Appendix 4.9

Phytoplankton species composition and distribution in the study area (Dry season)

Taxa	SW1	SW2	SW3	SWC1	SWC2	Total	%Total
Bacillariophyta							
Navicula spp	0	0	0	0	13	**13**	
Nitzschia spp	1	0	0	0	7	**8**	
Fragilaria crotonensis	0	0	0	0	4	**4**	
Cyclotella spp	0	2	75	2	2	**81**	
Melosira spp	0	0	0	0	17	**17**	
Synedra spp	1	1	0	0	0	**2**	
Subtotal	**2**	**3**	**75**	**2**	**43**	**125**	29.83
Chlorophyta							
Chlorella spp	0	3	12	0	0	**15**	
Rhizoclonium spp	0	0	0	0	37	**37**	
Subtotal	**0**	**3**	**12**	**0**	**37**	**52**	12.41
Cyanophyta							
Coelosphyaerium spp	0	22	48	172	0	242	
Subtotal	**0**	**22**	**48**	**172**	**0**	**242**	57.76
Taxa_S	2	4	3	2	6		
Individuals (cells/1000L)	2	28	135	174	80		
Shannon_H	0.69	0.74	0.91	0.06	1.44		
Evenness_e^H/S	1	0.50	0.82	0.08	0.80		
Margalef	1.44	0.90	0.41	0.19	1.14		
Dominance_D	1	0.38	0.56	0.02	0.71		

Source: Field survey, 2011

Phytoplankton species composition and distribution in the study area (Wet season)

Taxa	SW1	SW2	SW3	SWC1	SWC2	Total	%Total
Class: Bacillariophyceae							
Amphora ovalis	1	5	1	0	1	**8**	
Amphora spiroides	0	0	0	1	0	**1**	
Nitzschia frigida	5	0	1	0	1	**7**	
Nitzschia gracilis	0	1	5	1	1	**8**	
Nitzschia clausii	1	0	0	1	1	**3**	
Nitzschia closterium	0	7	1	1	0	**9**	
Cyclotella stigmata	0	1	0	0	5	**6**	
C. operculata	1	0	1	0	1	**3**	
C. centralis	0	1	0	1	0	**2**	
Melosira varians	1	0	1	0	1	**3**	
Navicula gracilis	1	5	0	0	0	**6**	
N. cuspidate	3	1	1	5	1	**11**	
N. ovalis	1	0	0	0	1	**2**	
Synedra ulna	2	0	0	0	3	**5**	
Tabellaria fenestrata	1	3	1	2	1	**8**	
SUBTOTAL	**17**	**24**	**12**	**12**	**17**	**82**	**42.27**
Class: Cyanophyceae							
Oscillatoria indica	3	0	1	0	1	**5**	
O. limnosa	0	1	1	2	1	**5**	
O. major	1	0	3	1	0	**5**	
O. obscura	0	1	0	0	1	**2**	
O. miniata	1	1	1	2	0	**5**	
Anabaena affinis	0	1	0	0	1	**2**	
A. flos-aquae	1	0	1	0	0	**2**	
A. laxa	1	1	0	1	1	**4**	
A. limnetica	0	3	1	0	1	**5**	
A. affinis	1	0	1	1	0	**3**	
SUBTOTAL	**8**	**8**	**9**	**7**	**6**	**38**	**19.59**
Class: Chlorophyceae							
Closterium gracile	0	2	0	2	2	**6**	
C. littorale	6	0	0	0	0	**6**	
C. navicula	0	3	0	0	3	**6**	
C.lineatum	3	0	6	1	1	**11**	
C. parvulum	0	6	0	0	0	**6**	
C. kuetzingii	4	0	0	2	0	**6**	
Eudorina elegans	0	1	0	0	1	**2**	
E. cylindrica	0	0	3	1	0	**4**	
Scenedesmus acuminatus	0	0	0	0	0	**0**	
S. quadricauda	3	1	0	0	0	**4**	

Taxa	**SW1**	**SW2**	**SW3**	**SWC1**	**SWC2**	**Total**	**%Total**
Cosmarium sp	1	3	0	0	0	**4**	
Micrasterias apiculata	0	1	0	0	1	**2**	
Micrasterias radiata	3	2	2	0	2	**9**	
SUBTOTAL	**20**	**19**	**11**	**6**	**10**	**66**	**34.02**
Class: Euglenophyceae							
Euglena caudata	1	0	5	1	1	**8**	
SUBTOTAL	**1**	**0**	**5**	**1**	**1**	**8**	**4.12**
SUMMARY							
Taxa_S	23	22	19	17	24		
Individuals (cells/1000L)	46	51	37	26	34		
Shannon_H	2.91	2.83	2.67	2.68	3.01		
Evenness_e^H/S	0.93	0.92	0.91	0.96	0.97		
Margalef	5.75	5.34	4.98	4.91	6.52		
Dominance_D	0.95	0.95	0.94	0.95	0.97		

Source: Field survey, 2017

Zooplankton species composition and distribution in the study area (Dry season)

Taxa	SW1	SW2	SW3	SWC1	SWC2	Total	%Total
Order: Copepoda							
Copepod nauplius	0	0	0	2	4	6	
Subtotal	**0**	**0**	**0**	**2**	**4**	**6**	**20.69**
Rotifera							
Keratella cochlearis	0	0	0	9	11	20	
Kellicotia spp	0	0	0	1	0	1	
Subtotal	**0**	**0**	**0**	**10**	**11**	**21**	**72.41**
Tintinidae							
Tintinid larva	0	0	0	0	2	2	
Subtotal	0	0	0	0	2	2	**6.90**
Taxa_S	0	0	0	3	3		
Individuals (cells/100L)	0	0	0	12	17		
Shannon_H	0	0	0	0.72	0.87		
Evenness_e^H/S	0	0	0	0.62	0.78		
Margalef	0	0	0	0.80	0.71		
Dominance_D	0	0	0	0.44	0.54		

Source: Field survey, 2011

Zooplankton species composition and distribution in the study area (Wet season)

Taxa	SW1	SW2	SW3	SWC1	SWC2	Total	%Total
Order: Cladocera							
Alona sp	0	0	0	1	0	1	
Bosmina affinis	1	0	1	0	1	3	
Bosmina diaphana	1	1	0	1	0	3	
Polyphemus sp	5	0	1	0	1	7	
Moina sp	1	0	0	1	0	2	
SUBTOTAL	**8**	**1**	**2**	**3**	**2**	16	**22.86**
Order: Copepoda							
Mesocyclops sp	1	0	0	0	3	4	
Diaptomus sp	1	5	1	0	0	7	
Eucyclops sp	0	0	0	1	0	1	
Metacyclops sp	1	5	0	0	1	7	
SUBTOTAL	**3**	**10**	**1**	**1**	**4**	**19**	**27.14**
Order: Rotifera							
Lecane sp	0	5	1	1	1	8	
Euchlanis sp	0	4	1	0	1	6	
Collotheca sp	5	0	0	1	0	6	
Keratella sp	1	0	1	1	1	4	
Asplanchna sp	3	1	0	1	1	6	
SUBTOTAL	**9**	**10**	**3**	**4**	**4**	**30**	**42.86**
Cichlidae							
Tilapia sp (fry)	0	1	3	0	1	5	
SUBTOTAL	**0**	**1**	**3**	**0**	**1**	**5**	**7.14**
Taxa_S	10	7	7	8	9		
Individuals (cells/100L)	20	22	9	8	11		
Shannon_H	2.03	1.74	1.83	2.08	2.10		
Evenness_e^H/S	0.87	0.90	0.96	1	0.97		
Margalef	3.00	1.94	2.73	3.37	3.34		
Dominance_D	0.88	0.84	0.92	1	0.95		

Benthic invertebrates composition and distribution in the study area (Dry season)

Taxa	SW1	SW2	SW3	SWC1	SWC2	Total	%Total
CLASS: OLIGOCHAETA							
Oligochaete worm	0	0	0	3	0	3	
SUBTOTAL	0	0	0	3	0	3	25
CLASS: INSECTA							
Chaoborus larvae	0	0	0	0	2	2	
Chironomus larvae	0	0	0	0	6	6	
Simulium larvae	0	0	0	0	1	1	
SUBTOTAL	0	0	0	0	9	9	75
Taxa_S	0	0	0	1	3		
Individuals (cells/m^2)	0	0	0	3	9		
Shannon_H	0	0	0	0	0.85		
Evenness_e^H/S	0	0	0	0	0.74		
Margalef	0	0	0	0	0.91		
Dominance_D	0	0	0	0	0.56		

Source: Field survey, 2011

Benthic invertebrates composition and distribution in the study area (Wet season)

Taxa	Up-Stream	Mid-Stream	Down Stream	Agbonchia Control1	Rumukrushi Control2	Total	%Total
CLASS: OLIGOCHAETA							
Dero obtusa	2	0	0	0	1	3	
Ophidonias sp	0	0	1	0	0	1	
Dugesia polychroa	1	0	0	0	1	2	
Lumbricus sp	1	0	1	0	0	2	
SUBTOTAL	4	0	2	0	2	8	**38.10**
CLASS: INSECTA							
Chironomous sp	0	1	0	0	1	2	
Cordulia sp	0	2	0	0	0	2	
Donacia sp	1	0	0	1	1	3	
Dytiscus sp	0	0	1	0	0	1	
Poissonia sp	1	0	0	1	1	3	
SUBTOTAL	2	3	1	2	3	11	**52.38**
Nauplii	0	1	0	0	1	2	
SUBTOTAL	0	1	0	0	1	2	**9.52**
Taxa_S	5	3	3	2	6		
Individuals (cells/m^2)	6	4	3	2	6		
Shannon_H	1.56	1.04	1.10	0.69	1.79		
Evenness_e^H/S	1	1	1	1	1		
Margalef	2.23	1.44	1.82	1.44	2.79		
Dominance_D	0.93	0.83	1	1	1		

Source: Field survey, 2017