

Supplementary Table 1. Coordinates of sampling sites in six stations in the Lake Toba.

Number of sampling sites	Latitude	Longitude
Control		
6	2.714353 N	98.873467 E
18	2.742281 N	98.845014 E
19	2.742392 N	98.844586 E
20	2.727653 N	98.862397 E
42	2.744114 N	98.698375 E
43	2.742944 N	98.697550 E
59	2.435433 N	99.149372 E
60	2.434806 N	99.148111 E
Settlements		
3	2.654964 N	98.933403 E
10	2.875086 N	98.673939 E
11	2.873536 N	98.693889 E
14	2.796389 N	98.787867 E
15	2.797000 N	98.787189 E
21	2.656189 N	98.863214 E
22	2.654347 N	98.863822 E
29	2.754528 N	98.744800 E
30	2.758642 N	98.734319 E
31	2.617431 N	98.687986 E
12	2.822978 N	98.751386 E
13	2.822144 N	98.749447 E
Hospitality		
1	2.666875 N	98.936372 E
2	2.666953 N	98.936111 E
27	2.677639 N	98.855708 E
28	2.679000 N	98.852439 E

44	2.665025 N	98.927531 E
45	2.664172 N	98.927547 E
Community floating net cages		
4	2.655081 N	98.934408 E
5	2.675233 N	98.929347 E
32	2.619000 N	98.690117 E
33	2.619964 N	98.690064 E
37	2.598694 N	98.687086 E
38	2.598056 N	98.686986 E
39	2.599967 N	98.686675 E
Company floating net cages		
16	2.769214 N	98.813886 E
17	2.769536 N	98.814761 E
48	2.641681 N	98.882061 E
49	2.637239 N	98.885231 E
50	2.619417 N	98.896192 E
51	2.614933 N	98.898075 E
52	2.573544 N	98.917869 E
53	2.566811 N	98.921136 E
54	2.566006 N	98.946506 E
55	2.575097 N	98.937025 E
River mouths		
23	2.658953 N	98.855878 E
24	2.660364 N	98.856736 E
25	2.662742 N	98.852572 E
26	2.664158 N	98.857322 E
34	2.617850 N	98.687889 E
35	2.599492 N	98.685836 E
36	2.599583 N	98.685853 E
40	2.640578 N	98.682386 E

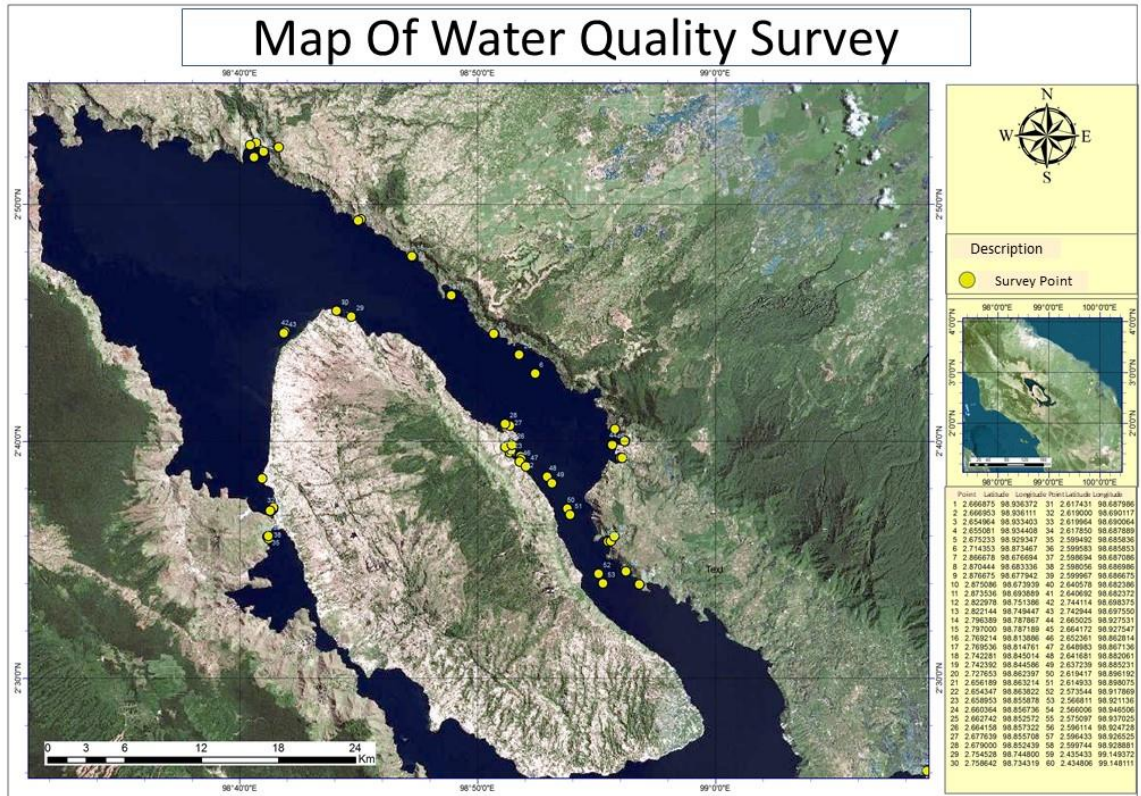
41	2.640692 N	98.682372 E
46	2.652361 N	98.862814 E
47	2.648983 N	98.867136 E
56	2.596114 N	98.924728 E
57	2.596433 N	98.926525 E
58	2.599744 N	98.928881 E

Supplementary Table 2. Determination of trophic status of the Lake Toba according to water quality parameters.

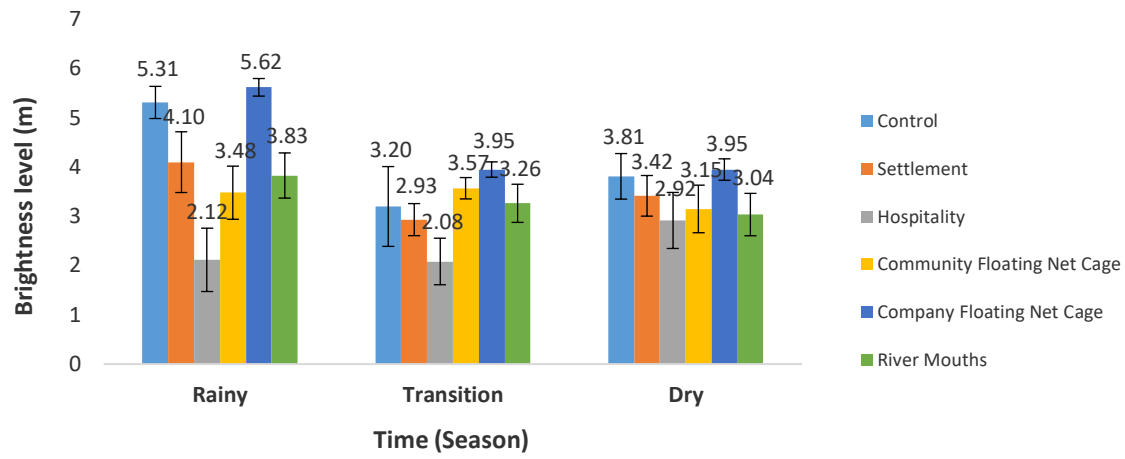
Trophic status	Total nitrogen ($\mu\text{g L}^{-1}$)	Total phosphorous ($\mu\text{g L}^{-1}$)	Chlorophyll a ($\mu\text{g L}^{-1}$)	Brighthness (m)
Oligotrophic	≤ 650	≤ 10	≤ 2.0	≤ 10
Mesotrophic	≤ 750	≤ 30	≤ 5.0	≤ 4
Eutrophic	≤ 1900	≤ 100	≤ 15	≤ 2.5
Hipereutrophic	≤ 1900	≤ 100	≤ 200	≤ 2.5

Total nitrogen, total phosphorus, chlorophyll-a, and brighthness were shown in average value. Source:

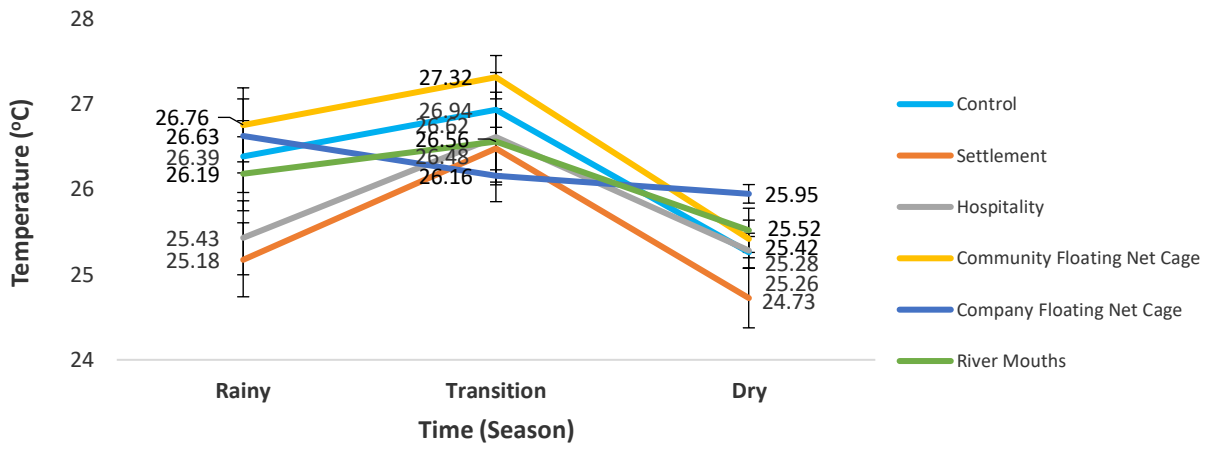
KLH (2009), modified from OECD (1982), MAB (1989), UNEP-ILEC (2001)



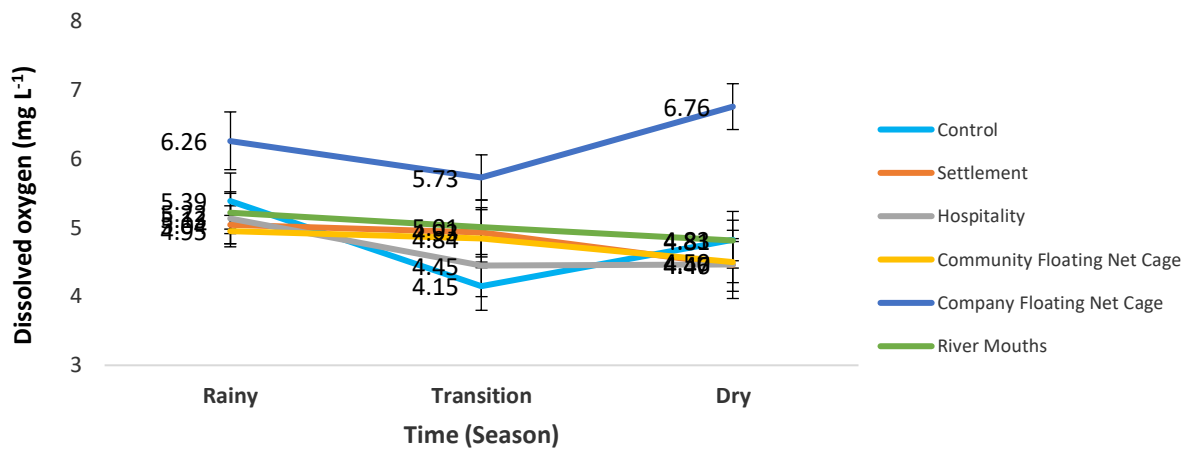
Supplementary Figure 1. Sixty sampling sites representing six stations in Lake Toba.



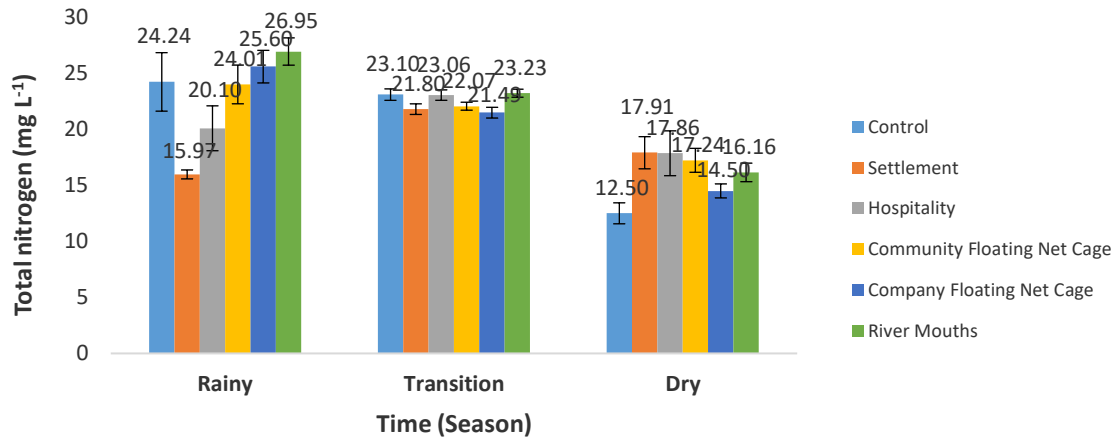
Supplementary Figure 2. Water brightness at six Lake Toba observation stations in each climatic season.



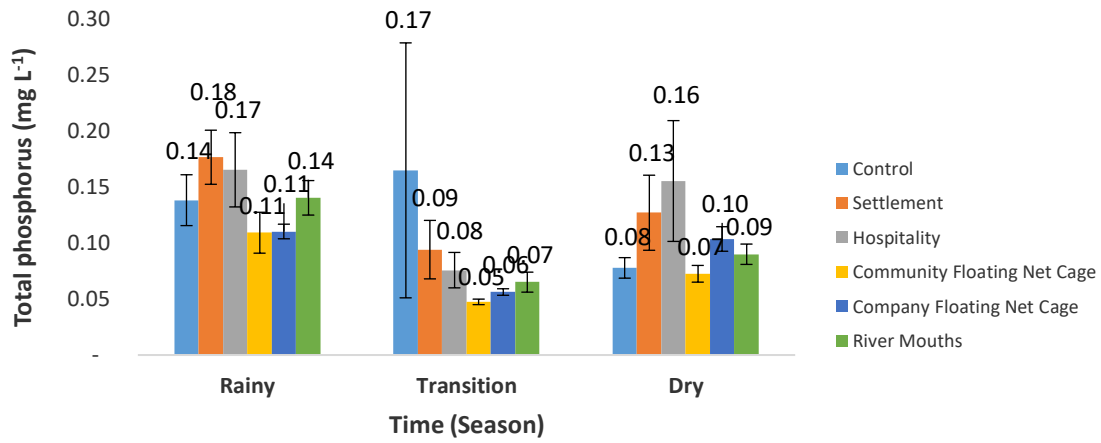
Supplementary Figure 3. Water temperature at six Lake Toba observation stations in each climatic season.



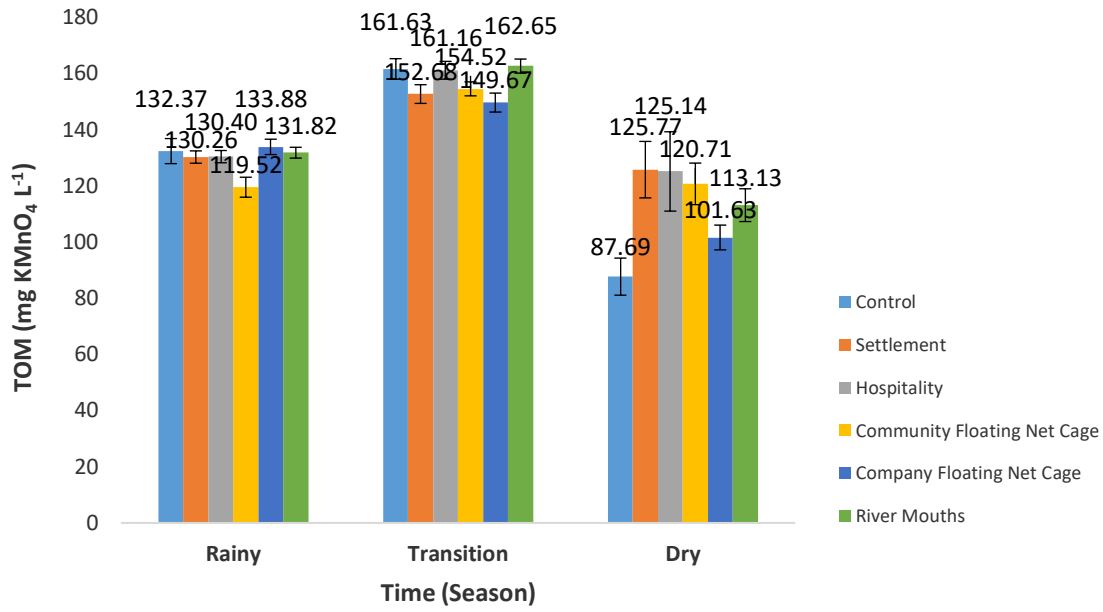
Supplementary Figure 4. Dissolved oxygen at six Lake Toba observation stations in each climatic season.



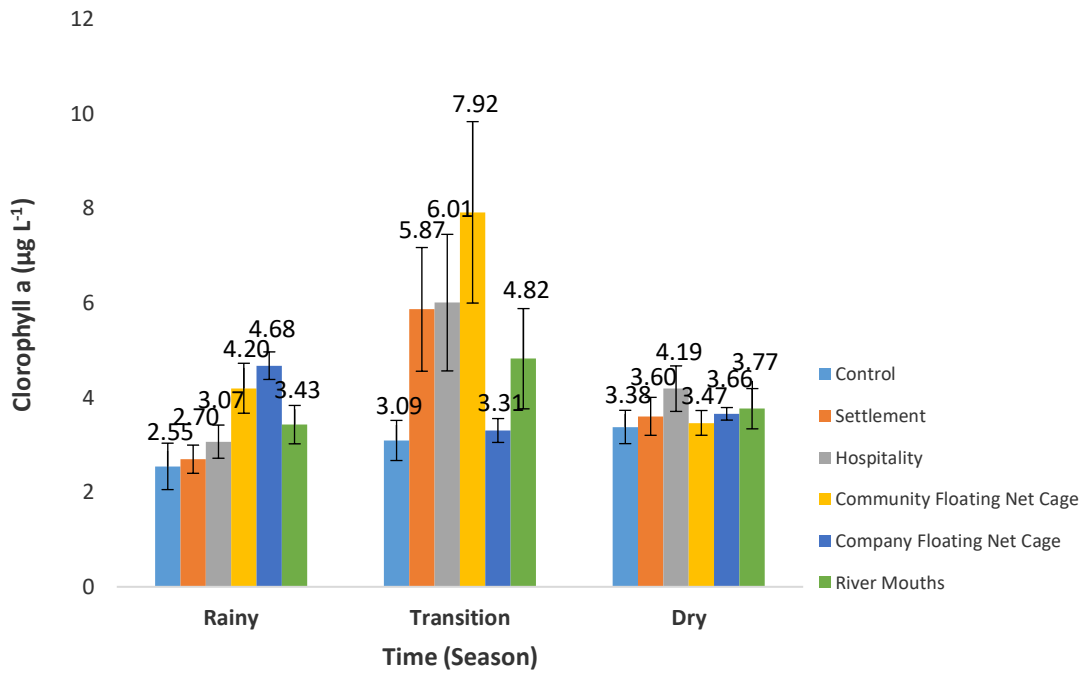
Supplementary Figure 5. Total nitrogen at six Lake Toba observation stations in each climatic season.



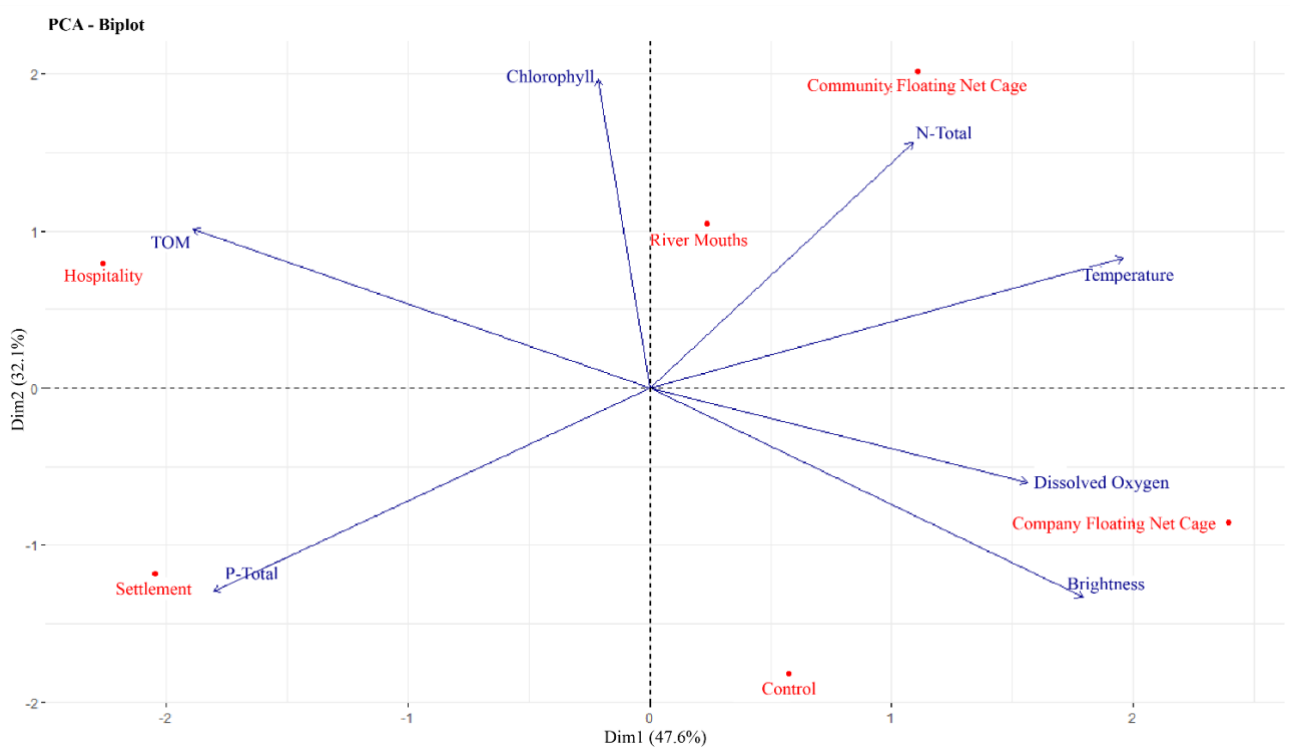
Supplementary Figure 6. Total phosphorus concentrations at six Lake Toba observation stations in each climatic season.



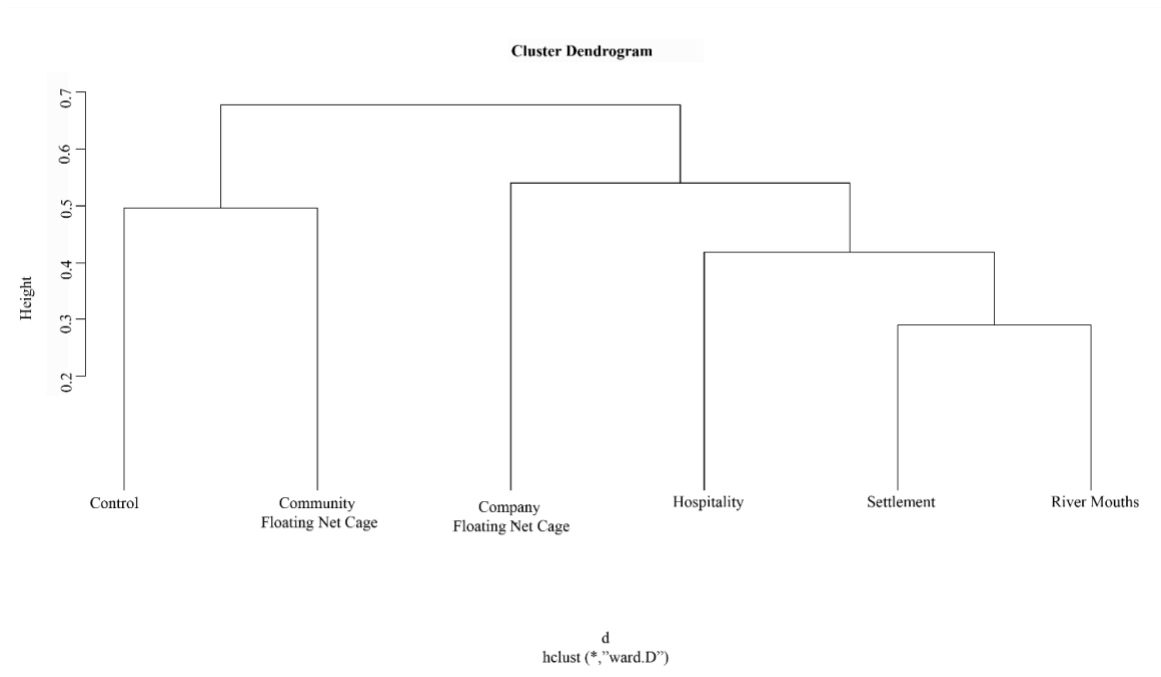
Supplementary Figure 7. Total organic matter (TOM) at six Lake Toba observation stations in each climatic season.



Supplementary Figure 8. Chlorophyll-a concentrations at six Lake Toba observation stations in each climatic season.



Supplementary Figure 9. Principal component analysis of water quality variables recorded at the six observation stations.



Supplementary Figure 10. Cluster dendrogram of six observation stations according to water quality variables using Canberra distance.