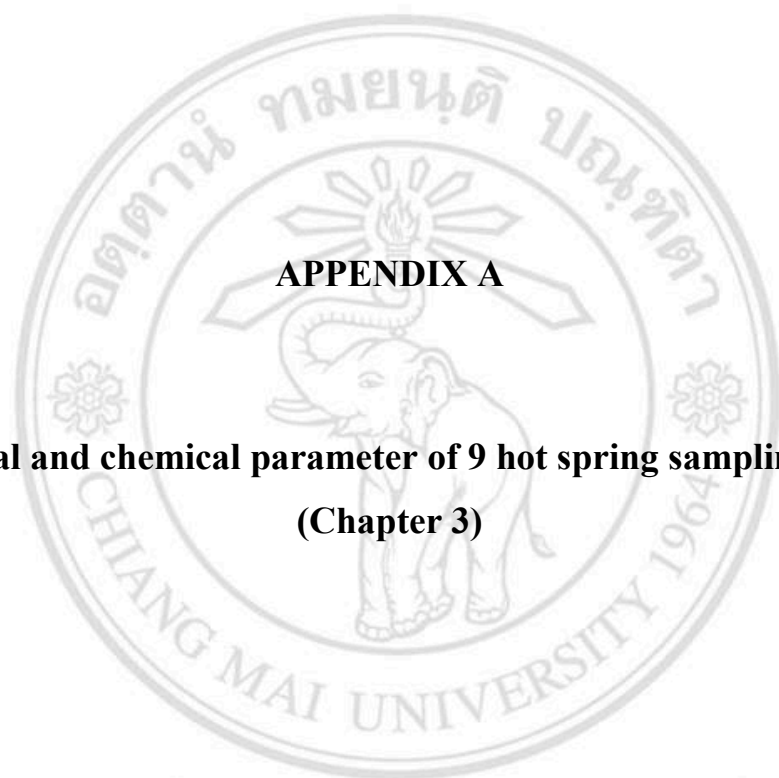




APPENDIX A

**Physical and chemical parameter of 9 hot spring sampling sites
(Chapter 3)**

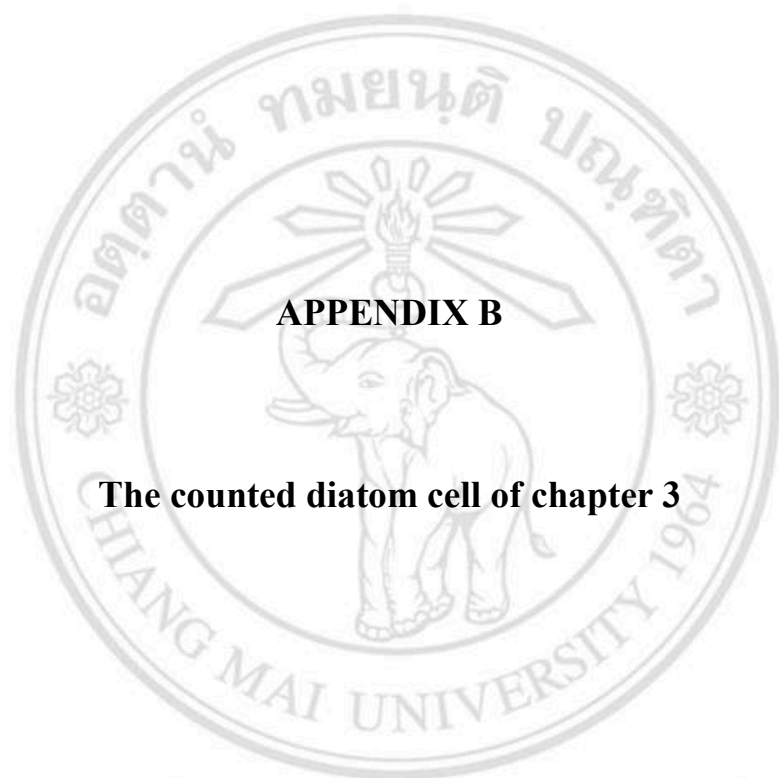
ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Table 6.1 The results of physico-chemical in wet season

W	Water temp (°C)	pH	Conductivity (µs/cm)	NO ₃ -N (mg/l)	NH ₄ -N (mg/l)	SRP (mg/l)	SiO ₂ (mg/l)	S ²⁻ (mg/l)	Alkalinity (mg/l CaCO ₃)	Total hardness (mg/l CaCO ₃)	Substrate
SK1	37.8	8.91	636	1.2	0.28	1.07	108.8	0.007	733	112	gravels, sand, soil sediment, artificial substrate
SK2	43.4	8.84	670	1	0.19	0.93	110	0.021	689	98	
SK3	44.8	8.33	702	1.2	0.22	1	110.4	0.011	655	109	
TPN1	39	8.59	496	0.6	0.09	0.86	145.2	ND	426	58	cobbles, gravels, sand, leaves
TPN2	41.3	8.5	497	0.8	0.13	0.84	67.1	ND	421	62	
TPN3	45.5	8.65	528	0.9	0.11	0.6	59.6	ND	413	74	
TP1	38	8.33	380	0.8	0.21	0.41	70.3	0	290	58	gravels, sand, soil sediment, leaves
TP2	44.5	8.66	391	0.8	0.2	0.2	71.1	ND	300	72	
TP3	49	8.12	366	0.7	0.18	0.23	56.9	ND	283	61	
CHD1	37	7.88	686	0.8	0.45	0.21	54.6	0.001	844	90	rocks, gravels, sand
CHD2	45	8.03	715	0.8	0.49	0.35	55.9	0	856	76	
CHD3	47.5	7.46	673	1	0.5	0.55	57.2	0.001	818	92	
JS1	38.1	8.41	453	0.9	0.49	0.83	84.3	0.003	446	102	gravels, sand, small rocks
JS2	39.8	8.48	495	0.8	0.39	0.8	93.9	0.004	468	135	
JS3	46.5	7.82	541	0.8	0.53	0.6	97.8	0.006	500	110	
MJ2	42	8.16	733	0.7	0.15	0.2	52.2	0.001	442	72	rocks, soil sediment, artificial substrate
MJ3	45.7	8.81	764	0.5	0.22	0.11	76.1	0.001	380	70	
SL2	41.9	7.89	968	0.5	0.38	0.29	57.9	0.001	390	103	gravels, sand
SM1	38.6	7.12	462	0.1	0.14	0.05	25.2	ND	674	88	rocks, sand, soil sediment
SM2	45	7.78	536	0.5	0.22	0.03	46.8	ND	702	91	
SM3	45.8	7.88	560	0.1	0.18	0.03	30.1	ND	693	113	
NG1	38	8.16	535	0.2	0.13	0.09	28.2	0.001	151	48	gravels, rocks, sand
NG2	43.1	8.33	590	0.5	0.12	0.1	20.7	0.001	116	50	
NG3	45.1	8.14	681	0.5	0.1	0.1	33.4	0.001	128	50	

Table 6.2 The results of physico-chemical in dry season

D	Water temp (°C)	pH	Conductivity (µs/cm)	NO ₃ -N (mg/l)	NH ₄ -N (mg/l)	SRP (mg/l)	SiO ₂ (mg/l)	S ²⁻ (mg/l)	Alkalinity (mg/l CaCO ₃)	Total hardness (mg/l CaCO ₃)	Substrate
SK1	37	8.83	724	1.2	0.21	0.97	114	0.029	298	136	gravels, sand, soil sediment, artificial substrate,
SK2	41.4	8.76	715	1.1	0.24	1	131	0.024	300	119	
SK3	46	8.58	729	1.4	0.28	0.57	157	0.035	304	127	
TPN1	39	8.35	495	0.7	0.27	0.75	78.2	0.003	203	60	cobbles, gravels, sand, leaves
TPN2	43	8.49	516	1.1	0.24	0.75	76.1	0.004	207	48	
TPN3	46.5	8.4	530	1	0.29	0.61	63.8	0.003	203	96	
TP1	40	8.61	382	0.7	0.18	0.44	68	0.012	134	68	gravels, sand, soil sediment, leaves
TP2	45	8.35	406	0.9	0.18	0.61	68.9	0.008	133	52	
TP3	51	8.53	417	1.2	0.22	0.5	69.8	0.005	52	24	
CHD1	38.5	7.49	739	0.8	0.61	0.27	62.4	0.002	392	108	rocks, gravels, sand
CHD2	44	8.25	790	0.7	0.58	0.33	67.7	0.001	501	96	
CHD3	48	7.98	712	1.1	0.5	0.39	60.1	0.001	566	97	
JS1	38	8.86	421	1	0.38	0.63	126.7	0.002	435	128	gravels, sand, small rocks
JS2	43	8.32	486	0.7	0.42	0.8	99.5	0.003	481	164	
JS3	48	8.13	570	1.2	0.5	0.69	108.9	0.003	463	150	
MJ2	42.3	7.61	935	0.8	0.12	0.27	89.1	ND	322	98	rocks, soil sediment, artificial substrate
MJ3	46.3	8.24	985	0.7	0.14	0.23	90.6	0.002	360	76	
SL2	43.4	7.55	1016	0.7	0.23	0.12	65.6	ND	345	162	gravels, sand
SM1	40.4	6.86	530	0.5	0.26	0.08	24.9	ND	314	103	rocks, sand, soil sediment
SM2	44.7	6.86	752	0.3	0.29	0.03	28.1	ND	370	140	
SM3	46.7	6.98	887	0.2	0.24	0.07	30.8	ND	375	142	
NG1	38	7.87	380	0.6	0.1	0.14	33.2	0.006	145	50	gravels, rocks, sand
NG2	42	7.9	215	0.6	0.14	0.13	31.3	0.005	135	52	
NG3	46	8.02	750	0.5	0.11	0.21	40.3	0.006	200	59	



ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Table 6.3 The results of counted diatom cell in hot spring sampling sites in dry season

	SK1	SK2	SK3	TPN1	TPN2	TPN3	TP1	TP2	TP3	CHD1	CHD2	CHD3
Aulamb	0	0	0	0	0	0	0	0	0	0	0	0
Aulgra	0	5	0	0	0	0	0	0	0	0	0	0
Melvar	0	8	0	0	0	0	0	0	0	0	0	0
Achexi	150	102	89	0	0	0	0	0	0	0	0	0
Achsp	58	12	0	97	95	48	13	36	0	20	113	82
Ampmon	2	0	0	14	0	0	0	0	11	1	59	0
Ampova	0	5	0	5	0	0	0	0	0	0	22	0
Anopha	10	32	48	0	0	0	0	0	0	0	0	0
Anosp	11	0	0	0	0	0	0	0	0	90	0	0
Calaci	18	0	0	0	0	0	0	0	0	0	0	0
Cocpla	0	0	0	0	0	0	0	0	0	0	0	0
Craamb	10	0	0	2	0	0	0	0	0	72	0	96
Diacon	0	0	0	3	0	0	0	0	0	0	0	0
Diabal	122	98	0	81	30	22	64	0	0	0	0	260
Dipova	0	0	0	1	0	0	0	13	0	0	0	0
Fracro	0	8	0	0	0	0	0	0	0	0	0	0
Gomaff	7	0	0	0	18	10	0	0	0	0	0	0
Gomgra	0	0	0	5	0	0	0	0	0	0	0	0
Gompar	0	0	0	9	0	0	0	0	0	0	0	0
Halfon	19	0	0	21	0	0	50	0	0	2	0	0
Hanamp	0	0	0	1	0	0	35	3	0	1	0	0
Navgri	0	0	0	0	0	0	0	0	0	0	0	0
Navsub	0	0	0	0	0	0	0	0	0	0	0	0
Nitamp	0	19	0	0	0	0	0	0	0	0	0	0
Nitcla	0	0	0	0	0	0	0	0	0	0	0	0
Nitpal	8	19	163	0	0	0	0	0	0	0	0	0
Pinbor	0	0	0	0	0	0	0	0	0	0	0	0
Pinsap	0	0	0	0	0	0	0	0	0	0	0	0
Plalan	16	0	0	0	0	0	0	0	0	0	0	0
Rhogib	0	28	0	130	27	5	0	0	0	7	47	10
Sellan	38	16	0	165	30	11	0	0	0	0	0	51
Staell	0	0	0	0	0	0	0	0	0	0	0	0
Surbis	0	0	0	1	0	0	0	0	0	0	0	0
Surele	0	0	0	0	0	0	0	0	0	0	0	0
Synuln	0	0	0	0	0	0	0	0	0	0	0	0

Table 6.3 The results of counted diatom cell in hot spring sampling sites in dry season
(continued)

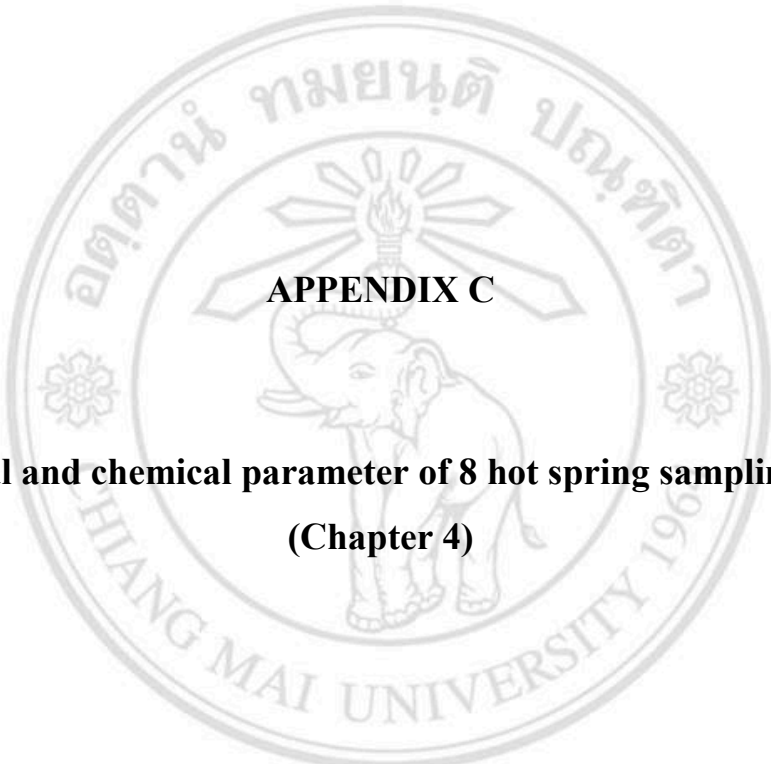
	JS1	JS2	JS3	MJ2	MJ3	SL1	SM1	SM2	SM3	NG1	NG2	NG3
Aulamb	0	0	0	0	0	2	0	0	0	0	0	0
Aulgra	0	0	0	0	0	7	0	0	0	0	0	0
Melvar	0	0	0	0	0	0	0	0	0	0	0	0
Achexi	0	0	0	50	55	0	0	0	28	0	0	0
Achsp	0	0	54	0	0	0	0	0	0	0	0	0
Ampmon	0	3	0	0	0	0	0	0	0	0	0	0
Ampova	2	0	0	0	0	0	0	0	0	0	0	0
Anopha	0	0	0	0	0	196	0	0	0	0	0	0
Anosp	0	0	0	0	87	0	0	0	0	0	0	0
Calaci	0	0	0	0	0	0	0	0	0	0	0	0
Cocpla	0	0	0	0	0	0	0	0	0	0	2	0
Craamb	0	10	0	0	0	0	0	0	0	0	0	0
Diacon	0	0	0	0	1	0	0	0	0	0	0	0
Diabal	496	98	112	17	48	0	5	0	0	0	7	82
Dipova	0	0	0	0	0	0	0	0	0	0	24	0
Fracro	0	0	0	0	0	0	0	0	0	18	0	0
Gomaff	0	0	7	0	0	0	0	0	0	0	0	0
Gomgra	0	0	0	0	0	0	0	0	0	0	0	0
Gompar	0	0	0	0	0	0	0	0	0	0	0	0
Halfon	0	16	0	0	0	0	0	0	0	0	0	0
Hanamp	0	0	0	0	0	0	0	0	0	0	0	0
Navgri	0	0	0	20	258	12	0	0	0	16	45	0
Navsub	0	0	0	0	0	5	0	0	0	0	0	0
Nitamp	25	0	0	0	0	0	0	0	0	0	0	0
Nitcla	0	0	0	0	0	0	0	0	0	0	0	0
Nitpal	27	0	0	1	12	0	0	0	0	0	0	0
Pinbor	2	0	0	2	0	0	0	0	0	0	0	0
Pinsap	0	0	0	0	0	0	0	0	0	0	0	16
Plalan	0	0	0	0	0	0	0	0	0	0	0	0
Rhogib	39	16	0	2	0	0	0	0	0	0	1	0
Sellan	41	18	0	0	54	31	0	0	0	10	0	16
Staell	0	0	0	0	0	1	0	0	0	0	0	0
Surbis	0	0	0	0	0	0	0	0	0	0	0	0
Surele	0	0	0	0	0	2	0	0	0	0	0	0
Synuln	0	0	0	0	0	0	0	0	0	0	0	0

Table 6.4 The results of counted diatom cell in hot spring sampling sites in wet season

	SK1	SK2	SK3	TPN1	TPN2	TPN3	TP1	TP2	TP3	CHD1	CHD2	CHD3
Aulamb	0	0	0	0	0	0	0	0	0	0	0	0
Aulgra	0	0	0	0	0	0	0	0	0	0	0	0
Melvar	0	0	0	0	0	0	1	0	0	0	0	0
Achexi	196	169	197	147	0	0	43	36	0	56	0	0
Achsp	139	64	0	68	160	67	16	30	28	67	164	132
Ampmon	0	0	0	24	2	0	4	1	0	0	31	0
Ampova	5	0	2	0	0	0	0	0	0	2	3	1
Anopha	12	30	0	0	0	0	0	0	0	0	0	23
Anosp	0	18	0	0	0	0	0	0	0	38	0	0
Calaci	11	0	0	0	0	0	0	0	0	0	0	0
Cocpla	0	0	0	0	1	0	0	0	0	0	0	0
Craamb	12	0	0	0	0	0	0	0	60	60	0	64
Diacon	0	0	0	0	0	0	0	0	0	0	0	0
Diabal	116	0	16	137	79	0	6	0	0	0	0	187
Dipova	0	0	0	0	0	0	0	1	0	0	0	0
Fracro	0	0	0	0	0	0	0	0	0	0	0	0
Gomaff	0	0	0	26	0	0	0	1	0	0	0	0
Gomgra	0	0	0	0	0	0	0	0	0	0	0	0
Gompar	0	0	0	0	0	0	0	0	0	0	0	0
Halfon	0	0	0	0	0	0	0	0	0	0	0	0
Hanamp	0	0	0	1	1	0	0	0	0	0	0	0
Navgri	0	0	0	20	2	1	0	76	0	1	0	5
Navsub	0	0	0	0	0	0	0	0	0	0	0	0
Nitamp	0	0	0	0	0	0	0	0	0	0	0	0
Nitcla	0	0	0	0	0	0	0	0	0	0	0	0
Nitpal	30	77	0	54	3	0	0	10	0	36	2	18
Pinchor	0	0	0	0	1	0	0	0	0	0	0	0
Pinsap	0	0	0	0	0	0	0	0	0	0	0	0
Plalan	0	0	0	0	0	0	0	0	0	0	0	0
Rhogib	14	0	85	85	0	0	2	0	0	0	67	0
Sellan	27	0	0	128	78	0	7	102	0	23	0	81
Staell	0	0	0	0	0	0	0	0	0	0	0	0
Surbis	0	0	0	0	0	0	0	0	0	0	0	0
Surele	0	0	0	0	0	0	0	0	0	1	0	0
Synuln	5	0	0	0	0	0	0	0	0	0	1	0

Table 6.4 The results of counted diatom cell in hot spring sampling sites in wet season
(continued)

	JS1	JS2	JS3	MJ2	MJ3	SL1	SM1	SM2	SM3	NG1	NG2	NG3
Aulamb	0	0	0	0	0	0	0	0	0	0	0	0
Aulgra	0	0	0	0	0	0	0	0	0	0	0	0
Melvar	0	0	1	0	0	0	0	0	0	0	0	0
Achexi	0	0	16	73	36	0	12	8	43	34	32	29
Achsp	34	36	60	0	0	0	0	0	0	0	0	0
Ampmon	0	0	0	0	0	0	0	0	0	0	0	0
Ampova	0	0	4	0	0	0	0	0	0	0	0	0
Anopha	0	0	0	0	0	144	0	0	0	0	0	0
Anosp	0	0	0	0	136	0	0	0	0	0	0	0
Calaci	21	0	0	0	0	0	0	0	0	0	0	0
Cocpla	0	0	0	0	0	0	0	0	0	0	0	0
Craamb	0	10	0	0	0	0	0	0	0	0	0	0
Diacon	0	0	0	0	0	0	0	0	0	0	0	0
Diabal	388	179	168	0	0	0	10	0	0	0	10	23
Dipova	0	0	0	0	0	0	0	0	0	0	0	0
Fracro	0	0	0	0	0	0	0	0	0	0	0	0
Gomaff	0	0	7	0	0	0	0	0	0	0	0	0
Gomgra	0	0	0	0	0	0	0	0	0	0	0	0
Gompar	0	0	0	0	0	0	0	0	0	0	0	0
Halfon	0	0	0	0	0	0	0	0	0	0	0	0
Hanamp	0	0	0	0	0	0	0	0	0	0	0	0
Navgri	0	0	0	0	83	21	0	0	0	26	55	19
Navsub	0	0	0	0	0	0	0	0	0	0	0	0
Nitamp	0	0	0	0	0	0	0	0	0	0	0	0
Nitcla	0	0	0	5	12	0	0	0	0	0	0	0
Nitpal	16	3	2	0	14	0	0	0	0	0	0	0
Pinbor	2	0	0	2	0	0	0	0	0	0	0	0
Pinsap	0	1	0	0	0	0	0	0	0	0	0	0
Plalan	0	0	0	0	0	0	0	0	0	0	0	0
Rhogib	39	29	0	2	0	0	0	0	0	0	0	19
Sellan	21	12	0	13	22	18	14	0	0	20	0	25
Staell	0	0	0	0	0	0	0	0	0	0	0	0
Surbis	0	0	0	0	0	0	0	0	0	0	0	0
Surele	0	0	0	1	0	0	0	0	0	0	0	0
Synuln	0	0	0	0	0	0	0	0	0	0	0	0

The seal of Chiang Mai University is a circular emblem. It features a central figure of an elephant standing and facing left, with a five-pointed star above its head. The Thai text "มหาวิทยาลัยเชียงใหม่" (Mahavithayalai Chiang Mai) is written in a circle around the central figure. Below the elephant, the English text "CHIANG MAI UNIVERSITY 1964" is visible. The seal is rendered in a light gray, semi-transparent style.

APPENDIX C

**Physical and chemical parameter of 8 hot spring sampling sites
(Chapter 4)**

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Table 6.5 The results of physico-chemical in San Kamphang hot spring

Temperature range (°C)	37-40			40.1-45			45.1-50			50.1-55			T _{max}		
Replicate	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Water temp (°C)	37	38.9	39.4	41.2	42.5	44.8	45.8	46.6	49.2	51.6	52	54.4	98	98	98
pH	8.89	8.81	8.86	8.81	8.77	8.72	8.73	8.79	8.82	8.77	8.74	8.78	8.75	8.7	8.65
Conductivity (μs/cm)	759	765	775	828	813	822	790	784	771	825	798	829	722	720	789
NO ₃ ⁻ (mg/l)	0.6	0.8	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.8	1.7	0.7	15.6	16.4	14.3
NH ₄ ⁺ (mg/l)	0.73	0.66	0.77	0.61	0.75	0.55	0.54	0.5	0.55	1.09	1.14	1.24	2.86	3.82	3.88
SRP (mg/l)	0.58	0.3	0.84	0.53	0.36	0.67	0.65	1.08	1.21	0.97	0.79	0.67	1	0.73	0.47
SiO ₂ (mg/l)	117.6	143	135.2	132.4	128.4	129.6	125.8	137.4	131.4	148.2	153.6	145	216.2	222.9	217.2
S ²⁻ (mg/l)	0.092	0.301	0.085	0.019	0.013	0.017	0.013	0.011	0.01	0.302	1.094	0.558	5.07	6.29	5.7
Total hardness (mg/l CaCO ₃)	8	8	8	4	4	4	8	12	4	8	4	8	12	8	8
Alkalinity (mg/l CaCO ₃)	347	339	347	334	338	333	346	352	351	345	331	349	319	318	334
Elevation (m)	360			360			360			360			360		
GPS	18°48'59"N 99°13'39"E			18°48'59"N 99°13'39"E			18°48'59"N 99°13'39"E			18°48'59"N 99°13'39"E			18°48'59"N 99°13'39"E		

Table 6.6 The results of physico-chemical in Theppanom hot spring

Temperature range (°C)	37-40			40.1-45			45.1-50			50.1-55			T _{max}		
Replicate	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Water temp (°C)	38.1	39.3	40	41.1	42.3	43.1	45.2	45.2	45.2	54.5	54.5	55.3	85	85	85
pH	8.15	8.46	8.53	8.46	8.51	8.57	8.47	8.57	8.63	8.46	8.5	8.32	8.43	8.33	8.09
Conductivity (µs/cm)	572	563	554	543	561	551	543	560	552	576	571	580	503	537	524
NO ₃ ⁻ (mg/l)	0.3	0.2	0.2	0.4	0.2	0.3	0.3	0.5	0.3	0.3	0.3	0.3	1.1	0.7	0.6
NH ₄ ⁺ (mg/l)	0.15	0.19	0.16	0.22	0.23	0.16	0.2	0.26	0.13	0.2	0.16	0.17	0.41	0.31	0.34
SRP (mg/l)	1.28	1.12	1.07	1.26	1.56	0.94	1.16	1.3	0.89	1.1	1.29	1.13	1.07	1.59	1.22
SiO ₂ (mg/l)	72.8	119.8	116.8	114.2	116.4	116.6	117.6	118.2	110.6	111.2	118.4	108	105	104.6	104
S ²⁻ (mg/l)	0.003	0.001	0.006	0.001	0.001	0.002	0	0	0	0.003	0.004	0.002	0.071	0.043	0.051
Total hardness (mg/l CaCO ₃)	12	16	16	16	16	12	12	8	12	8	16	8	12	12	16
Alkalinity (mg/l CaCO ₃)	229	229	229	224	220	223	226	223	224	219	220	222	219	215	215
Elevation (m)	372			320			363			369			351		
GPS	18°16'16"N 98°23'42"E			18°16'16"N 98°23'42"E			18°16'13"N 98°23'54"E			18°16'21"N 98°23'44"E			18°16'21"N 98°23'45"E		

Table 6.7 The results of physico-chemical in Ta Pai hot spring

Temperature range (°C)	37-40			40.1-45			45.1-50			50.1-55			T _{max}		
Replicate	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Water temp (°C)	37.2	38.7	39.8	41.9	43.8	44.5	46.3	47.2	49.3	50.8	51.1	54.4	75.2	75.2	75.2
pH	6.96	7.1	7.14	7.16	7.28	7.32	7.29	7.39	7.4	7.2	7.31	6.88	6.76	6.82	6.92
Conductivity (µs/cm)	373	381	384	360	380	384	372	380	382	369	378	381	354	363	377
NO ₃ ⁻ (mg/l)	0.2	0.5	0.2	0.2	0.2	0.3	0.4	0	0.1	0	0.2	0.3	0.5	0.3	0
NH ₄ ⁺ (mg/l)	0.03	0.02	0.01	0.03	0.05	0.06	0.03	0.01	0.04	0.09	0.03	0.05	0.23	0.34	0.34
SRP (mg/l)	0.08	0.13	0.04	0.07	0.1	0.12	0.01	0.07	0.18	0.22	0.19	0.37	0.19	0.09	0.1
SiO ₂ (mg/l)	71	71.6	72.2	70	74.8	70.9	69.4	71.3	69.6	68	68.4	69.2	67.8	72.3	73.2
S ²⁻ (mg/l)	0	0	0	0	0	0	0	0	0	0.01	0	0	0.007	0.051	0.041
Total hardness (mg/l CaCO ₃)	36	48	52	36	44	40	40	36	28	36	48	44	36	36	40
Alkalinity (mg/l CaCO ₃)	184	164	156	158	158	154	168	168	154	156	154	168	176	144	164
Elevation (m)	518			536			505			481			524		
GPS	19°18'35"N 98°27'57"E			19°17'53"N 98°28'14"E			19°17'52"N 98°28'13"E			19°18'27"N 98°28'33"E			19°18'26"N 98°28'34"E		

Table 6.8 The results of physico-chemical in Pong Ang hot spring

Temperature range (°C)	37-40			40.1-45			45.1-50			50.1-55			T _{max}		
Replicate	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Water temp (°C)	37.8	39.2	39.9	42.9	42.2	42.8	45.4	45.5	45.4						
pH	7.32	7.21	7.13	6.97	6.97	7.16	7.17	7.25	7.29						
Conductivity (µs/cm)	803	807	803	791	809	800	797	801	795						
NO ₃ ⁻ (mg/l)	0.1	0.3	0.2	0.3	0.3	0.4	0.3	0.2	0.4						
NH ₄ ⁺ (mg/l)	0.39	0.37	0.39	0.36	0.36	0.37	0.43	0.44	0.4						
SRP (mg/l)	1.09	0.86	1.01	0.87	1.13	0.85	0.94	1.13	1						
SiO ₂ (mg/l)	55.9	55.1	55.5	54.1	55.6	54.6	58.8	55.1	56.6						
S ²⁻ (mg/l)	0.002	0	0.004	0.002	0.002	0.001	0.001	0	0.001						
Total hardness (mg/l CaCO ₃)	56	52	64	60	52	60	64	52	60						
Alkalinity (mg/l CaCO ₃)	449	443	445	440	441	437	438	436	434						
Elevation (m)	484.6			490.7			496.8								
GPS	19°35'42"N 98°56'32"E			19°35'49"N 98°56'43"E			19°35'54"N 98°56'50"E								

Table 6.9 The results of physico-chemical in Chae Sorn hot spring

Temperature range (°C)	37-40			40.1-45			45.1-50			50.1-55			T _{max}		
Replicate	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Water temp (°C)	39.8	40.2	40.2	41.6	42.5	44.5	47.1	47.2	47.3	51.2	51.7	54.4	73.4	73.4	73.4
pH	7.66	7.36	7.74	7.63	7.55	7.57	7.74	7.61	7.68	7.6	7.55	7.62	7.32	7.36	7.39
Conductivity (µs/cm)	563	580	568	558	573	569	548	568	558	521	521	530	588	574	567
NO ₃ ⁻ (mg/l)	0.1	0.2	0.1	0.2	0.3	0.2	0.2	0.1	0.2	0.2	0.4	0.3	4.6	3.5	2.1
NH ₄ ⁺ (mg/l)	0.25	0.25	0.23	0.37	0.34	0.34	0.34	0.32	0.34	0.37	0.38	0.35	1.67	1.58	1.48
SRP (mg/l)	0.55	0.54	0.41	0.53	0.18	0.31	0.19	0.19	0.19	0.18	0.23	0.1	0.2	0.14	0.07
SiO ₂ (mg/l)	96	96.8	94.2	96.9	96	94.2	97	92.8	94.5	95.2	93.6	92.1	131.4	127.8	121.6
S ²⁻ (mg/l)	0.002	0.004	0.003	0.003	0.002	0.005	0.004	0.004	0.002	0.007	0.004	0.003	1.178	0.648	0.364
Total hardness (mg/l CaCO ₃)	52	48	40	72	60	64	60	52	60	68	60	52	52	56	68
Alkalinity (mg/l CaCO ₃)	235	231	230	285	240	238	236	240	238	232	228	218	248	249	251
Elevation (m)	424			424			424			424			430		
GPS	18°50'12"N 99°28'19"E			18°50'12"N 99°28'19"E			18°50'12"N 99°28'19"E			18°50'12"N 99°28'19"E			18°50'12"N 99°28'20"E		

Table 6.10 The results of physico-chemical in Mae Chok hot spring

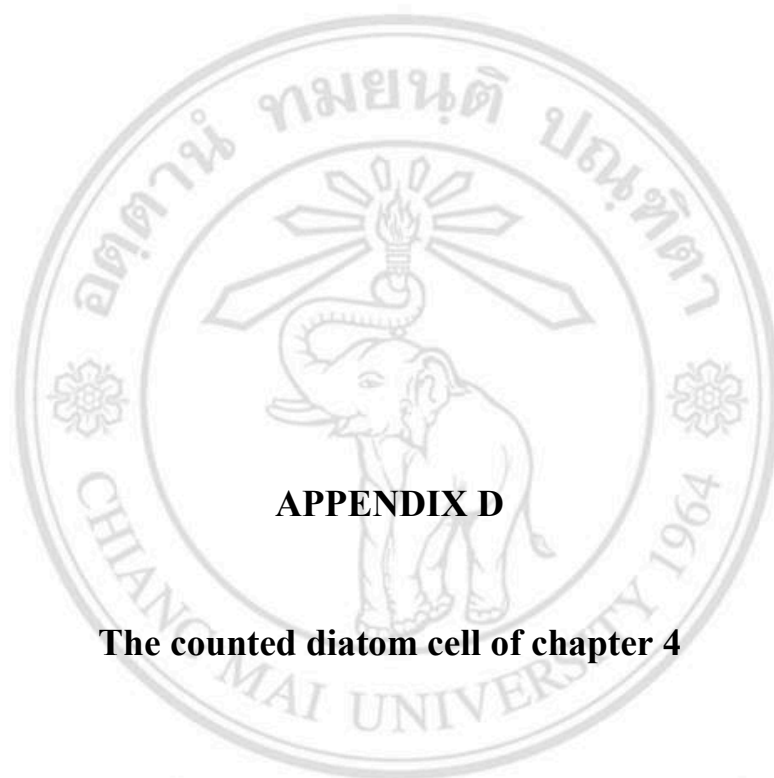
Temperature range (°C)	37-40			40.1-45			45.1-50			50.1-55			T _{max}		
Replicate	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Water temp (°C)				41.1	41.2	41.1	47.9	48.9	50.1	54.1	54.1	54.1	66.7	66.7	66.7
pH				7.31	7.48	7.45	7.42	7.37	7.43	7.39	7.34	7.41	7.32	7.32	7.27
Conductivity (µs/cm)				1031	1135	1022	1016	1012	1015	1009	1018	1019	1092	1015	1021
NO ₃ ⁻ (mg/l)				0.8	0.4	0.4	0.2	0.3	0.2	0.1	0.4	0.6	0.4	0.5	0.1
NH ₄ ⁺ (mg/l)				0.27	0.02	ND	ND	ND	ND	ND	0.15	ND	ND	ND	ND
SRP (mg/l)				0.74	0.54	0.1	0.32	0.52	2.62	0.34	0.9	0.29	0.42	0.34	0.33
SiO ₂ (mg/l)				83.3	85.9	83.9	83.1	83.2	83.9	81.9	82.3	82	80.6	79.6	79.1
S ²⁻ (mg/l)				0.001	0.001	ND	0	ND	ND	ND	0	0.001	0.002	ND	0.01
Total hardness (mg/l CaCO ₃)				64	64	64	68	72	64	76	68	64	72	72	72
Alkalinity (mg/l CaCO ₃)				368	360	360	356	354	350	352	354	354	376	352	370
Elevation				143			143			143			131		
GPS				17°58'44"N 99°38'15"E			17°58'44"N 99°38'15"E			17°58'44"N 99°38'15"E			17°58'44"N 99°38'15"E		

Table 6.11 The results of physico-chemical in Wat Salaeng hot spring

Temperature range (°C)	37-40			40.1-45			45.1-50			50.1-55			T _{max}		
Replicate	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Water temp (°C)				41.3	41.9	42.3									
pH				7.59	7.69	7.5									
Conductivity (µs/cm)				1066	1126	1121									
NO ₃ ⁻ (mg/l)				0.4	0.5	0.5									
NH ₄ ⁺ (mg/l)				0.18	0.28	0.22									
SRP (mg/l)				0.55	0.35	0.24									
SiO ₂ (mg/l)				82.3	83.3	82.5									
S ²⁻ (mg/l)				0.004	0.004	0.002									
Total hardness (mg/l CaCO ₃)				48	48	53									
Alkalinity (mg/l CaCO ₃)				428	502	414									
Elevation (m)					131										
GPS					18°5'35"N 99°49'45"E										

Table 6.12 The results of physico-chemical in Ban Su Men hot spring

Temperature range (°C)	37-40			40.1-45			45.1-50			50.1-55			T _{max}		
Replicate	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Water temp (°C)	38.3	39.2	39.7	42.4	43.5	43.9	46.2	46.9	47.6						
pH	7.27	7.13	7.04	7.01	7.05	7.08	7.07	7.21	7.23						
Conductivity (µs/cm)	562	504	485	622	652	649	665	689	692						
NO ₃ ⁻ (mg/l)	0.4	0.2	0.2	0.2	0.3	0.3	0.4	0.3	0.3						
NH ₄ ⁺ (mg/l)	0.03	0.1	ND	ND	0.08	ND	0.01	0.08	0.21						
SRP (mg/l)	1.07	0.22	0.38	0.27	0.3	0.34	0.49	0.54	0.52						
SiO ₂ (mg/l)	36.4	34.7	34.2	38.5	39.7	39.4	23.9	41.9	40.7						
S ²⁻ (mg/l)	0.001	0.002	0.002	0	0.001	0.003	0.001	0.001	0.002						
Total hardness (mg/l CaCO ₃)	48	64	60	40	40	40	32	28	24						
Alkalinity (mg/l CaCO ₃)	178	130	158	182	188	192	196	194	202						
Elevation (m)	408			408			408								
GPS	19°13'19"N 100°39'12"E			19°13'19"N 100°39'12"E			19°13'19"N 100°39'12"E								



APPENDIX D

The counted diatom cell of chapter 4

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Table 6.13 The results of counted diatom cell in hot spring sampling sites

	SK1.1e	SK1.2e	SK1.3e	SK1.1p	SK1.2p	SK1.3p	SK2.1e	SK2.2e	SK2.3e	SK2.1p	SK2.2p
Aulamb	0	0	1	0	0	0	0	0	0	0	0
Aulgra	0	0	0	0	0	0	0	0	0	0	0
Melvar	0	2	0	0	0	0	0	0	0	0	0
Achmin	18	0	9	34	17	0	51	0	60	0	43
Achexi	72	102	89	58	42	48	88	135	118	98	71
Ampmon	2	0	0	0	8	0	6	0	0	0	0
Ampova	0	5	0	0	0	0	5	0	0	0	0
Anopha	20	32	18	10	14	31	114	42	92	55	74
Anosp	10	32	48	0	33	0	20	0	0	24	0
Calbal	0	0	0	0	0	0	0	3	0	0	0
Calmol	22	0	0	0	0	0	4	0	0	0	0
Cocpla	0	0	0	0	0	0	3	10	0	0	0
Craaci	16	0	0	0	0	0	0	0	0	0	0
Craamb	0	0	0	0	0	0	0	0	0	0	0
Cracus	0	0	0	2	0	0	0	96	0	0	0
Cymtum	0	4	0	2	0	2	0	0	0	0	1
Diacon	0	0	0	0	0	0	0	0	0	0	0
Diabal	122	98	71	52	115	69	93	83	80	87	110
Dipell	0	0	0	0	0	0	0	1	0	0	0
Dipova	0	0	0	0	0	0	1	0	0	0	0
Epizeb	0	0	0	0	0	0	0	0	2	0	0
Fracro	19	0	7	0	0	11	0	0	0	0	3
Gomaff	10	0	7	0	3	0	0	18	0	10	0
Gomaug	0	0	0	0	2	0	0	0	0	0	0
Gomgra	8	23	12	15	0	4	0	0	0	6	0
Gompar	0	2	0	0	0	0	0	0	0	0	0
Halfon	16	0	3	8	0	0	0	0	13	9	0
Hanamp	0	0	0	0	1	0	0	0	0	0	0
Navgri	0	0	0	0	0	0	0	0	0	0	0
Navros	0	0	0	0	0	0	0	0	0	0	0
Navsub	0	0	0	0	0	0	0	0	0	0	0
Nitamp	0	0	0	0	0	0	0	0	0	0	0
Nitcla	0	0	0	0	0	0	0	0	0	0	0
Nitign	0	2	0	0	0	0	0	0	0	0	0
Nitpal	27	21	35	40	12	23	48	0	30	0	43
Pinaba	0	0	0	0	0	0	0	0	0	0	0
Pinbor	0	0	0	0	0	0	0	0	0	0	0
Pinsap	0	0	0	0	0	0	0	0	0	0	0
Pinmes	0	0	0	0	0	0	0	0	0	0	0
Plalan	20	0	14	0	28	0	19	0	0	0	0
Rhogib	0	28	0	187	61	82	0	27	0	5	0
Sellan	41	36	22	0	13	26	52	4	30	11	0
Staanc	2	0	17	0	0	1	0	0	0	0	0
Surbis	0	0	0	0	1	0	0	0	0	0	0
Surele	0	0	0	0	0	0	0	0	0	0	0
Synuln	0	2	0	0	0	0	0	0	0	0	0

Table 6.13 The results of counted diatom cell in hot spring sampling sites (continued)

	SK2.3p	SK3.1e	SK3.2e	SK3.3e	SK3.1p	SK3.2p	SK3.3p	SK4.1e	SK4.2e	SK4.3e	SK4.1p
Aulamb	0	0	0	0	0	0	0	0	0	0	0
Aulgra	0	0	0	0	0	0	0	0	0	0	0
Melvar	0	0	0	0	0	0	0	0	0	0	0
Achmin	0	64	10	0	0	25	0	0	11	0	0
Achexi	64	129	106	114	89	70	51	0	0	0	0
Ampmon	0	0	0	0	0	0	1	0	0	0	3
Ampova	0	0	0	0	0	0	0	0	0	0	0
Anopha	101	45	68	30	64	40	57	8	14	0	0
Anosp	0	0	16	0	0	0	0	0	0	0	0
Calbal	0	0	0	0	0	0	0	0	0	0	0
Calmol	0	0	0	0	0	0	0	0	0	0	0
Cocpla	0	0	0	0	0	0	0	0	0	0	0
Craaci	0	0	0	0	0	0	27	7	0	38	0
Craamb	0	0	0	0	0	0	0	0	0	0	0
Cracus	0	0	0	0	0	0	0	0	0	0	0
Cymtum	0	0	0	0	0	0	0	0	0	0	0
Diacon	0	0	0	0	0	0	0	0	0	0	0
Diabal	99	226	194	175	206	259	118	84	102	114	80
Dipell	0	0	0	0	2	0	0	0	0	0	0
Dipova	0	0	0	0	0	0	0	0	0	0	0
Epizeb	0	0	0	0	0	0	0	0	0	0	0
Fracro	0	0	5	0	0	0	0	0	0	0	0
Gomaff	0	0	0	0	0	0	0	0	0	0	0
Gomaug	5	0	0	2	0	0	0	0	0	0	0
Gomgra	0	0	0	0	0	1	0	0	0	0	0
Gompar	0	0	0	0	0	0	0	0	0	0	0
Halfon	0	0	4	0	0	0	0	0	0	1	0
Hanamp	0	0	0	0	0	0	1	0	0	0	0
Navgri	0	0	0	0	0	0	0	0	0	0	0
Navros	0	0	0	0	0	0	0	0	0	0	0
Navsub	0	0	0	0	0	0	0	0	0	0	0
Nitamp	0	0	0	0	0	0	0	0	0	0	0
Nitcla	0	22	25	0	0	0	0	0	0	0	0
Nitign	0	0	0	0	0	0	0	0	0	0	0
Nitpal	0	0	0	2	0	18	9	0	0	0	0
Pinaba	0	0	0	0	2	0	0	0	0	0	0
Pinbor	0	0	0	0	0	0	0	0	0	0	0
Pinsap	0	0	0	0	0	0	0	0	0	0	0
Pinmes	0	0	0	0	0	0	0	0	0	0	0
Plalan	0	0	0	0	0	0	0	0	0	0	0
Rhogib	0	0	0	0	39	0	2	0	0	5	0
Sellan	43	15	6	18	0	21	11	0	0	0	0
Staanc	0	0	0	0	0	0	0	0	0	0	0
Surbis	0	0	0	0	0	0	0	0	0	0	0
Surele	0	0	0	0	0	0	0	0	0	0	0
Synuln	0	0	0	0	0	0	0	0	0	0	0

Table 6.13 The results of counted diatom cell in hot spring sampling sites (continued)

	SK4.2p	SK4.3p	SK5.1	SK5.2	SK5.3	TPN 1.1e	TPN 1.2e	TPN 1.3e	TPN 1.1p	TPN 1.2p	TPN 1.3p
Aulamb	0	0	0	0	0	0	0	0	0	0	0
Aulgra	0	0	0	0	0	0	0	0	0	0	0
Melvar	0	0	0	0	0	0	0	0	0	0	0
Achmin	0	0	0	0	0	0	0	0	0	0	0
Achexi	0	0	0	0	0	24	69	33	40	35	56
Ampmon	11	48	0	0	0	0	0	12	3	0	0
Ampova	0	0	0	0	0	4	0	0	0	0	0
Anopha	10	0	0	0	0	0	0	0	0	0	0
Anosp	0	0	0	0	0	0	0	0	0	0	0
Calbal	0	0	0	0	0	0	0	0	0	0	0
Calmol	0	0	0	0	0	0	0	0	0	0	0
Cocpla	0	0	0	0	0	0	1	0	0	0	0
Craaci	0	0	0	0	0	0	0	0	0	0	0
Craamb	0	0	0	0	0	0	0	0	0	0	0
Cracus	0	0	0	0	0	3	0	1	0	0	2
Cymtum	0	0	0	0	0	0	0	0	0	0	0
Diacon	0	0	0	0	0	0	0	0	0	0	0
Diabal	91	63	0	0	0	86	80	101	34	20	37
Dipell	0	0	0	0	0	0	0	0	0	0	0
Dipova	0	0	0	0	0	0	6	0	0	0	4
Epizeb	0	0	0	0	0	0	0	0	0	0	0
Fracro	0	0	0	0	0	0	0	0	0	0	0
Gomaff	0	0	0	0	0	0	18	12	0	0	1
Gomaug	0	0	0	0	0	0	0	0	0	0	0
Gomgra	0	0	0	0	0	0	0	0	0	0	0
Gompar	0	0	0	0	0	0	0	0	0	0	0
Halfon	0	0	0	0	0	0	0	0	0	0	0
Hanamp	0	0	0	0	0	15	0	0	0	0	1
Navgri	0	0	0	0	0	0	0	0	0	0	0
Navros	0	0	0	0	0	0	0	0	0	0	0
Navsub	0	0	0	0	0	0	0	0	0	0	0
Nitamp	0	0	0	0	0	0	0	0	0	2	0
Nitcla	0	0	0	0	0	0	0	0	0	0	0
Nitign	0	0	0	0	0	0	0	0	0	0	0
Nitpal	0	0	0	0	0	0	3	0	0	0	14
Pinaba	0	0	0	0	0	0	0	0	0	0	0
Pinbor	0	0	0	0	0	0	0	0	0	0	0
Pinsap	0	0	0	0	0	0	0	0	0	0	0
Pinmes	0	0	0	0	0	0	0	0	0	0	0
Plalan	0	0	0	0	0	0	0	0	0	0	0
Rhogib	10	37	0	0	0	0	32	48	64	55	70
Sellan	0	0	0	0	0	44	50	30	14	0	0
Staanc	0	0	0	0	0	1	0	0	0	0	0
Surbis	0	0	0	0	0	3	0	0	0	0	0
Surele	0	0	0	0	0	0	0	0	0	0	0
Synuln	0	0	0	0	0	0	0	0	0	0	0

Table 6.13 The results of counted diatom cell in hot spring sampling sites (continued)

	TPN 2.1e	TPN 2.2e	TPN 2.3e	TPN 2.1p	TPN 2.2p	TPN 2.3p	TPN 3.1e	TPN 3.2e	TPN 3.3e	TPN 3.1p	TPN 3.2p
Aulamb	0	0	0	0	0	0	0	0	0	0	0
Aulgra	0	0	0	0	0	0	0	0	0	0	0
Melvar	0	0	0	0	0	0	0	0	0	0	0
Achmin	0	0	0	0	0	0	0	0	0	0	0
Achexi	84	113	72	128	71	116	103	91	86	50	28
Ampmon	6	0	4	0	1	0	0	0	0	0	0
Ampova	0	16	10	0	0	0	0	0	10	0	0
Anopha	3	0	0	0	0	0	0	4	0	0	0
Anosp	0	0	0	0	0	0	0	0	0	0	0
Calbal	0	0	0	0	0	0	0	0	0	0	0
Calmol	0	0	0	0	0	0	0	0	0	0	0
Cocpla	1	0	18	0	0	0	0	1	0	0	0
Craaci	0	0	0	0	0	0	0	0	0	0	0
Craamb	0	0	0	0	0	0	0	0	0	0	0
Cracus	48	0	0	0	16	0	0	0	0	0	0
Cymtum	0	0	0	0	0	0	0	0	0	0	0
Diacon	0	0	0	0	0	0	0	0	0	0	0
Diabal	114	145	132	63	78	102	192	178	201	181	159
Dipell	0	0	0	0	0	0	0	0	0	0	0
Dipova	1	7	0	0	0	2	0	0	0	0	0
Epizeb	0	0	0	0	0	0	0	0	0	0	0
Fracro	0	0	0	0	0	0	0	0	0	0	0
Gomaff	0	10	0	3	0	5	0	0	0	0	1
Gomaug	0	0	0	0	0	0	0	0	0	0	0
Gomgra	0	0	0	0	0	0	0	0	0	0	0
Gompar	0	0	0	0	0	0	0	0	0	0	0
Halfon	0	0	0	0	0	0	0	0	0	0	0
Hanamp	0	0	3	0	0	0	0	0	0	0	0
Navgri	0	0	0	0	0	0	0	0	0	0	0
Navros	0	0	0	0	0	0	0	0	0	0	0
Navsub	0	0	0	0	0	0	0	0	0	0	0
Nitamp	0	0	0	0	0	0	0	0	0	0	0
Nitcla	0	0	0	0	0	0	0	0	0	0	0
Nitign	0	0	0	0	0	0	0	0	0	0	0
Nitpal	0	0	0	2	0	0	0	0	0	0	0
Pinaba	0	0	0	0	0	0	0	0	0	0	0
Pinbor	1	0	0	0	0	0	0	0	0	0	0
Pinsap	0	0	0	0	0	0	0	0	0	0	0
Pinmes	0	0	0	0	0	0	0	0	0	0	0
Plalan	10	0	0	0	2	0	0	0	0	0	0
Rhogib	135	64	112	11	0	18	0	9	0	20	22
Sellan	37	63	49	18	31	30	19	15	23	20	0
Staanc	0	0	0	0	0	0	0	0	0	0	0
Surbis	0	2	0	0	0	0	0	0	0	0	0
Surele	0	0	0	0	0	0	0	0	0	0	0
Synuln	0	0	0	0	0	0	0	0	0	0	0

Table 6.13 The results of counted diatom cell in hot spring sampling sites (continued)

	TPN 3.3p	TPN 4.1e	TPN 4.2e	TPN 4.3e	TPN 4.1p	TPN 4.2p	TPN 4.3p	TPN 5.1	TPN 5.2	TPN 5.3	TP1.1e
Aulamb	0	0	0	0	0	0	0	0	0	0	0
Aulgra	0	0	0	0	0	0	0	0	0	0	0
Melvar	0	0	0	0	0	0	0	0	0	0	6
Achmin	0	0	0	0	0	0	0	0	0	0	0
Achexi	62	17	10	25	0	6	0	0	0	0	142
Ampmon	1	0	0	0	2	0	8	0	0	0	0
Ampova	0	0	0	0	0	0	0	0	0	0	0
Anopha	0	0	0	0	0	0	0	0	0	0	0
Anosp	0	0	0	0	0	0	0	0	0	0	0
Calbal	0	0	0	0	0	0	0	0	0	0	0
Calmol	0	0	0	0	0	0	0	0	0	0	0
Cocpla	0	0	0	0	0	0	0	0	0	0	0
Craaci	0	0	0	0	0	0	0	0	0	0	0
Craamb	0	0	0	0	0	0	0	0	0	0	0
Cracus	0	0	0	0	0	0	0	0	0	0	0
Cymtum	0	0	0	0	0	0	0	0	0	0	0
Diacon	0	0	0	0	0	0	0	0	0	0	0
Diabal	142	70	54	81	65	43	70	12	9	11	168
Dipell	0	0	0	0	0	0	0	0	0	0	0
Dipova	0	0	0	0	0	0	0	0	0	0	2
Epizeb	0	0	0	0	0	0	0	0	0	0	0
Fracro	0	0	0	0	0	0	0	0	0	0	0
Gomaff	0	0	0	0	0	0	0	0	0	0	0
Gomaug	0	0	0	0	0	0	0	0	0	0	0
Gomgra	0	0	0	0	0	0	0	0	0	0	0
Gompar	0	0	0	0	0	0	0	0	0	0	0
Halfon	0	0	0	0	0	0	0	0	0	0	0
Hanamp	0	0	0	0	0	0	0	0	0	0	0
Navgri	0	0	0	0	0	0	0	0	0	0	0
Navros	0	0	0	0	0	0	0	0	0	0	0
Navsub	0	0	0	0	0	0	0	0	0	0	0
Nitamp	0	0	0	0	0	0	0	0	0	0	0
Nitcla	0	0	0	0	0	0	0	0	0	0	0
Nitign	0	0	0	0	0	0	0	0	0	0	0
Nitpal	0	0	0	0	0	0	0	0	0	0	0
Pinaba	0	0	0	0	0	0	0	0	0	0	0
Pinbor	0	0	0	0	0	0	0	0	0	0	0
Pinsap	0	0	0	0	0	0	0	0	0	0	0
Pinmes	0	0	0	0	0	0	0	0	0	0	0
Plalan	0	0	0	0	0	0	0	0	0	0	1
Rhogib	0	0	3	0	7	0	2	0	0	0	14
Sellan	16	0	0	0	0	1	0	0	0	0	21
Staanc	0	0	0	0	0	0	0	0	0	0	0
Surbis	0	0	0	0	0	0	0	0	0	0	0
Surele	0	0	0	0	0	0	0	0	0	0	0
Synuln	0	0	0	0	0	0	0	0	0	0	0

Table 6.13 The results of counted diatom cell in hot spring sampling sites (continued)

	TP1.2e	TP1.3e	TP1.1p	TP1.2p	TP1.3p	TP2.1e	TP2.2e	TP2.3e	TP2.1p	TP2.2p	TP2.3p
Aulamb	0	0	0	0	0	0	0	0	0	0	0
Aulgra	0	0	0	0	0	0	0	0	0	0	0
Melvar	0	1	0	0	1	0	0	0	0	0	0
Achmin	10	0	0	0	24	0	12	0	0	0	0
Achexi	107	114	190	156	171	166	109	116	95	120	84
Ampmon	1	15	0	10	0	0	0	0	0	0	7
Ampova	0	0	0	0	0	0	0	0	0	0	0
Anopha	0	0	0	0	0	0	0	0	0	0	0
Anosp	0	0	0	0	0	0	0	0	0	0	0
Calbal	0	0	0	0	0	0	0	0	0	0	0
Calmol	0	0	0	0	0	0	0	0	0	0	0
Cocpla	0	0	0	0	0	0	0	0	0	0	0
Craaci	0	0	0	0	0	0	0	0	0	0	0
Craamb	0	0	0	0	0	0	0	0	0	0	0
Cracus	0	0	0	0	0	0	0	0	0	0	0
Cymtum	0	0	0	0	0	0	0	0	0	0	0
Diacon	0	0	0	0	0	0	0	0	0	0	0
Diabal	191	143	110	99	159	98	84	114	67	90	63
Dipell	0	0	0	0	0	0	0	0	0	0	0
Dipova	7	0	0	9	0	1	0	15	0	3	0
Epizeb	0	0	0	0	0	0	0	0	0	0	0
Fracro	0	0	0	0	0	0	0	0	0	0	0
Gomaff	8	5	0	0	0	10	0	0	0	0	2
Gomaug	0	0	0	0	0	0	0	0	0	0	0
Gomgra	0	0	0	0	0	0	0	0	0	0	0
Gompar	0	0	0	0	0	0	0	0	0	0	0
Halfon	0	0	0	0	0	0	0	0	0	0	0
Hanamp	0	0	0	0	0	0	0	0	0	0	0
Navgri	0	0	0	0	0	0	0	0	0	0	0
Navros	2	0	5	0	0	0	0	0	0	0	0
Navsub	0	0	0	0	0	0	0	0	0	0	0
Nitamp	0	0	0	0	0	0	0	0	0	0	0
Nitcla	0	0	0	0	0	0	0	0	0	0	0
Nitign	0	0	0	0	0	0	0	0	0	0	0
Nitpal	25	0	32	0	0	0	0	0	0	0	0
Pinaba	0	0	0	0	0	0	0	0	0	0	0
Pinbor	1	0	0	0	0	0	0	0	0	0	0
Pinsap	0	0	0	1	0	0	0	0	0	0	0
Pinmes	0	0	0	0	0	0	0	0	0	0	0
Plalan	0	0	0	0	0	0	0	0	0	0	0
Rhogib	0	8	60	42	0	0	0	59	0	11	0
Sellan	32	20	0	0	0	43	70	0	34	0	0
Staanc	0	0	0	0	0	0	0	0	0	0	0
Surbis	0	0	0	0	0	0	0	0	0	0	0
Surele	0	0	0	0	0	0	0	0	0	0	0
Synuln	0	0	0	0	0	0	0	0	0	0	0

Table 6.13 The results of counted diatom cell in hot spring sampling sites (continued)

	TP3.1e	TP3.2e	TP3.3e	TP3.1p	TP3.2p	TP3.3p	TP4.1e	TP4.2e	TP4.3e	TP4.1p	TP4.2p
Aulamb	0	0	0	0	0	0	0	0	0	0	0
Aulgra	0	0	0	0	0	0	0	0	0	0	0
Melvar	0	0	0	0	0	0	0	0	0	0	0
Achmin	0	0	19	0	0	0	8	0	0	0	0
Achexi	139	80	76	119	64	79	0	0	0	0	0
Ampmon	0	0	0	4	0	0	0	4	0	0	0
Ampova	0	0	0	0	0	0	0	0	0	0	0
Anopha	0	0	0	0	0	0	0	0	0	0	0
Anosp	0	0	0	0	0	0	0	0	0	0	0
Calbal	0	0	0	0	0	0	0	0	0	0	0
Calmol	0	0	0	0	0	0	0	0	0	0	0
Cocpla	0	0	0	0	0	0	0	0	0	0	0
Craaci	0	0	0	0	0	0	0	0	0	0	0
Craamb	0	0	0	0	0	0	0	0	0	0	0
Cracus	0	0	0	0	0	0	0	0	0	0	0
Cymtum	0	0	0	0	0	0	0	0	0	0	0
Diacon	0	0	0	0	0	0	0	0	0	0	0
Diabal	158	166	182	140	142	107	95	64	111	80	66
Dipell	0	0	0	0	0	0	0	0	0	0	0
Dipova	0	0	0	0	0	0	0	0	0	0	0
Epizeb	0	0	0	0	0	0	0	0	0	0	0
Fracro	0	0	0	0	0	0	0	0	0	0	0
Gomaff	0	0	0	0	1	0	0	0	0	0	0
Gomaug	0	0	0	0	0	0	0	0	0	0	0
Gomgra	0	0	0	0	0	0	0	0	0	0	0
Gompar	0	0	0	0	0	0	0	0	0	0	0
Halfon	0	0	0	0	0	0	0	0	0	0	0
Hanamp	0	0	0	0	0	0	0	0	0	0	0
Navgri	48	0	16	0	20	0	0	0	0	0	0
Navros	0	0	0	0	0	0	0	0	0	0	0
Navsub	0	0	0	0	0	0	0	0	0	0	0
Nitamp	0	0	0	0	0	0	0	0	0	0	0
Nitcla	0	0	0	0	0	0	0	0	0	0	0
Nitign	0	0	0	0	0	0	0	0	0	0	0
Nitpal	2	0	0	1	0	0	0	0	0	0	0
Pinaba	0	0	0	0	0	0	0	0	0	0	0
Pinbor	0	0	0	0	0	0	0	0	0	0	0
Pinsap	0	0	0	0	0	0	0	0	0	0	0
Pinmes	0	0	0	0	0	0	0	0	0	0	0
Plalan	10	0	0	0	0	0	0	0	0	0	0
Rhogib	0	1	0	0	0	0	0	0	0	0	0
Sellan	18	0	26	2	0	0	0	0	0	0	0
Staanc	0	0	0	0	0	0	0	0	0	0	0
Surbis	0	0	0	0	0	0	0	0	0	0	0
Surele	1	0	0	0	2	0	0	0	0	0	0
Synuln	0	0	0	0	0	0	0	0	0	0	0

Table 6.13 The results of counted diatom cell in hot spring sampling sites (continued)

	TP4.3p	TP5.1	TP5.2	TP5.3	CHD 1.1e	CHD 1.2e	CHD 1.3e	CHD 1.1p	CHD 1.2p	CHD 1.3p	CHD 2.1e
Aulamb	0	0	0	0	0	0	0	0	0	0	0
Aulgra	0	0	0	0	0	0	0	0	0	0	0
Melvar	0	0	0	0	0	0	0	0	0	0	0
Achmin	0	0	0	0	0	0	25	0	0	12	0
Achexi	0	0	0	0	0	0	0	0	0	0	64
Ampmon	0	0	0	0	0	0	0	0	0	0	8
Ampova	0	0	0	0	13	0	0	0	2	0	0
Anopha	0	0	0	0	0	0	0	0	0	0	0
Anosp	0	0	0	0	0	0	0	0	0	0	0
Calbal	0	0	0	0	0	0	0	0	0	0	0
Calmol	0	0	0	0	0	0	0	0	0	0	0
Cocpla	0	0	0	0	0	0	0	0	0	0	0
Craaci	0	0	0	0	40	29	60	0	15	10	0
Craamb	0	0	0	0	0	0	0	0	0	0	0
Cracus	0	0	0	0	0	0	0	0	0	0	0
Cymtum	0	0	0	0	0	4	0	0	0	0	0
Diakon	0	0	0	0	0	0	0	0	0	0	0
Diabal	51	0	0	0	0	0	0	0	0	0	0
Dipell	0	0	0	0	0	0	0	0	0	0	0
Dipova	0	0	0	0	0	0	0	0	0	0	0
Epizeb	0	0	0	0	0	0	0	0	0	0	0
Fracro	0	0	0	0	0	0	0	0	0	0	0
Gomaff	0	0	0	0	0	0	0	0	0	0	0
Gomaug	0	0	0	0	0	0	0	0	0	0	0
Gomgra	0	0	0	0	0	0	0	0	0	0	0
Gompar	0	0	0	0	0	0	0	0	0	0	0
Halfon	0	0	0	0	0	0	0	0	0	0	0
Hanamp	0	0	0	0	0	0	0	0	0	0	0
Navgri	0	0	0	0	17	0	0	4	0	0	0
Navros	0	0	0	0	0	0	0	0	0	0	0
Navsub	0	0	0	0	0	0	0	0	0	0	0
Nitamp	0	0	0	0	0	0	0	0	0	0	0
Nitcla	0	0	0	0	0	0	0	0	0	0	0
Nitign	0	0	0	0	0	0	0	0	0	0	0
Nitpal	0	0	0	0	0	19	0	0	10	0	0
Pinaba	0	0	0	0	0	0	0	0	0	0	0
Pinbor	0	0	0	0	0	0	0	0	0	0	0
Pinsap	0	0	0	0	0	0	0	0	0	0	0
Pinmes	0	0	0	0	0	0	0	0	0	0	0
Plalan	0	0	0	0	0	0	0	0	0	0	0
Rhogib	0	0	0	0	15	22	11	0	8	0	0
Sellan	0	0	0	0	19	0	10	0	0	6	0
Staanc	0	0	0	0	0	0	0	0	0	0	0
Surbis	0	0	0	0	0	0	0	0	0	0	0
Surele	0	0	0	0	5	0	0	0	0	0	0
Synuln	0	0	0	0	0	0	3	0	0	0	0

Table 6.13 The results of counted diatom cell in hot spring sampling sites (continued)

	CHD 2.2e	CHD 2.3e	CHD 2.1p	CHD 2.2p	CHD 2.3p	CHD 3.1e	CHD 3.2e	CHD 3.3e	CHD 3.1p	CHD 3.2p	CHD 3.3p
Aulamb	0	0	0	0	0	0	0	0	0	0	0
Aulgra	0	0	0	0	0	0	0	0	0	0	0
Melvar	0	0	0	0	0	0	0	0	0	0	0
Achmin	0	0	0	0	0	0	0	0	0	0	0
Achexi	78	23	30	12	0	15	0	0	0	0	9
Ampmon	26	0	17	0	0	0	0	0	0	0	0
Ampova	0	7	0	0	0	0	0	0	0	0	0
Anopha	0	0	0	0	0	0	0	0	0	0	0
Anosp	0	0	0	0	0	0	0	0	0	0	0
Calbal	0	0	0	0	0	0	0	0	0	0	0
Calmol	0	0	0	0	0	0	0	0	0	0	0
Cocpla	0	0	0	0	0	0	0	0	0	0	0
Craaci	0	0	0	0	0	0	0	0	0	0	0
Craamb	0	4	0	1	0	0	0	0	0	0	0
Cracus	0	0	0	0	0	0	0	0	0	0	0
Cymtum	0	0	0	0	0	0	0	0	0	0	0
Diakon	0	0	0	0	0	0	0	0	0	0	0
Diabal	0	0	0	0	0	58	0	41	66	12	0
Dipell	0	0	0	0	0	0	0	0	0	0	0
Dipova	0	0	0	0	0	0	0	0	0	0	0
Epizeb	0	0	0	0	0	0	0	0	0	0	0
Fracro	0	0	0	0	0	0	0	0	0	0	0
Gomaff	0	0	0	0	0	0	0	0	0	0	0
Gomaug	0	0	0	0	0	0	0	0	0	0	0
Gomgra	0	0	0	0	0	0	0	0	0	0	0
Gompar	0	0	0	0	0	0	0	0	0	0	0
Halfon	0	0	0	0	0	0	0	0	0	0	0
Hanamp	0	0	0	0	0	0	0	0	0	0	0
Navgri	0	0	0	0	0	28	0	17	0	30	0
Navros	0	0	0	0	0	0	0	0	0	0	0
Navsub	0	0	0	0	0	0	0	0	0	0	0
Nitamp	0	0	0	0	0	0	0	0	0	0	0
Nitcla	0	0	0	0	0	0	0	0	0	0	0
Nitign	0	0	0	0	0	0	0	0	0	0	0
Nitpal	0	0	0	0	0	27	0	6	0	10	0
Pinaba	0	0	0	0	0	0	0	0	0	0	0
Pinbor	0	0	0	0	0	0	0	0	0	0	0
Pinsap	0	0	0	0	0	0	0	0	0	0	0
Pinmes	0	0	0	0	0	0	0	0	0	0	0
Plalan	0	0	0	0	0	0	0	0	0	0	0
Rhogib	4	0	1	0	10	0	0	1	0	2	0
Sellan	0	0	0	0	0	11	15	0	3	0	0
Staanc	0	0	0	0	0	0	0	0	0	0	0
Surbis	0	0	0	0	0	0	0	0	0	0	0
Surele	0	0	0	0	0	0	0	0	0	0	0
Synuln	4	0	0	0	0	0	0	0	0	0	0

Table 6.13 The results of counted diatom cell in hot spring sampling sites (continued)

	JS1.1e	JS1.2e	JS1.3e	JS1.1p	JS1.2p	JS1.3p	JS2.1e	JS2.2e	JS2.3e	JS2.1p	JS2.2p
Aulamb	0	0	0	0	0	0	0	0	0	0	0
Aulgra	0	0	0	0	0	0	0	0	0	0	0
Melvar	0	0	0	0	0	0	0	0	0	0	0
Achmin	0	27	0	24	10	0	0	0	0	18	0
Achexi	0	0	0	0	0	0	0	0	0	0	0
Ampmon	0	0	0	0	8	0	8	0	0	0	0
Ampova	0	0	0	0	0	0	0	0	0	0	0
Anopha	40	28	65	21	10	35	0	0	0	0	0
Anosp	0	0	0	0	0	0	0	0	0	0	0
Calbal	0	0	0	0	0	0	0	0	0	0	0
Calmol	0	0	0	0	0	0	0	0	0	0	0
Cocpla	0	0	0	0	0	0	0	0	0	0	0
Craaci	0	0	0	0	0	0	0	0	0	0	0
Craamb	0	0	0	0	0	0	0	0	0	0	0
Cracus	14	93	0	47	0	0	0	0	0	0	0
Cymtum	0	0	0	0	0	0	0	0	0	0	0
Diacon	0	0	0	0	0	0	0	0	0	0	0
Diabal	220	176	212	113	136	200	193	142	110	87	125
Dipell	0	0	0	0	0	0	0	0	0	0	0
Dipova	0	0	0	0	0	0	0	0	0	0	0
Epizeb	0	0	0	0	0	0	0	0	0	0	0
Fracro	0	0	0	0	0	0	0	0	0	0	0
Gomaff	0	0	0	0	0	0	0	0	0	0	0
Gomaug	0	0	1	0	0	0	0	0	0	0	0
Gomgra	0	0	0	0	0	0	0	0	0	0	0
Gompar	0	0	1	0	0	0	0	0	0	0	0
Halfon	0	0	0	0	0	0	0	0	0	0	0
Hanamp	0	2	0	0	0	0	0	0	0	0	0
Navgri	0	0	0	0	0	0	0	0	0	0	0
Navros	0	0	0	0	0	0	0	0	0	0	0
Navsub	0	0	0	0	0	0	0	0	0	0	0
Nitamp	0	0	0	0	0	0	0	0	0	0	0
Nitcla	0	0	0	0	0	0	0	0	0	0	0
Nitign	0	0	0	0	0	0	0	0	0	0	0
Nitpal	1	16	0	0	12	2	30	24	0	0	13
Pinaba	0	0	5	0	0	0	0	0	0	0	0
Pinbor	0	0	0	0	0	0	0	0	0	0	0
Pinsap	0	0	0	0	0	0	0	0	0	0	0
Pinmes	0	0	0	0	0	0	0	3	0	0	0
Plalan	0	0	0	0	0	0	0	0	0	0	0
Rhogib	46	0	8	24	12	0	0	0	1	0	0
Sellan	0	20	25	29	0	0	52	33	0	11	0
Staanc	0	0	0	0	0	0	0	0	0	0	0
Surbis	0	0	0	0	0	0	0	0	0	0	0
Surele	0	0	0	0	0	0	0	0	0	0	0
Synuln	0	0	0	0	0	0	0	0	0	0	0

Table 6.13 The results of counted diatom cell in hot spring sampling sites (continued)

	JS2.3p	JS3.1e	JS3.2e	JS3.3e	JS3.1p	JS3.2p	JS3.3p	JS4.1e	JS4.2e	JS4.3e	JS4.1p
Aulamb	0	0	0	0	0	0	0	0	0	0	0
Aulgra	0	0	0	0	0	0	0	0	0	0	0
Melvar	0	0	0	0	0	0	0	0	0	0	0
Achmin	0	51	10	0	0	30	0	0	0	0	0
Achexi	0	0	0	0	0	0	0	0	0	0	0
Ampmon	0	0	0	0	0	0	0	0	0	0	0
Ampova	0	0	0	0	0	0	0	0	0	0	0
Anopha	0	0	0	0	0	0	0	0	0	0	0
Anosp	0	0	0	0	0	0	0	0	0	0	0
Calbal	0	0	0	0	0	0	0	0	0	0	0
Calmol	0	0	0	0	0	0	0	0	0	0	0
Cocpla	0	0	0	0	0	0	0	0	0	0	0
Craaci	0	0	0	0	0	0	0	0	0	0	0
Craamb	0	0	0	0	0	0	0	0	0	0	0
Cracus	0	0	0	0	0	0	0	0	0	0	0
Cymtum	0	4	5	8	0	1	0	0	0	0	0
Diacon	0	0	0	0	0	0	0	0	0	0	0
Diabal	163	127	180	144	252	190	148	111	115	130	84
Dipell	0	0	0	0	0	0	0	0	0	0	0
Dipova	0	0	0	0	0	0	0	0	0	0	0
Epizeb	0	0	0	0	0	0	0	0	0	0	0
Fracro	0	0	0	0	0	0	0	0	0	0	0
Gomaff	0	9	10	0	0	25	0	0	0	0	0
Gomaug	0	0	0	0	0	0	0	0	0	0	0
Gomgra	0	0	0	0	0	0	0	0	0	0	0
Gompar	0	0	0	0	0	0	0	0	0	0	0
Halfon	0	0	0	0	0	0	0	0	0	0	0
Hanamp	0	0	0	0	0	0	0	0	0	0	0
Navgri	0	0	0	0	0	0	0	0	0	0	0
Navros	0	0	0	0	0	0	0	0	0	0	0
Navsub	0	0	0	0	0	0	0	0	0	0	0
Nitamp	0	0	0	0	0	0	0	0	0	0	0
Nitcla	0	0	0	0	0	0	0	0	0	0	0
Nitign	0	0	0	0	0	0	0	0	0	0	0
Nitpal	10	0	0	0	0	0	0	0	0	0	0
Pinaba	0	0	0	0	0	0	0	0	0	0	0
Pinbor	0	0	0	0	0	0	0	0	0	0	0
Pinsap	0	0	0	0	0	0	0	0	0	0	0
Pinmes	0	0	0	0	0	0	0	0	0	0	0
Plalan	0	0	0	0	0	0	0	0	0	0	0
Rhogib	0	0	6	0	14	0	2	0	0	0	0
Sellan	43	0	0	0	0	0	0	0	0	0	0
Staanc	0	0	0	0	0	0	0	0	0	0	0
Surbis	0	0	0	0	0	0	0	0	0	0	0
Surele	0	0	0	0	0	0	0	0	0	0	0
Synuln	0	0	0	0	0	0	0	0	0	0	0

Table 6.13 The results of counted diatom cell in hot spring sampling sites (continued)

	JS4.2p	JS4.3p	JS5.1	JS5.2	JS5.3	MJ2.1e	MJ2.2e	MJ2.3e	MJ2.1p	MJ2.2p	MJ2.3p
Aulamb	0	0	0	0	0	0	0	0	0	0	0
Aulgra	0	0	0	0	0	0	0	0	0	0	0
Melvar	0	0	0	0	0	6	14	0	3	0	0
Achmin	0	0	0	0	0	0	0	0	0	0	0
Achexi	0	0	0	0	0	39	60	48	50	21	30
Ampmon	0	0	0	0	0	0	0	0	0	0	0
Ampova	0	0	0	0	0	0	0	0	0	0	0
Anopha	0	0	0	0	0	0	0	0	0	0	0
Anosp	0	0	0	0	0	0	0	0	0	0	0
Calbal	0	0	0	0	0	0	0	0	0	0	0
Calmol	0	0	0	0	0	0	0	0	0	0	0
Cocpla	0	0	0	0	0	0	0	0	0	0	0
Craaci	0	0	0	0	0	0	0	0	0	0	0
Craamb	0	0	0	0	0	0	0	0	0	0	0
Cracus	0	0	0	0	0	0	0	0	0	0	0
Cymtum	0	0	0	0	0	0	0	0	0	0	0
Diacon	0	0	0	0	0	0	0	0	0	0	0
Diabal	99	70	0	0	0	0	0	0	0	0	0
Dipell	0	0	0	0	0	0	0	0	0	0	0
Dipova	0	0	0	0	0	0	0	0	0	0	0
Epizeb	0	0	0	0	0	0	0	0	0	0	0
Fracro	0	0	0	0	0	0	0	0	0	0	0
Gomaff	0	0	0	0	0	0	0	0	0	0	0
Gomaug	0	0	0	0	0	0	0	0	0	0	0
Gomgra	0	0	0	0	0	0	0	0	0	0	0
Gompar	0	0	0	0	0	0	0	0	0	0	0
Halfon	0	0	0	0	0	0	0	0	0	0	0
Hanamp	0	0	0	0	0	0	0	0	0	0	0
Navgri	0	0	0	0	0	0	50	18	0	22	0
Navros	0	0	0	0	0	0	0	0	0	0	0
Navsub	0	0	0	0	0	0	0	0	0	0	0
Nitamp	0	0	0	0	0	0	0	0	0	0	0
Nitcla	0	0	0	0	0	16	0	4	0	19	0
Nitign	0	0	0	0	0	0	0	0	0	0	0
Nitpal	0	0	0	0	0	0	16	0	0	4	0
Pinaba	0	0	0	0	0	0	0	10	0	8	0
Pinbor	0	0	0	0	0	0	0	0	0	0	0
Pinsap	0	0	0	0	0	0	0	0	0	0	0
Pinmes	0	0	0	0	0	0	0	0	0	0	0
Plalan	0	0	0	0	0	0	0	0	0	0	0
Rhogib	0	0	0	0	0	14	6	30	27	33	19
Sellan	0	0	0	0	0	0	44	17	0	35	0
Staanc	0	0	0	0	0	0	0	0	0	0	0
Surbis	0	0	0	0	0	0	0	0	0	0	0
Surele	0	0	0	0	0	0	0	1	0	0	0
Synuln	0	0	0	0	0	0	0	0	0	0	0

Table 6.13 The results of counted diatom cell in hot spring sampling sites (continued)

	MJ3.1e	MJ3.2e	MJ3.3e	MJ3.1p	MJ3.2p	MJ3.3p	MJ4.1e	MJ4.2e	MJ4.3e	MJ4.1p	MJ4.2p
Aulamb	0	0	0	0	0	0	0	0	0	0	0
Aulgra	0	0	0	0	0	0	0	0	0	0	0
Melvar	0	2	0	0	0	0	0	0	0	0	0
Achmin	0	0	0	0	0	0	0	0	0	0	0
Achexi	0	15	0	11	14	0	0	0	0	0	0
Ampmon	0	0	0	0	0	0	0	0	0	0	0
Ampova	0	0	0	0	0	0	0	0	0	0	0
Anopha	0	0	0	0	0	0	0	0	0	0	0
Anosp	0	0	0	0	0	0	0	0	0	0	0
Calbal	0	0	0	0	0	0	0	0	0	0	0
Calmol	0	0	0	0	0	0	0	0	0	0	0
Cocpla	0	0	0	0	0	0	0	0	0	0	0
Craaci	0	0	0	0	0	0	0	0	0	0	0
Craamb	0	0	0	0	0	0	0	0	0	0	0
Cracus	0	0	0	0	0	0	0	0	0	0	0
Cymtum	0	0	0	0	0	0	0	0	0	0	0
Diacon	0	0	0	0	0	0	0	0	0	0	0
Diabal	0	0	0	0	0	0	0	0	0	0	0
Dipell	0	0	0	0	0	0	0	0	0	0	0
Dipova	0	0	0	0	0	0	0	0	0	0	0
Epizeb	0	0	0	0	0	0	0	0	1	0	0
Fracro	0	0	0	2	0	0	0	0	0	0	0
Gomaff	0	0	0	0	0	0	0	0	0	0	0
Gomaug	0	0	0	0	0	0	0	0	0	0	0
Gomgra	0	0	0	0	0	0	0	0	0	0	0
Gompar	0	0	0	0	0	0	0	0	0	0	0
Halfon	0	0	0	0	0	0	0	0	0	0	0
Hanamp	0	0	0	0	0	0	0	0	0	0	0
Navgri	2	0	0	0	0	0	0	1	0	0	0
Navros	0	0	0	0	0	0	0	0	0	0	0
Navsub	0	0	0	0	0	0	0	0	0	0	0
Nitamp	0	0	0	0	0	0	0	0	0	0	0
Nitcla	0	0	0	0	0	0	0	0	0	0	0
Nitign	0	0	0	0	0	0	0	0	0	0	0
Nitpal	0	0	5	0	0	0	8	0	1	0	0
Pinaba	0	0	0	0	0	0	0	0	0	0	0
Pinbor	0	0	0	0	0	0	0	0	0	0	0
Pinsap	0	0	0	0	0	0	0	0	0	0	0
Pinmes	0	0	0	0	0	0	0	0	0	0	0
Plalan	0	0	0	0	0	0	0	0	0	0	0
Rhogib	0	50	28	0	16	25	0	0	0	7	0
Sellan	9	0	0	11	10	0	0	2	0	0	0
Staanc	0	0	0	0	0	0	0	0	0	0	0
Surbis	0	0	0	0	0	0	0	0	0	0	0
Surele	0	0	0	0	0	0	2	0	0	0	0
Synuln	0	0	0	0	0	0	0	0	0	0	0

Table 6.13 The results of counted diatom cell in hot spring sampling sites (continued)

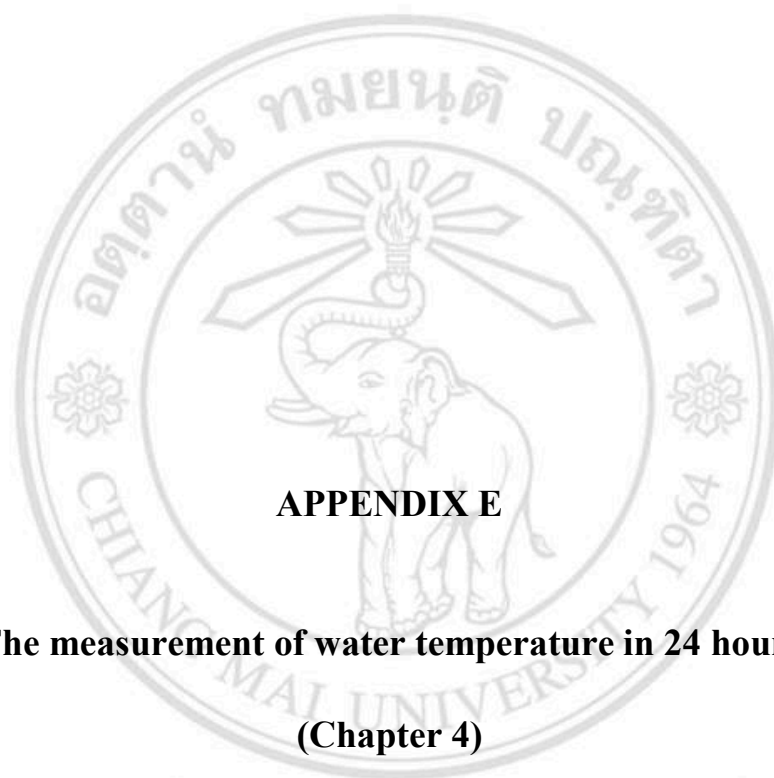
	MJ4.3p	MJ5.1	MJ5.2	MJ5.3	SL1.1e	SL1.2e	SL1.3e	SL1.1p	SL1.2p	SL1.3p	NG 1.1e
Aulamb	0	0	0	0	0	0	0	0	0	0	0
Aulgra	0	0	0	0	20	5	0	0	11	0	0
Melvar	0	0	0	0	0	19	0	8	0	0	0
Achmin	0	0	0	0	0	0	0	0	0	0	0
Achexi	0	0	0	0	0	0	0	0	0	0	50
Ampmon	0	0	0	0	0	0	0	0	0	0	0
Ampova	0	0	0	0	0	0	0	0	0	0	0
Anopha	0	0	0	0	362	275	330	197	201	211	0
Anosp	0	0	0	0	0	87	41	0	20	0	0
Calbal	0	0	0	0	0	0	0	0	0	0	0
Calmol	0	0	0	0	0	0	0	0	0	0	0
Cocpla	0	0	0	0	0	0	0	0	0	0	0
Craaci	0	0	0	0	0	0	0	0	0	0	0
Craamb	0	0	0	0	0	0	0	0	0	0	0
Cracus	0	0	0	0	12	0	0	9	0	0	0
Cymtum	0	0	0	0	0	7	0	0	0	0	0
Diakon	0	0	0	0	19	0	0	0	0	0	0
Diabal	0	0	0	0	0	0	0	0	0	0	0
Dipell	0	0	0	0	0	0	0	0	0	0	0
Dipova	0	0	0	0	0	0	0	0	0	0	0
Epizeb	0	0	0	0	0	0	0	0	0	0	0
Fracro	0	0	0	0	0	0	0	0	0	0	0
Gomaff	0	0	0	0	0	0	0	0	0	0	0
Gomaug	0	0	0	0	0	0	0	0	0	0	0
Gomgra	0	0	0	0	0	0	0	0	0	0	0
Gompar	0	0	0	0	0	0	0	0	0	0	0
Halfon	0	0	0	0	0	0	0	0	0	0	0
Hanamp	0	0	0	0	0	0	0	0	0	0	0
Navgri	0	0	0	0	45	32	56	0	40	0	48
Navros	0	0	0	0	0	0	0	0	0	0	0
Navsub	0	0	0	0	0	0	0	0	0	0	0
Nitamp	0	0	0	0	0	0	0	0	0	0	0
Nitcla	0	0	0	0	0	0	0	0	0	0	0
Nitign	0	0	0	0	0	0	0	0	0	0	0
Nitpal	0	0	0	0	0	0	0	0	0	0	0
Pinaba	0	0	0	0	0	0	0	0	0	0	0
Pinbor	0	0	0	0	0	0	0	0	0	0	0
Pinsap	0	0	0	0	0	0	0	0	0	0	0
Pinmes	0	0	0	0	17	0	0	0	0	6	0
Plalan	0	0	0	0	0	0	0	0	0	0	0
Rhogib	13	0	0	0	0	0	0	0	0	0	13
Sellan	0	0	0	0	20	18	10	17	29	2	0
Staanc	0	0	0	0	0	0	0	0	0	0	0
Surbis	0	0	0	0	0	0	0	0	0	0	0
Surele	0	0	0	0	0	7	0	0	0	0	0
Synuln	0	0	0	0	0	0	0	0	0	0	0

Table 6.13 The results of counted diatom cell in hot spring sampling sites (continued)

	NG 1.2e	NG 1.3e	NG 1.1p	NG 1.2p	NG 1.3p	NG 2.1e	NG 2.2e	NG 2.3e	NG 2.1p	NG 2.2p	NG 2.3p
Aulamb	0	0	0	0	0	0	0	0	0	0	0
Aulgra	0	0	0	0	0	0	0	0	0	0	0
Melvar	0	0	0	0	0	0	0	0	0	0	0
Achmin	0	0	0	0	0	0	0	0	0	0	0
Achexi	24	0	19	30	28	32	40	0	37	25	0
Ampmon	0	0	0	0	0	0	0	0	0	0	0
Ampova	0	0	0	0	0	0	0	0	0	0	0
Anopha	0	0	0	0	0	22	20	25	0	30	0
Anosp	0	0	0	0	0	0	0	0	0	0	0
Calbal	0	0	0	0	0	0	0	0	0	0	0
Calmol	0	0	0	0	0	0	0	0	0	0	0
Cocpla	0	0	0	0	0	0	0	0	0	0	0
Craaci	0	0	0	0	0	0	0	0	0	0	0
Craamb	0	0	0	0	0	0	0	0	0	0	0
Cracus	0	0	0	0	0	0	0	0	0	0	0
Cymtum	0	0	0	0	0	15	0	0	0	8	0
Diakon	0	0	0	0	0	0	0	0	0	0	0
Diabal	10	5	0	14	4	0	8	0	0	0	0
Dipell	0	0	0	0	0	0	0	0	0	0	0
Dipova	0	0	0	0	0	0	0	0	0	0	0
Epizeb	0	0	0	0	0	0	0	0	0	0	0
Fracro	0	0	0	0	0	0	0	0	0	0	0
Gomaff	0	0	0	0	0	0	0	0	0	0	0
Gomaug	0	0	0	0	0	0	0	0	0	0	0
Gomgra	0	0	0	0	0	0	0	0	0	0	0
Gompar	0	0	0	0	0	0	0	0	0	0	0
Halfon	0	0	0	0	0	0	0	0	0	0	0
Hanamp	0	0	0	0	0	0	0	0	0	0	0
Navgri	61	22	50	39	41	20	0	33	0	14	0
Navros	0	0	0	0	0	0	0	0	0	0	0
Navsub	3	0	0	0	0	1	0	0	0	0	0
Nitamp	0	0	0	0	0	0	0	0	0	0	0
Nitcla	0	0	0	0	0	0	0	0	0	0	0
Nitign	0	0	0	0	0	0	0	0	0	0	0
Nitpal	0	0	0	0	0	0	0	0	0	0	0
Pinaba	0	0	0	0	0	0	0	0	0	0	0
Pinbor	0	0	0	0	0	0	0	0	0	0	0
Pinsap	0	0	0	0	0	0	0	0	0	0	0
Pinmes	0	0	0	0	0	0	0	0	0	0	0
Plalan	0	0	0	0	0	0	0	0	0	0	0
Rhogib	0	0	0	0	0	0	0	5	0	0	0
Sellan	0	15	0	12	0	0	0	3	0	0	3
Staanc	0	0	0	0	0	0	0	0	0	0	0
Surbis	0	0	0	0	0	0	0	0	0	0	0
Surele	2	0	0	0	0	0	0	0	0	0	0
Synuln	0	0	0	0	0	0	0	0	0	0	0

Table 6.13 The results of counted diatom cell in hot spring sampling sites (continued)

	NG 3.1e	NG 3.2e	NG 3.3e	NG 3.1p	NG 3.2p	NG 3.3p
Aulamb	0	0	0	0	0	0
Aulgra	0	0	0	0	0	0
Melvar	0	0	0	0	0	0
Achmin	0	0	0	0	0	0
Achexi	44	0	50	18	0	0
Ampmon	0	0	0	0	0	0
Ampova	0	0	0	0	0	0
Anopha	18	10	0	0	0	10
Anosp	0	0	0	0	0	0
Calbal	0	0	0	0	0	0
Calmol	0	0	0	0	0	0
Cocpla	0	0	0	0	0	0
Craaci	0	0	0	0	0	0
Craamb	0	0	0	0	0	0
Cracus	0	0	0	0	0	0
Cymtum	0	0	2	0	3	0
Diacon	0	0	0	0	0	0
Diabal	2	0	0	0	11	0
Dipell	0	0	0	0	0	0
Dipova	0	0	0	0	0	0
Epizeb	0	0	0	0	0	0
Fracro	0	0	0	0	0	0
Gomaff	0	0	0	0	0	0
Gomaug	0	0	0	0	0	0
Gomgra	0	0	0	0	0	0
Gompar	0	0	0	0	0	0
Halfon	0	0	0	0	0	0
Hanamp	0	0	0	0	0	0
Navgri	9	12	0	0	0	13
Navros	0	0	0	0	0	0
Navsub	0	0	0	0	0	0
Nitamp	0	0	0	0	0	0
Nitcla	0	0	0	0	0	0
Nitign	0	0	0	0	0	0
Nitpal	0	0	0	0	0	0
Pinaba	0	0	0	0	0	0
Pinbor	0	0	0	0	0	0
Pinsap	0	0	0	0	0	0
Pinmes	0	0	0	0	0	0
Plalan	0	0	0	0	0	0
Rhogib	0	0	0	1	0	0
Sellan	0	0	6	0	0	0
Staanc	0	0	0	0	0	0
Surbis	0	0	0	0	0	0
Surele	0	1	0	0	0	0
Synuln	0	0	0	0	0	0



APPENDIX E

The measurement of water temperature in 24 hours

(Chapter 4)

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Table 6.14 The measurement of water temperature in 24 hours

Time (h)	SK1	SK2	SK3	SK4	TPN1	TPN2	TPN3	TPN4	TP1	TP2	TP3	TP4	CHD1
0	40.2	40.9	46	51	39.7	40.5	34.4	54.5	37	40.4	47.7	53.2	39.4
1	42.6	45.1	45.4	52	40.4	44.4	46.1	55.7	39.5	42.1	49.2	53.8	40
2	39	40.4	46.1	52.3	41.3	46.2	48	56.5	40	43.4	49.5	54.2	40.1
3	42.7	41.2	46.9	51	41.6	46.2	48.2	56.9	40.5	43.1	48.8	53.8	40.5
4	44.3	41.2	46.8	50.8	42.7	45.3	48.3	57.1	40.8	43	48.5	53.9	40.9
5	43.9	45.6	46.1	50.5	42.4	44.2	48.2	57.4	40.8	42.4	47.7	53.1	41
6	45.5	45.5	44.6	50.8	42	45.5	48.7	58.3	40.4	42	47.4	53.4	41.6
7	47.7	44.9	47.9	51.2	41.1	44.7	47	54.5	40.3	41.6	47.2	53.3	41.3
8	45.8	44.1	47.2	49	41.1	44.6	47.3	54.9	40.2	41.9	47.4	53.4	41.1
9	46.8	43.9	47	50.1	40	44.1	46.8	54.7	40.1	41.7	47.2	53.3	41.7
10	46.1	44	46.3	51	39.2	43.8	46.4	54.4	40	41.5	47	53.2	42.4
11	45.8	43.8	47.2	50.9	38.8	43.2	46.1	53.8	39.9	41.4	46.8	53.1	42.1
12	44.6	42.9	45.7	49.6	38.3	42.9	45.8	53.7	39.7	41.2	46.7	52.9	41.9
13	44.1	43.3	46.4	49.3	38	42.5	45.7	53.7	39.6	41.1	46.7	52.9	41.5
14	43.5	43.8	44.9	50.4	37.5	42.3	45.6	53.8	39.4	41	46.7	52.9	41.4
15	45.1	40.4	46.2	50.9	37.2	42	45.5	53.8	39.3	40.9	46.3	52.7	41.1
16	44.3	42.9	45.3	50.4	36.4	42	45.3	53.7	39.1	40.5	46	52.4	41
17	44.9	41.7	44.9	50.1	35.8	41.9	45	53.5	38.8	40.3	45.8	52.2	40.7
18	44.8	41.6	45.8	49.2	35.9	41.7	44.8	53.3	38.6	40	45.6	52.1	40.4
19	44.9	42.5	45.4	49.8	34.8	41.5	44.6	52.9	38.4	39.8	45.5	51.9	40.3
20	46.4	38.5	43.5	50	34.5	41.3	44.3	52.5	38.1	39.6	45.4	51.9	40.1
21	45.1	41.6	46.1	49.2	35.2	41.3	44.2	52.2	37.7	39.3	45.6	52.1	40.1
22	46.6	41.5	46.7	50.4	37.4	42.1	44.6	51.9	38.1	39.9	46.1	52.5	40.3
23	44	43.9	46	55.6	36.4	42.4	45.7	52.7	38.1	40	47	52.9	41.1
24	42.2	43.4	46.8	55.5	37.8	43.3	47.7	56.3	39	41.1	48.3	53.7	42

Table 6.14 The measurement of water temperature in 24 hours (continued)

Time (h)	CHD2	CHD3	JS1	JS2	JS3	JS4	MJ2	MJ3	MJ4	SL2	NG1	NG2	NG3
0	43.7	45.8	40.3	41.4	48.8	54.4	41.4	50.6	51.7	43.9	40	43	46
1	43.2	46.5	41.9	42.6	49.4	55.9	41	50.6	52.1	45.1	40.7	43.2	47.2
2	43.9	47.4	44	43.2	50.6	57.4	41.5	50.5	52.4	46.2	41.1	44	47
3	44.4	47.9	44.7	44	51	58.2	41.4	50.3	52.1	46.9	41.5	44.7	46.4
4	44.8	48.4	44.1	44	51.1	58	42.8	49.6	51.9	47.3	41.9	44.4	46.7
5	44.8	48.2	43.2	44.7	50.8	58	42.3	48.5	51	47.2	41.8	44.3	46.6
6	45.7	47.9	41.2	44.8	50.5	56.8	42.4	48.4	50.2	46.7	41.7	45	46.6
7	45.4	47.5	40.5	44.3	50	56	42.3	48.4	50.2	45.7	41.4	45	46.4
8	45.2	47	39.7	45.5	49.3	55.3	42.1	47.8	49.7	44.9	40.1	45.7	48.2
9	45.9	46.7	39.6	45.3	49	54.8	41.6	48.2	49.7	44.4	39.2	45.3	48.3
10	45.7	46.6	39.8	45.2	48.8	54.8	41.4	48.2	49.7	44.3	39	45.3	48
11	45.6	46.3	40.3	45.4	48.8	55.1	41.2	47.4	49.4	43.9	38.9	44.8	47.8
12	45.3	46.1	40.5	45.7	48.9	55.3	41	47	48.9	43.5	38.8	44.4	47.7
13	45.3	46	40.7	45.7	49	55.3	40.8	46.7	48.6	43.2	37.8	44.1	47.2
14	46	45.8	40.5	45.8	49.2	55.3	40.3	46.2	48.1	42.9	38.1	43.8	47.2
15	45.8	45.5	40.2	45.7	48.9	55.1	40.2	46	47.9	42.5	38.2	43.5	47
16	45.6	45.3	40.1	45.6	48.7	55	39.9	46	47.7	42.2	35.3	41.5	45.3
17	45.5	45	39.9	45.5	48.7	54.5	39.7	46.1	47.8	42	32.5	43.6	42.1
18	45.3	44.9	39.8	45.7	48.5	54.4	39.6	46.4	47.9	41.6	32.3	42.5	41.4
19	45.3	44.9	39.9	45.8	48.5	54.4	39.5	46.7	48	41.4	32.2	42.1	41.6
20	44.9	44.7	39.7	45.7	48.4	54.2	39.4	47.4	48.5	41.3	32.3	42	42.1
21	45	44.8	40.3	46	48.5	54.5	39.6	48	49	41.3	32.6	42.1	42
22	45.1	44.9	41.4	46.4	49	55.3	39.9	49.7	50.1	41.7	33.1	42.6	41.9
23	45.5	45.5	43	46.8	49.7	56.3	40.4	50.7	51.4	42.3	33.9	43.1	42.1
24	45.1	46.2	44.8	47	51	57.4	40.5	51.8	52.7	43.4	35	43.7	41.7

CURRICULUM VITAE

Author's Name	Ms. Supattira Pruetiworanan
Date/Year of Birth	August 10, 1984
Place of Birth	Phrae Province, Thailand
Education	2006 B.Sc. in Microbiology, Chiang Mai University 2009 M.Sc. in Biology, Chiang Mai University 2017 Ph.D. in Applied Microbiology, Chiang Mai University
Publications	Pruetiworanan S. <i>et al.</i> Effect of pH on heat tolerance of hot spring diatom <i>Achnanthes exiguum</i> AARL D025-2 in cultivation. Journal of Applied Phycology. 2017. 29(158):1-7. ISSN 0921-8971.
Oral presentation	Pruetiworanan S., Mayama S., Peerapornpisal Y., Pekkoh J. and Pumas C. The screening of diatoms in some hot springs in the northern of Thailand between wet and dry seasons. The 34 th Research meeting of the Japanese Society of Diatomology, Lake Biwa Museum, Japan November 8-9, 2014. Pruetiworanan S., Mayama S., Peerapornpisal Y., Pekkoh J. and Pumas C. The distribution of diatoms in some hot springs in the northern of Thailand. The 7 th National Conference on Algae and Plankton. Bangkok. Thailand. May 25-27, 2015.

Poster presentation Pruetiworanan S., Peerapornpisal Y., Pekkoh J. and Pumas C.

Effect of pH on heat tolerance of hot spring diatom *Achnanthes exiguum* AARL D025-2 in cultivation. The 9th Asia-Pacific Conference on Algal Biotechnology: Algae for Food, Feed, Fuel and Beyond. Bangkok. Thailand. November 15-18, 2016.

Experience

The 20th Anniversary of the Korean Society of Phycology. Korea. October 16-19, 2006.

Workshop on The Use of Diatoms as Water Quality Indicators. University of Essex. UK. May – June 2008.

The 11th International Conference on Applied Phycology. The National University of Ireland. Galway. June 21-27, 2008.

Research in the diversity of hot spring diatoms. Department of Biology, Tokyo Gakugei University. Tokyo. Japan. October – December 2014.

