MAATALOUSHALLITUKSEN KALATALOUDELLINEN TUTKIMUSTOIMISTO

Monistettuja julkaisuja N:o 34

LIMNOLOGICAL AND BIOLOGICAL OBSERVATIONS MADE ON SMALL FINNISH LAKES TREATED WITH ROTENONE IN THE YEARS 1960 AND 1962

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Helsinki 1968

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1. Introduction

Some observations concerning the small lakes that form the subject of this study have been published earlier. SUOMEN KALASTUSYHDISTYS (1961) published analyses of water quality, plankton, bottom animals, and fish stock, together with a depth map of Ulpasjärvi, which was cleared of fish by treatment in 1960. Some observations on the growth and food of brown trout (Salmo trutta L.) and rainbow trout (Salmo gairdneri Richardson) with which the lake was later stocked have been published by JAHNSSON (1963). Observations on limnology and natural fish populations made in connection with treatment of lakes in 1962 have been reported by TOIVONEN (1962). After the treatment brown trout and rainbow trout were introduced, mainly as fry, into these lakes. Places where older fish were released have been mentioned separately. Some limnological analyses made after the treatment and ecological observations on new fish stocks have already been published (TUUNAINEN 1965 and 1966). The present report includes limnological and biological observations made on the lake up to the end of the year 1966. The data of Sahalampi include observations for the year 1967 as well.

The exact sites where samples of water and bottom animals were collected are marked on the maps. All the water samples were taken with a Ruttner sampler as vertical series at the deepest point of the lake. The chemical and physical analyses were made by standard methods (GESELLSCHAFT DEUTSCHER CHEMIKER 1960, ELINTARVIKETUTKIJAIN SEURA r.y. 1962). Samples of benthic animals were collected with an Ekman-Birge sampler and sifted through a 0.75 mm mesh sieve. Stocked brown trout and rainbow trout were caught with the series of gill nets, in which the distances between the knots were 12,

17, 20, 25, 30, 35 and 45 mm. Some fish were caught by angling too. A more exact report of the methods of analyses used, and more detailed limnological description of the lakes, with results of investigations and conclusions, will be published later.

All the lakes dealt with in this study are small lakes (0.8-4.3 hectares) and lie at altitudes of 0-152 metres. The maximum depths are 3.0-19.5 metres. The bottom is mainly mud of herbaceous origin and mud with plankton debris. The shores of most of the lakes are becoming marshy. Eight of them have no outlet, while the ninth has a small one.

2. Maps of the lakes and dates of observations.

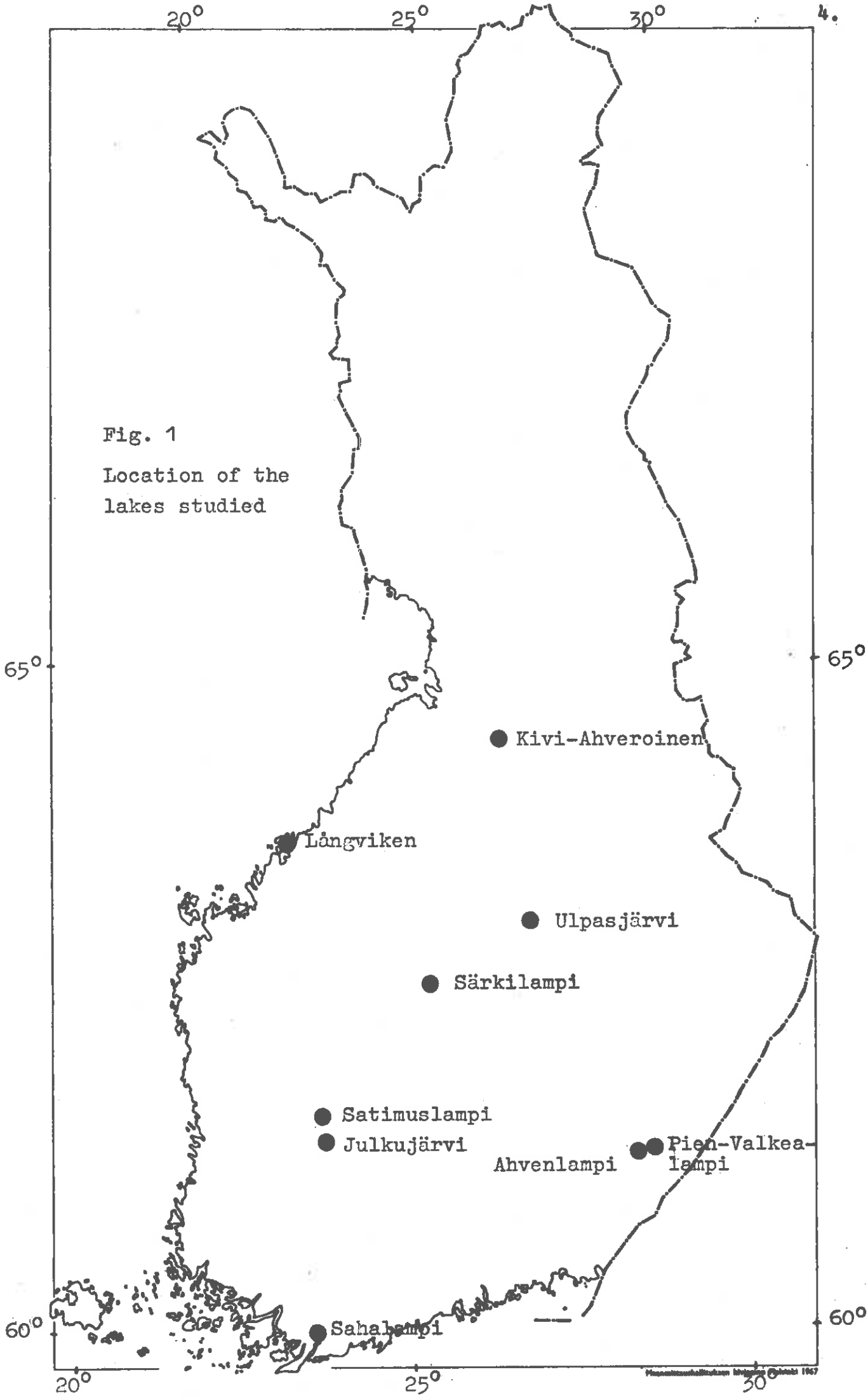


Fig. 1

Location of the lakes studied

MAP SYMBOLS


Shore line

Outer border of the emergent vegetation


Floating vegetation


Depth contour


Marshland


Rock


Trash


Sampling station


Dock and outlet


Cottage

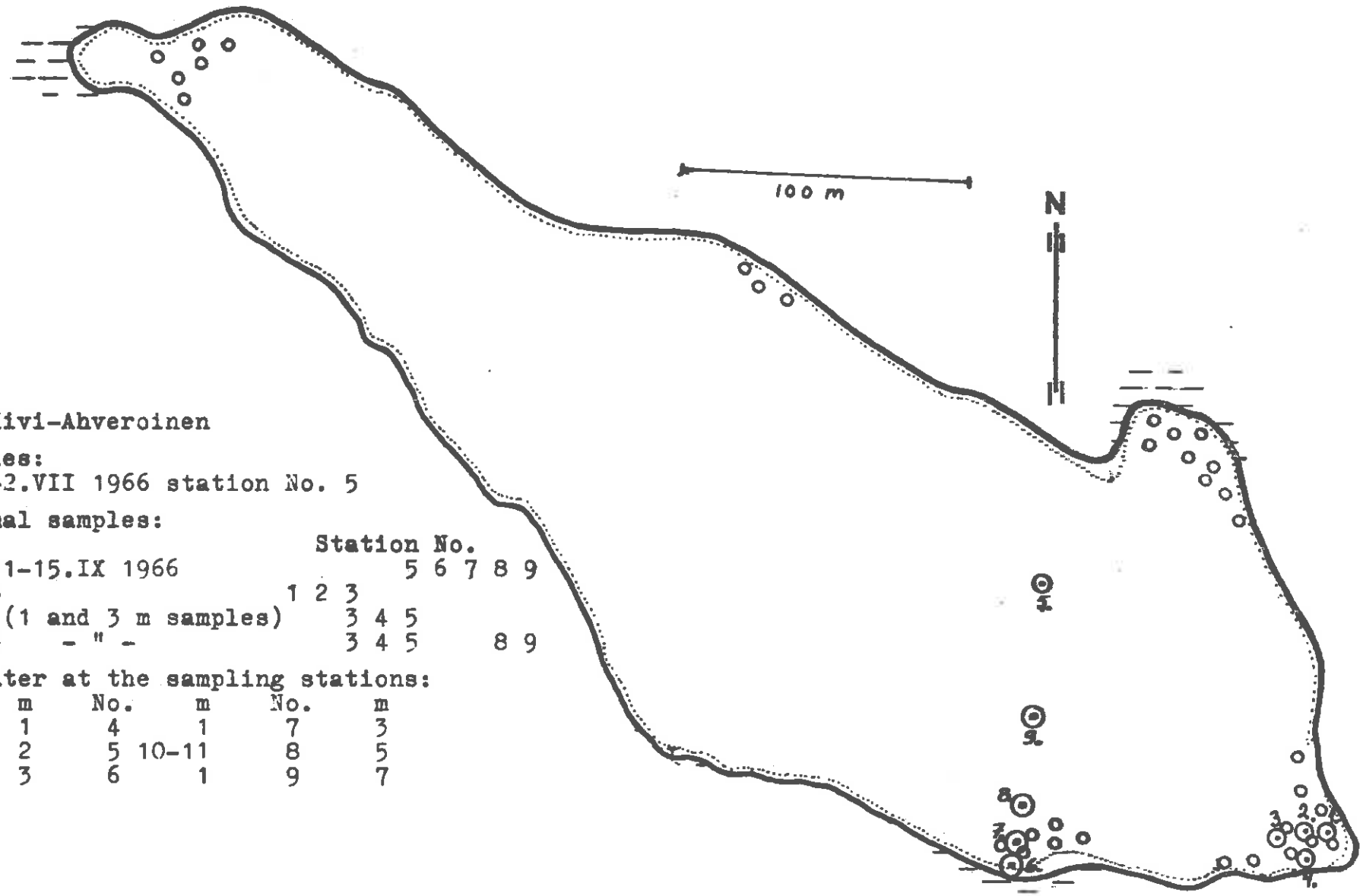


Fig. 2

2.1. Lake Kivi-Ahveroinen

Water samples:
5.VII 1959-2.VII 1966 station No. 5

Bottom animal samples:

	Station No.								
22.VIII 1961-15.IX 1966					5	6	7	8	9
4. VII 1963	1	2	3						
8. VI 1964 (1 and 3 m samples)			3	4	5				
15.VII 1966 - " -			3	4	5			8	9

Depth of water at the sampling stations:

No.	m	No.	m	No.	m
1	1	4	1	7	3
2	2	5	10-11	8	5
3	3	6	1	9	7

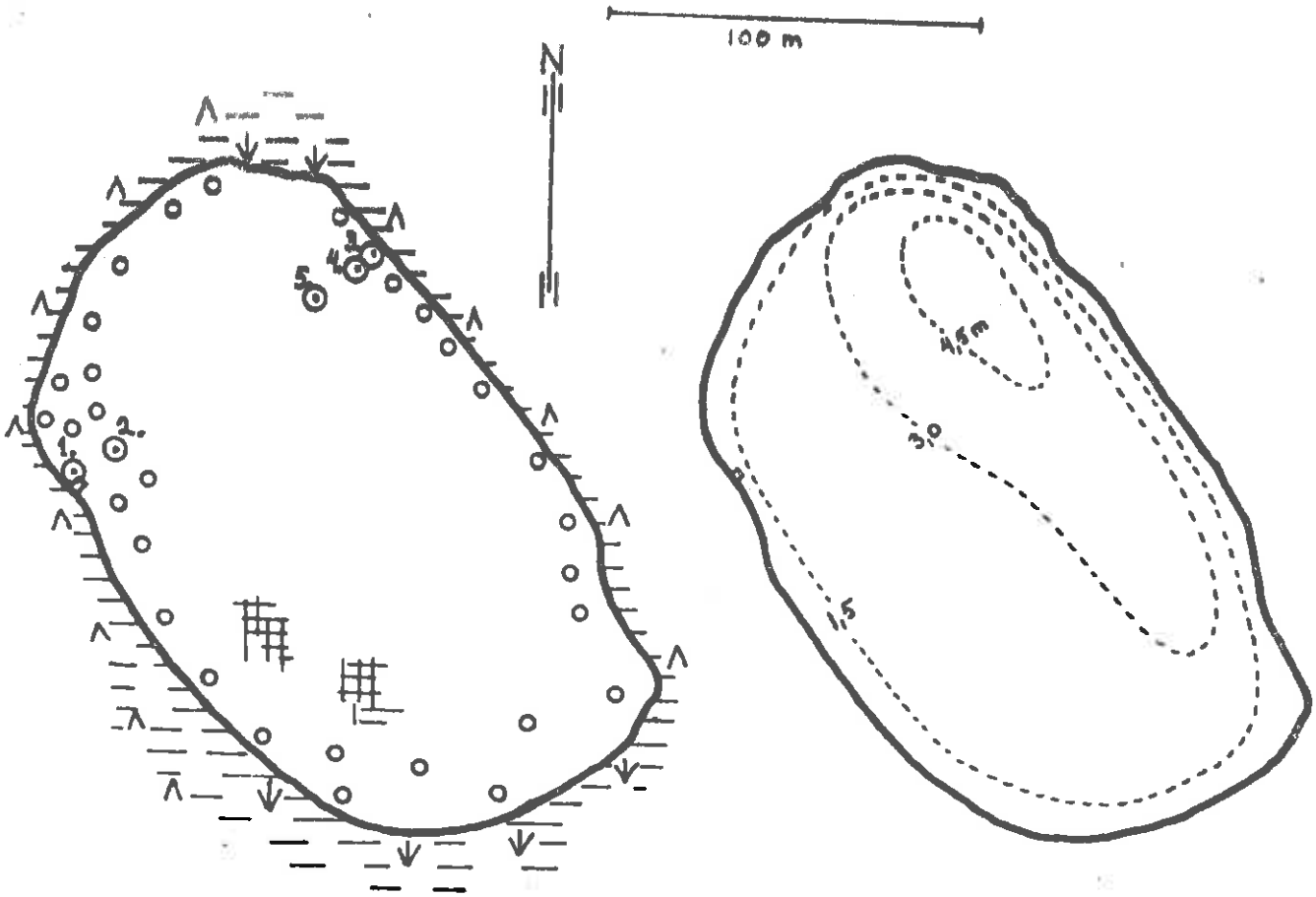


Fig. 3

2.2. Lake Satimuslampi

Water samples:
18.IX 1962-10.VI 1965 station No. 5

Bottom animal samples:

	Station No.
17-18.IX 1962	1 2 5
7-8.VI 1963	1 2
3.VI 1964	1 3 4 5

Depth of water at the sampling stations:

No.	m	No.	m
1	1	4	2.5
2	2-2.5	5	4.5-4.8
3	1		

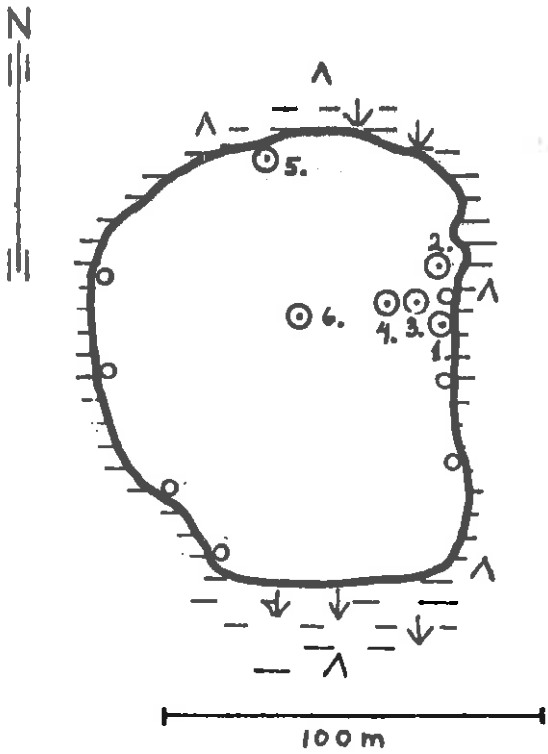


Fig. 4

2.3. Lake Pien-Valkealampi

Water samples:
11.IX 1962-26.VII 1966 station No. 6

Bottom animal samples:

	Station No.					
12.IX 1962	1			4		6
24-25.VI 1963	1	2	3		5	
1.VII 1964-26.VII 1966	1			4		6

Depth of water at the sampling stations:

No.	m	No.	m	No.	m
1	1	3	3	5	3
2	2	4	4.5-5	6	11

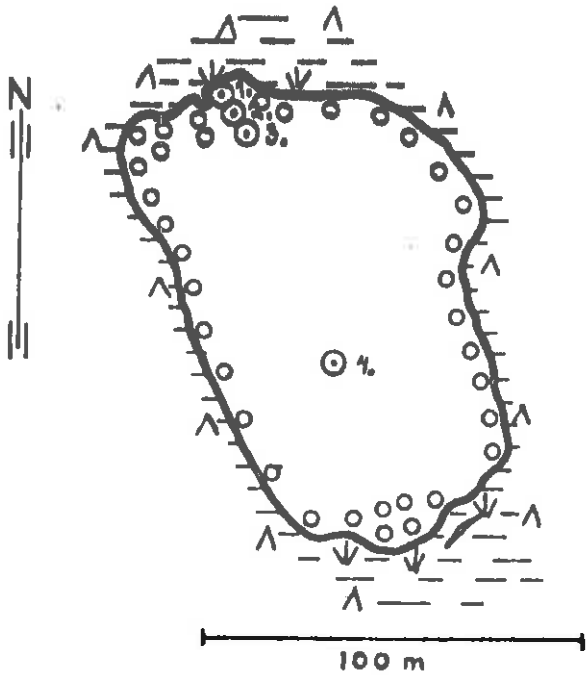


Fig. 5

2.4. Lake Ahvenlampi

Water samples:
10.IX 1962-26.VII 1966 station No. 4

Bottom animal samples:

	Station No.			
9-10.IX 1962	1		3	4
25.VI 1963	1	2	3	
2-3.VII 1964	1	2		4
12.VII 1965-25.VII 1966	1		3	4

Depth of water at the sampling stations:

No.	m	No.	m
1	1	3	3
2	2	4	4.5-5

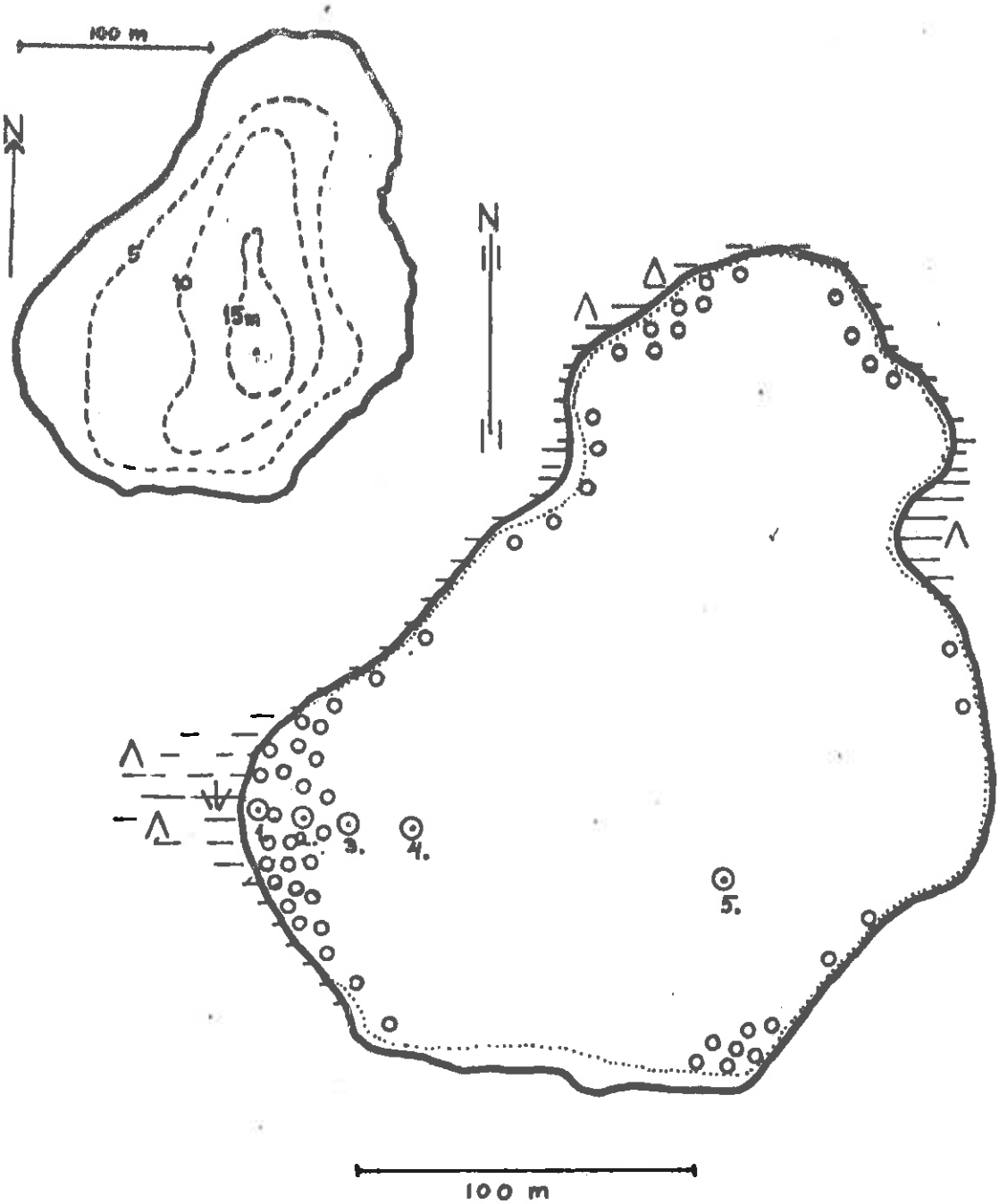


Fig. 6

2.5. Lake Ulpasjärvi

Water samples:
2.VIII 1960-27.VII 1966 station No. 5

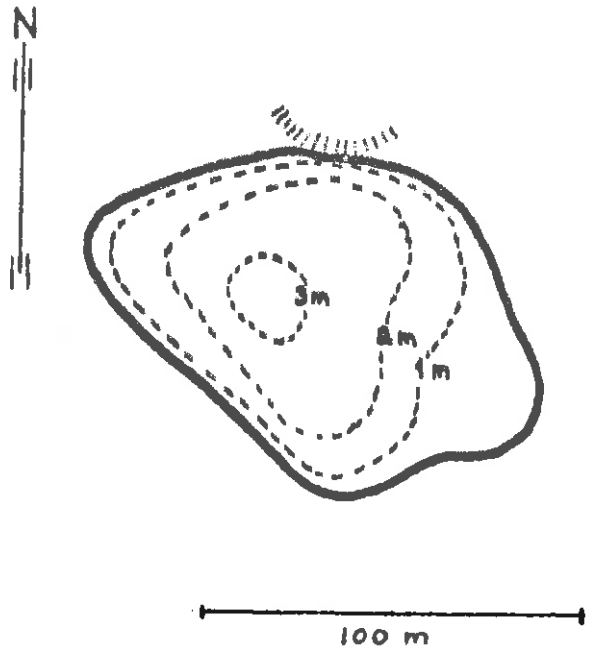
Bottom animal samples:

	Station No.
2.VIII 1960	5
31.VIII 1961	1 3 4 5
19.VI 1963	1 2 3
10.VI 1964	1 3 4 5
19.VIII 1964-20.VII 1966	1 3 4

Depth of water at the sampling stations:

No.	m	No.	m
1	1	4	5
2	2	5	18.5-19.5
3	3		

Depth map: SUOMEN KALASTUSYHDISTYS (1961)



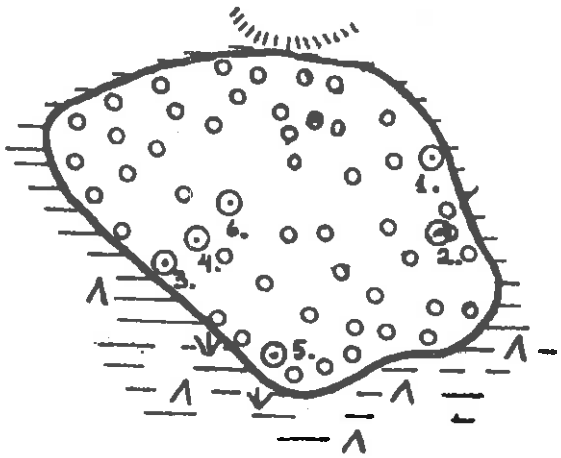


Fig. 7

2.6. Lake Sahalampi

Water samples:
27.II 1962-24.X 1967 station No. 6

Bottom animal samples:

	Station No.					
27.VIII 1962	1			4		6
11-12.VI 1963-24.X 1967		2		4		6
11-12.VI 1963		2	3	4	5	6
29.V 1964	1	2		4		6

Depth of water at the sampling stations:

No.	m	No.	m	No.	m
1	1	3	1	5	1
2	1	4	2	6	3

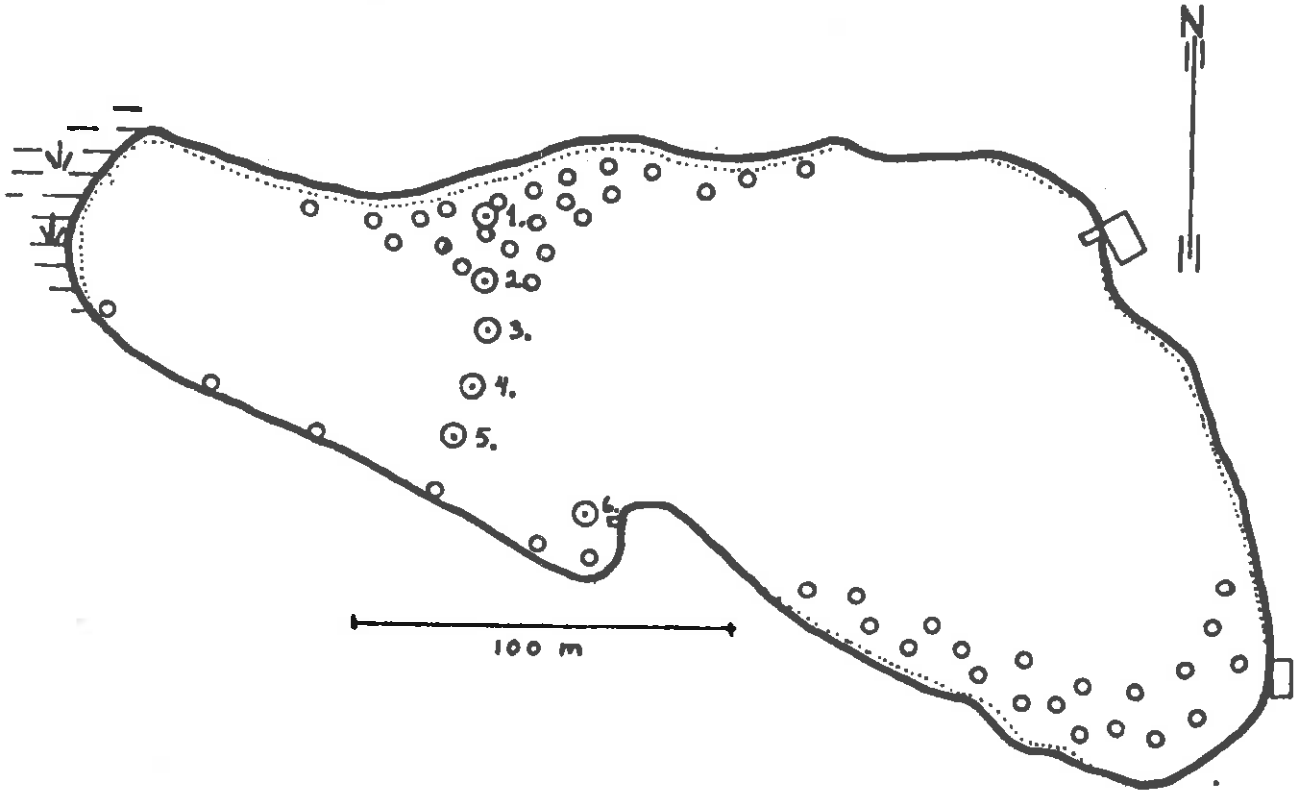


Fig. 8

2.7. Lake Julkujärvi

Water samples:
26.IX 1961-22.VIII 1966 station No. 5

Bottom animal samples:

	Station No.
6-7.VI 1963	1 2 3
2.VI 1964	1 3 4 6

Depth of water at the sampling stations:

No.	m	No.	m	No.	m
1	1	3	3	5	9.8
2	2	4	7-8	6	3

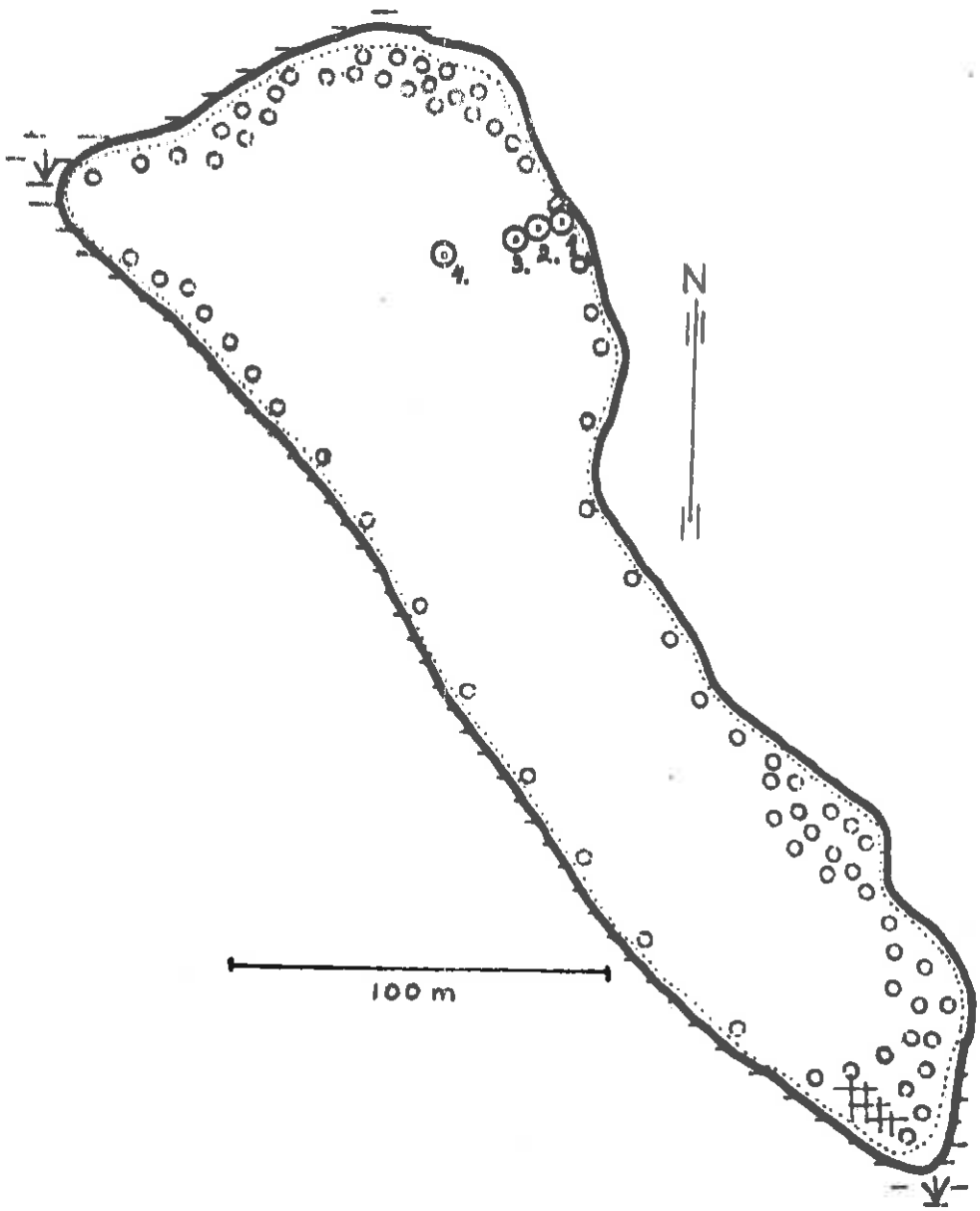


Fig. 9

2.8. Lake Särkilampi

Water samples:
7.VIII 1962-23.VIII 1966 station No. 4

Bottom animal samples:

	Station No.
7. VI 1963	1 2 3
4.VI 1964-12.VII 1966	1 3 4

Depth of water at the sampling stations:

No.	m	No.	m
1	1	3	3
2	2	4	5-5.5

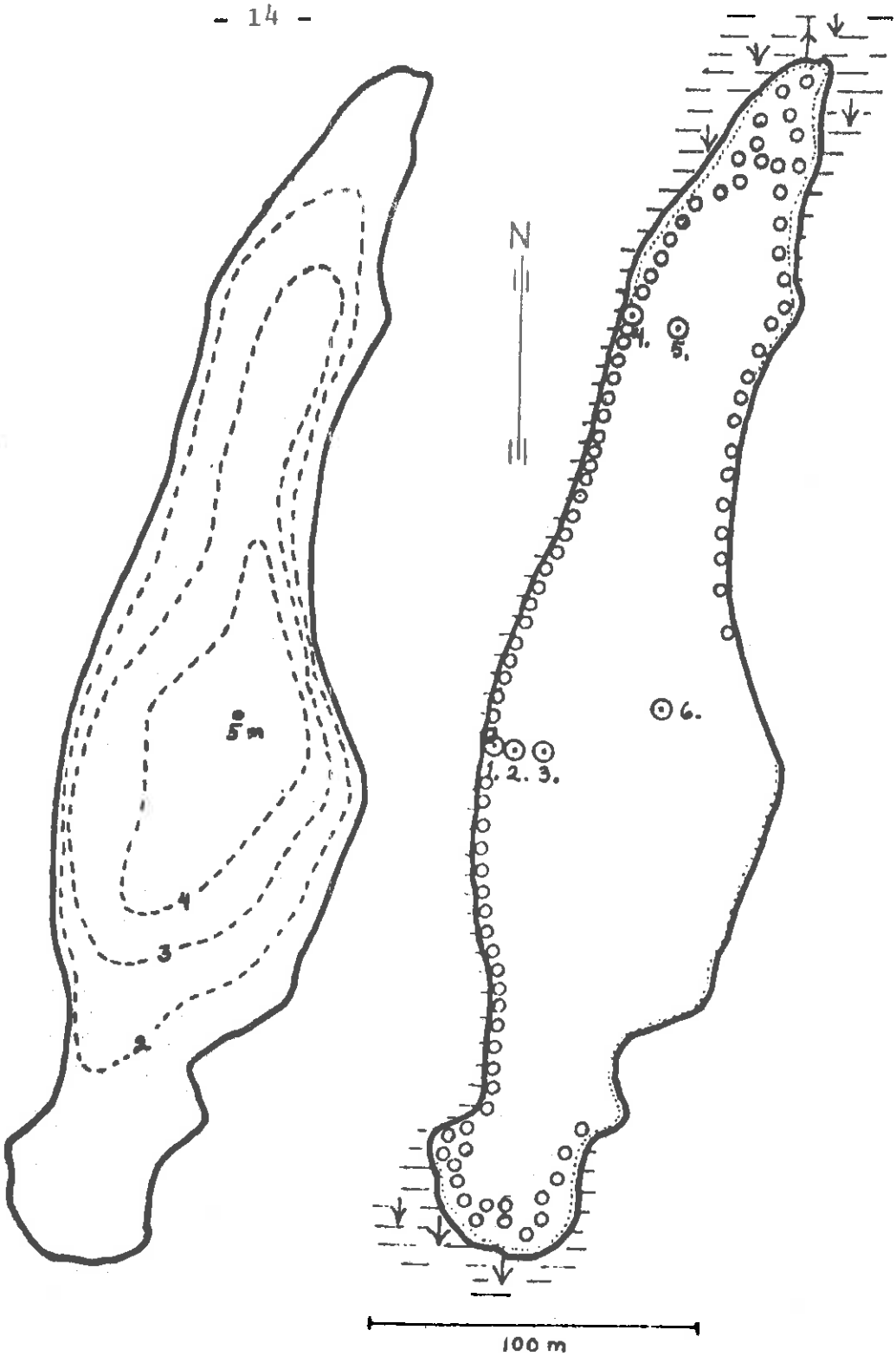


Fig 10

2.9. Lake Långviken

Water samples:
3.IX 1962-6.VI 1964 station No.6

Bottom animal samples:

	Station No.
2-3.IX 1962	1 2 6
3.VII 1963	1 2 3
3.IX 1963	1 3 6
6-7.VI 1964	4 5 6

Depth of water at the sampling stations:

No.	m	No.	m	No.	m
1	1	3	3	5	3
2	2	4	1	6	5

3. Water analyses

3.1. Lake Kivi-Ahveroinen

Station No. 5, depth to bottom 11 m

Date and depth	t°C	O_2 mg/l	O_2%	pH	Electrolytic conductivity µS	Methyl orange alkalinity mval/l	Total hardness °dH	Colour mg Pt/l	$KMnO_4$ consumption mg/l	Fe mg/l	
1	2	3	4	5	6	7	8	9	10	11	12
5.VII-59											
0.3 m	17.9	9.4	101	6.6	16			5			Transparency
2.0 "	17.7	9.2	100	6.8	17	0.08	0.25	5	13.9		at 12.10.,
4.0 "	17.4	9.4	101	6.7	16			5			sunny:
6.0 "	15.6	10.5	110	6.8	17			5			6.8 m
8.0 "	11.5	11.4	110	7.1	15			5			
9.0 "	9.6	10.2	94								
10.0 "	9.1	9.9	90	6.3	16	0.08	0.27		11.7		
18.IV-61											
1.0 m	0.9	9.4	68						7.5		
3.0 "	2.4	6.7	51						10.3		
5.0 "	3.9	6.0	48						7.8		
7.0 "	4.3	4.1	33						8.1		
9.5 "	4.9	0.3	0						10.3		
22.VIII-61											
1.0 m	15.0	9.6	99						7.8		Transparency
3.0 "	15.0	9.3	95		13				6.9		5.0 m
5.0 "	15.0	9.3	95						7.8		
7.0 "	15.0	9.2	95		13				7,8		
9.5 "	10.0	3.4	31						6.1		

1	2	3	4	5	6	7	8	9	10	11	12
2.IV-62											
1.0 m	0.8	13.2	97	6.0	17				6.0		Transparency
3.0 "	2.6	10.4	80	6.0	15		0.30	0-5	4.7	0.12	8.0 m
5.0 "	3.3	8.2	69	5.5	15				3.5		
7.0 "	4.0	3.3	26	5.5	17		0.30	0-5	3.2	0.13	
9.5 "	4.4	0.8	7	6.5	27				6.6		
17.VIII-62											
1.0 m	15.4	11.0	114	6.0	15				13.3		
3.0 "	14.7	11.0	113	6.0	14		0.14	5	12.0	0.03	Transparency
5.0 "	14.5	11.0	112	6.5	13				10.1		8.0 m
7.0 "	14.3	11.0	111	6.5	13		0.16	5	10.1	0.02	
10.0 "	12.7	6.2	60	6.5	14				14.2		
6.IV-63											
1.0 m	0.8	14.4	106	6.0	15				7.0		Transparency
3.0 "	1.9	11.3	86	6.0	15				5.4		at 11.30.:
5.0 "	2.6	9.4	72	6.0	14				5.4		7.1 m
7.0 "	3.3	4.0	31	6.0	17				6.0		
9.0 "	4.0	1.5	12	6.5	25				6.0		
4.VII-63											
0.3 m	17.8										
1.0 "	17.8										
3.0 "	17.8										
5.0 "	15.0										
7.0 "	12.9										
9.0 "	9.4										
10.0 "	8.3										

1	2	3	4	5	6	7	8	9	10	11	12
8.VIII-63											
1.0 m	19.7	9.1	104	6.5	14			10	11.7		Transparency
3.0 "	19.2	9.0	100	6.7	14		0.28	5	10.1	0.05	at 12.00.:
5.0 "	17.8	8.9	97	6.5	11			10	9.8		4.6 m
7.0 "	13.3	6.6	65	6.5	14		0.30	15	8.2	0.12	
10.0 "	8.8	0.0	0	6.5	23			60	13.9		
9.IV-64											
1.0 m	0.9	11.6	85	5.5	19			10	5.7		Transparency
3.0 "	3.0	8.6	67	6.2	18		0.28	10	5.3	0.00	at 10.50.:
5.0 "	3.5	5.8	46	6.2	18			10	5.4		5.5 m
7.0 "	3.8	3.4	27	6.0	19		0.30	15	5.4	0.03	
10.0 "	4.5	0.6	5	6.8	34			30	11.1		
8.VI-64											
0.5 m	10.3										
1.0 "	10.5										
3.0 "	10.4										
5.0 "	10.4										
7.0 "	7.6										
9.0 "	6.7										
10.5 "	6.6										
14.VIII-64											
1.0 m	16.9	9.0	96	6.5	15			10	10.7		Transparency
3.0 "	16.8	9.0	96	6.5	15		0.25	10	9.5	0.07	at 9.50.:
5.0 "	16.7	8.9	95	6.3	15			10	13.6		3.9 m
7.0 "	11.9	5.1	49	6.0	16		0.28	15	8.5	0.23	
10.0 "	9.3	0.8	8	5.7	19			35	9.8		

1	2	3	4	5	6	7	8	9	10	11	12
9.IV-65											
1.0 m	1.0	12.3	91	6.0	15			5	9.5		Transparency
3.0 "	2.6	8.5	65	6.1	16		0.29	5	10.4	0.02	at 11.20.:
5.0 "	3.4	6.8	54	6.0	15			10	9.5		7.3 m
7.0 "	3.9	5.2	41	6.3	16		0.34	10	7.0	0.04	
10.0 "	4.4	1.9	15	6.5	21			20	12.6		
5.VIII-65											
1.0 m	16.6	8.9	94	6.8	14			5	11.4		Transparency
3.0 "	16.6	8.9	94	6.8	14		0.24	5	14.5	0.00	at 10.12.:
5.0 "	16.4	8.9	94	6.8	14			10	14.5		6.2 m
7.0 "	13.9	9.7	98	6.8	10		0.22	10	18.6	0.02	
10.0 "	9.4	2.5	23	6.5	16			25	15.8		
3.IV-66											
1.0 m	1.0	12.2	90	6.8	16			5	6.3		Transparency
3.0 "	2.9	10.2	80	6.8	16			5	8.2		at 10.40.:
5.0 "	3.8	8.2	65	6.8	16			5	9.2		10.0 m
7.0 "	3.9	7.2	57	6.8	11			10	5.7		
10.0 "	4.4	2.3	18	6.8	31			25	13.3		

1	2	3	4	5	6	7	8	9	10	11	12
15.VII.66											
1.0 m	17.3	9.9	107	6.4	20	0.14	0.27	5	7.2		Transparency
2.0 "											at 13.20.:
3.0 "	17.2	10.0	107								cloudy: 7.5 m
4.0 "											
5.0 "	17.2	10.1	109								
6.0 "											
7.0 "	14.7										
8.0 "											
9.0 "	9.9	11.0	102								
10.0 "	9.2	7.5	68								
11.0 "	8.5	4.0	36	6.5	16	0.16	0.32	15	9.2		
2.VIII.66											
1.0 m	18.7	10.1	112	7.0	15			5	6.6		Transparency
3.0 "	18.7	9.5	105	7.0	14			5	12.3		at 10.30.:
5.0 "	18.6	9.5	105	7.0	14			5	10.1		6.3 m
7.0 "	16.6	8.4	88	7.0	14			10	9.2		
10.0 "	10.1	4.8	45	6.5	15			20	8.8		

3.2. Lake Satimuslampi

Station No,5, depth to bottom 4.8 m

Date and depth	t°C	O_2 mg/l	O_2%	pH	Electrolytic conductivity µS	Methyl orange alkalinity mval/l	Total hardness °dH	Colour mg Pt/l	$KMnO_4$ consumption mg/l	Fe mg/l	
1	2	3	4	5	6	7	8	9	10	11	12
18.IX-62											
1.0	10.5	9.6	90	4.8	18			5	11.0		Transparency
2.0 "	10.4	9.2	86	4.6	16			5	14.0		at 11.10.sunny:
3.0 "	10.4	9.7	91	4.7	18			10	11.0		4.8 m (to bottom)
4.0 "	10.4	9.9	92	5.3	18			25	21.0		
21.II-63											
1.0 m	0.9	7.0	52	4.5	22				6.3	0.01	
2.5 "	3.4	6.3	49	4.6	18				8.8		
4.0 "	4.0	1.2	9	4.7	17				11.1	0.15	
28.III-63											
1.0 m	1.0	11.7	86	4.7	22				11.4		
2.5 "	3.8	4.4	35	4.6	22				16.8		
3.0 "	4.0	2.6	21	4.7	18				13.3		
7.VI-63											
0.5 m	19.7										
4.5 "	19.1										

1	2	3	4	5	6	7	8	9	1o	11	12
3.VI-64											
0.5 m	15.2			5.6							
1.0 "	15.2										
2.0 "	15.2										
3.0 "	15.2										
4.0 "	15.1										
10.VI-65											
0.5 m	18.6	10.4	115	7.3							Transparency
1.0 "	18.3										at 9.15.,
2.0 "	17.9	10.6	113								sunny:4,5 m
3.5 "	14.9	10.9	111	6.8							(to bottom)

3.3. Lake Pien - Valkealampi

Station No, 6, depth to bottom 11 m

Date and depth	t°C	O_2 mg/l	O_2 %	pH	Electrolytic conductivity µS	Methyl orange alkalinity mval/l	Total hardness °dH	Colour mg Pt/l	$KMnO_4$ consumption mg/l	
1	2	3	4	5	6	7	8	9	10	11
11.IX.62										
1.0 m	14.7	9.4	94	5.5	8			5	6	Transparency
3.0 "	14.5	9.5	97	5.5	9			5	7	at 10.30.,
5.0 "	14.5	9.3	94	5.4	10			5	6	cloudy:
7.0 "	14.3	9.4	95	5.6	9			5	6	8.0 m
9.0 "	10.6	2.4	22	5.6	9			5	8	
10.0 "	8.7	0.7	6	5.9	16			5	33	
24.VI.63										
0.5 m	18.1									
1.0 "	17.9									
3.0 "	17.5									
5.0 "	16.4									
7.0 "	12.9									
9.0 "	10.0									
10.0 "	8.8									
11.0 "	8.0									

1	2	3	4	5	6	7	8	9	10	11
1.VII-64										
0.5 m	19.1									
1.0 "	19.1									
3.0 "	19.0									
5.0 "	15.1									
7.0 "	10.7									
9.0 "	7.7									
10.5 "	7.3									
31.V-65										
0.2 m	12.7	11.1	109	6.1	9.3	0.10	0.22			
2.0 "	11.8	11.4	110							
3.0 "	11.5									
4.0 "	10.0	11.6	107							
5.0 "	8.6									
6.0 "	7.3									
7.0 "	6.7	8.9	76	6.3						
8.0 "	6.1									
9.0 "	5.9									
10.0 "	5.7									
10.5 "	5.7	0.2	0	5.7	14.6	0.12	0.28			

1	2	3	4	5	6	7	8	9	10	11
12.VII-65										
0.5 m	18.0	11.5	126	7.2	9.8	0.12	0.17			
1.0 "	17.7									
3.0 "	17.0	11.4	122							
5.0 "	15.1									Transparency
7.0 "	10.3	9.1	85							at 13.50.,half
9.0 "	7.6									cloudy:
10.0 "	7.3	0.2	0							3.5 m (Turbidity
10.5 "				6.6	12.0	0.13	0.22			caused by
11.0 "	7.1									plankton)
8.VI-66										
0.2 m	17.1	13.1	141	6.5	20.0	0.17		20	20.6	Transparency
1.0 "	16.3									at 10.40.,
2.0 "	14.6	14.0	143							half cloudy:
3.0 "	12.1									2.0 m
4.0 "	8.3	10.2	91							
5.0 "	5.9									
6.0 "	5.1	9.1	75							
7.0 "	4.7									
8.0 "	4.6									
9.0 "	4.3									
10.0 "	4.1	4.8	39	6.0	22.0	0.17		20	19.7	

1	2	3	4	5	6	7	8	9	10	11
26.VII-66										
0.2 m	23.6	11.2	136	5.9	13.5	0.07	0.20	25.6		Transparency
1.0 "	23.0									at 13.55,
3.0 "	18.4	9.8	108							sunny:
4.0 "	16.5									2.8 m
5.0 "	13.3	3.8	38							
6.0 "	7.3	2.8	24							
7.0 "	6.1									
8.0 "	5.7	0.6	5							
10.0 "	4.9	0.1	0	6.5	27.3	0.17	0.39	20.0	23.4	

3.4. Lake Ahvenlampi

Station No. 3, depth to bottom 5 m

Date and depth	t°C	O_2 mg/l	O_2 %	pH	Electrolytic conductivity µS	Methyl orange alkalinity mval/l	Total hardness °dH	Colour mg Pt/l	$KMnO_4$ consumption mg/l	
1	2	3	4	5	6	7	8	9	10	11
10.IX-62										
1.0 m	14.2	8.7	88	4.7	15			7	19	Transparency
2.0 "	13.8	8.3	84	4.3	18			7	11	at 11.30,:
4.0 "	13.8	8.7	88	4.0	22			8	11	4.0 m
5.0 "	13.8	8.7	88	4.0	13			10	17	
25.VI-63										
0.5 m	20.1									
1.0 "	19.8									
2.0 "	18.9									
3.0 "	18.6									
4.0 "	16.1									
4.7 "	15.0									
2.VII-64										
0.5 m	22.0									
1.0 "	21.1									
2.0 "	20.4									
3.0 "	20.0									
4.0 "	17.8									
4.5 "	17.0									

1	2	3	4	5	6	7	8	9	10	11
1.VI.65										
0.2 m										
0.5 "	14.4	10.6	108	6.9	31.3	0.32	0.11			
1.0 "	13.4									
2.0 "	12.5									
3.0 "	10.2	10.6	99							
4.0 "	8.2	12.4	110	6.5	33.7	0.36	0.06			
12.VII.65										
0.2 m	17.7	10.6	115							
0.5 "				7.3	28.9	0.29	0.08			Transparency
1.0 "	17.4									at 9.30.,
2.0 "	17.2									sunny:
3.0 "	17.0	10.6	114							3.5 m
4.0 "	16.3	12.4	131	7.3	30.5	0.33	0.11			
7.VI.66										
0.2 m	17.5	11.6	125	6.7	24.0	0.21		20	21.5	Transparency
1.0 "	16.4	11.6	122							at 10.00,
2.0 "	14.9									sunny:
3.0 "	12.1	11.3	110							3.8 (Turbidity
4.0 "	9.5	11.0	100	6.4	29.0	0.25		20-25	23.7	caused by plankton)

1	2	3	4	5	6	7	8	9	10	11
26.VII.66										
0.2 m	22.7	8.7	103	6.7	22.1	0.17	0.39	20	23.4	Transparency
1.0 "	22.5									at 10.22.,
2.0 "	22.4	8.7	103							half cloudy:
3.0 "	21.0	8.5	98							3.5 m
4.0 "	17.9									
4.5 "	16.2	9.2	97	6.7	26.0	0.21	0.48	25	21.5	

3.5. Lake Ulpasjärvi

Station No. 5, depth to bottom 19,5 m

Date and depth	t°C	O_2 mg/l	O_2 %	pH	Electrolytic conductivity µS	Methyl orange alkalinity mval/l	Total hardness °dH	Colour mg Pt/l	$KMnO_4$ consumption mg/l	Fe mg/l	Ca mg/l	
1	2	3	4	5	6	7	8	9	10	11	12	13
2.VIII-60[1]												
1.0 m	21.5	8.6	100	6.0				35	39.5			Transparency
3.0 "	17.5	9.5	103	5.7	16		0.31	35	39.5	0.00	0.9	at 10.00,
4.0 "	12.8	10.5	104	5.3	13			35	34.8			cloudy:4.0 m
5.0 "	6.8	9.3	80	5.0	15			35	35.4			
6.0 "	6.5	8.1	69	4.8	16			35	44.8			
7.0 "	4.7	7.2	58	4.7	20			35	46.2			
9.0 "	4.2	4.2	34	4.6				35	51.5			
10.0 "	4.2	-	-	-	16		0.25	35		0.05	1.0	
11.0 "	4.0	2.3	18	4.3	16			35	31.8			
15.0 "	4.0	0.1	0	4.0	14			35	53.5			
17.0 "	4.0	0.3	0	4.0	17			35	46.7			
18.5 "	3.2			4.3					63.5			

1) Suomen Kalastusyhdistys (1961)

1	2	3	4	5	6	7	8	9	10	11	12	13
31.VIII-61												
1.0 m	14.7	9.5	99						25.0			Transparency:
3.0 "	14.6	9.0	92		10				27.2		0.6	4.0 m
5.0 "	10.4	8.5	79						23.9			
7.0 "	6.6	6.0	51						27.2			
10.0 "	5.9	1.4	12						25.4			
15.0 "	4.7	0.0	0		12				31.0		0.4	
17.0 "	4.5	0.0	0						33.4			
18.0 "	4.7	0.3	0						35.8			
19.0 "	4.6	0.0	0						44.6			
3.IV-62												
1.0 m	9.8	9.6	70		15		0.20	20	20.2	0.08	0.02	
3.0 "	2.4	8.3	63									
5.0 "	3.4	7.8	61									
7.0 "	3.8	7.5	60									
10.0 "	4.2	6.0	48									
15.0 "	4.2	0.6	5		15		0.22	15	23.1	0.21	0.03	
17.0 "	4.1	0.0	0									
18.0 "	4.1	0.0	0									
19.0 "	4.1	0.0	0									

1	2	3	4	5	6	7	8	9	10	11	12	13
20.VII.62												
1.0 m	16.6	9.9	106									
3.0 "	15.1	8.6	89						24.3			
5.0 "	7.9	8.2	72									
7.0 "	6.1	7.4	62									
10.0 "	4.5	5.1	41									
15.0 "	4.5	0.9	7						31.6			
17.0 "	4.4											
19.0 "	4.4											
8.VIII.62												
1.0 m	15.0	9.9	102									Transparency:
3.0 "	14.6	9.7	99		12		0.17	20	22.4	0.05		4.3 m
5.0 "	9.4	8.1	74									
7.0 "	5.8	6.9	57									
10.0 "	4.5	5.1	41									
15.0 "	4.5	0.7	6		14		0.16	30	27.2	0.28		
17.0 "	4.4	0.0	0									
19.0 "	4.4	0.0	0									

1	2	3	4	5	6	7	8	9	10	11	12	13
10.X-62												
1.0 m	7.4	11.1	97									
3.0 "	7.5	10.9	95						22.8			
5.0 "	7.5	10.6	93									
7.0 "	7.4	9.8	86									
10.0 "	7.5	8.6	75									
15.0 "	7.5	5.2	45						44.1			
17.0 "	7.5	1.9	16									
18.5 "	4.4	0.3	0									
19.5 "	4.4	0.0	0									
2-6.IV-63												
3.0 m	2.1	9.6	73	5.7	12		0.22	30	21.8	0.11	0.5	
15.0 "	4.2	0.9	7	5.5	13		0.46	25	23.2	0.08	0.4	
18.VI-63												
0.5 m	15.9											
1.0 "	15.2											
3.0 "	13.7											
5.0 "	7.2											
7.0 "	5.1											
10.0 "	4.4											
13.0 "	4.3											
15.0 "	4.2											
17.0 "	4.2											
19.0 "	4.2											
19.5 "	4.2											

1	2	3	4	5	6	7	8	9	10	11	12	13
4.IX-63												
1.0 m	17.6	9.6	104	5.8								Transparency:
3.0 "	14.8	9.4	96	5.8	10		0.22	20	15.2	0.06		4.1 m
5.0 "	11.9	9.6	93	5.5								
7.0 "	6.9	7.2	62	5.5								
10.0 "	5.0	3.9	32	5.5								
15.0 "	4.5	0.3	0	5.3	11		0.32	35	19.4	0.32		
17.0 "	4.5	0.0	0	5.3								
19.0 "	4.5	0.0	0	5.5								
26.III-64												
1.0 m	0.6	10.1	74	5.5				25				
3.0 "	2.6	9.1	70	5.5				25				
5.0 "	3.3	8.7	68	5.5				20				
7.0 "	4.0	7.4	59	5.4				20				
10.0 "	4.0	6.8	54	5.5				25				
15.0 "	4.2	2.6	21	5.3				25				
17.0 "	4.2	0.6	5	5.3				35				
19.0 "	4.2	0.0	0	5.3				40				

1	2	3	4	5	6	7	8	9	10	11	12	13
10.VI-64												
1.0 m	12.6											
3.0 "	11.3											
5.0 "	7.1											
7.0 "	5.3											
10.0 "	4.4											
15.0 "	4.3											
17.0 "	4.2											
18.VIII-64												
1.0 m	15.8	9.2	96	6.0				15				Transparency
3.0 "	15.8	9.1	95	5.5	11		0.21	20	18.0	0.02		at 11.55,
5.0 "	11.7	9.1	87	5.3				25				cloudy:4.0 m
7.0 "	5.9	7.0	59	5.3				25				
10.0 "	4.8	3.6	29	5.3				25				
15.0 "	4.4	0.4	0	5.3	12		0.26	35	15.2	0.06		
17.0 "	4.4	0.2	0	5.3				40				
19.0 "	4.3	0.0	0	5.3				40				
1.V-65												
4.0 m				5.4	15			25	28.4	0.06		
10.0 "				5.8	12		0.32		19.3	0.03		

1	2	3	4	5	6	7	8	9	10	11	12	13
VIII-65												
3.0 m				5.7	12		0.20	20	19.3	0.02		
15.0 "				5.4	12		0.21	25	20.9	0.23		
18.IV-66												
1.0 m	0.6	8.7	63	6.3				25	24.9			
3.0 "	2.7	8.0	62	6.3				25	24.3			
5.0 "	3.9	7.5	60	6.0				25	23.0			
7.0 "	4.1	6.3	50	6.0				25	23.7			
10.0 "	4.1	6.2	49	5.8				30	23.0			
15.0 "	4.2	0.2	0	5.8				40	26.7			
17.0 "	4.2	0.1	0	5.5				50	29.7			
19.0 "	4.3	0.0	0	5.5				50	25.7			
20.VII-66												
0.2 m	21.3	9.8	113	6.1	10	0.09	0.24	25	22.4			Transparency
2.0 "	19.8											at 12.30,
3.0 "	16.6	12.1	128					25				sunny:
5.0 "	9.9	10.4	96									3.0 m
7.0 "	6.2	8.5	72									
9.0 "	4.5											
11.0 "	4.3											
13.0 "	4.5											
19.0 "	4.2	0.0	0	6.1	14	0.10	0.28	40	27.1			

1	2	3	4	5	6	7	8	9	10	11	12	13
27.VII.66												
1.0 m	21.1	10.5	122	6.0				20	25.6			
3.0 "	18.3	10.2	112	6.0				25	24.1			
5.0 "	17.9	8.9	97	5.5				30	23.9			
7.0 "	15.0	5.2	54	5.5				35	26.8			
10.0 "	14.9	3.2	33	5.5				35	25.7			
15.0 "	4.7	2.4	20	5.8				35	27.0			
17.0 "	4.3	0.8	0	5.5				45	30.1			
19.0 "	4.3	0.0	0	5.3				45	33.2			

3.6. Lake Sahalampi

Station No,6, depth to bottom 3 m

Date and depth	t^oC	O_2 mg/l	O_2 %	pH	Electrolytic conductivity µS	Methyl orange alkalinity mval/l	Total hardness ^odH	Colour mg Pt/l	$KMnO_4$ consumption mg/l	Fe mg/l	Ca mg/l	
1	2	3	4	5	6	7	8	9	10	11	12	13
27.II-62												Transparency:
1.0 m	0.6	5.3	38	5.3	25			30	29			1.5 m
1.5 "												
2.0 "	2.5	2.4	18	5.6	33			50	43			
2.5 "	3.2	1.8	14	5.6	30			70	39			
27.VIII-62												
0.3 m	16.6	6.6	70									
1.0 "	16.6	7.0	75	5.6	30			30	33			
2.0 "	16.2	6.6	70	5.6	30			50	49			
3.0 "	16.0	6.5	69	5.8	31			60	39			
11.IV-63												
1.0 m	1.1	7.4	55	5.5	39			30	30			
1.5 "	1.9	3.8	29									
2.0 "	2.6	3.1	24	5.5	42			35	37			
3.0 "	3.8	0.4	0	5.6	38			60	59			
11.VI-63												
0.3 m	22.1											
1.0 "	21.2											
2.0 "	20.6											
3.0 "	16.8											

1	2	3	4	5	6	7	8	9	10	11	12	13
16.X.63												
0.5 m	6.6			6.0	20			30	22	0.19		
1.0 "	6.5											
2.0 "	6.4											
2.5 "	6.3											
3.0 "	6.3			6.0	20			30	25	0.16		
26.II.64												
0.5 m	0.8	9.4	69	5.9	29			40	31	0.19		
1.5 "	2.3											
2.0 "	3.4	3.0	29	5.9	26			50	30			
2.5 "	3.8	1.8	14	5.9	25			60	30	1.19		
28.V.64												
0.5 m	21.5											
1.0 "	20.8											
2.0 "	15.8											
3.0 "	13.5											
5.IV.65												
1.0 m	1.3	1.5	11	4.8	27			40				
2.0 "	3.0	0.4	0	5.1	24			40				
2.5 "	3.8	0.7	5	5.5	25			70				
21.VI.65												
0.5 m	21.4			5.8	20.7	0.08	0.32					
1.0 "	20.2											
2.0 "	19.4											
3.0 "	18.8			5.9	20.2	0.05	0.35					

1	2	3	4	5	6	7	8	9	10	11	12	13
22.VI.65												
0.5 m	19.7	10.6	120									
2.0 "	19.2	10.7	120									
3.0 "	19.1	10.8	120									
9.IX.65												
0.2 m	17.5	7.3	79									
0.5 "				5.5	20.8	0.07	0.35	20				Transparency
1.0 "	17.1											at 13.50, cloudy:
2.0 "	16.9	7.1	76									3 m (to bottom)
2.5 "	16.8	7.0	75	5.6	20.2	0.09	0.32	20				
9.IV.66												
0.7 m	0.7	6.6	48	5.7	26.5	0.12		40	25.4	0.39		
1.5 "	2.0	2.6	20									
2.5 "	4.0	0.0	0	6.4	31.2	0.26		100	26.0	3.34		
1.VI.66												
0.2 m	18.1	9.3	102	5.5		0.08		15	15.7	0.16		
1.0 "	15.9	9.9	104									
2.0 "	13.9	8.6	87									Transparency
3.0 "	10.1	3.2	30	5.8		0.14		40	24.0	0.88		at 16.30, sunny: 3 m (to bottom)
5.VII.66												
0.2 m	24.3	9.5	116	5.6	20.6	0.10		15	13.9			Transparency
1.0 "	23.4											at 14.20,
1.5 "	23.3	9.3	112									sunny: 3 m
2.0 "	22.7											(to bottom)
2.5 "	22.6	8.8	104	6.0	19.7	0.08		15	16.1			

1	2	3	4	5	6	7	8	9	10	11	12	13
4.VIII.66												
0.2 m	21.3	9.5	110	5.6			0.32	15	16.7			Transparency at
1.0 "	21.3	9.5	110									11.00,half
1.5 "	21.3											cloudy: 3 m
2.0 "	21.3	9.6	111									(to bottom)
2.5 "	21.3	9.4	109	5.5			0.28	15	15.5			
2.IX.66												
0.2 m	16.6	8.3	88	5.5	21.0	0.09		10				Transparency at
1.0 "	16.6	8.2	87									11.40,cloudy:
2.0 "	16.6	8.1	86									2.7 m
2.5 "	16.6	7.8	83	5.4	21.7	0.10		10				(to bottom)
14.X.66												
0.2 m	6.1	10.1	86	7.1	26.4	0.10		5				Transparency at
1.0 "	6.0											11.30,half
2.0 "	5.9	9.9	83									cloudy: 2,5 m
2.5 "	5.8	9.9	83	6.3	22.1	0.09		5				(to bottom)
6.VI.67												
0.5 m	18.5	9.8	108	5.6	22.0	0.10	0.33	15		0.00	3.2	Transparency
1.0 "	18.2											at 14.45,
1.5 "	18.0											sunny: 3 m
2.0 "	17.7	9.0	97									(to bottom)
2.5 "	17.4											
3.0 "	17.1	9.4	101	5.4	22.0	0.10	0.30	10		0.00	3.0	

1	2	3	4	5	6	7	8	9	10	11	12	13
6.VII-67												
0.5 m	20.2	9.3	106	5.4	20.4		0.30	15		0.00		Transparency
1.0 "	20.0											at 10.00,half
1.5 "	20.0	9.2	104									cloudy: 3 m
2.0 "	19.9											(to bottom)
2.5 "	19.9	9.2	104	5.4	20.4		0.30	15		0.00		
15.VIII-67												
0.2 m	19.5	7.9	89	5.7	22.0	0.10	0.50	15	18.0	0.41		Transparency
1.0 "	19.5											at 10.00,
1.5 "	19.5	8.2	92									cloudy: 2.8 m
2.0 "	19.5											
2.5 "	19.5	7.8	88	5.5	21.0	0.09	0.28	18	17.8	0.40		
14.IX-67												
0.2 m	16.7	8.2	87	5.4	24.5	0.06	0.40	10	19.9	0.17	1.2	Transparency
1.0 "	16.3											at 10.30,
1.5 "	16.1	8.1	85									sunny: 3 m
2.0 "	16.0											(to bottom)
2.5 "	16.0	8.5	89	5.5	24.5	0.06	0.41	15	19.6	0.17	1.2	
3.0 "	16.0											
24.X-67												
0.2 m	6.4	9.5	81	5.2	21.0	0.07	0.39	25	22.6	0.07	1.5	Transparency
1.0 "	6.5											at 09.00,
1.5 "	6.5	9.2	78									cloudy: 3 m
2.0 "	6.5											(to bottom)
2.5 "												
3.0 "	6.5	9.2	78	5.3	21.0	0.08	0.42	25	21.2	0.09	1.6	

3.7. Lake Julkujärvi

Station No. 5, depth to bottom 9.8 m

Date and depth	t°C	O_2 mg/l	O_2 %	pH	Electrolytic conductivity µS	Methyl orange alkalinity mval/l	Total hardness °dH	Colour mg Pt/l	$KmnO_4$ consumption mg/l	
1	2	3	4	5	6	7	8	9	10	11
26.IX-61										
0.5 m	10.8	9.9	93							
9.8 "	10.2	8.0	75							
17.IX-62										
1.0 m	10.4	9.5	89	5.8	12			15	20	Transparency
2.0 "	10.4	9.4	88	5.9	11			15	21	at 12.50,
3.0 "	10.4	9.4	88	5.9	11			20	20	cloudy: 2.8 m
5.0 "	10.4	9.4	88	6.0	12			25	22	
6.0 "	10.4	9.4	88	5.9	11			20	20	
7.0 "	7.7	9.3	81	5.9	11			20	21	
8.0 "	7.4	1.1	9	5.8	18			70	26	
9.0 "	6.7	0.0	0	4.1	29			80	39	
28.III-63										
1.0 m	1.0	10.0	74	5.8	14				22.2	
2.0 "	2.2	8.5	64	5.8	14				26.9	
3.0 "	3.1	5.4	25	5.8	15				23.7	
4.0 "	4.1	0.9	7	5.8	16				21.5	
5.0 "	4.2	0.6	5	5.8	18				19.0	
6.0 "	4.5	0.4	4	6.0	21				31.6	
7.0 "	4.5	0.6	5	6.0	21				30.0	

1	2	3	4	5	6	7	8	9	10	11
6.VI-63										
0.5 m	19.4									
1.0 "	18.9									
2.0 "	18.5									
3.0 "	15.1									
4.0 "	11.2									
5.0 "	7.8									
6.0 "	7.3									
7.0 "	6.4									
8.0 "	5.8									
17.IV-64										
1.0 m	0.7	7.4	54							
2.0 "	2.0	3.3	25							
3.0 "	2.3	1.2	9							
5.0 "	3.2	0.2	0							
2.VI-64										
0.5 m	16.2									
1.0 "	15.7									
2.0 "	14.9									
3.0 "	13.3									
4.0 "	10.5									
5.0 "	8.0									
6.0 "	7.1									
7.0 "	5.7									
8.0 "	5.7									

1	2	3	4	5	6	7	8	9	10	11
17.VI.64										
1.0 m	18.2	9.8	110	6.2	14			35	27	
2.0 "	16.4	10.6	111	6.2	13			30	26	
3.0 "	13.5	8.9	90	6.0	13			35	26	
4.0 "	9.4	1.8	16	5.7	17			35	26	
5.0 "	7.6	0.4	0	5.6	17			35	26	
5.9 "	5.9	0.2	0	5.9	26			35	32	
2.III.65										
1.0 m	0.8	4.0	29	6.1						
2.0 "	2.0	2.2	17	6.0						
3.0 "	3.0	0.7	5	6.1						
5.0 "	4.0	0.2	0	6.0						
15.III.65										
0.5 m	0.7	3.2	23							
1.0 "	1.4	2.9	21							
2.0 "	2.6	1.3	9							
3.0 "	3.5	1.0	8							
30.III.65										
0.5 m	0.7	1.8	13							

1	2	3	4	5	6	7	8	9	10	11
9.VI.65										
0.5 m	19.8	10.6	120	7.2						
2.0 "	16.6	10.9	115							
3.0 "	11.5			7.1						
4.0 "	10.1			7.1						
6.0 "	6.6	0.4	0							
6.5 "	6.6	0.1	0	7.0						
22.IV.66										
1.0 m	0.4	3.0	22	5.8					42	
2.0 "	0.7	2.5	18	-					-	
3.0 "	0.9	2.5	18	5.6					38	
5.0 "	3.1	0.6	0	5.9					41	
7.0 "	4.2	0.2	0	6.1					51	
22.VIII.66										
1.0 m	16.3	10.0	105	6.0	15			30	29	
3.0 "	16.1	9.0	95	5.7	14			30	26	
5.0 "	15.5	7.3	76	5.6	14			35	26	
6.0 "	11.3	1.4	13	5.8	20			45	26	
7.0 "	8.2	0.1	0	5.9	20			45	26	

3.8. Lake Särkilampi

Station No. 4, depth to bottom 5.5 m

Date and depth	t°C	O_2 mg/l	O_2 %	pH	Electrolytic conductivity µS	Methyl orange alkalinity mval/l	Total hardness °dH	Colour mg Pt/l	$KMnO_4$ consumption mg/l	Fe mg/l	Ca hardness °dH	
1	2	3	4	5	6	7	8	9	10	11	12	13
7.VIII-62												
1.0 m	16.8	8.1	86	6.7	22				30			
2.0 "	16.2	7.2	76									
3.0 "	15.7	7.0	74	6.7	22				30			
4.0 "	15.3	6.4	66									
4.5 "	15.0	4.9	49	6.4	22				29			
30.VIII-62												
1.0 m	14.5	8.4	84	6.1	19			25	28			Transparency
2.0 "	14.3	7.8	80	6.3	18			25	26			at 11.25,
3.0 "	14.2	8.2	83	6.4	18			30	26			half cloudy:
4.0 "	14.2	8.2	83	6.5	19			30	26			2.7 m
5.0 "	14.1	8.2	83	6.3	18			30	26			
7.VI-63												
0.5 m	18.3											
1.0 "	18.3											
2.0 "	18.3											
3.0 "	18.2											
4.0 "	16.9											
5.0 "	15.0											
5.2 "	13.8											

1	2	3	4	5	6	7	8	9	10	11	12	13
4.VI.64												
0.5 m	13.1											
1.0 "	13.1											
2.0 "	13.1											
3.0 "	10.8											
4.0 "	9.0											
5.0 "	7.0											
5.5 "	6.3											
20.VII.65												
0.5 m	21.4				20	0.17	0.38					Transparency
1.0 "	20.6	11.0	126									at 15.40:
2.0 "	18.2	11.4	125									2.3 m
3.0 "	17.3	11.8	127									
4.0 "	16.3											
5.0 "	12.7	1.3	12		25	0.17	0.48					
28.III.66												
1.0 m	1.0	5.9	43	5.9	26			25	29.1			Transparency
2.0 "	2.2	3.2	24	5.8	27	0.16	0.24	25	30.9	0.14	0.21	at 15.30:
3.0 "	3.3	1.6	13	5.8	32			35	29.6			3.7 m
4.0 "	3.7	1.1	9	6.0	28			50	32.6			
5.0 "	4.0	0.8	7	5.9	30	0.27	0.36	60	33.1	0.60	0.32	
5.3 "	4.0											

1	2	3	4	5	6	7	8	9	10	11	12	13
12.VII-66												
0.2 m	18.6	9.8	108	6.5	19.2	0.08	0.33	20-25	25.3			Transparency
1.0 "	18.0	9.8	108									at 13.20, half
2.0 "	17.2	10.0	107									cloudy: 2.0 m
3.0 "	16.2	8.8	93									
4.0 "	11.9											
4.5 "	10.9	1.2	11	6.3	31.9	0.19	0.49	40	32.5			
23.VIII-66												
1.0 m	16.0	6.8	72	5.9	23.6			30	29.7			Transparency
2.0 "	15.5	4.1	43	6.0	28.0			25	31.1			at 9.15,
3.0 "	15.4	0.9	10	5.8	31.4			35	29.9			cloudy: 3.5 m
4.0 "	15.0	0.9	10	5.9	28.0			35	32.7			
5.0 "	13.9	0.0	0	5.8	35.6			50	34.0			

3.9. Lake Långviken

Station No. 6, depth to bottom 5 m

Date and depth 1	t°C 2	O_2 mg/l 3	O_2 % 4	pH 5	Electrolytic conductivity µS 6	Methyl orange alkalinity mval/l 7	Total hardness °dH 8	Colour mg Pt/l 9	$KMnO_4$ consumption mg/l 10	Fe mg/l 11	12
3.IX-62											
1.0 m	13.0	7.3	72	6.3	60			90	67		Transparency
2.0 "	12.9	7.9	78	6.5	60			90	79		at 11.50,
3.0 "	12.7	7.8	76	6.6	61			100	82		cloudy: 1.3 m
4.0 "	12.3	7.0	68	6.7	65			125	109		
4.5 "	12.2	5.4	52	6.6	68			300	131		
3.VII-63											
0.5 m	18.1										
1.0 "	18.2										
2.0 "	18.0										
3.0 "	15.6										
4.0 "	12.1										
4.5 "	11.8										
3.IX-63											
4.5 m	8.0				95					0.33	
30.XII-63											
1.0 m		9.7									
4.0 "		6.1									

1	2	3	4	5	6	7	8	9	10	11	12
25.II.64											
1.0 m	0.5	3.8	28	6.6	136			110	71		
3.0 "	3.0	2.7	21		110			110	70		
6.VI.64											
0.5 m	14.2										
1.0 "	14.1										
2.0 "	13.4										
3.0 "	12.5										
4.0 "	8.9										
4.5 "	6.8										

4. Benthic animals

4.1. Frequencies of occurrence

4.1.1. Lake Kivi-Ahveroinen

Number of animals per m^2 of bottom

	Date	22.VIII 1961			17.VIII 1962				
n	n		3			3			
m	Depth m	1	3	5	1	3	5	7	10
No.	Station No.	6	7	8	6	7	8	9	5
1.	Nematoda								
2.	Oligochaeta					12			
3.	Hirudinea								
4.	Glossosiphonia sp.								
5.	Planorbidae					12		12	
6.	Pisidium sp.								
7.	Asellus aquaticus	60	12			276	24	72	
8.	Hydracarina								
9.	Ephemerida l.								
10.	Aeschnidae l.								
11.	Corixidae i.								
12.	Dytiscidae l.								
13.	-"- i.	12							
14.	Sialis sp. l.		12	12		12		12	
15.	Trichoptera l.								
16.	Diptera l.								
17.	Chaoborus sp. l.					12			
18.	Chironomidae l.		12			12		24	300
19.	-"- p.								
20.	Tabanidae l.	12						12	
21.	Total	84	36	12	0	336	24	132	300

n = Number of 1/36 m^2 samples from which the m^2 values were calculated

Lake Kivi-Ahveroinen (cont.)

	4.VII 1963			8.VI 1964			14.VIII 1964				
n	6			6			3				
m	1	2	3	1	3	11	1	3	5	7	10
No.	1	2	3	4	3	5	6	7	8	9	5
1.										12	
2.	6			6							
3.											
4.					12						
5.	6	18									
6.	90	78	96	132	486						
7.	30	42	42	126	348			84	144	504	
8.				6	6						
9.											
10.		6		6							
11.		6									
12.				6							
13.											
14.	6	12	6	6	42			12			
15.			6	12	6						
16.					6						
17.											
18.	12	90	90	12	42	42	12	12	48		36
19.									12		
20.		6									
21.	150	258	240	312	948	42	12	108	204	516	36

Lake Kivi-Ahveroinen (cont.)

	3.XI 1964					19.V 1965				
n	3					3				
m	1	3	5	7	10	1	3	5	7	11
No.	6	7	8	9	5	6	7	8	9	5
1.										
2.		24								
3.										
4.							12		12	
5.										
6.		144								
7.	84	96	132	156		48	144	120	108	
8.								12		
9.										
10.										
11.										
12.										
13.										
14.		24	36	36						
15.	12		12				12		12	
16.										
17.										
18.	12	180	48		300		96	72	36	24
19.										
20.						12				
21.	108	468	228	192	300	60	264	204	168	24

Lake Kivi-Ahveroinen (cont.)

	5.VIII 1965					3.XI 1965				
n	3					3				
m	1	3	5	7	10	1	3	5	7	11
No.	6	7	8	9	5	6	7	8	9	5
1.										
2.					12					
3.										
4.										
5.										
6.						12			36	
7.		12	48	120		48	156	12	84	
8.										
9.										
10.										
11.										
12.										
13.										
14.				12			12		12	
15.						12	12			
16.										
17.										
18.		12	12	48	132		72		336	120
19.										
20.										
21.	0	24	60	180	144	72	252	12	468	120

Lake Kivi-Ahveroinen (cont.)

	27.V 1966					15.VII 1966				
n	3					3				
m	1	3	5	7	10	1	3	5	7	11
No.	6	7	8	9	5	4	3	8	9	5
1.										
2.										
3.	24					12		12		
4.										
5.										
6.		12				264	468	420	396	
7.	168	288	60		48	72	180	120	60	
8.										
9.						12	60	204	36	108
10.										
11.							12		12	
12.								12	24	
13.										
14.						12	12	60		
15.	36	60	24					12		
16.										
17.										
18.		60	12	24	1884	72	288	192	288	180
19.		12			12					
20.	12						12			
21.	240	432	96	24	1944	444	1032	1032	756	288

Lake Kivi-Ahveroinen (cont.)

	2.VIII 1966					15.XI 1966				
n			3					3		
m	1	3	5	7	10	1	3	5	7	10
No.	6	7	8	9	5	6	7	8	9	5
1.										
2.						24				12
3.	12		24							
4.										
5.	12					12				
6.								12		
7.	192		72	96	12	348		108	312	36
8.										
9.	12									
10.										
11.	24									
12.										12
13.										
14.							12	12	24	
15.						12				
16.										
17.										
18.	36		48	24	972		72	36	12	1668
19.										
20.										
21.	288	0	144	120	984	396	84	168	348	1728

4.1.2. Lake Satimuslampi

Number of animals per m^2 of bottom

Date	17-18.IX 1962			7-8.VI 1963		3.VI.1964		
n	3			9		3		
Depth m	1	2.5	4.5	1	2	1	2.5	4.8
Station No.	1	2	5	1	2	1,3	4	5
Eurycerus sp.						24	6	
Hydracarina				4				
Libellullidae l.				4				
Donacia sp.p.					4			
Sialis sp. l.		60	12	68	32	78	36	12
Chironomidae l.						24	6	6
Total	0	60	12	76	36	126	48	18

n = Number of 1/36 m^2 samples from which the m^2 values were calculated

4.1.3. Lake Pien-Valkealampi

Number of animals per m^2 of bottom

	Date	12.IX 1962			24-25.VI 1963			1.VII 1964		
n	n	3			6			6		
m	Depth m	1	5	11	1	2	3	1	4.5	10-11
No.	Station No.	1	4	6	1	2	3,5	1	4	6
1.	Nematoda									
2.	Oligochaeta								6	
3.	Argyroneta aquatica					6				
4.	Hydracarina									
5.	Ephemerida 1.									
6.	Odonata 1.					6				
7.	Libellullidae 1.									
8.	Corixidae 1.					12				
9.	Coleoptera 1.				6					
10.	Dytiscidae 1.									
11.	-"- i.					18				
12.	Donacia sp.puparia				12			6		
13.	Sialis sp. 1.								6	
14.	Trichoptera 1.							6		
15.	Chaoborus sp.1.									24
16.	Chironomidae 1.			120		216	12		18	60
17.	-"- p.						6			
18.	Ceratopogoninae 1.									
19.	Total	0	0	120	18	258	24	12	30	84

n = Number of 1/36 m^3 samples from which the m^2 values were calculated

Lake Pien-Valkealampi (cont.)

	12.VII 1965			8.VI 1966			26.VII 1966		
n	3			3			3		
m	1	4.5	11	1	5	11	1	5	11
No.	1	4	6	1	4	6	1	4	6
1.						24			
2.	72			36			24		
3.									
4.				24					
5.						12			12
6.									
7.				12					
8.									
9.									12
10.									
11.									
12.				24			12		
13.				24	24		24	12	
14.	12			60			48		
15.			12			12			
16.	12	24	12	72	12	48	120		36
17.							12		
18.				12			24		
19.	96	24	24	264	36	96	264	12	60

4.1.4. Lake Ahvenlampi

Number of animals per m^2 of bottom

Date	9-10.IX 1962			25.VI 1963			2-3.VII 1964		
n	3			6			6		
m Depth m	1	3	5	1	2	3	1	2	4.5
No. Station No.	1	3	4	1	2	3	1	2	4
1. Oligochaeta				12			54	30	
2. Hydracarina						6			
3. Ephemerida 1.									
4. Libellullidae 1.									
5. Notonecta sp. 1.				24			6		
6. Corixidae 1.				6			18		
7. Coleoptera i.							6		
8. Dytiscidae 1.							12		
9. -"- i.				18	6	30			
10. Donacia sp.p.								6	6
11. Sialis sp. 1.	12					6		6	6
12. Trichoptera 1.									
13. Diptera p.						6			
14. Chaoborus sp. 1.									
15. Chironomidae 1.				24	6	54	24	54	6
16. -"- p.									
17. Ceratopogoninae 1.					24	12			
18. Total	12	0	0	84	36	114	120	96	18

n = Number of 1/36 m^2 samples from which the m^2 values were calculated

Lake Ahvenlampi (cont.)

	12.VII 1965			7.VI 1966			25.VII 1966		
n.		6			6			3	
m	1	3	4.8	1	3	5	1	3	5
No.	1	3	4	1	3	4	1	3	4
1.	90			18			24		
2.					6	6	12		
3.		6							
4.	6		36	6			12		
5.									
6.									
7.									
8.									
9.									
10.	6			12					
11.		24			12			36	
12.							12		
13.									
14.			6			30			12
15.	174	276	288	84	1380	126	156	720	36
16.					6				
17.	6			6			24		
18.	282	306	330	126	1404	162	240	756	48

4.1.5. Lake Ulpasjärvi

Number of animals per m^2 of bottom

	Date	2.VIII 1960[1]				31.VIII 1961			
n	n	3				3			
m	Depth	1	3	6	9-18.5	1	3	4	7-19
No.	Station	-	-	-	5	1	3	4	5
1.	Oligochaeta								
2.	Pisidium sp.								
3.	Asellus aquaticus	26				384			
4.	Hydracarina								
5.	Ephemerida l.								
6.	Odonata l.								
7.	Corixidae i.								
8.	Sialis sp. l.	13				108			
9.	Trichoptera l.								
10.	Lepidoptera l.								
11.	Chironomidae l.					24	12		
12.	-"- p.								
13.	Ceratopogoninae l.								
14.	Total	39	0	0	0	516	12	0	0

n = Number of 1/36 m^2 samples from which the m^2 values were calculated

1) SUOMEN KALASTUSYHDISTYS (1961): sample 1/40 m^2

Lake Ulpasjärvi (cont.)

	19.VI 1963			10.VI.1964			19.VIII 1964		
n		6			6			6	
m	1	2	3	1	3	5	1	3	5
No.	1	2	3	1	3	4	1	3	4
1.						12			
2.	324	12	42	84	54	6		60	
3.		168	90	12	234		12	96	
4.	108	18	6	12					
5.	6								
6.	24	12	18						
7.									
8.		12	12	36	72		36	24	12
9.	6	6	6	18	42				
10.	6								
11.	12	24	6	24	24	6	24	12	12
12.	6								
13.									
14.	492	252	180	186	426	24	72	192	24

Lake Ulpasjärvi (cont.)

	20.XI 1964			20.VII 1966		
n		3			3	
m	1	3	5	1	3	5
No.	1	3	4	1	3	4
1.						24
2.		12	24	240	12	
3.			48	24	12	12
4.						12
5.						
6.						
7.				48	12	
8.				144	36	
9.		36		12		
10.						
11.		12		276		132
12.						
13.				24		
14.	0	60	72	768	72	180

4.1.6. Lake Sahalampi

Number of animals per m^2 of bottom

Date	27.VIII 1962			11-12.VI 1963			16-17.X 1963		
n n	3			6			1	3	3
m Depth m	1	2	3	1	2	3	1	2	3
No. Station No.	1	4	6	2,3,5	4	6	2	4	6
1. Oligochaeta					6				
2. Pisidum sp.	12			12			3528	24	
3. Asellus aquaticus				6			108		
4. Argyroneta aquatica				12					
5. Hydracarina	12					12		12	
6. Agrionidae 1.									
7. Aeschnidae 1.									
8. Libellullidae 1.				6		6	72	48	12
9. Notonecta sp. 1.						6			
10. Corixidae 1.				6		12			
11. Coleoptera 1.	12			24	12				
12. Dytiscidae 1.					6				
13. Sialis sp. 1.		12					108	120	24
14. Trichoptera 1.									
15. Lepidoptera 1.									
16. Diptera 1.				6					
17. -"- p.				6					
18. Chaoborus sp. 1.									36
19. -"- p.									
20. Chironomidae 1.			12	126	18	78	468	432	732
21. -"- p.		12							
22. Ceratopogoninae 1.						6		108	
23. Total	36	24	12	222	42	120	4284	744	804

n = Number of 1/36 m^2 samples from which the m^2 values were calculated

Lake Sahalampi (cont.)

	29.V 1964			6.X 1964			21.VI 1965		
n	6			3			6		
m	1	2	3	1	2	3	1	2	3
No.	1,2	4	6	2	4	6	2	4	6
1.									
2.	402	132		1020	324		360	36	
3.									
4.									6
5.	12				12	12	6		
6.	6								
7.									
8.	6	6			12	12	12		6
9.									
10.									
11.									
12.									
13.		18		24	96	60	24	18	6
14.	6			12			6	6	
15.								6	
16.									
17.									
18.			18						
19.									
20.	12	162	258	204	36	96	60	72	102
21.			6						6
22.		12		36		36			24
23.	444	330	282	1296	480	216	468	138	150

Lake Sahalampi (cont.)

	9.XI 1965			2.VI 1966			5-6.VII 1966		
n	3			6			6		
m	1	2	3	1	2	3	1	2	3
No.	2	4	6	2	4	6	2	4	6
1.					6			6	
2.	828	564		984	312		2388	132	
3.				78			36		
4.									
5.				18					
6.	24		24			12			
7.		12				6			
8.	108		12	90			18		12
9.									
10.									
11.									
12.									
13.	48	228	48	24	108		42	78	12
14.	36			6			6		
15.									
16.									
17.									
18.								6	6
19.									6
20.	108	216	240	12	270	96	66	144	138
21.							6	6	
22.	24			6	6		18	6	12
23.	1176	1080	324	1218	702	114	2580	378	186

Lake Sahalampi (cont.)

	4-5.VIII 1966			2.IX 1966			14.X 1966		
n		6			6			3	
m	1	2	3	1	2	3	1	2	3
No.	2	4	6	2	4	6	2	4	6
1.									
2.	1140	36		564	18		432	24	
3.	60			90	6				24
4.									
5.	6			6	24	210		12	288
6.		18	12	24		24	12		24
7.									
8.	18	12	12	60		18	12		
9.									
10.									
11.									
12.									
13.	72	348	108	18	180	108	84	144	48
14.	60	6		60			12	12	
15.			6						
16.									
17.									
18.			6			12			
19.									
20.	114	36	90	72	66	108	228	60	36
21.			6						
22.	42		66	72	30	102	24	48	144
23.	1512	456	306	966	324	582	804	300	564

Lake Sahalampi (cont.)

	6-7.VI 1967			6.VII 1967			15.VIII 1967		
n	6			6			6		
m	1	2	3	1	2	3	1	2	3
No.	2	4	6	2	4	6	2	4	6
1.					6				
2.	72	24		108	24		204	12	
3.	24								
4.									
5.									18
6.								12	12
7.									
8.	12	12	6	12	6	6	6	6	6
9.									
10.									
11.								6	18
12.			6						
13.	30	78	18	24	150	12	144	228	180
14.		6						12	
15.									
16.									
17.									
18.							6		30
19.									
20.				42	120	24	48	12	12
21.									
22.						24			6
23.	138	120	30	186	300	66	408	288	282

Lake Sahalampi (cont.)

	14.IX 1967			24.X 1967		
n	6			6		
m	1	2	3	1	2	3
No.	2	4	6	2	4	6
1.		6		6		
2.	42	72		66	66	
3.	12			18		
4.						
5.	6		114		12	42
6.		12	6	6		
7.				6		
8.	24	6		6	12	
9.						
10.			6			
11.	18		12		6	24
12.						
13.	90	228	168	108	246	108
14.	12	6	6	24	18	12
15.						
16.						
17.						
18.			60	18		60
19.						
20.	54	60	6	108	96	12
21.						
22.			6			
23.	258	390	384	366	456	258

4.1.7. Lake Julkujärvi

Number of animals per m^2 of bottom

Date	6-7.VI 1963			2.VI.1964		
n	6			6		
Depth m	1	2	3	1	3	7-8
Station No.	1	2	3	1	3,6	4
Pisidium sp.			6	168	180	
Asellus aquaticus	150	72		486	72	
Corixidae i				6		
Dytiscidae l.	6					
Donacia sp.p.		6		12		
Sialis sp. l.				24		
Trichoptera l.		6				
Chironomidae l.	762	152	114	18	408	6
-"- p.	6					
Total	924	236	120	714	660	6

n = Number of 1/36 m^2 samples from which the m^2 values were calculated

4.1.8. **Lake Särkilampi**

Number of animals per m^2 of bottom

	Date	7.VI 1963			4.VI.1964		
n	n		6			6	
m	Depth m	1	2	3	1	3	5
No.	Station No.	1	2	3	1	3	4
1.	Oligochaeta	12	6				
2.	Pisidium sp.				354	6	
3.	Asellus aquaticus	72	126	570	480	1452	
4.	Hydracarina		30	18	120	30	
5.	Libellullidae l.						
6.	Corixidae			6			
7.	Coleoptera l.					6	
8.	Dytiscidae l.						
9.	Donacia sp.p.				6		
10.	Sialis sp. l.	60	54	6	114	12	
11.	Trichoptera l.				18	18	
12.	Lepidoptera l.	6					
13.	Diptera l.				6		
14.	Chaoborus sp. l.				6		12
15.	-"- p.						
16.	Chironomidae l.	120	102	306	60	258	204
17.	-"- p.	6			12	12	
18.	Ceratopogoninae l.						
19.	Total	276	318	906	1176	1794	216

n = Number of 1/36 m^2 samples from which the m^2 values were calculated

Lake Särkilampi (cont.)

	20.VII 1965			12.VII 1966		
n		3			3	
m	1	3	5	1	3	5
No.	1	3	4	1	3	4
1.		12			12	
2.	276			1488	360	
3.	420	372		96	444	
4.		12				
5.		12				
6.				24		
7.						
8.	12					
9.						
10.	72	36		120	12	
11.		12				
12.						
13.					12	
14.			120	60	408	156
15.					12	
16.	108	372	1680	252	756	1176
17.		48			36	
18.	12			12		
19.	900	876	1800	2052	2052	1332

4.1.9. Lake Långviken

Number of animals per m^2 of bottom

	Date	2-3.IX 1962			3.VII.1963		
n	n	3			6		
m	Depth m	1	2	4-5	1	2	3
No.	Station No.	1	2	6	1	2	3
1.	Nematoda				54		
2.	Oligochaeta		12		300	30	18
3.	Glossosiphonia sp.				12		
4.	Helobdella sp.				12	90	
5.	Valvata sp.				12		
6.	Pisidium sp.				162	624	318
7.	Asellus aquaticus		192		108	48	6
8.	Aeschnidae 1.						
9.	Libellullidae 1.				6		
10.	Corixidae i.		12		24		12
11.	Coleoptera 1.				6		
12.	Sialis sp. 1.				12	12	
13.	Trichoptera 1.		12				
14.	Diptera 1.					12	
15.	Chaoborus sp. 1.			660			24
16.	Chironomidae 1.			204	120	174	234
17.	-"- p.			12			
18.	Ceratopogoninae 1.				18	24	30
19.	Total	0	228	876	846	1014	648

n = Number of 1/36 m^2 samples from which the m^2 values were calculated

Lake Långviken (cont.)

	3.IX 1963			6-7.VI 1964		
n	3			6		
m	1	3	5	1	3	4.5-5
No.	1	3	6	4	5	6
1.						
2.	48			138	12	6
3.				6		
4.	36			18		
5.						
6.	24	324		402	1062	
7.	696			336	66	
8.	12					
9.				6		
10.						
11.						
12.				12		
13.				6		
14.				12		
15.			36			
16.	96	840	24	60	114	12
17.					6	
18.	24	120		18		
19.	936	1284	60	1014	1260	18

4.2. Weights of benthic animals

Weight of benthic animals. Each sample 1/36 m^2.

4.2.1. Lake Kivi-Ahveroinen

	Depth m	Station No.	Weight/samples		Weight g/m^2
22.VIII 1961	1	6	0.040	g/3 samples	0.48
	3	7	0.028	-"-	0.33
	5	8	0.068	-"-	0.82
17.VIII 1962	1	6	0.000	g/3 samples	0.00
	3	7	0.300	-"-	3.60
	5	8	0.010	-"-	0.12
	7	9	0.243	-"-	2.91
	10	5	0.312	-"-	3.75
4.VII 1963	1	1	0.107	g/3 samples	1.17
			0.088	-"-	
	2	2	0.389	-"-	3.53
			0.199	-"-	
	3	3	0.476	-"-	3.50
			0.106	-"-	
8.VI.1964	1	4	0.351	g/3 samples	4.78
			0.445	-"-	
	3	3	0.711	-"-	10.23
			0.993	-"-	
	11	5	0.136	g/6 samples	0.86
14.VIII 1964	1	6	0.005	g/3 samples	0.06
	3	7	0.133	-"-	1.60
	5	8	0.220	-"-	2.64
	7	9	0.884	-"-	10.61
	10	5	0.070	-"-	0.84
3.XI 1964	1	6	0.525	g/3 samples	6.30
	3	7	0.381	-"-	4.58
	5	8	0.297	-"-	3.57
	7	9	0.428	-"-	5.14
	10	5	0.617	-"-	7.41
19.V 1965	1	6	0.070	g/3 samples	0.84
	3	7	0.268	-"-	3.22
	5	8	0.218	-"-	2.62
	7	9	0.286	-"-	3.43
	11	5	0.026	-"-	0.31
5.VIII 1965	1	6	0.000	g/3 samples	0.00
	3	7	0.021	-"-	0.25
	5	8	0.074	-"-	0.88
	7	9	0.144	-"-	1.72
	10	5	0.174	-"-	2.09

Lake Kivi-Ahveroinen

4.2.2. Lake Satimuslampi

	Depth m	Station No.		Weight/samples	Weight g/m^2
3.XI 1965	1	6	0.096	g/3 samples	1.16
	3	7	0.338	-"-	4.06
	5	8	0.022	-"-	0.27
	7	9	0.624	-"-	7.49
	11	5	0.139	-"-	1.67
27.V 1966	1	6	0.552	g/3 samples	6.62
	3	7	0.765	-"-	9.18
	5	8	0.167	-"-	2.00
	7	9	0.014	-"-	0,17
	10	5	1.873	-"-	22.48
15.VII 1966	1	4	0.427	g/3 samples	5.13
	3	3	0.578	-"-	6.93
	5	8	0.715	-"-	8.58
	7	9	0.444	-"-	5.33
	11	5	0.275	-"-	3.30
2.VIII 1966	1	6	0.268	g/3 samples	3.22
	3	7	0.000	-"-	0.00
	5	8	0.386	-"-	4.63
	7	9	0.149	-"-	1.78
	10	5	1.517	-"-	18.20
15.XI 1966	1	6	0.656	g/3 samples	7.88
	3	7	0.067	-"-	0.80
	5	8	0.276	-"-	3.32
	7	9	0.970	-"-	11.63
	10	5	2.741	-"-	32.89

4.2.2. Lake Satimuslampi

17-18.IX 1962	1	1	0.000	g/3 samples	0.00
	2.5	2	0.438	-"-	5.26
	4.5	5	0.059	-"-	0.71
7-8.VI 1963	1	1	0.151	g/3 samples	
			0.551	-"-	3.77
			0.240	-"-	
	2	2	0.003	-"-	
			0.230	-"-	1.68
			0.187	-"-	
3.VI 1964	1	1,3	0.454	g/3 samples	5.44
	2.5	4	0.171	-"-	2.05
	4.8	5	0.124	-"-	1.49

4.2.3. Lake Pien-Valkealampi

4.2.4. Lake Ahvenlampi (cont.)

	Depth m	Station No.		Weight/samples	Weight g/m^2
12.IX 1962	1	1	0.000	g/3 samples	0.00
	5	4	0.000	-"-	0.00
	11	6	0.110	-"-	1.31
24-25.VI 1963	1	1	0.256	g/3 samples	4.14
			0.436	-"-	
	2	2	0.559	-"-	4.06
			0.117	-"-	
	3	3,5	0.008	-"-	0.11
			0.011	-"-	
1.VII 1964	1	1	0.133	g/6 samples	0.80
	4.5	4	0.105	-"-	0.63
	10-11	6	0.213	-"-	1.28
12.VII 1965	1	1	0.172	g/3 samples	2.07
	4.5	4	0.010	-"-	0.12
	11	6	0.008	-"-	0.10
8.VI 1966	1	1	0.870	g/3 samples	10.44
	5	4	0.067	-"-	0.81
	11	6	0.022	-"-	0.27
26.VII 1966	1	1	0.444	g/3 samples	5.33
	5	4	0.055	-"-	0.66
	11	6	0.005	-"-	0.06

4.2.4. Lake Ahvenlampi

9-10.IX 1962	1	1	0.095	g/3 samples	1.14
	3	3	0.000	-"-	0.00
	5	4	0.000	-"-	0.00
25.VI 1963	1	1	0.274	g/3 samples	2.19
			0.091	-"-	
	2	2	0.017	-"-	0.24
			0.023	-"-	
	3	3	0.074	-"-	0.65
			0.035	-"-	
2-3.VII 1964	1	1	0.206	g/6 samples	1.24
	2	2	9.326	-"-	1.96
	4.5	4	0.078	-"-	0.47

Lake Ahvenlampi (cont.)

4.2.5. Lake Ulpasjärvi

	Depth m	Station No.		Weight/samples	Weight g/m^2
12.VII 1965	1	1	0.216	g/3 samples	2.93
			0.273	-"-	
	3	3	0.108	-"-	2.74
			0.348	-"-	
	4.8	4	1.261	-"-	10.20
			0.440	-"-	
7.VI 1966	1	1	0.339	g/3 samples	3.20
			0.194	-"-	
	3	3	0.826	-"-	11.46
			1.084	-"-	
	5	4	0.218	-"-	1.59
			0.047	-"-	
25.VII 1966	1	1	0.110	g/3 samples	1.32
	3	3	0.639	-"-	7.66
	5	4	0.013	-"-	0.15
4.2.5. Lake Ulpasjärvi					
2.VIII 1960[1)]	1	-	0.130	g/3 samples	1.56
	3	-	0.000	-"-	0.00
	6	-	0.000	-"-	0.00
	9-18.5	5	0.000	-"-	0.00
19.VI 1963	1	1	0.343	g/3 samples	7.23
			0.861	-"-	
	2	2	0.090	-"-	2.25
			0.285	-"-	
	3	3	0.213	-"-	3.91
			0.438	-"-	
10.VI 1964	1	1	0.301	g/6 samples	1.81
	3	3	0.334	-"-	2.00
	5	4	0.048	-"-	0.29
	19	5	0.000	-"-	0.00
19.VIII 1964	1	1	0.132	g/3 samples	1.59
	3	3	0.107	-"-	1.29
	5	4	0.051	-"-	0.61
20.XI 1964	1	1	0.000	g/3 samples	0.00
	3	3	0.072	-"-	0.87
	5	4	0.073	-"-	0.88
20.VII 1966	1	1	0.279	g/3 samples	3.34
	3	3	0.118	-"-	1.42
	5	4	0.123	-"-	1.47

1) SUOMEN KALASTUSYHDISTYS (1961)

4.2.6. Lake Sahalampi

	Depth m	Station No.		Weight/samples	Weight g/m²
27.VIII 1962	1	1	0.020	g/3 samples	0.24
	2	4	0.130	-"-	1.55
	3	6	0.019	-"-	0.23
11-12.VI 1963	1	2,3,5	0.133	g/3 samples	4.42
			0.603	-"-	
	2	4	0.014	-"-	0.62
			0.089	-"-	
	3	6	0.024	-"-	0.67
			0.088	-"-	
16-17.X 1963	1	2	1.081	g/1 sample	38.90
	2	4	1.131	g/3 samples	13.58
	3	6	1.179	-"-	14.15
29.V 1964	1	1,2	0.260	g/3 samples	3.04
			0.237	-"-	
	2	4	0.120	-"-	3.24
			0.420	-"-	
	3	6	0.131	-"-	1.56
			0.129	-"-	
6.X 1964	1	2	0.691	g/3 samples	8.28
	2	4	0.456	-"-	5.47
	3	6	0.285	-"-	3.42
21.VI 1965	1	2	0.376	g/3 samples	5.17
			0.485	-"-	
	2	4	0.121	-"-	1.32
			0.099	-"-	
	3	6	0.091	-"-	1.68
			0.189	-"-	
9.IX 1965	1	2	1.583	g/3 samples	19.00
	2	4	1.976	-"-	23.71
	3	6	0.475	-"-	5.70
2.VI 1966	1	2	1.339	g/3 samples	22.30
			2.378	-"-	
	2	4	0.621	-"-	8.37
			0.774	-"-	
	3	6	0.374	-"-	2.44
			0.032	-"-	

Lake Sahalampi (cont.)

	Depth m	Station No.	Weight/samples		Weight g/m^2
5-6.VII 1966	1	2	1.174	g/3 samples	15.23
			1.364	-"-	
	2	4	0.385	-"-	5.32
			0.502	-"-	
	3	6	0.494	-"-	3.98
			0.169		
4-5.VIII 1966	1	2	0.520	g/3 samples	6.93
			0.635	-"-	
	2	4	0.916	-"-	10.96
			0.910	-"-	
	3	6	0.350	-"-	3.62
			0.353	-"-	
2.IX 1966	1	2	0.739	g/3 samples	12.14
			1.285	-"-	
	2	4	0.652	-"-	6.41
			0.416	-"-	
	3	6	0.359	-"-	5.90
			0.624	-"-	
14.X 1966	1	2	0.501	g/3 samples	6.02
	2	4	0.404	-"-	4.85
	3	6	0.120	-"-	1.44
6-7.VI 1967	1	2	1.180	g/3 samples	8.36
			0.213	-"-	
	2	4	0.538	-"-	4.30
			0.194	-"-	
	3	6	0.390	-"-	2.78
			0.074	-"-	
6.VII 1967	1	2	0.341	g/3 samples	4.81
			0.461	-"-	
	2	4	0.481	-"-	5.88
			0.500	-"-	
	3	6	0.030	-"-	2.70
			0.420	-"-	
15.VIII 1967	1	2	0.492	g/3 samples	5.98
			0.505	-"-	
	2	4	0.396	-"-	7.12
			0.790	-"-	
	3	6	1.081	-"-	9.11
			0.437	-"-	
14.IX 1967	1	2	1.105	g/3 samples	15.53
			1.484	-"-	
	2	4	0.463	-"-	8.77
			0.999	-"-	
	3	6	0.682	-"-	5.82
			0.289	-"-	

Lake Sahalampi (cont.)

4.2.7. Lake Julkujärvi
4.2.8. Lake Särkilampi

	Depth m	Station No.	Weight/samples		Weight g/m^2
24.X 1967	1	2	0.707	g/3 samples	14.25
			1.668	-"-	
	2	4	1.614	-"-	15.33
			0.941	-"-	
	3	6	0.360	-"-	6.75
			0.766	-"-	
4.2.7. Lake Julkujärvi					
6-7. VI 1963	1	1	0.238	g/3 samples	10.40
			1.485	-"-	
	2	2	0.378	-"-	4.10
			0.305	-"-	
	3	3	0.000	-"-	1.14
			0.190	-"-	
2.VI 1964	1	1	1.277	g/3 samples	17.71
			1.673	-"-	
	3	3,6	0.282	-"-	8.54
			1.140	-"-	
	7-8	4	0.022	g/6 samples	0.13
4.2.8. Lake Särkilampi					
7.VI 1963	1	1	0.285	g/3 samples	2.99
			0.212	-"-	
	2	2	0.236	-"-	3.42
			0.334	-"-	
	3	3	1.222	-"-	14.71
			1.244	-"-	
4.VI 1964	1	1	1.843	g/3 samples	24.30
			2.207	-"-	
	3	3	3.304	-"-	35.60
			2.630	-"-	
	5	4	0.595	g/6 -"-	3.57
20.VII 1965	1	1	0.654	g/3 samples	7.85
	3	3	1.322	-"-	15.86
	5	4	1.059	-"-	12.71
12.VII 1966	1	1	1.060	g/3 samples	12.72
	3	3	2.376	-"-	28.52
	5	4	1.907	-"-	22.89

4.2.9. Lake Långviken

	Depth m	Station No.		Weight/samples	Weight g/m^2
2-3.IX 1962	1	1	0.000	g/3 samples	0.00
	2	2	0.766	-"-	9.19
	4-5	6	0.563	-"-	6.76
3.VII 1963	1	1	0.861	g/3 samples	9.36
			0.699	-"-	
	2	2	0.398	-"-	5.51
			0.520	-"-	
	3	3	0.376	-"-	5.01
			0.459	-"-	
3.IX 1963	1	1	1.322	g/3 samples	15.86
	3	3	1.099	-"-	13.19
	5	6	0.066	-"-	0.79
6-7.VI 1964	1	4	2.107	g/6 samples	12.64
	3	5	1.058	-"-	6.34
	4.5-5	6	0.028	-"-	0.17

5. Catch statistics

5.1. Lake Kivi-Ahveroinen

Brown trout

	n	Length $\bar{x} \pm s_{\bar{x}}$ cm	Weight $\bar{x} \pm s_{\bar{x}}$ g	Age years
4.X 1963	14	11.53 ± 0.28	9.06 ± 1.20	0+
7-8.VI 1964	7	18.60 ± 0.94	57.86 ± 9.22	1+
4.XI 1964	20	26.97 ± 0.75	173.90 ± 13.77	1+
19.V 1965	20	29.18 ± 0.69	210.55 ± 14.15	2+
6-7.VIII 1965	18	34.28 ± 0.59	388.06 ± 19.27	2+
3-4.XI 1965	22	38.40 ± 0.57	518.27 ± 23.14	2+
27-29.V 1966	15	40.17 ± 0.88	643.33 ± 40.05	3+
2-6.VIII 1966	5	44.06 ± 1.83	975.00 ± 98.45	3+
15-17.XI 1966	4	47.23 ± 1.40	1057.50 ± 83.03	3+
25-28.V 1967	11	49.07 ± 0.77	1187.73 ± 51.78	4+
Total 1000	136	90 1.0 2.0%		

5.2. Lake Satimuslampi

Brown trout

	n	Length $\bar{x} \pm s_{\bar{x}}$ cm	Weight $\bar{x} \pm s_{\bar{x}}$ g	Age years
3.VI 1963	2	14.60 ± 0.30	28.50 ± 2.50	1+
17.X 1964	1	18.0	50.0	1+
9.VI 1965	13	20.16 ± 0.76	73.00 ± 8.76	2+
23.IX 1966	2	25.00 ± 1.00	162.50 ± 47.50	3+
Total	18			

Rainbow trout

	n	Length $\bar{x} \pm s_{\bar{x}}$ cm	Weight $\bar{x} \pm s_{\bar{x}}$ g	Age years
3.VI 1963	36	22.63 ± 0.36	116.08 ± 5.50	1+
17.X 1964	8	23.38 ± 0.60	121.88 ± 12.50	1+
9.VI 1965	10	24.23 ± 0.96	124.60 ± 13.14	2+
23.IX 1966	1	27.0	200.0	3+
Total	55			

5.3. Lake Pien-Valkealampi

Brown trout

	n	Length $\bar{x} \pm s_{\bar{x}}$ cm	Weight $\bar{x} \pm s_{\bar{x}}$ g	Age years
2.VII 1964	3	13.80 ± 0.40	26.33 ± 1.66	1+
28.VIII 1964	7	17.97 ± 0.42	53.14 ± 3.83	1+
24.IX 1964	7	18.16 ± 0.69	59.71 ± 4.39	1+
21.IV 1965	19	20.17 ± 0.06	60.47 ± 2.63	2+
31.V-1.VI 1965	16	19.29 ± 0.26	53.75 ± 2.30	2+
13.VII 1965	7	19.10 ± 0.49	53.00 ± 3.95	2+
8.VI 1966	3	20.73 ± 0.07	75.00 ± 4.04	3+
26.VII 1966	1	19.5	55.0	3+
Total 2 0+2	63			

Rainbow trout
Released on 22.IX 1963 at an age of 0+ year

	n	Length $\bar{x} \pm s_{\bar{x}}$ cm	Weight $\bar{x} \pm s_{\bar{x}}$ g	Age years
2.VII 1964	9	17.40 ± 0.59	53.67 ± 4.98	1+
28.VIII 1964	5	21.16 ± 0.71	89.20 ± 9.53	1+
24.IX 1964	3	20.00 ± 0.55	75.67 ± 4.05	1+
21.IV 1965	7	21.57 ± 0.49	71.14 ± 5.01	2+
13.VII 1965	1	23.2	78.0	2+
Total	25			

5.4. Lake Ahvenlampi

Brown trout
Released om 30.X 1964 at an age of 1+ years

	n	Length $\bar{x} \pm s_{\bar{x}}$ cm	Weight $\bar{x} \pm s_{\bar{x}}$ g	Age years
26.VII 1966	1	31.6	320.0	3+

Rainbow trout
Released on 30.X 1964 at an age of 1+ years

	n	Length $\bar{x} \pm s_{\bar{x}}$ cm	Weight $\bar{x} \pm s_{\bar{x}}$ g	Age years
30.X 1964	300	20-21	90.3	1+
1.VI 1965	10	24.77 ± 0.56	162.40 ± 9.21	2+
12.VII 1965	5	28.36 ± 0.64	220.40 ± 14.91	2+
7.VI 1966	6	30.93 ± 0.50	300.00 ± 13.84	3+
26.VII 1966	3	35.43 ± 1.44	440.00 ± 46.19	3+
Total	24			

5.5. Lake Ulpasjärvi

Brown trout

	n	Length $\bar{x} \pm s_{\bar{x}}$ cm	Weight $\bar{x} \pm s_{\bar{x}}$ g	Age years
6.XI 1961[1)]	1	16.0	45.0	0+
29.V 1962[1)]	1	16.3	45.0	1+
12-13.XII 1962[1)]	5	25.54 ± 0.49	164.40 ± 12.44	1+ 2+6
14-20.VI 1963	22	28.50 ± 0.38	198.91 ± 4.99	2+
4-5.XII 1963	9	30.61 ± 0.44	243.89 ± 9.38	2+ 3
9-11. VI 1964	11	32.85 ± 0.35	296.10 ± 12.33	3+
7-8.VII 1964	5	31.40 ± 0.58	264.00	3+
18-23.XI 1964	6	34.70 ± 0.70	393.30 ± 16.31	3+ 4
19-20.VI 1965	11	36.15 ± 0.57	455.45 ± 16.90	4+
25-30.XI 1965	2	46.10 ± 1.10	900.00 ± 125.00	4+ 5
20.VII 1966	1	37.50	455.0	5+ 6
Total	74	~~1506~~ 30%		

Rainbow trout

	n	Length $\bar{x} \pm s_{\bar{x}}$ cm	Weight $\bar{x} \pm s_{\bar{x}}$ g	Age years
6.XI 1961[1)]	5	18.1	66.0	0+
29.V 1962[1)]	38	~ 20	89.4	1+
12-13.XII 1962[1)]	27	26.23 ± 0.26	174.85 ± 6.16	1+
14-20.VI 1963	15	27.56 ± 0.25	191.47 ± 6.13	2+
4-5.XII 1963	4	29.00 ± 1.34	220.00 ± 33.23	2+
9-11.VI 1964	8	28.96 ± 0.49	212.50 ± 14.22	3+
7-8.VII 1964	7	29.30 ± 1.37	230.0	3+
18-23.XI 1964	2	30.50 ± 1.00	277.50 ± 2.50	3+
19-20.VI 1965	12	32.39 ± 0.76	350.83 ± 15.06	4+
25-30.XI 1965	3	36.10 ± 1.53	500.00 ± 38.19	4+
Total	121			

1) JAHNSSON (1963)

5.6. Lake Sahalampi

Brown trout

	n	Length $\bar{x} \pm s_{\bar{x}}$ cm	Weight $\bar{x} \pm s_{\bar{x}}$ g	Age years
16-17.X 1963	58	13.59 ± 0.16	22.40 ± 0.84	0+
28-29.V 1964	14	17.53 ± 0.43	54.71 ± 3.57	1+
5-6.X 1964[1)]	101	22.11 ± 0.14	100.18 ± 1.62	1+
16.V 1965	4	22.40 ± 1.02	113.00 ± 19.91	2+
22.VI 1965	1	27.7	200.0	2+
9.IX 1965	5	28.62 ± 0.66	236.80 ± 19.05	2+
1.VI 1966	4	33.65 ± 1.16	398.75 ± 41.25	3+
2.XI 1966	6	37.68 ± 0.92	601.67 ± 28.22	3+
14-15.X 1966	8	38.40 ± 0.61	592.00 ± 26.84	3+
Total	201			

1) 50 specimens of these were released after the necessary measurements

Rainbow trout

	n	Length $\bar{x} \pm s_{\bar{x}}$ cm	Weight $\bar{x} \pm s_{\bar{x}}$ g	Age years
16-17.X 1963	9	16.99 ± 0.68	48.22 ± 6.11	0+
28-29.V 1964	5	22.04 ± 1.01	125.60 ± 17.84	1+
5-6.X 1964	1	25.2	160.0	1+
Total	15			

5.7. Lake Julkujärvi

Brown trout

	n	Length $\bar{x} \pm s_{\bar{x}}$ cm	Weight $\bar{x} \pm s_{\bar{x}}$ g	Age years
20.X 1964	1	20.0	85.0	1+
28.V 1966	2	33.00 ± 3.00	575.00 ± 125.02	3+
31.IX 1966	7	42.86 ± 0.74	841.43 ± 33.12	3+
Total	10			

Rainbow trout

	n	Length $\bar{x} \pm s_{\bar{x}}$ cm	Weight $\bar{x} \pm s_{\bar{x}}$ g	Age years
2.VI 1964 1)	5	21.88 ± 0.99	135.00 ± 16.19	1+
-"- 2)	12	12.55 ± 0.60	25.50 ± 3.61	1+
20.X 1964 1)	3	36.93 ± 1.01	613.30 ± 39.19	1+
-"- 2)	30	26.70 ± 0.61	226.50 ± 17.74	1+
9.VI 1965 1)	2	39.20 ± 0.20	625.00 ± 25.00	2+
-"- 2)	13	29.05 ± 0.78	314.38 ± 26.86	2+
20.VI 1965 1)	3	40.83 ± 1.01	886.67 ± 85.70	2+
-"- 2)	9	30.72 ± 0.89	367.22 ± 32.03	2+
28.V 1966	1	48.0	1150.0	3+
Total	78			

1) Released on 26.VI 1963 at an age of 0+ year
2) -"- 30.X 1963 - " -

5.8. Lake Särkilampi

Brown trout

	n	Length $\bar{x} \pm s_{\bar{x}}$ cm	Weight $\bar{x} \pm s_{\bar{x}}$ g	Age years
19.V 1964 +)	500 +)	10	10-15	1+
28.VIII 1964	24	18.61 ± 0.50	73.42 ± 5.84	1+
Total	24			

Rainbow trout

	n	Length $\bar{x} \pm s_{\bar{x}}$ cm	Weight $\bar{x} \pm s_{\bar{x}}$ g	Age years
10.VII 1964 +)	500 +)	10-15	15-25	1+
28.VIII 1964	32	19.65 ± 0.30	86.41 ± 3.52	1+
Total	32			

+) = introduction

5.9. Lake Långviken

Brown trout

	n	Length $\bar{x} \pm s_{\bar{x}}$ cm	Weight $\bar{x} \pm s_{\bar{x}}$ g	Age years
2-3.IX 1963	8	10.86 ± 0.22	12.63 ± 1.03	0+
6.VI 1964	4	15.45 ± 1.01	39.75 ± 7.95	1+
in the early summer of 1964	3	16.83 ± 0.67	50.00 ± 2.88	1+
25.VII 1964	2	19.30 ± 0.30	72.00 ± 2.00	1+
15.VIII 1964	2	21.00 ± 0.00	67.50 ± 2.50	1+
28.IX 1966	9	31.83 ± 0.60	328.33 ± 10.45	3+
Total	28	25		

Rainbow trout

	n	Length $\bar{x} \pm s_{\bar{x}}$ cm	Weight $\bar{x} \pm s_{\bar{x}}$ g	Age years
2-3.IX 1963	10	14.61 ± 0.65	40.10 ± 6.52	0+
6.VI 1964	21	21.82 ± 0.37	112.29 ± 5.60	1+
in the early sommer of 1964	7	22.47 ± 0.25	112.14 ± 3.06	1+
25.VII 1964	5	22.64 ± 0.26	114.80 ± 4.80	1+
15.VIII 1964	5	24.80 ± 1.02	137.00 ± 19.27	1+
28.IX 1966	7	30.29 ± 0.67	322.14 ± 17.55	3+
Total	55			

In addition to the fish mentioned above, there are catches of brown trout and rainbow trout as follows:

		Number	Total weight g
Lake Kivi-Ahveroinen			
19.V 1965	brown trout	5	1053
Lake Satimuslampi			
19.V-18.IX 1966	brown trout	39	6340
19.V-8.VI 1966	rainbow trout	5	1000
Lake Ulpasjärvi			
6.XI 1961	brown trout	11	495
6.XI 1961	rainbow trout	23	1518
Lake Sahalampi			
in the summer of 1964	brown trout	35	3308
Lake Långviken			
in the summer of 1964	brown trout	43	2300
	rainbow trout	116	13450
in the summer of 1965	brown trout	76	13340
	rainbow trout	151	31050
in the summer of 1966	brown trout	27	8860
	rainbow trout	43	13860

43
76
27
146
28
174/25
7

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