\_1 | ~~ | mysid\_1 | -0.2124 | 0.0000 |  |
| Zooplankton | Sacramento | rotif\_1 | ~~ | estfish\_bsmt\_1 | -0.1981 | 0.0000 |  |
| Zooplankton | Sacramento | corbic\_1 | ~~ | corbic\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | Sacramento | corbic\_1 | ~~ | flow | 0.0137 | 0.0000 |  |
| Zooplankton | Sacramento | corbic\_1 | ~~ | turbid | -0.0562 | 0.0000 |  |
| Zooplankton | Sacramento | corbic\_1 | ~~ | temp | -0.1736 | 0.0000 |  |
| Zooplankton | Sacramento | corbic\_1 | ~~ | pcope\_1 | 0.0532 | 0.0000 |  |
| Zooplankton | Sacramento | corbic\_1 | ~~ | mysid\_1 | -0.1027 | 0.0000 |  |
| Zooplankton | Sacramento | corbic\_1 | ~~ | estfish\_bsmt\_1 | 0.0570 | 0.0000 |  |
| Zooplankton | Sacramento | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Zooplankton | Sacramento | flow | ~~ | turbid | 0.0868 | 0.0000 |  |
| Zooplankton | Sacramento | flow | ~~ | temp | -0.2383 | 0.0000 |  |
| Zooplankton | Sacramento | flow | ~~ | pcope\_1 | -0.1934 | 0.0000 |  |
| Zooplankton | Sacramento | flow | ~~ | mysid\_1 | -0.3225 | 0.0000 |  |
| Zooplankton | Sacramento | flow | ~~ | estfish\_bsmt\_1 | -0.3306 | 0.0000 |  |
| Zooplankton | Sacramento | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Zooplankton | Sacramento | turbid | ~~ | temp | 0.0372 | 0.0000 |  |
| Zooplankton | Sacramento | turbid | ~~ | pcope\_1 | -0.2587 | 0.0000 |  |
| Zooplankton | Sacramento | turbid | ~~ | mysid\_1 | 0.2534 | 0.0000 |  |
| Zooplankton | Sacramento | turbid | ~~ | estfish\_bsmt\_1 | 0.1655 | 0.0000 |  |
| Zooplankton | Sacramento | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Zooplankton | Sacramento | temp | ~~ | pcope\_1 | 0.0725 | 0.0000 |  |
| Zooplankton | Sacramento | temp | ~~ | mysid\_1 | 0.2238 | 0.0000 |  |
| Zooplankton | Sacramento | temp | ~~ | estfish\_bsmt\_1 | 0.1404 | 0.0000 |  |
| Zooplankton | Sacramento | pcope\_1 | ~~ | pcope\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | Sacramento | pcope\_1 | ~~ | mysid\_1 | 0.2210 | 0.0000 |  |
| Zooplankton | Sacramento | pcope\_1 | ~~ | estfish\_bsmt\_1 | 0.1379 | 0.0000 |  |
| Zooplankton | Sacramento | mysid\_1 | ~~ | mysid\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | Sacramento | mysid\_1 | ~~ | estfish\_bsmt\_1 | 0.3664 | 0.0000 |  |
| Zooplankton | Sacramento | estfish\_bsmt\_1 | ~~ | estfish\_bsmt\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | San Joaquin | chla | ~ | chla\_1 | 0.2672 | 0.0637 | 0.0000 |
| Zooplankton | San Joaquin | chla | ~ | hcope\_1 | 0.1126 | 0.0631 | 0.0742 |
| Zooplankton | San Joaquin | chla | ~ | clad\_1 | 0.1581 | 0.0665 | 0.0174 |
| Zooplankton | San Joaquin | chla | ~ | rotif\_1 | -0.0981 | 0.0624 | 0.1158 |
| Zooplankton | San Joaquin | chla | ~ | corbic\_1 | 0.0128 | 0.0626 | 0.8384 |
| Zooplankton | San Joaquin | chla | ~ | flow | -0.0590 | 0.0672 | 0.3802 |
| Zooplankton | San Joaquin | chla | ~ | turbid | 0.0112 | 0.0657 | 0.8651 |
| Zooplankton | San Joaquin | chla | ~ | temp | 0.0805 | 0.0639 | 0.2076 |
| Zooplankton | San Joaquin | hcope | ~ | chla\_1 | 0.1832 | 0.0576 | 0.0015 |
| Zooplankton | San Joaquin | hcope | ~ | hcope\_1 | 0.3517 | 0.0560 | 0.0000 |
| Zooplankton | San Joaquin | hcope | ~ | pcope\_1 | -0.0004 | 0.0599 | 0.9953 |
| Zooplankton | San Joaquin | hcope | ~ | corbic\_1 | 0.1195 | 0.0587 | 0.0416 |
| Zooplankton | San Joaquin | hcope | ~ | flow | -0.1397 | 0.0599 | 0.0196 |
| Zooplankton | San Joaquin | hcope | ~ | turbid | -0.0995 | 0.0600 | 0.0974 |
| Zooplankton | San Joaquin | hcope | ~ | temp | 0.1862 | 0.0583 | 0.0014 |
| Zooplankton | San Joaquin | hcope | ~ | estfish\_bsmt\_1 | -0.1921 | 0.0587 | 0.0011 |
| Zooplankton | San Joaquin | clad | ~ | chla\_1 | 0.1214 | 0.0555 | 0.0288 |
| Zooplankton | San Joaquin | clad | ~ | clad\_1 | 0.5258 | 0.0487 | 0.0000 |
| Zooplankton | San Joaquin | clad | ~ | pcope\_1 | -0.0380 | 0.0541 | 0.4822 |
| Zooplankton | San Joaquin | clad | ~ | flow | 0.1784 | 0.0540 | 0.0010 |
| Zooplankton | San Joaquin | clad | ~ | turbid | -0.0475 | 0.0557 | 0.3937 |
| Zooplankton | San Joaquin | clad | ~ | temp | 0.1086 | 0.0545 | 0.0462 |
| Zooplankton | San Joaquin | clad | ~ | estfish\_bsmt\_1 | -0.0909 | 0.0533 | 0.0880 |
| Zooplankton | San Joaquin | amphi | ~ | chla\_1 | -0.0310 | 0.0661 | 0.6389 |
| Zooplankton | San Joaquin | amphi | ~ | amphi\_1 | 0.2139 | 0.0647 | 0.0009 |
| Zooplankton | San Joaquin | amphi | ~ | flow | -0.0053 | 0.0669 | 0.9372 |
| Zooplankton | San Joaquin | amphi | ~ | turbid | 0.1600 | 0.0673 | 0.0174 |
| Zooplankton | San Joaquin | amphi | ~ | temp | 0.0851 | 0.0669 | 0.2036 |
| Zooplankton | San Joaquin | amphi | ~ | estfish\_bsmt\_1 | 0.0488 | 0.0681 | 0.4736 |
| Zooplankton | San Joaquin | rotif | ~ | chla\_1 | 0.0341 | 0.0649 | 0.5991 |
| Zooplankton | San Joaquin | rotif | ~ | rotif\_1 | 0.1144 | 0.0632 | 0.0704 |
| Zooplankton | San Joaquin | rotif | ~ | flow | 0.3039 | 0.0616 | 0.0000 |
| Zooplankton | San Joaquin | rotif | ~ | turbid | -0.0721 | 0.0653 | 0.2694 |
| Zooplankton | San Joaquin | rotif | ~ | temp | 0.0015 | 0.0661 | 0.9821 |
| Zooplankton | San Joaquin | rotif | ~ | estfish\_bsmt\_1 | 0.1726 | 0.0649 | 0.0078 |
| Zooplankton | San Joaquin | pcope | ~ | chla\_1 | 0.2025 | 0.0604 | 0.0008 |
| Zooplankton | San Joaquin | pcope | ~ | hcope\_1 | -0.0537 | 0.0594 | 0.3659 |
| Zooplankton | San Joaquin | pcope | ~ | clad\_1 | 0.0816 | 0.0624 | 0.1910 |
| Zooplankton | San Joaquin | pcope | ~ | pcope\_1 | 0.4463 | 0.0532 | 0.0000 |
| Zooplankton | San Joaquin | pcope | ~ | corbic\_1 | -0.0524 | 0.0580 | 0.3657 |
| Zooplankton | San Joaquin | pcope | ~ | flow | 0.0259 | 0.0624 | 0.6781 |
| Zooplankton | San Joaquin | pcope | ~ | turbid | -0.0739 | 0.0618 | 0.2314 |
| Zooplankton | San Joaquin | pcope | ~ | temp | 0.0111 | 0.0605 | 0.8546 |
| Zooplankton | San Joaquin | pcope | ~ | estfish\_bsmt\_1 | -0.0463 | 0.0612 | 0.4494 |
| Zooplankton | San Joaquin | chla | ~~ | chla | 0.8404 | 0.0441 | 0.0000 |
| Zooplankton | San Joaquin | hcope | ~~ | hcope | 0.6963 | 0.0487 | 0.0000 |
| Zooplankton | San Joaquin | clad | ~~ | clad | 0.5961 | 0.0464 | 0.0000 |
| Zooplankton | San Joaquin | amphi | ~~ | amphi | 0.9043 | 0.0375 | 0.0000 |
| Zooplankton | San Joaquin | rotif | ~~ | rotif | 0.8660 | 0.0421 | 0.0000 |
| Zooplankton | San Joaquin | pcope | ~~ | pcope | 0.7176 | 0.0478 | 0.0000 |
| Zooplankton | San Joaquin | chla | ~~ | hcope | 0.1084 | 0.0682 | 0.1120 |
| Zooplankton | San Joaquin | chla | ~~ | clad | 0.2741 | 0.0638 | 0.0000 |
| Zooplankton | San Joaquin | chla | ~~ | amphi | -0.0085 | 0.0690 | 0.9018 |
| Zooplankton | San Joaquin | chla | ~~ | rotif | 0.1316 | 0.0678 | 0.0523 |
| Zooplankton | San Joaquin | chla | ~~ | pcope | -0.0534 | 0.0688 | 0.4379 |
| Zooplankton | San Joaquin | hcope | ~~ | clad | 0.0735 | 0.0686 | 0.2839 |
| Zooplankton | San Joaquin | hcope | ~~ | amphi | 0.0292 | 0.0689 | 0.6724 |
| Zooplankton | San Joaquin | hcope | ~~ | rotif | 0.0194 | 0.0690 | 0.7784 |
| Zooplankton | San Joaquin | hcope | ~~ | pcope | 0.0380 | 0.0689 | 0.5812 |
| Zooplankton | San Joaquin | clad | ~~ | amphi | -0.1240 | 0.0679 | 0.0681 |
| Zooplankton | San Joaquin | clad | ~~ | rotif | 0.0443 | 0.0689 | 0.5203 |
| Zooplankton | San Joaquin | clad | ~~ | pcope | 0.1267 | 0.0679 | 0.0620 |
| Zooplankton | San Joaquin | amphi | ~~ | rotif | 0.0641 | 0.0687 | 0.3512 |
| Zooplankton | San Joaquin | amphi | ~~ | pcope | 0.0349 | 0.0689 | 0.6124 |
| Zooplankton | San Joaquin | rotif | ~~ | pcope | 0.2498 | 0.0647 | 0.0001 |
| Zooplankton | San Joaquin | chla\_1 | ~~ | chla\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | San Joaquin | chla\_1 | ~~ | hcope\_1 | 0.1451 | 0.0000 |  |
| Zooplankton | San Joaquin | chla\_1 | ~~ | clad\_1 | 0.2464 | 0.0000 |  |
| Zooplankton | San Joaquin | chla\_1 | ~~ | rotif\_1 | 0.0859 | 0.0000 |  |
| Zooplankton | San Joaquin | chla\_1 | ~~ | corbic\_1 | -0.0408 | 0.0000 |  |
| Zooplankton | San Joaquin | chla\_1 | ~~ | flow | -0.0416 | 0.0000 |  |
| Zooplankton | San Joaquin | chla\_1 | ~~ | turbid | 0.0692 | 0.0000 |  |
| Zooplankton | San Joaquin | chla\_1 | ~~ | temp | 0.0770 | 0.0000 |  |
| Zooplankton | San Joaquin | chla\_1 | ~~ | pcope\_1 | -0.0251 | 0.0000 |  |
| Zooplankton | San Joaquin | chla\_1 | ~~ | estfish\_bsmt\_1 | 0.0864 | 0.0000 |  |
| Zooplankton | San Joaquin | chla\_1 | ~~ | amphi\_1 | 0.0104 | 0.0000 |  |
| Zooplankton | San Joaquin | hcope\_1 | ~~ | hcope\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | San Joaquin | hcope\_1 | ~~ | clad\_1 | 0.0937 | 0.0000 |  |
| Zooplankton | San Joaquin | hcope\_1 | ~~ | rotif\_1 | -0.1050 | 0.0000 |  |
| Zooplankton | San Joaquin | hcope\_1 | ~~ | corbic\_1 | 0.0913 | 0.0000 |  |
| Zooplankton | San Joaquin | hcope\_1 | ~~ | flow | -0.2094 | 0.0000 |  |
| Zooplankton | San Joaquin | hcope\_1 | ~~ | turbid | -0.0037 | 0.0000 |  |
| Zooplankton | San Joaquin | hcope\_1 | ~~ | temp | -0.0186 | 0.0000 |  |
| Zooplankton | San Joaquin | hcope\_1 | ~~ | pcope\_1 | 0.1186 | 0.0000 |  |
| Zooplankton | San Joaquin | hcope\_1 | ~~ | estfish\_bsmt\_1 | -0.0519 | 0.0000 |  |
| Zooplankton | San Joaquin | hcope\_1 | ~~ | amphi\_1 | 0.0180 | 0.0000 |  |
| Zooplankton | San Joaquin | clad\_1 | ~~ | clad\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | San Joaquin | clad\_1 | ~~ | rotif\_1 | 0.1367 | 0.0000 |  |
| Zooplankton | San Joaquin | clad\_1 | ~~ | corbic\_1 | 0.0664 | 0.0000 |  |
| Zooplankton | San Joaquin | clad\_1 | ~~ | flow | 0.1692 | 0.0000 |  |
| Zooplankton | San Joaquin | clad\_1 | ~~ | turbid | -0.1476 | 0.0000 |  |
| Zooplankton | San Joaquin | clad\_1 | ~~ | temp | 0.0048 | 0.0000 |  |
| Zooplankton | San Joaquin | clad\_1 | ~~ | pcope\_1 | 0.2513 | 0.0000 |  |
| Zooplankton | San Joaquin | clad\_1 | ~~ | estfish\_bsmt\_1 | -0.0298 | 0.0000 |  |
| Zooplankton | San Joaquin | clad\_1 | ~~ | amphi\_1 | -0.2041 | 0.0000 |  |
| Zooplankton | San Joaquin | rotif\_1 | ~~ | rotif\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | San Joaquin | rotif\_1 | ~~ | corbic\_1 | 0.0933 | 0.0000 |  |
| Zooplankton | San Joaquin | rotif\_1 | ~~ | flow | 0.1607 | 0.0000 |  |
| Zooplankton | San Joaquin | rotif\_1 | ~~ | turbid | -0.0195 | 0.0000 |  |
| Zooplankton | San Joaquin | rotif\_1 | ~~ | temp | 0.1038 | 0.0000 |  |
| Zooplankton | San Joaquin | rotif\_1 | ~~ | pcope\_1 | 0.2522 | 0.0000 |  |
| Zooplankton | San Joaquin | rotif\_1 | ~~ | estfish\_bsmt\_1 | -0.0309 | 0.0000 |  |
| Zooplankton | San Joaquin | rotif\_1 | ~~ | amphi\_1 | 0.0162 | 0.0000 |  |
| Zooplankton | San Joaquin | corbic\_1 | ~~ | corbic\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | San Joaquin | corbic\_1 | ~~ | flow | 0.1218 | 0.0000 |  |
| Zooplankton | San Joaquin | corbic\_1 | ~~ | turbid | 0.1504 | 0.0000 |  |
| Zooplankton | San Joaquin | corbic\_1 | ~~ | temp | -0.0930 | 0.0000 |  |
| Zooplankton | San Joaquin | corbic\_1 | ~~ | pcope\_1 | 0.0398 | 0.0000 |  |
| Zooplankton | San Joaquin | corbic\_1 | ~~ | estfish\_bsmt\_1 | -0.0287 | 0.0000 |  |
| Zooplankton | San Joaquin | corbic\_1 | ~~ | amphi\_1 | 0.0550 | 0.0000 |  |
| Zooplankton | San Joaquin | flow | ~~ | flow | 1.0000 | 0.0000 |  |
| Zooplankton | San Joaquin | flow | ~~ | turbid | 0.0945 | 0.0000 |  |
| Zooplankton | San Joaquin | flow | ~~ | temp | -0.0543 | 0.0000 |  |
| Zooplankton | San Joaquin | flow | ~~ | pcope\_1 | 0.0592 | 0.0000 |  |
| Zooplankton | San Joaquin | flow | ~~ | estfish\_bsmt\_1 | -0.1034 | 0.0000 |  |
| Zooplankton | San Joaquin | flow | ~~ | amphi\_1 | -0.0928 | 0.0000 |  |
| Zooplankton | San Joaquin | turbid | ~~ | turbid | 1.0000 | 0.0000 |  |
| Zooplankton | San Joaquin | turbid | ~~ | temp | -0.0363 | 0.0000 |  |
| Zooplankton | San Joaquin | turbid | ~~ | pcope\_1 | -0.1606 | 0.0000 |  |
| Zooplankton | San Joaquin | turbid | ~~ | estfish\_bsmt\_1 | 0.1398 | 0.0000 |  |
| Zooplankton | San Joaquin | turbid | ~~ | amphi\_1 | 0.2021 | 0.0000 |  |
| Zooplankton | San Joaquin | temp | ~~ | temp | 1.0000 | 0.0000 |  |
| Zooplankton | San Joaquin | temp | ~~ | pcope\_1 | 0.1389 | 0.0000 |  |
| Zooplankton | San Joaquin | temp | ~~ | estfish\_bsmt\_1 | 0.1919 | 0.0000 |  |
| Zooplankton | San Joaquin | temp | ~~ | amphi\_1 | -0.0479 | 0.0000 |  |
| Zooplankton | San Joaquin | pcope\_1 | ~~ | pcope\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | San Joaquin | pcope\_1 | ~~ | estfish\_bsmt\_1 | 0.0890 | 0.0000 |  |
| Zooplankton | San Joaquin | pcope\_1 | ~~ | amphi\_1 | -0.0226 | 0.0000 |  |
| Zooplankton | San Joaquin | estfish\_bsmt\_1 | ~~ | estfish\_bsmt\_1 | 1.0000 | 0.0000 |  |
| Zooplankton | San Joaquin | estfish\_bsmt\_1 | ~~ | amphi\_1 | 0.0123 | 0.0000 |  |
| Zooplankton | San Joaquin | amphi\_1 | ~~ | amphi\_1 | 1.0000 | 0.0000 |  |